

BioTrade in Practice: Case Studies



2025

The case studies compiled in this study were prepared under the "Global BioTrade Programme: Linking trade, biodiversity and sustainable development", funded by the Swiss State Secretariat for Economic Affairs SECO

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The case studies featured in the study demonstrate business models that can advance environmental, social, and economic dimensions. They are not endorsements of specific businesses.

Acknowledgements

The compilation and case studies were prepared by Lika Sasaki, based on the input, insights and information provided by BioTrade partners and practitioners implementing the BioTrade Principles and Criteria around the world. For its development and publishing, it received the support of Helvetas Swiss Intercooperation – Viet Nam.

The case studies compiled under this study were prepared with the support of the Swiss State Secretariat for Economic Affairs SECO under the “Global BioTrade Programme: Linking trade, biodiversity and sustainable development.” Further information about the programme, please contact biotrade@un.org.

Acronyms and abbreviations

ABS	Access and benefit-sharing
ABioSA	ABS Compliant Biotrade in South(ern) Africa Project
BAP	Biodiversity action plan
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DFFE	Department of Fisheries, Forestry and the Environment (South Africa)
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Development Cooperation Agency)
Helvetas	Helvetas Swiss Intercooperation
KMGBF	Kunming-Montreal Global Biodiversity Framework
MADS	Ministry of Environment and Sustainable Development (Colombia)
MINAM	Ministry for the Environment (Peru)
Nagoya Protocol	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization
OECS	Organisation of Eastern Caribbean States
P&C	(BioTrade) Principles and Criteria
PromPerú	Peruvian Export Promotion Board
SECO	State Secretariat for Economic Affairs (Switzerland)
SDGs	Sustainable Development Goals
SMEs	Small and medium-sized enterprises
TraBio	(UNCTAD) Trade and Biodiversity statistical tool
UEBT	Union for Ethical BioTrade
UNCTAD	UN Trade and Development

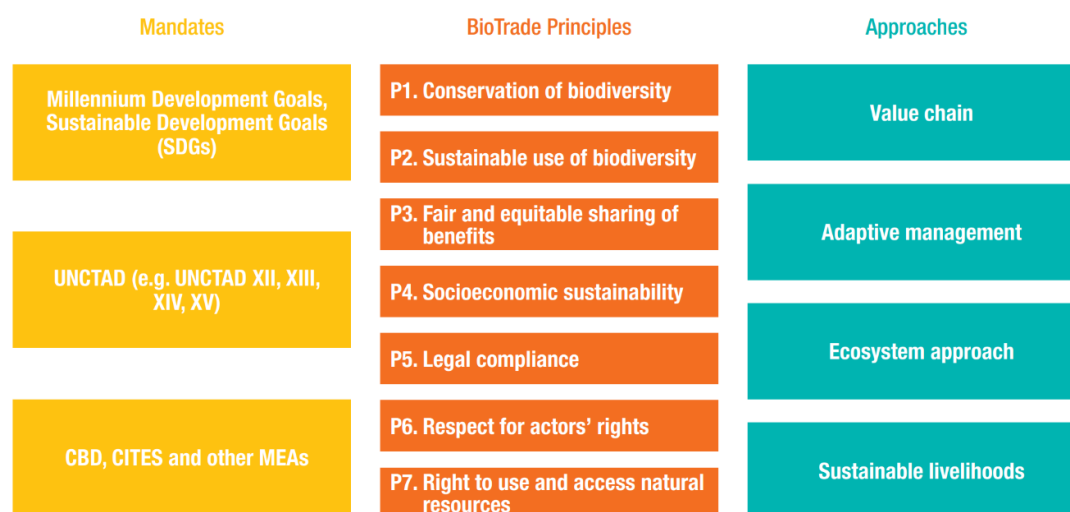
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I. BioTrade in Practice: Case Studies

In 1996, UN Trade and Development (UNCTAD) launched its BioTrade Initiative to promote trade and investment in biological resources, to further advance sustainable development. At the core of the Initiative are the BioTrade Principles and Criteria (P&C) – a set of sustainability criteria that ensures sustainability across the value chain. These are used by businesses, governments and civil society that want to support the conservation and sustainable use of biodiversity, as well as the fair and equitable sharing of benefits through trade¹. The P&C were first published in 2007 and updated in 2020 (see figure 1). They are being implemented with the support of national, regional and international partners in around 80 countries in Asia, Africa, America and Europe.

Figure 1: BioTrade conceptual framework with mandates, principles and approaches



Source: UNCTAD (2020). BioTrade principles and criteria. United Nations. Geneva. Available at <https://unctad.org/topic/trade-and-environment/biotrade/principles-and-criteria>

As part of its mandate to support developing countries, UNCTAD has been working with the Convention on Biological Diversity (CBD) and partners worldwide for over 25 years to develop BioTrade Principles and Criteria (P&C) in response to developing countries' needs. UNCTAD brings a unique comparative advantage to this work through its extensive network of partners - built over more than two decades - which is unmatched in the region.

As global markets for natural ingredients continue to grow, there is an increasing need for transparency and clear indicators that help consumers distinguish between genuine sustainable practices and greenwashing. Companies committed to biodiversity-friendly practices need practical guidance, while consumers need reliable ways to identify responsible sourcing. This is particularly crucial as the bioeconomy market expands, creating new opportunities for sustainable business models.

By implementing BioTrade, including its P&C, it supports stakeholders to achieve social, economic and environmental dimensions of sustainable development, in particular the conservation of biodiversity through sustainable use, sustainable livelihoods for local communities, and trade diversification for

¹ The BioTrade P&C include 7 principles and 25 criteria applicable to products and services based on terrestrial, marine and other aquatic biodiversity. For further information, please see: UNCTAD (2020). BioTrade principles and criteria, available at <https://unctad.org/topic/trade-and-environment/biotrade/principles-and-criteria> and UNCTAD (2025). Report of the 7th BioTrade Congress: Global Governance for Trade and Biodiversity, available at: https://unctad.org/system/files/information-document/7th_biotrade_congress_report_en.pdf

developing countries. These case studies, selected through consultation with BioTrade partners on the ground, demonstrate not only successful implementation of the BioTrade P&C but also the potential for scaling up and replication across different contexts and regions.

They demonstrate how the BioTrade P&C provides practical guidance that benefits markets, countries, and marginalized communities. These examples showcase successful business models where companies are rewarded for their commitment to sustainability while contributing to economic diversification in developing countries. The cases span 4 regions and over 20 countries, covering various scales of operation from community-based enterprises to international value chains, demonstrating the versatility and adaptability of the BioTrade approach.

The case studies compiled in this study demonstrate how BioTrade enables conservation through sustainable use and trade of biodiversity-based products and services. These providing concrete examples of successful implementation and aim to:

- Showcase how BioTrade serves as a new business model that simultaneously advances conservation, sustainable livelihoods, and trade diversification
- Share proven success stories of how countries, communities, and biodiversity have benefited from the practical application of BioTrade principles
- Demonstrate practical, solution-oriented approaches for implementing BioTrade P&C on the ground
- Share proven strategies for overcoming common implementation challenges
- Highlight innovative approaches to sustainable value chain development and market differentiation
- Provide examples of business practices that enable conservation through sustainable trade while supporting community livelihoods
- Offer replicable examples of biodiversity-friendly business practices to help diversify the economy and trade.
- Inform policymaking and contribute to intergovernmental processes, including Sustainable Development Goals (SDGs), Kunming-Montreal Global Biodiversity Framework (KMGBF), Paris Agreement, among others.

In particular, the studies are designed for:

- Policymakers working at the nexus of biodiversity and trade at national and international levels
- Decision-makers engaged in intergovernmental processes and consensus building
- Private sector actors seeking to implement sustainable sourcing practices
- Developing countries wanting to advance their biodiversity-based sectors, as well as bioeconomy strategies and leverage nature-based solutions
- Collectives including cooperatives, women's associations, and Indigenous Peoples and local communities' groups
- Industry associations and business networks promoting sustainability

The study was developed under the Global BioTrade Programme: Linking trade, biodiversity and sustainable development, implemented by UNCTAD with the support of the Swiss State Secretariat for Economic Affairs SECO. This global programme aimed at enabling key stakeholders to seize and capitalize on trade opportunities from linking trade, biodiversity and sustainable development, thereby advancing the implementation of the SDGs, and the KMGBF².

² For more information about the Global BioTrade Programme, please see <https://unctad.org/project/global-biotrade-facilitation-programme-linking-trade-biodiversity-and-sustainable>.

II. Case studies from Africa

The chapter includes four cases from Africa which have been identified and drafted with the support of BioTrade partners working in the continent. These cases are:

- 2.1. Building an inclusive baobab value chain in Mozambique
- 2.2. Building a sustainable and equitable honeybush value chain in South Africa
- 2.3. Empowering communities to protect natural resources and traditional knowledge in Zimbabwe
- 2.4. Protecting the traditional knowledge of marula in Southern Africa

2.1. Building an inclusive baobab value chain in Mozambique³

Featured BioTrade Principles: 2, 3, 4

Relevant Sustainable Development Goals: 1, 5, 8, 9, 10, 12, 13, 15

2.1.1. Overview

- **Product:** Baobab (*Adansonia digitata* L.) is a tree native to Africa that typically grows in arid areas. In Mozambique, baobab is grown in central and northern regions of the country.
- **Context:** The tree holds cultural and traditional significance across the region. Almost all parts of the tree can be used for medicinal and nutritional purposes including its bark, leaves, seed, and fruit. In recent years, the pulp of the Baobab fruit has been gaining international attention as a superfood.
- **Partnership:** Since 2018, the [German Development Cooperation Agency \(GIZ\)'s ProEcon project in Mozambique](#) has aimed to economically empower women in the agricultural sector, focusing on integrating them into supply chains through inclusive business models with private companies. GIZ established a partnership with [Micaia](#), a foundation that helps to increase market opportunities for smallholders and primary producers in central Mozambique. They also help to better manage their biodiversity and environmental resources while improving their livelihoods.
- **The issue:** Baobab collection is a critical source of income for local communities. However, their livelihoods are highly vulnerable due to the decrease in the baobab population caused by deforestation and climate change. Moreover, with increased global demands, consistent sourcing of high-quality baobab has been a challenge especially with international buyers demanding more stringent quality and food safety standards.

2.1.2. Actions

- In 2015, Micaia founded a social enterprise company for baobab products in Chimoio, Manica Province. The company collects, processes, and commercializes organic certified baobab fruit powder and seed oil. By paying three or four times the informal market price, the company aims to address the exploitation of the women collectors by informal sector baobab traders.
- For years, the lack of effective land governance and resource management contributed to the shrinking of the baobab population. To combat this, the [BioTrade Principles & Criteria \(P&C\)](#) were adopted to develop management plans with communities for their natural resources and maintaining its inventories.
- Additionally, by attaining EcoCert's organic certification and Hazard Analysis Critical Control Point (HACCP), baobab products got the necessary quality assurance of their client's products. They also implemented quality control measures at every stage of the supply chain.

³ This case study was developed with the support of Andrew Kingman from Eco-MICAIA.

2.2.3. Results

- **Economic benefits:** The social enterprise company increased its turnover five-fold, mainly through domestic and international sales of organic baobab fruit powder. In 2021, 1.654 women collectors collected 600 tons of baobab fruit which is equivalent to 60 tons of baobab powder.
- **Livelihood benefits:** 2,000 women annually gain from the baobab value chain managed by the social enterprise. The income they receive enables them to invest in household assets, small businesses, and access to services. 20% of the company's shares are soon to be held by women baobab collectors who already play an active role, through their Association, in the planning and running of the company.
- **Biodiversity benefits:** Baobab collectors are trained in accordance with the [BioTrade P&C](#) for sustainable harvesting. Natural management planning and zoning of baobab trees are in place to protect and nurture young baobab trees in collaboration with the [Enhancing Governance for Economic Development \(LEGEND\) programme](#).

2.2.4. Success factors

- **Investment in training:** The collectors are trained so that each village has a lead collector responsible for local coordination, planning, training, and quality control. These actions ensure that the products meet international market standards. Currently, every sack of powder sold can be traced back to its day of production, ensuring its traceability and sourcing.
- **Investment in long-term relationships:** The company invested in building long-term relationships with distributor partners who share the same vision and commitments of the BioTrade P&C.⁴ The relationships with trusted suppliers and an investment in quality control equipment, has facilitated a more inclusive business. It also makes the company resilient to the increasingly challenging and competitive international market.

2.2.5. Way forward

- **Innovative sustainability measures:** Through Micaia, the company continues to keep its business sustainable, biodiversity-friendly, and profitable through innovative measures to develop by-products, such as addressing waste issues. For example, they are repurposing excess baobab seeds (that are usually discarded as waste), to be used as animal feed.
- **Increasing operational efficiency:** While baobab demand from customers has increased, the price of baobab in the world market has been decreasing in recent years. As a result, the company has been exploring innovative ways to increase the efficiency of its operations in order to maintain the livelihoods of workers and collectors.
- **Maintaining a resilience fund:** During the initial stages of the COVID-19 pandemic, a resilience fund was established by GIZ and Micaia to compensate the baobab collectors and ensure livelihoods for them. By 2021, their sales and customer base had recovered, and the resilience fund was replenished to serve as a buffer against future external disruptions.

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⁴ ProFound Advisers in Development, n.d. Available at <https://thisisprofound.com/2021/02/08/meet-baobab-products-mozambique-at-the-organic-africa-pavilion-2021/>

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2.2. Building a Sustainable and Equitable Honeybush Value Chain in South Africa⁵

Featured BioTrade Principles: 1, 3, 6, 7

Relevant Sustainable Development Goals: 1, 5, 8, 9, 12, 15, 17

2.2.1. Overview

- **Product:** Honeybush is a flowering shrub from the *Cyclopia* plant found in South Africa. *Cyclopia subternata* and *C. intermedia* are the two main commercial types of honeybush.
- **Context:** Honeybush is not only an endemic plant in South Africa but only grows in the Western and Eastern Cape regions. The leaves and stems of the honeybush are collected, processed, fermented, and dried to make herbal teas. Caffeine-free and known to have antioxidant properties, honeybush tea has been gaining international recognition as a health product. Honeybush has a long history of being used medicinally within the region. With the rise in popularity in specialty health products, international exports for honeybush tea increased significantly in the past decade.
- **Partnership:** The [German Development Cooperation Agency \(GIZ\)](#) and the [South African Department of Forestry, Fisheries and the Environment \(DFFE\)](#) are jointly implementing the [ABS Compliant BioTrade in South\(ern\) Africa \(ABioSA\)](#) project funded by the [Swiss State Secretariat for Economic Affairs SECO](#). The project supports the development of the private sector as well as the implementation of their national access and benefit-sharing (ABS) systems and compliance to the [BioTrade Principles and Criteria \(P&C\)](#).
- **The issue:** With over 80% of honeybush harvests wildly collected, overharvesting has especially been a concern. Moreover, there are no management or monitoring systems implemented across the sector.

⁵ This case study was developed with the support of the Department of Fisheries, Forestry and the Environment (DFFE) of South Africa, the ABS Capacity Development Initiative, and Kruger Swart and Associates for their cooperation in this case study.

2.2.2. Actions

- The [South African Honeybush Tea Association \(SAHTA\)](#) is among the pioneers within the honeybush sectors which coordinates and promotes activities of sustainably cultivated and wild harvest honeybush. They also organize training and capacity building sessions on the know-hows and best practices of honeybush collection.
- To better coordinate the various honeybush stakeholders, the [Honeybush Community of Practice](#) was published in 2017 by the [Department of Environmental Affairs and Development Planning](#) of Western Cape. The document was the first standardized guideline drafted for the sustainable harvesting of wild honeybush.
- Since 2018, the ABioSA project has brought together the various stakeholders working on honeybush. The project incorporates use of traditional knowledge and management plans, which contribute to the livelihoods of communities through the sustainable use of biodiversity.

2.2.3. Results

- **Economic benefits:** Due to its growing global niche market, honeybush is an important source of income not only for harvesters but also for processors and sellers. Over 90% of honeybush products are sold internationally where the market value is 10 times more than the domestic market.
- **Livelihood benefits:** Wild harvesting of honeybush provides additional income for producers in the Western and Eastern Cape regions as a secondary source of income. Given the drought and climate resistance of honeybush, initiatives to promote sustainable cultivation and harvesting are underway. This could lead to economic opportunities in rural areas with marginal land.
- **Biodiversity benefits:** Honeybush is part of a unique fynbos biome that only exists in South Africa and provides habitat for other fynbos species and organisms. Maintaining sustainable levels of honeybush helps to restore and enhance local biodiversity.

2.2.4. Success factors

- **Successful consumer targeting campaign:** Even though honeybush was relatively unknown outside South Africa 20 years ago, it has been gaining global recognition in recent years in countries such as the United States of America and Japan. This was achieved through the efforts of honeybush promoters and sellers pinpointedly identifying the increasing consumer demand for natural and wellness-focused products from niche areas. Clinical studies and research supporting positive health claims for honeybush has also contributed to its reputation.
- **Assistance from local government:** Since the Honeybush Community of Practice guidelines were first published, they have been adopted by many honeybush collectors due to many training activities offered by the Department of Environmental Affairs and Development Planning of Western Cape which contributed to their capacity and knowledge building. The guidelines have also been translated into Afrikaans, making it more reader-friendly for the harvesters.
- **Bringing together stakeholders to the same table:** As part of the ABioSA project, a Sector Development Plan was established to collaboratively work towards a sustainable honeybush sector. This plan brings all stakeholders to develop a better understanding of national and international biodiversity-based standards (including the BioTrade P&C) and to collectively address the various blockages and market entry barriers within the honeybush value chain.

2.2.5. Way forward

- **Aiming for a more inclusive sector for all stakeholders:** A Honeybush Joint Action Group was also founded as part of the plan. The group serves as a platform for cooperative and smallholder producers to be able to raise their concerns and priorities within the sector. The group will work with South African Honeybush Tea Association to support the transformation to a more inclusive

representation of the honeybush sector while at the same time supporting Honeybush Community of Practice to ensure producer representation at all levels.

- **More recognition and benefits for the community and producers:** Application for access and benefit-sharing permits for honeybush is currently in process so that local communities can receive monetary and non-monetary benefits. A geographic indication application for honeybush is also in the process of being established by the South African government.

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2.3. Empowering Communities to Protect Natural Resources and Traditional Knowledge in Zimbabwe⁶

Featured BioTrade Principles: 3, 4, 6, 7

Relevant Sustainable Development Goals: 1, 2, 5, 8, 10, 12, 15

2.3.1. Overview

- **Product/value chain:** Traditional and local Zimbabwean crops, including “chindambi” (*Rosella* or *Hibiscus sabdariffa*), makoni (Bird’s Eye Chili or *Capsicum annum*), and devils’ claw (*Harpagophytum procumbens*).
- **Context:** Zimbabwe is one of the most biodiversity-rich countries in the world with over 10,000 plant species being endemic or near endemic. The majority of the Zimbabwean population live in rural areas, with over 70% of the population depending on agriculture for their livelihoods. In recent years the overharvesting of agricultural land and mining activities has been threatening deforestation.
- **Partnership:** Fairtrade Support Network Zimbabwe is an organization based in Harare that aims to raise awareness about sustainable agricultural practices and biodiversity conservation. They work with rural producers to facilitate market access by helping them obtain certification from internationally recognized standards such as [Fairtrade](#), [Union for Ethical BioTrade \(UEBT\)](#), and organic certifications.
- **The issue:** Zimbabwe ratified the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (Nagoya Protocol)* to the *Convention on Biological Diversity* and has been a party since 2017. The country also has national legislation on

⁶ This case study was developed with the support of Shamiso Mungwahu, founder of Fairtrade Support Network Zimbabwe (FSNZ).

access and benefit-sharing under [Statutory Instrument 61 of 2009](#). A major challenge is that national implementation of the Nagoya Protocol requires highly intricate negotiations at the provincial level. Local communities lack the capacity to effectively manage such negotiations, making them susceptible to the exploitation of their traditional knowledge.

2.3.2. Actions

- Fairtrade Support Network Zimbabwe offers consulting and training to local companies to obtain international certifications for better market access. One of them is a bulk ingredient supplier for baobab products in Zimbabwe. In collaboration with [FairWild](#), [Fairtrade](#), [Ecocert](#), and [Fair for Life](#) this supplier was collectively able to obtain its first Fairtrade certification in 2013. Today it is one of the largest baobab producers in the world.
- Even though all benefit-sharing agreements in Zimbabwe need to be negotiated at the provincial level, many of the rural district councils do not have adequate knowledge on access and benefit-sharing nor have legal specialists to assist them. To address this, the Fairtrade Support Network Zimbabwe has had a catalytic role by collaborating with local authorities, helping with the legal language involved in these agreements.
- Despite many local communities having a plethora of traditional knowledge, many are not aware of the value that it holds. With the support from organizations such as Union for Ethical BioTrade and ABS Capacity Development Initiative, Fairtrade Support Network Zimbabwe train community leaders on the process of negotiation and access granting process so that they develop the necessary knowledge and capacities to make better informed decisions. This in turn also reinforces the importance of the value of biodiversity and its sustainable use.

2.3.3. Results

- **Economic benefits:** Fairtrade Support Network Zimbabwe currently works with 6 businesses, assisting them with international market access for their products, primarily targeting European and American markets. Additionally, they support 4 businesses in obtaining certification under the UEBT label. [UEBT certification](#) can help these businesses improve their market access, enhance their brand reputation, ensure the long-term sustainability of their supply chains.
- **Livelihood benefits:** One of the main aims of Fairtrade Support Network Zimbabwe is to empower small-scale producers and encourage participation of women. Most of the communities that Fairtrade Support Network Zimbabwe works with are indigenous communities and 85% of wild plant collectors are comprised of women. Beyond supporting farmers, Fairtrade Support Network Zimbabwe is also involved in broader community development initiatives such as running a daycare center for orphans in Harare.
- **Biodiversity benefits:** Fairtrade Support Network Zimbabwe takes a multilayered approach to biodiversity conservation, working with local communities and provincial authorities. They provide training on environmental protection, climate change, forest rehabilitation, and sustainability. As commercial agriculture increases, Fairtrade Support Network Zimbabwe supports organic and sustainable agriculture methods and encourages communities to replant trees and conserve natural resources.

2.3.4. Success factors

- **Appointing community champions:** Fairtrade Support Network Zimbabwe engage directly with communities, especially in rural provinces, to raise awareness on the importance of biodiversity conservation and traditional knowledge through appointing focal points who act as community champions of biodiversity. This was successful during the COVID-19 pandemic lockdown in 2020 and 2021 when the focal points were able to conduct training and demonstrations on behalf of the organization.

- **Helping to diversify certification:** Fairtrade Support Network Zimbabwe assists producers in obtaining multiple certifications according to their needs and fit including with [FairWild](#), [Fairtrade](#), and [UEBT labels](#). This approach not only attracts sustainability-conscious buyers but also enables small producers to access larger and more diverse markets with greater ease. The organization also collaborates with certification organizations to provide community training for the certification process.
- **Having an innovative approach to ABS negotiations:** Fairtrade Support Network Zimbabwe adapted a "coming to the table full" approach in which they work with both the local communities and the district councils to equip them with the necessary information, techniques, and skills. By providing them with the necessary resources, all parties will be fully prepared to be able to come to a fair and just agreement at the negotiation table.

2.3.5. Way forward

- **Expanding the organization on a community level:** As Fairtrade Support Network Zimbabwe continues to increase its presence in Zimbabwe, it organizes training-of-trainers with community leaders. They have also identified community champions who can empower local communities with the skills and knowledge for sustainable agriculture and biodiversity conservation. Environmental trainers focus on training communities on the sustainable use of resources, using tools like the UEBT community toolkit, which provides guidance on negotiating fair working conditions and benefit-sharing.
- **Assisting certification for small-scale and large-scale producers:** Fairtrade Support Network Zimbabwe primarily assists small-scale producers but has also been working with large-scale commercial producers on obtaining Fairtrade certification for bigger market access. However, their focus remains on offering training and awareness-raising programs to local producers.
- **Preserving traditional knowledge/fighting biopiracy:** Traditional knowledge in Zimbabwean culture has been shared orally, resulting in few written records on biodiversity, including lists of species. Consequently, this has been one of the primary causes of biopiracy in Zimbabwe. Fairtrade Support Network Zimbabwe actively encourages communities to take ownership of their traditional knowledge, emphasizing the importance of preserving this knowledge and ensuring that communities receive fair benefits from its use.

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2.4. Protecting the traditional knowledge of marula in Southern Africa⁷

Featured BioTrade Principles: 2, 3, 6

Relevant Sustainable Development Goals: 1, 5, 8, 10, 12, 15, 17

2.4.1. Overview

- **Product/value chain:** Marula (*Sclerocarya birrea*) is a tree native to the Southern African region. As the tree is drought resistant and produces nutritious fruits, it is valued by local communities and ecosystem services. It also holds significant sociocultural importance in the region.
- **Context:** Marula trees are found growing naturally across 25 countries in the African continent. The fruits of these drought-resistant trees have been traditionally consumed as food and medicine by local communities. However, in recent years, the oil extracted from the marula fruit has been attracting global demand from the cosmetic industry due to its rich fatty acid content, which makes it well-suited for moisturizing and hydrating the skin.
- **Partnership:** The [ABS Compliant Biotrade in South\(ern\) Africa \(ABioSA\)](#) project, funded by the Swiss State Secretariat for Economic Affairs SECO and implemented by the [German Development Cooperation Agency \(GIZ\)](#) is a collaborative initiative working across biodiversity-based value chains and plant species across the region. In collaboration with [South African Department of Forestry, Fisheries and the Environment \(DFFE\)](#) and other regional governments, the project has strategically focused on value chains and species that meet specific criteria, including the BioTrade Principles and Criteria and in particular covering traditional knowledge, ecological sustainability, market demand, potential for value-addition and job creation, and the participation of Indigenous Peoples and local communities and small medium enterprises (SMEs).
- **Issue:** Commercialization of marula oil started gaining global momentum in the late 1990s which presented economic opportunities for local communities. However, the absence of guidelines, legal frameworks, and standards posed a threat to these communities, as their traditional knowledge and rights were vulnerable to exploitation without proper protection measures in place.

2.4.2. Actions

- In response to the growing demand for marula oil in the cosmetics industry, marula oil stakeholders from Namibia, Botswana, Zimbabwe, South Africa, and Swaziland proactively established the Southern African Marula Oil Producers Network (SAMOPN) in 2000. The network aimed to ensure sustainable and equitable practices by facilitating the exchange of extraction technology, commercial insights, product specifications, and standards among its members.

⁷ This case study was developed with the support of the ABS Capacity Development Initiative.

- Recognizing the need for fair and equitable treatment of traditional knowledge holders, SAMOPN conceptualized a trade association called the Southern African Natural Products Trade Association (SANProTA), which was later rebranded as [PhytoTrade Africa](#). PhytoTrade Africa established a charter based on the [principles of the Convention on Biological Diversity](#) and on the [BioTrade Principles and Criteria \(P&C\)](#).
- Since 2018, the ABioSA project has been collaborating with biodiversity-based value chains in southern Africa, including marula, to further implement the BioTrade P&C.
- Stakeholders created a comprehensive plan and roadmap to guide the development of the marula sector. The plan outlines strategies to formalize and strengthen the organization, ensure regulatory compliance, facilitate research and innovation, promote quality and protection, and pursue marula's registration as a novel food.

2.4.3. Results

- **Economic benefits:** The marula value chain has been generating economic opportunities and income for local communities in Southern Africa, such as the [Eudafano Women's Cooperative \(EWC\)](#) in Northern Namibia, developed by the Centre for Research-Information-Action in Africa/Southern African Development & Consulting (CRIAA SA-DC). In 2020 alone, the cooperative's sales from marula kernels collected by the cooperative's members reached \$158,000. With marula exports growing at a rate of 4% annually, the sector is expected to continue to grow from \$ 55 million in 2023 to \$ 98 million in 2033.
- **Livelihood benefits:** Eudafano Women's Cooperative's activities have been instrumental in stimulating the development of rural communities by leveraging traditional knowledge for the conservation of indigenous plants like marula. The cooperative provides direct employment to 2,500 women across 27 associations, empowering them through their involvement in the collection and processing of marula oil. This initiative has increased access to education, healthcare, and raised living standards in the region, enhancing livelihoods for women in areas where job scarcity has been a major socioeconomic challenge.
- **Biodiversity benefits:** The marula tree serves as a cornerstone of biodiversity and societal well-being in the region. These trees provide valuable habitats for various plant and animal species, protecting them from the arid climate. Moreover, the fruit of marula is rich in nutrients, serving as a valuable source of sustenance for both wildlife and local communities.

2.4.4. Success factors

- **Long-term multi-stakeholder collaboration:** The steady growth of the marula sector stems from a robust multi-stakeholder partnership, where each partner played a vital role.
- **Capacity building and technical support:** Providing on-the-ground capacity building and technical support to rural producers has been crucial in supporting and empowering local communities throughout the years. The partners' expertise has also been invaluable in offering guidance on complex ABS agreements, including negotiating complex commercial deals with international companies.
- **Establishment of governance frameworks:** The formation of association of producers as well as the work undertaken in the development of the marula sector development plan has been crucial in establishing governance frameworks and standards for the marula value chain. These governance frameworks ensured that the marula industry operated in a sustainable and equitable manner, protecting the rights and interests of local communities.

2.4.5. Way forward

- **Implementing the Marula sector development plan:** A four-pillar marula sector development plan was developed based on the roadmap that was developed by the stakeholders. One of the key actions is to increase market access by opening up the European Union market for marula fruit through compliance with European Union regulations. This will involve establishing a food business operator as the notifier or applicant. Additionally, the sector will explore the potential for geographical indicators or other forms of intellectual property protection to enhance competitiveness.
- **Sustainable management, quality improvement, and compliance:** The sector development plan also focuses on sustainable management of marula, which supports resource assessments and marula biodiversity management plans. Improving the quality of marula products is another key aspect, which includes supporting members of the [Southern African Essential Oil Producers' Association \(SAEOPA\)](#) and to generate scientific data to protect the sector from downstream adulteration. Additionally, the plan aims to improve marula producers' compliance with ABS regulations.
- **Knowledge-sharing and setting the example through peer exchange events:** Facilitation of events will also be organized with other sector organizations, associations, and stakeholders. These events will provide a platform for knowledge sharing, discussing challenges and opportunities, and collaborating on solutions to foster sustainable growth and development of the marula sector as well as draw lessons that could be replicated for other value chains and sectors.

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III. Case studies from Asia

The chapter includes four cases from Asia which have been identified and drafted with the support of BioTrade partners working in the continent. These cases are:

- 3.1. Empowering communities with sustainable prickly ash production in Lao People's Democratic Republic
- 3.2. Empowering marginalized communities through sustainable spice production and trade in Viet Nam
- 3.3. Logging to sustainable gum collection: transforming Viet Nam's benzoin sector
- 3.4. Promoting biodiversity-friendly practices in India's spice value chains

3.1. Empowering communities with sustainable prickly ash production in Lao People's Democratic Republic⁸

Featured BioTrade Principles: 1, 2, 6,7

Relevant Sustainable Development Goals: 1, 2, 5, 8, 9, 12, 13, 15, 17

3.1.1. Overview

- **Product:** *Zanthoxylum rhetsa*, Indian prickly ash (hereafter referred to as prickly ash) is a small flowering tree that grows wild in Lao People's Democratic Republic including Huaphanh, Xiengkhouang, and Vientiane Provinces in Northern Laos.
- **Context:** The woody coat of the tiny fruits of the prickly ash are used traditionally as a cooking spice and has a similar tingling sensation to Szechuan pepper. In recent years, prickly ash has also come into high demand as an ingredient for the European fragrance sector.
- **Partnership:** Since 2016, [Helvetas Swiss Intercooperation](#) (Helvetas) has implemented the [Regional Biotrade project](#) with the support of the [Swiss State Secretariat for Economic Affairs SECO](#) with a focus on improving earnings for small and medium sized enterprises and rural producers of natural ingredients including spices, tea, and phyto-pharmaceutical sectors.
- **The issue:** Traditionally, prickly ash has been cultivated as a by-product of shifting (swidden) agriculture in which prickly ash seeds germinate after clearing and burning of forest plots. Crops such as rice are grown on the plot for a few years and then are abandoned for a period of 12-15 years (fallow period) to allow the soil to regenerate. This period also allows the prickly ash trees to mature. However, due to increasing demand for commercial agricultural crops, producers are now forced to shorten the fallow period to 4 years. This depletes the fertility of the soil and does not allow the prickly ash to fully develop before it gets harvested.

3.1.2. Actions

- The Regional Biotrade Project promotes the production and export of products derived from local plants and secures greater access to more lucrative markets. Helvetas and the Laos government have been supporting stakeholders along the spices value chain align to more biodiversity-friendly sourcing practices, based on the [BioTrade Principles and Criteria \(P&C\)](#). They have also been providing assistance to develop the [biodiversity action plans \(BAPs\)](#) which serve as roadmaps for regenerating biodiversity within the value chain while also preserving ecosystem services of the region.
- Instead of practicing shifting agriculture, producers have now created prickly ash plantations: certain areas of the forest are dedicated primarily to growing prickly ash trees, along with other

⁸ This case study was developed with the support of Helvetas Swiss Intercooperation and Dakdae.

naturally occurring species. These plantations are managed over a period of approximately 15 years, allowing the prickly ash to reach full maturity and productivity.

- The Helvetas project has benefited from the development of a market platform by Dakdae, a women-led social enterprise which supports young entrepreneurs to establish microenterprises that source from local and sustainable ingredients.

3.1.3. Results

- **Economic benefits:** Local communities primarily earn their living through wild mushroom collection, rice cultivation and silk weaving; nevertheless, prickly ash represents a significant source of secondary income, varying from 9 to 23% of the producer's total income.
- **Livelihood benefits:** The current plantation system constitutes a long-term rotational farming system. This system allows farmers to preserve biodiversity in the forest areas and ensures more opportunities for longer term income sourcing.
- **Biodiversity benefits:** Traditionally, local collectors cut down the entire tree because it was quicker to collect the fruits. By having a plantation system in place, producers have stopped cutting the trees because they realize that keeping the trees allows them to collect more fruit in addition to allowing the trees to mature.

3.1.4. Success factors

- **Use of traditional knowledge:** The idea for a plantation system was initially proposed by the local collectors who already possessed traditional knowledge about prickly ash. Hence not only were they able to identify the problem but also develop innovative solutions. This empowered the communities to exercise their rights and ownership over their genetic resources.
- **Effective use of land plans:** The villages where prickly ash is sourced have local Land Use Plans in accordance with the [BioTrade P&C](#). This plan allows the villagers to stipulate what activities can be conducted in each location. Following these plans, prickly ash plantations are only established in agreed designated areas.

3.1.5. Way forward

- **Conservation policies crucial for high-quality prickly ash:** Although prickly ash grows wildly and abundantly in the region, there is a marked difference in the quality of the product derived from different areas depending on the climate and the ecosystem. The promotion and conservation of these areas, especially from the government, will be vital for the sustainable production of high-quality prickly ash.
- **Local quality testing facilities needed:** As of 2022, quality assessment is only conducted at the end of the value chain; thus, buyers cannot verify if prickly ash meets the desired quality standards until the shipments arrive at their destinations, mainly in Europe. Establishing local quality testing facilities would be key to preventing these supply chain risks.

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3.2. Empowering marginalized communities through sustainable spice production and trade in Viet Nam⁹

Featured BioTrade Principles: 2, 3, 4, 6

Relevant Sustainable Development Goals: 1, 5, 8, 9, 10, 12, 13, 15

3.2.1. Overview

- **Context:** The provinces of Lang Son, Cao Bang and Yen Bai in northern Viet Nam are distinguished by their mountainous terrain, which fosters a diverse array of habitats and ecosystems. These regions are also culturally and historically rich, with the presence of various ethnic minority groups. The cultivation of spices like cinnamon and star anise is deeply rooted in their traditional knowledge, preserving the rich cultural heritage of these local communities.
- **Partnership:** Since 2016, [Helvetas Swiss Intercooperation](#) (Helvetas) has implemented the [Regional Biotrade project](#) with the support of the [Swiss State Secretariat for Economic Affairs SECO](#) with a focus on improving earnings for small and medium sized enterprises (SMEs) and rural producers of natural ingredients including spices, tea, and phyto-pharmaceutical sectors. The [Union for Ethical BioTrade \(UEBT\)](#), a non-profit promoting responsible natural ingredient sourcing and biodiversity conservation, certifies companies implementing practices that conserve biodiversity, respect traditional knowledge, and ensure fair benefit-sharing.
- **The issue:** Despite the growing global demand for natural spices, ethnic minority communities in these regions face significant challenges in earning a livable income due to limited market access and volatile prices. Spice producers in these regions face significant challenges in earning a livable income due to limited market access. Additionally, unsustainable harvesting practices have posed risks to the region's biodiversity.

3.2.2. Actions

- Helvetas's project has been promoting the production and export of products derived from local plants and secures greater access to more lucrative markets and more biodiversity-friendly sourcing practices that are based on the [BioTrade Principles and Criteria \(P&C\)](#). In 2017, Helvetas started working with an SME based in the region that specializes in certified organic spices. Established in 2012, the SME had been sourcing spices like cinnamon and star anise directly from smallholder producers at fair prices but faced challenges implementing a fully inclusive and sustainable business model.
- In cooperation with UEBT, [biodiversity action plans \(BAPs\)](#) were developed as roadmaps for regenerating biodiversity within the value chain while preserving ecosystem services. This helped to better align with international sustainability standards and for ensuring biodiversity conservation in growing and sourcing ingredients.
- Local producers and government officials received training on biodiversity-friendly practices such as avoiding pesticides, respecting forest and wildlife habitats, and implementing sustainable waste management. This comprehensive capacity building has helped create more resilient and sustainable supply chains that are more competitive in accessing international markets.

3.2.3. Results

- **Economic benefits:** The implementation of sustainable sourcing practices and access to international markets has driven significant growth in Viet Nam's spice sector, with export turnover for certified cinnamon from this project exceeding \$43 million. The success of the project along with the great potential of the sector is corroborated by the fact that export turnover of value chains of

⁹ This case study was developed with the support of Helvetas Swiss Intercooperation and Vinasamex.

sustainably produced goods in Vietnam grew from \$ 9 million in 2021, to more than \$ 138 million by the end of 2023. This market success has translated into tangible benefits for local communities - the SME now has direct contracts with 3,000 producers across 4,200 hectares of certified organic and conventional growing areas, purchasing spices at rates 5-10% higher than market prices. The combination of fair pricing and quality training has dramatically improved producer incomes, which now average US\$5,000 per hectare annually - a 20-fold increase from 2012.

- **Livelihood benefits:** The initiative has particularly benefited ethnic minority communities (such as Tày and Dao people) and women, who make up 60% of producers. Beyond price premiums, producers receive training in quality management, finance, and decision-making, creating lasting economic empowerment. The regular income from spice production has become a crucial source of household stability for these traditionally marginalized communities.
- **Biodiversity benefits:** The project established an innovative mixed-cropping model that integrates 968 cinnamon trees with 298 kernel trees and 364 medicinal plants per hectare, such as Trám (*Canarium album*), Giổi (*Michelia mediocris*), Ba kích (*Morinda officinalis*). This diverse agroforestry system maintains ecosystem services while generating income. Additionally, investments in water treatment, smoke filters, and waste management facilities ensure environmental protection throughout the value chain.

3.2.4. Success factors

- **Securing supply through long-term contracts:** Long-term contracts formalized with producers ensured a consistent supply of high-quality and sustainably sourced spices. By providing producers with stability and fair prices over an extended period, the SME could rely on a dependable source of organic spices cultivated using biodiversity-friendly methods.
- **Building effective partnerships:** Long-term engagement between producers, businesses, and government agencies has created stable and equitable value chains that benefit all stakeholders. b. Market differentiation through certification: Adherence to international standards like organic and HACCP certification has enabled access to premium markets in the European Union, United States of America, and Japan. c. Integration of traditional and modern practices: The mixed-cropping model combines traditional knowledge with modern biodiversity-friendly techniques, creating resilient agricultural systems that support both livelihoods and conservation.
- **Mixed cropping systems bolstered rural livelihoods:** The lucrative cultivation of spices such as cinnamon and star anise alongside other crops enabled rural households to diversify their income sources beyond traditional activities like rice farming. This diversification strengthened the economic resilience of these communities. Star anise in particular, with its long lifespan and wide spacing allowing intercropping, demonstrates how mixed cropping can promote both higher incomes and biodiversity conservation.
- **Focus on high-quality, certified products for exports:** The SME's commitment to exporting high-quality, certified organic spices provided access to premium markets such as the European Union, United States of America, and Japan. Adherence to stringent international standards such as Hazard Analysis Critical Control Point (HACCP), organic, and Fairtrade certifications, positioned the company as a reputable and reliable supplier in the global market.
- **Building effective partnerships:** Long-term engagement between producers, businesses, and government agencies has created stable and equitable value chains that benefit all stakeholders.
- **Market differentiation through certification:** Adherence to international standards like organic and HACCP certification has enabled access to premium markets in the European Union, United States of America, and Japan.
- **Integration of traditional and modern practices:** The mixed-cropping model combines traditional knowledge with modern biodiversity-friendly techniques, creating resilient agricultural systems that support both livelihoods and conservation.

3.2.5. Way forward

- **Replication and scaling:** Exploring opportunities to replicate the mixed cropping model with similar socio-economic and environmental contexts could lead to more sustainable and resilient agricultural systems in other regions. Leveraging carbon credit schemes and biodiversity incentives wherever applicable could also help promote the adoption of sustainable practices.
- **Foster collaborations:** Strengthen collaborations with organizations and initiatives working towards similar goals, such as biodiversity conservation, sustainable agriculture, and rural development. Such collaborations could facilitate knowledge sharing and resource pooling. Engaging provincial and district authorities is also crucial to ensure consistent policy support for organic production, biodiversity conservation, and sustainable land management practices.
- **Development of a geographical indication (GI):** Establishing a GI for cinnamon could highlight its unique biodiversity-friendly qualities, the use of sustainable mixed cropping methods, and the area's distinctive cinnamon variety. It can also help secure premium prices, protect the region's reputation, and provide a model for other areas to replicate.
- **Establishing producer organizations:** Supporting the formation and capacity building of producer organizations can help producers navigate and comply with new organic certification standards and regulations. These organizations can also provide training on organizational management, collective bargaining, and quality control.
- **Strategic scaling through policy engagement:** Expanding the mixed-cropping model requires supportive policy frameworks. Enhanced coordination with provincial authorities could help establish regulations that protect biodiversity while promoting sustainable trade.
- **Market-driven expansion:** Growing international demand for responsibly-sourced spices presents opportunities to expand this approach to more communities. Development of geographical indications could further differentiate these products in global markets.
- **Strengthening producer organizations:** Supporting collective action through producer groups can improve bargaining power and ensure quality standards, creating more resilient supply chains.

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3.3. Logging to sustainable gum collection: transforming Viet Nam's benzoin sector¹⁰

Featured BioTrade Principles: 1, 2, 3

Relevant Sustainable Development Goals: 1, 8, 12, 15, 17

3.3.1. Overview

- **Product:** Siam benzoin gum (hereafter referred to as benzoin gum) is an aromatic resin that is exuded from the sap of the benzoin tree, *Styrax tonkinensis*. The gum is extracted from the tree by making intersections into the tree bark and then secreted out. Benzoin gum is a popular main ingredient used by the perfume and fragrance industry.
- **Context:** Benzoin trees grow in the northern highlands in Viet Nam. The forest-covered mountainous region creates conditions that are conducive to produce high quality benzoin gum.
- **Partnership:** Since 2016, [Helvetas Swiss Intercooperation](#) (Helvetas), an non-governmental organization, has implemented the [Regional Biotrade project](#) with the support of the [Swiss State Secretariat for Economic Affairs SECO](#). The project focuses on improving earnings for small and medium sized enterprises and rural producers of natural ingredients including spices, tea, and phyto-pharmaceutical sectors.
- **The issue:** While benzoin trees have traditionally been logged for timber, falling log prices made this practice an unreliable source of income for local communities. Additionally, the deforestation has become a major national problem in Viet Nam, threatening both wildlife habitats and increasing flood risks for local villages.

3.3.2. Actions

- The project promotes the production and export of products derived from local plants and secures greater access to bigger markets. With support from Helvetas and the Vietnamese government, stakeholders in the benzoin gum value chain adopted biodiversity-friendly and sustainable sourcing practices, based on the guidelines of the [BioTrade Principles and Criteria \(P&C\)](#). For example, measures such as worker well-being and occupational safety for benzoin collectors were put in place. Additionally, they have assisted in developing [biodiversity action plans \(BAPs\)](#) which serve as roadmaps for regenerating biodiversity within the value chain and preserving ecosystem services in the region.
- Helvetas has been working with a [small medium enterprise \(SME\) in Northern Viet Nam](#) that works with over 1,000 households in rural villages in the region to extract, collect, and sell benzoin gum. Established in 2015, the company fosters sustainable use of natural ingredients that contribute to biodiversity conservation and livelihood of local communities.
- In addition, Helvetas has been facilitating partnerships along natural ingredient supply chains. In 2018, it helped establish a partnership between the SME and an [international fragrance and flavor sourcing company](#) based in France. This partnership enabled the sourcing of high-quality raw materials that meet the sustainability standards of the company and its clients.

3.3.3. Results

- **Economic benefits:** Previously, an entire benzoin tree was sold for approximately \$8.50 per tree.¹¹ However, \$11 worth of benzoin gum can be collected per tree, per season. The benzoin tree can live typically up to 10 years which ensures the workers a steady income. Thus, the gum collection

¹⁰ This case study was developed with the support of Helvetas Swiss Intercooperation and Duc Phu Agriculture Forestry Joint Stock Company.

¹¹ After reaching 5-6 years maturity.

incentivized the local community to shift away from logging practices. As a result of implementing sustainable sourcing practices and accessing international markets, the benzoin sector has seen significant growth. The total export turnover value of certified benzoin for beneficiaries working under the Helvetas project in the region (Viet Nam and Lao People's Democratic Republic) has exceeded over \$880,000 in 2023.

- **Livelihood benefits:** The partnership led to higher prices being paid for benzoin gum which also resulted in increased wages for workers. While the main source of income in the community is agriculture, benzoin gum collection helps to diversify their source of income. The rise in exports to international buyers generates an additional income of \$300-450 per household per season.
- **Biodiversity benefits:** As the extraction of the benzoin gum is more profitable than logging activities, the latter has diminished thus preventing deforestation. By maintaining the benzoin trees, they contribute to the genetic flow of the local biodiversity and maintain a vital food source for local wildlife.

3.3.4. Success factors

- **Building effective partnerships:** A dedicated convener bringing together businesses, households, local governments and non-governmental organizations has been essential in building a sustainable and durable value chain for the long term.
- **Market differentiation through BioTrade P&C:** Implementation of BioTrade P&C has enabled value chain actors to access premium markets while ensuring benefits flow to local communities and biodiversity conservation.
- **Continuous improvement maintains market access:** The BAPs enable stakeholders to systematically review and evaluate their operations against BioTrade P&C. This systematic approach helps identify areas for improvement in biodiversity conservation efforts while maintaining access to international markets.

3.3.5. Way forward

- **Strategic scaling through policy engagement:** While economic incentives have proven effective at the community level, scaling up requires stronger policy frameworks. Enhanced coordination with local government could help establish regulations that protect benzoin tree populations while promoting sustainable trade.
- **Market-driven expansion:** Growing international demand for sustainably-sourced natural ingredients present opportunities to expand this approach to more communities and regions, creating additional export opportunities for Viet Nam's bioeconomy.

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3.4. Promoting biodiversity-friendly practices in India's spice value chains¹²

Featured BioTrade Principles: 1, 2, 3, 4

Relevant Sustainable Development Goals: 2, 12, 13, 15, 17

3.4.1. Overview

- **Product:** India is the world's largest producer and exporter of spices, producing more than 3 million tons of various spices (valued at approximately US 2.5 billion¹³) exported to more than 150 countries. Spices are produced in all regions of India, but the Western Ghats region is well known for its high-quality pepper, cardamom, nutmeg, cinnamon, and chili.
- **Context:** Western Ghats is a mountain range in the Southwestern India that is designated as a UNESCO World Heritage Site and is a biodiversity hotspot. Approximately 40% of the plant species found in this region are endemic. Spice cultivation has been among the leading agricultural sectors in the Western Ghats region, providing livelihoods for millions of smallholder farmers.
- **Partnership:** The Private Business Action for Biodiversity project was part of the [International Climate Initiative \(IKI\)](#) commissioned by [the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety \(BMU\)](#). It was implemented by the German Development Cooperation Agency (GIZ) from 2016 to 2021 in cooperation with the [Global Nature Fund](#), [Rainforest Alliance](#), the [Union for Ethical BioTrade \(UEBT\)](#) as well as Indian partner organizations such as the [I](#) and [World Spice Organisation](#). Its main objective was to promote promising methods and instruments for biodiversity-friendly production and commercialization.
- **The issue:** Due to global demand for spices, local producers in the Western Ghats region are increasingly forced to intensify their production and use pesticides which are contributing to biodiversity loss. Soil health has been depleted and expansion of agriculture near forest areas has led to the intrusion of invasive alien species, which in turn has put spice production at risk jeopardizing human livelihoods.

3.4.2. Actions

- The project aimed to identify and create management tools to better integrate biodiversity-friendly practices into the spice value chain in the Western Ghats region.
- Among the implementation tools created was the [biodiversity action plans \(BAPs\)](#), which helped spice producers and businesses to better plan and implement ways to conserve biodiversity. These plans served as roadmaps for regenerating biodiversity within the agricultural production while also preserving ecosystem service of the region. They also served as a basis for the integration of biodiversity-friendly measures for companies and standards.
- The project also advised companies on how to create their own biodiversity action plans and organized capacity building workshops.

3.4.3. Results

- **Economic benefits:** Systematic biodiversity management not only contributed to the preservation of natural resources but also resulted in cost-effectiveness operation, improved sustainability of the supply chain, and increased access to new markets.
- **Livelihood benefits:** BAPs helped initiatives for monetary and non-monetary benefit sharing among local stakeholders and tribal communities. It also helped to promote good agricultural practices and

¹² This case study was developed with the support of KJ Venugopal, Food Safety Expert and Supply Quality Consultant.

¹³ According to the export value of spices in India from [UNCTAD Trade in biodiversity-based products \(TraBio\) database](#).

educate small producers in the region, which in turn helped them to better meet biodiversity and environmental standards to export to bigger and more profitable international markets.

- **Biodiversity benefits:** Incorporating the BAP creates a pathway to regenerate soil through effective soil management. Monitoring soil health and implementing sustainable practices increase soil fertility and enhance the land's resilience against natural disasters such as droughts or heavy rainfall.

3.4.4. Success factors

- **Raised awareness of biodiversity for producers:** 70 trainees were trained to support 800 farmers and approximately 100 pilot BAPs were implemented. Producers being more aware of the importance of integrating biodiversity into their operations and supply chains allowed them to realize the risks and impacts it would have on their income and long-term economic sustainability.
- **Companies realized it is possible to be profitable while preserving resources:** Having BAPs in place has proved that it is possible for companies to be biodiversity-friendly and economically profitable. For example, biodiversity-friendly production allows companies to strategize and manage their supply chains in a more sustainable and resilient way.
- **Development of adaptable and scalable tools:** The BAPs are not a one-size-fits-all solution; they are adaptable and flexible, making them easy to use for everyone. It can be easily modified to suit many different contexts, and they were user-friendly which made it easier for the tools to be replicated and scaled up.

3.4.5. Way forward

- **Wider use of BAPs in India:** Because the BAPs are easy to adapt and incorporated into companies, the next steps would be for the BAPs to be used on a wider scale in more regions in India, as well as adapting them into other sectors beyond spices.
- **Mainstreaming biodiversity into policy frameworks through BAPs:** The BAPs can be utilized by the Indian government to integrate biodiversity considerations into various policy frameworks, drawing upon the lessons learned and successful cases from their implementation.
- **Collaboration of stakeholders using BAPs:** Encouragement of more facilitation and collaboration among stakeholders using BAPs can lead to collectively addressing biodiversity conservation on a bigger scale. For example, BAPs can allow producers to work not only with companies, but also with local environmental protection agencies and non-governmental organizations on the ground.

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IV. Case study from Latin America and the Caribbean

The chapter includes cases from Latin America and the Caribbean which have been identified and drafted with the support of BioTrade partners working in the continent. These cases are:

- 4.1. Strengthening the community through sustainable medicinal plants in Colombia
- 4.2. Preserving traditional knowledge while empowering communities in the Ecuadorian Amazon
- 4.3. First legal indigenous forest reserve in Honduras enables sustainable production of styrax gum
- 4.4. Harvesting aloe vera in harmony with biodiversity and Indigenous Peoples in Mexico
- 4.5. Harvesting and protecting traditional plants in Mexico
- 4.6. Sustainable algarrobo empowers communities in Northern Peru
- 4.7. Promoting legal, sustainable, and traceable queen conch trade in the Caribbean

4.1. Strengthening the community through sustainable medicinal plants in Colombia¹⁴

Relevant BioTrade Principles: 1, 2, 3, 5, 6

Relevant Sustainable Development Goals: 1, 3, 5, 8, 10, 12, 15, 17

4.1.1. Overview

- **Product:** Over-the-counter medicinal products utilizing traditional plants from the Chocó region in northwestern Colombia, such as "desbaratadora" (*Apocynaceae*), "arnica" (*Arnica montana*), and "monito" (*Renealmia cernua*).
- **Context:** With its tropical and rainy climate, the Chocó region is known as an "eco-region". Having over 900 registered medicinal plants, these resources play a crucial role not only in safeguarding human health but also hold significant cultural, religious, and historical importance for the local Afro-Colombian and indigenous communities.
- **Partnership:** [The Ministry of Environment and Sustainable Development of the Colombian government \(MADS\)](#) actively promotes economic activities that contribute to biodiversity conservation while fostering livelihoods and advocating for environmentally, socially, and economically responsible practices, aligned with Sustainable Development Goals (SDGs).
- **The issue:** Despite generations of rich traditional knowledge of medicinal plants being passed down, communities in the Chocó region lack the resources and capacity to harness these assets for generating livelihoods. As one of the most impoverished areas in Colombia, this presents a significant challenge to sustainable development efforts.

4.1.2. Actions

- The [Green Business \(Negocios Verde\) program](#) is an ongoing initiative led by MADS since 2014. The program promotes and supports businesses that are implementing biodiversity-friendly practices while aligning with industry and market requirements. These businesses are identified and verified through indicators that are adapted from the [BioTrade Principles and Criteria \(P&C\)](#).
- Currently there are over 4,000 registered green businesses that are verified by MADS, with the goal of having 12,000 businesses by 2030. These green businesses actively contribute to the Colombian economy while safeguarding natural resources. In the Chocó region, 138 green

¹⁴ This case study was developed with the support of Fabio Murillo, CEO of Asociación Grupo Rescate de Plantas Medicinales and the Colombian Ministry of Environment and Sustainable Development (MADS).

businesses have been verified since 2014, including the Asociación Grupo Rescate De Plantas Medicinales (hereafter referred to as the "Association").

- The Association was founded in 2010 and is dedicated to the production, transformation, and commercialization of products derived from medicinal plants. The Association aims to leverage local traditional knowledge of medicinal plants to create social, economic, and environmental impacts.
- Operating as a small-medium enterprise, the Association has a local production plant manufacturing over-the-counter medications for topical use, including ointments, creams, and oils. Its products are processed under ecological and biodiversity-friendly practices, as required to be registered under the Green Business Programme.

4.1.3. Results

- **Economic benefits:** With a 60% profit margin and around 1,600 clients across major Colombian cities like Bogotá and Medellín, the Association has witnessed increasing demand for its products from the United States and neighboring countries. Much of their operation is done locally which contributes to the regional economy, fostering economic empowerment and stability, demonstrating a social and solidarity economic approach.
- **Livelihood benefits:** One of the aims of the Association is to empower marginalized or vulnerable individuals and build community respect and social cohesion. Prioritizing local employment, particularly for women, has been a top priority for the Association. Out of its 16 employees, 15 are women from Afro-Colombian communities. Additionally, the Association actively engages in community development efforts, collaborating with local communities in the Chocó region to provide flood relief assistance.
- **Biodiversity benefits:** Companies verified as green businesses are required to adopt more environmentally friendly production methods and business models that are less intensive on natural resources. In this regard, the Association has been conducting reforestation activities by replanting endangered native trees and providing biodiversity awareness training at local schools.

4.1.4. Success factors

- **Strong community engagement:** The Association actively supports social and environmental investment, and community development initiatives through close collaboration with the local community council. A consultation mechanism has been established to safeguard the ancestral and traditional knowledge of neighboring communities. Additionally, many reforestation activities in the region have been undertaken with the participation of local populations, fostering a sense of solidarity and shared responsibility among the communities.
- **Ownership of traditional knowledge by workers:** Many of the company's employees are also practicing midwives who possess extensive traditional knowledge gained from using local plants for pregnancy, childbirth, and first aid. These workers play a crucial role in integrating traditional knowledge throughout the production and transformation processes of the products, ensuring its preservation and application.

4.1.5. Way forward

- **Exploring potential in the region's plant diversity:** The Chocó region holds huge potential for the commercialization of local plants across various sectors, including pharmaceuticals, food, essences, dyes, antioxidants, and cosmetics. Further research on the chemical and biological properties of these plants will facilitate the exploitation of the full potential of these plants including the development of new niche products. This will also contribute to generating additional income for the local communities.

- **Addressing knowledge gaps for equitable benefits:** In recent years, the region has seen an influx of researchers and companies seeking to uncover the potential active ingredients of these products. Nonetheless, many local communities remain unaware of access and benefit-sharing mechanisms, resulting in an inequitable distribution of benefits. It is crucial to raise awareness among these communities about the value of their local biodiversity and traditional knowledge, enabling them to negotiate fair contracts.
- **Empowering local communities:** Government support is essential to bolster the capacity and awareness of local communities. Targeted training programmes and better information on how the rights of producers can be protected are essential for empowering them to safeguard their ancestral knowledge and ensure fair compensation for their valuable contributions.

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4.2. Preserving traditional knowledge while empowering communities in the Ecuadorian Amazon¹⁵

Featured BioTrade Principles: 1, 2, 3, 4, 7

Relevant Sustainable Development Goals: 1, 2, 3, 8, 12, 15

4.2.1. Overview

- **Product:** Cosmetic and personal care products, including massage oils and facial creams, crafted from medicinal and aromatic plants native to the Amazonian region in Ecuador. These plant species include ungurahua (*Oenocarpus bataua*), sangre de drago (*Croton lechleri*), ishpink (*Ocotea quixos*), and guayusa (*Ilex guayusa*).
- **Context:** The Province of Morona Santiago in Ecuador's Amazon region is a biodiversity hotspot with abundant tropical forests and rainfall. Many of the plant species are unique to the region and have been traditionally used for food, medicine, and cultural traditions by the Achuar and Shuar indigenous communities.
- **Partnership:** Established in 1996, the [Chankuap Foundation](#) (hereafter referred to as the "Foundation") supports the livelihoods of the Achuar and Shuar communities through fostering sustainable collection and production activities. By harnessing traditional knowledge, the Foundation facilitates the creation of sustainable value chains using traditional species from the region, thereby enhancing economic prospects, and generating market opportunities for the communities.
- **The issue:** Over recent decades, the Achuar and Shuar communities have embraced modern agricultural practices, including cattle raising, logging, and mining, which have resulted in adverse effects on the local ecosystem. Furthermore, their isolated geographical location has presented challenges in establishing new economic sectors and job opportunities.

4.2.2. Actions

- **Strategic business shift to value-added production:** To address logistical challenges associated with transporting fresh products across rugged terrains, the Foundation shifted its strategy to the sustainable production of high-value personal care products, such as soaps and body lotions, sourced from indigenous plants.
- **Investment in upgrading infrastructure:** To upscale the production of personal care products, a community processing plant was built with the support of an Italian non-governmental organization focusing on international development and education, Volontariato Internazionale per lo Sviluppo (VIS). This infrastructure development bolstered the Foundation's production capabilities while generating new job prospects for the local community.
- **Development of a management plan:** In 2012, the Foundation integrated the [BioTrade Principles and Criteria \(P&C\)](#) into the business, enabling the development of biodiversity-focused management plans. This initiative secured commercialization permits for wildlife issued by the [Ministry of Environment, Water and Ecological Transition \(MAATE\)](#) of Ecuador. In addition, it ensured regulatory compliance for the sustainable collection of wild species such as ungurahua, ishpink, sangre de dragon, and guayusa.

4.2.3. Results

- **Economic benefits:** Commercialized products range from soaps, massage oils, lotions, and shampoos, which are marketed at domestic and international organic shops, international trade

¹⁵ This case study was developed with the support of Fundación Chankuap Recursos para el Futuro.

fairs and an online platform. From 2008 to 2021, total sales of these products grew from \$166,000 to over \$600,000.

- **Livelihood benefits:** Through capacity-building initiatives, the Foundation empowers local communities to increase their productivity, which in turn improves their livelihoods. The Foundation currently supports over 700 Achuar and Shuar indigenous families across the region, ensuring that the purchase price of their harvest exceeds the market price through fair trade. Families saw an average additional annual income of \$ 562 in 2021 from the sale of these personal care products.
- **Biodiversity benefits:** Instead of cultivating cash crops, by applying the BioTrade Principles and Criteria, the community prioritizes traditional crops, blending traditional methods with modern organic farming practices. This approach helps conserve genetic diversity and traditional knowledge among the Achuar and Shuar people. Furthermore, it contributes to the resilience of the local ecosystem against natural disasters and climate change.

4.2.4. Success factors

- **Moving up the value chains:** Recognizing the logistical challenges of selling fresh produce, the community shifted its focus to producing higher-value products, hence gaining access to premium markets. Although this required high upfront investments in equipment and expertise, it ultimately resulted in increased sales and revenue.
- **Fostering local business opportunities:** The Achuar and Shuar communities are responsible for every stage of the process, from harvesting and collection to production and commercialization. This has not only created employment opportunities but has also bolstered the local economy as well as a sense of ownership for the community.
- **Establishment of working groups:** To effectively support and provide coordinated support for the communities which are spread across a vast and challenging terrain spanning 900,000 hectares, the Foundation formed working groups. This streamlined management and facilitated training, coordination, and technical support for workers.
- **Active pursuit of certification schemes:** Recognizing the growing demand for organic and fair-trade products, the Foundation trained community members in organic farming practices. Over 700 families have received technical assistance, leading to the certification of their BioTrade crops as organic. Many of the Foundation's products carry organic certifications, and it is affiliated with the World Fair Trade Organization to secure higher prices.

4.2.5. Way forward

- **Adoption of new certifications:** In addition to upholding its existing certifications, the Foundation aims to pursue new certifications, such as Good Manufacturing Practices and Good Agricultural Practices, to both scale up the production and foster further trade diversification and access to new niche markets.
- **Enhancement of marketing strategies:** The Foundation aims at strengthening the promotion and marketing of its products, particularly in the domains of cosmetics, essential oils, and phytopharmaceuticals, both nationally and internationally.
- **Reinvestment for the future:** The Foundation places a strong emphasis on reinvesting in the community through educational initiatives. It administers support programs for children and conducts awareness-raising campaigns on biodiversity conservation.

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4.3. First legal indigenous forest reserve in Honduras enables sustainable production of styrax gum¹⁶

Featured BioTrade Principles: 3, 4, 5, 6, 7

Relevant Sustainable Development Goals: 1, 3, 4, 7, 10, 12, 15, 17

4.3.1. Overview

- **Product:** *Liquidambar styraciflua* (also known as styrax tree) is a deciduous tree native to Honduras. Its balm (referred to hereafter as styrax gum) is extracted from the vascular tissue of the tree. Known for its floral and spicy smell, styrax gum is a popular raw ingredient for fragrances.
- **Context:** While styrax trees are found across the Southern United States of America, Mexico, and Central America, Honduras stands out as the sole commercial producer of styrax gum globally. The majority of styrax forests are located in the Northeastern region of Honduras. These forests are cared for by the Pech people, an indigenous community residing in the province of Olancho, Northeastern Honduras. Drawing on their traditional knowledge, the Pech have been harvesting styrax gum and engaging in commercial trade, mostly through exports to Europe. For some Pech communities, the sales of styrax gum contribute more than half of their income.
- **Partnership:** A partnership was formed by the [German Development Cooperation Agency \(GIZ\)](#) and [Fundación Hondureña de Investigación Agrícola \(FHIA\)](#), a non-profit institution dedicated to agricultural research, collaborated to enhance the Styrax gum supply chain. Furthermore, a French fragrance company, leveraging its expertise in the fragrance industry, contributed to the collaboration and facilitated exports to Europe.
- **The issue:** For centuries, the Pech have been collecting styrax gum from the forests within their traditional territory, known as "El Carbón Mountain," and have served as guardians of the styrax trees and the surrounding woods. However, state-driven settlement programs have been displacing the Pech from certain parts of the area, limiting their access to the forests. Additionally, the government has proposed converting the area into a national park, which would prohibit the collection of styrax gum, endangering the livelihoods of the Pech communities.

4.3.2. Actions

- **Establishment of a sustainable supply chain for styrax:** This initiative aimed to bolster the capacity of Pech producers in sustainably harvesting styrax gum through benefit-sharing mechanisms. GIZ and the Natural Resource Stewardship Council in collaboration with the fragrance company and Pech producers, worked towards establishing a stable and sustainable supply chain for styrax gum, fostering a long-term and mutually beneficial partnership.
- **Formation of a producer association for styrax:** Federación Tribus Pech de Honduras is an organization which represents the 10 Pech communities of Honduras with the aim of preserving and strengthening their culture, including traditional knowledge. To protect livelihoods working in the styrax gum sector, the organization formed a producer association for forestry and social services called Asociación de Productores de Resina, Agroforestal y Servicios Sociales .
- **Proposal for an indigenous forest reserve:** With support from GIZ, Natural Resource Stewardship Council, and the fragrance company, Federación Tribus Pech de Honduras drafted a proposal to the government to reclassify the planned protected area as an indigenous forest reserve rather than a

¹⁶ This case study was developed with the support of MANE and consultant Christine Woda.

national park. They proposed a co-management approach for the 34,000-hectare anthropogenic forest reserve, allowing for the integration of traditional forest practices with conservation efforts. The government accepted the proposal in 2016, establishing the first legal indigenous forest reserve in Honduras and granting stewardship of the forests to the Pech communities.

4.3.3. Results

- **Economic benefits:** The styrax gum value chain has become more equitable, strengthening the economic activities of producers and benefiting their local communities. 60% of the revenue is distributed directly to the community, benefiting approximately 60 farmer families. The remaining 40% is allocated to a “community social fund” for local projects. Moreover, producers who voluntarily adhere to the sustainable styrax gum harvesting guidelines have seen their income double from US\$2 to US\$4 per pound of gum sold. In addition, it is worth noting that 100% of the production is pre-purchased, which guarantees prefinancing of the crop and a minimum profitable income.
- **Livelihood benefits:** The project strengthens the skills of producers while creating benefits for local communities with the improvement of basic goods and services. The “community social fund” has been utilized for various initiatives such as renovating and improving village school buildings and the health center, as well as acquiring safety equipment for producers during the tapping and harvesting of styrax gum.
- **Biodiversity benefits:** The establishment of a joint anthropogenic forest reserve and a comprehensive forest management plan has resulted in improved health and protection of the styrax forests. Collaborating with partners from GIZ, Natural Resource Stewardship Council, and Fundación Hondureña de Investigación Agrícola, the Pech indigenous community has documented best practices and traditional knowledge for high yield styrax gum production with minimal tree damage. In 2018, national regulations for sustainable styrax gum production were enacted by the Honduran government, drawing from the ancestral knowledge of the Pech producers.

4.3.4. Success factors

- **Establishment of sustainable styrax gum guidelines:** The guidelines for verifying compliance with sustainable styrax gum production and sourcing, established in 2012, are based on the BioTrade Principles and Criteria (P&C). These guidelines encompass 6 principles with indicators for both producers and exporters. They not only provide a verification system but also include a traceability system with robust compliance measures for regulations and legal requirements. The fragrance company oversees the verification system of the guidelines and collaborates directly with the producer organization Asociación de Productores de Resina, Agroforestal y Servicios Sociales for on-site visits.
- **Price guarantee and transparency:** A transparency system is in place for styrax gum production which ensures transparent negotiations of prices that guarantees all production costs including the costs of administration and a fair margin for the producers and the Pech communities. To maintain stable livelihoods for the producers facing styrax gum production and local market prices fluctuations year to year, prices are pre-negotiated between Asociación de Productores de Resina, Agroforestal y Servicios Sociales and the fragrance company.

4.3.5. Way forward

- **Adapting to climate change:** Despite efforts to maintain a sustainable value chain, styrax gum production has declined due to climate change related droughts. To preserve the region's high biodiversity levels and conserve styrax tree forests, it is essential to implement revisions and adjustments to the forest management system, along with technical improvements.

- **Enhancing legal compliance and monitoring:** Although the forest territory of the Pech nation is legally protected through the reserve, concerns regarding deforestation and land-grabbing persist within the community. These issues have become more pronounced during the COVID-19 pandemic, as legal authorities have diverted attention away from land conflicts and environmental crimes. Strengthening legal assistance and support for monitoring efforts is crucial for the Pech communities, involving both public and private sectors.

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4.4. Harvesting aloe vera in harmony with biodiversity and Indigenous Peoples in Mexico¹⁷

Featured BioTrade Principles: 2, 3, 6

Relevant Sustainable Development Goals: 1, 5, 8, 10, 12, 15, 17

4.4.1. Overview

- **Product/value chain:** *Aloe barbadensis* Miller, commonly known as aloe vera, belongs to the Aloaceae family. Resilient to heat and drought, aloe vera thrives in both tropical and arid climates. Renowned for its anti-inflammatory and antibiotic properties, aloe has traditionally served as a medicinal plant for skin treatment and digestion. Today, it is widely used in cosmetics, medicines, and food products.
- **Context:** The mountainous region of Campeche state in Southeast Mexico is renowned for its unique flora and fauna, including aloe vera. Surrounded by deciduous forests, mangroves, and evergreen subtropical lowlands, the region boasts a rich biodiversity found only in Latin America. Key features include "aguadas" (waterholes) and "sartenejas" (natural rock pools), which are vital water sources for both people and wildlife.
- **Partnership:** [Union for Ethical BioTrade \(UEBT\)](#) is a non-profit association dedicated to promoting responsible sourcing of natural ingredients and biodiversity conservation. Through its certification program, based on the [BioTrade Principles and Criteria \(P&C\)](#), UEBT ensures that companies implement practices that conserve biodiversity, respect traditional knowledge, and ensure fair benefit-sharing. UEBT also provides capacity-building workshops, tools, and advisory services to support companies in implementing Ethical BioTrade practices.

¹⁷ This case study was developed with the support of Guadalupe Bojorquez, General Manager at Mexialoe Laboratorios.

- **The issue:** The transition to extensive agriculture and cattle ranching in the region has led to deteriorating soil quality, resulting in the loss of endemic plants and displacement of fauna. This has led to families relying on seasonal crops vulnerable to natural disasters. Moreover, the region's large indigenous Maya population faces limited job opportunities, particularly for young people and women.

4.4.2. Actions

- In partnership with the German Development Cooperation Agency (GIZ), UEBT has been formalizing operational procedures and manuals for engaging with indigenous communities in Mexico. Together, they executed a pilot project in 2014 with the objective of empowering indigenous Mayan women. This initiative involved collaborating with an organic aloe processor and production company in the region, providing support, training, and facilitating the establishment of an aloe vera cooperative.
- UEBT developed "biocultural dialogues," a tool to assist companies in facilitating transparent, inclusive, and constructive engagement with local producers and communities. This methodology aims to forge a strong foundation for collaboration between businesses and local stakeholders, facilitating fair pricing, and best practices.
- In 2016, the aloe processor and production company became a member of UEBT, further aligning its commitment to ethical sourcing of ingredients and biodiversity conservation. Through the membership process, company policies were realigned to promote biodiversity conservation, offering technical assistance and training provided to aloe suppliers on ethical farming methods and natural fertilizers. Additionally, a biodiversity action plan (BAP) was developed in 2021 to implement concrete practices that sustainably use and conserve biodiversity.

4.4.3. Results

- **Economic benefits:** Demand for aloe products has experienced steady growth even during the COVID-19 pandemic. In 2021, the production of organic certified aloe leaf exceeded 367,000 kg. Currently, the cooperatives span 9 Mayan communities, responsibly managing 13 hectares of organically certified aloe vera. By adopting an economic model that puts local communities at its core, the cooperative was able to be resilient during economic shocks and disruptions.
- **Livelihood benefits:** By offering employment opportunities to vulnerable individuals, the cooperative strengthens solidarity and collaboration within local communities. The cooperative comprises over 300 members, predominantly women, who are actively engaged in its management. The recruitment of younger generations into the cooperative has helped mitigate urban migration by providing alternative employment opportunities. This employment expansion has also catalyzed positive economic development in local communities, leading to infrastructure development, including introduction of electricity, enhanced public facilities, and the construction of schools.
- **Biodiversity benefits:** Aloe vera cultivation targets areas previously impacted by intensive agriculture and extensive cattle ranching, promoting soil regeneration while avoiding high biodiversity regions. Additionally, the company has implemented sustainable measures including establishing hedgerows and buffers, sustainable water usage, and contamination prevention which is in line with the BAP. These measures are crucial for conserving biodiversity features like aguadas and sartenejas.

4.4.4. Success factors

- **Strong cooperative management:** Effective coordination among cooperatives is essential for overseeing a large area encompassing multiple communities. Regular coordination meetings and the establishment of a cooperative council support the implementation of biodiversity-friendly and organic practices.

- **Dialogue with local actors:** Ongoing dialogues with local stakeholders, including indigenous Mayan communities, aloe producers, cooperatives, and neighboring landowners, are pivotal for cultivating mutually beneficial partnerships. Awareness-raising activities focused on promoting sustainable and organic aloe farming practices, as well as biodiversity conservation, are conducted collaboratively. Training programs on topics such as ethical sourcing, natural fertilizers, and soil regeneration aligned with the biodiversity action plan are organized with local government bodies like municipal authorities, educational institutions, and private sector entities involved in the aloe value chain
- **Sustainable certification:** Certification schemes, such as UEBT's Ethical BioTrade Standard, based on the BioTrade P&C, play a crucial role in promoting the sustainable use of biodiversity resources and ensuring regulatory compliance. These standards help regulate the establishment of management and traceability systems, promoting environmental conservation and fostering educational resources for sustainable practices among stakeholders.

4.4.5. Way forward

- **Women's economic empowerment:** Earning a stable income through aloe production and holding decision-making roles within the cooperatives has catalyzed the empowerment of women in this region. Despite persisting inequalities, economic independence coupled with positions of authority will continue to elevate women's status, agency, and decision-making capabilities within their households and communities.
- **Collaborative approach for sustainable practices:** The cooperatives aim to broaden their collaborative efforts with local authorities and neighboring landowners to implement comprehensive sustainability measures. This multi-stakeholder approach will enable the cooperatives to address cross-cutting issues that extend beyond aloe vera production, such as waste management and mitigating pollution from agrochemicals used in the region.

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4.5. Harvesting and protecting traditional plants in Mexico¹⁸

Featured BioTrade Principles: Principles 1, 2, 3

Relevant Sustainable Development Goals: 1, 5, 6, 8, 10, 12, 15, 17

4.5.1. Overview

- **Product:** Native and traditional aromatic and medicinal plants in Mexico such as Mexican giant hyssop (*Agastache mexicana*), amaranth leaf (*Amaranthus hypochondriacus*), and Mexican arnica flower, also locally called “cuateteo” (*Heterotheca inuloides*).
- **Context:** The Madrean Pine-Oak Woodlands is located in the State of Querétaro in Mexico. Despite being an arid region, it is rich in biodiversity due to its volcanic terrains, high mountains, and deep canyons. It is said that more than a quarter of all plant species in Mexico are grown here, including aromatic and medicinal plants.
- **Partnership:** Mujeres y Ambiente is a women’s community-based association in Mexico that offers training to women to boost employment opportunities in rural communities through sustainable cultivation.
- **The issue:** Local aromatic and medicinal plants grown in the region have been passed down through generations as traditional knowledge and have considerable economic value. However, this opportunity had not been tapped due to lack of capacity. Moreover, due to the arid climate and high soil degradation rates, local communities have very limited opportunities for agricultural production as well as other commercial activities.

4.5.2. Actions

- In 2010, Mujeres y Ambiente initiated a program aimed at enhancing living conditions through the restoration and preservation of biodiversity in the region. The program focused on training women from three communities – La Carbonera, La Joya, and Charape-La Joya – in sustainable agriculture methods while incorporating their traditional knowledge.
- In 2014, Mujeres y Ambiente partnered with a Spanish company that specializes in developing and manufacturing natural active ingredients from plants or botanic sources. They started a partnership to supply quality raw ingredients from the region and an access and benefit-sharing (ABS) Agreement was signed in 2016. Subsequently in 2017, Mexican authorities generated an Internationally Recognized Certificate of Compliance, which confirms that the community will receive monetary and non-monetary benefits when the cosmetic company commercializes a product using plants from the community.
- The products adhere to the [BioTrade Principles and Criteria \(P&C\)](#) which ensure that their ingredients are collected and utilized in a way that is biodiversity-friendly, sustainable, and safeguards the livelihoods of sourcing communities. Moreover, the company became a member of the Union for Ethical BioTrade in 2018, solidifying its commitment to biodiversity conservation.
- With the support of their Spanish partners and the [Autonomous University of Querétaro](#), Mujeres y Ambiente also installed sustainable watersheds for a better agricultural irrigation system. They also started training the communities on how to manage the watershed and developed a plan to conserve the micro-watershed.

4.5.3. Results

- **Economic benefits:** 60 families in the region directly and indirectly benefit from Mujeres y Ambiente. The communities also receive monetary and non-monetary benefits from the Spanish cosmetics

¹⁸ This case study was developed with the support of Provital.

company through the ABS agreement. Additionally, the communities run eco-tourism businesses which generate additional employment and income.

- **Livelihood benefits:** In accordance with the BioTrade P&C, producers are contracted directly to source their ingredients and pay prices that allow for a profit margin that supports both livelihoods and biodiversity. Producers of cuateteo that participate in the project are remunerated 45% more than the average wholesaler in the Mexican market. This has contributed to the increase in income for the community, particularly as there are limited alternative economic activities. Additionally, Mujeres y Ambiente reinvests back in the community by creating gardens and green spaces.
- **Biodiversity benefits:** To bring water into the region sustainably, 60 biofilters and 10 ferro-cement tanks for collecting rainwater have been constructed, which benefits the local biodiversity and makes water management more efficient for agricultural use.

4.5.4. Success factors

- **Commitment of stakeholders:** ABS agreements and issuing of an Internationally Recognized Certificate of Compliance can be a long and complicated process; however, it was made possible by the strong determination and coordination among stakeholders including local authorities, Mujeres y Ambiente, the cosmetics company, and Autonomous University of Querétaro to work together towards a common aim.
- **ABS agreement led to further research and development activities:** Studies carried out by the company and Autonomous University of Querétaro identified that cuateteo can improve elasticity and firmness of the skin and can prevent wrinkles. After performing many other in vitro and in vivo efficacy analysis of the plant extract, this resulted a new cosmetic active ingredient Ethicskin™ which was commercialized in June 2021.

4.5.5. Way forward

- **Addressing water scarcity:** Water scarcity remains a major challenge in the area, especially with decreasing rainfall over the years. The communities continue to tackle this issue together with partners by exploring sustainable water management solutions and water-efficient agricultural practices.
- **Expanding outreach:** Mujeres y Ambiente continues to upscale their projects to a wider level by offering training to groups who are interested in replicating the experience. They have already been working with women producers in other communities in Querétaro state in sectors such as walnut oil and chilcuague (*Heliopsis longipes*).

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4.6. Sustainable algarrobo empowers communities in Northern Peru¹⁹

Featured BioTrade Principles: 2, 3, 4, 6

Relevant Sustainable Development Goals 1, 2, 3, 8, 13, 15

4.6.1. Overview

- **Product:** The carob tree (*Prosopis pallida*) is a mid-sized tree that bears flower pods, commonly known as algarrobo. It is primarily grown in the Piura district in Northwestern Peru.
- **Context:** Algarrobo contains rich antioxidants and phytonutrients and has been gaining international recognition as a “superfood” in recent years. The pods are collected, washed, dehydrated, grounded, and processed into health supplements such as syrups and powders.
- **Partnership:** The National Program for the Promotion of BioTrade (Programa Nacional de Promoción del Biocomercio hereafter referred to as PNPB) of Peru is part of the broader National BioTrade Program overseen by the Ministry of Foreign Trade and Tourism which aims to advance the sustainable trade of biodiversity-based products and services within Peru. Working with key partners such as the Ministry of Environment (MINAM) and the Peruvian Export Promotion Board (PromPerú), the program provides training on sustainable trade practices and offers support to Peruvian companies including marketing assistance and participation in trade events.
- **Issue:** In the 1990s, agricultural production in Peru was badly hit by El Niño-Southern Oscillation, which caused heavy rainfall in the Piura region, resulting in major soil and crop degradation. While El Niño-Southern Oscillation is a recurring phenomenon that occurs every few years, climate change has exacerbated its frequency and intensity. This makes rural communities highly vulnerable as they lack capacity and financial resources.

4.6.2. Actions

- Since 2003, PNPB has assisted small and medium enterprises (SMEs) to incorporate the BioTrade Principles and Criteria (BioTrade P&C) to increase productivity while reducing their environmental impact and implementing biodiversity conservation practices. The PNPB also works to strengthen value chains, making them more inclusive, providing training, implementing sustainability certifications, and promoting products in international markets. Additionally, it empowers small producers and provides benefits to their surrounding communities.
- Since 2011, PromPerú and MINAM have been facilitating market access for algarrobo through the Biocomercio Andino project (BCA)²⁰ which adopted the BioTrade P&C. Participation in international trade fairs in Europe and the United States led to business expansion overseas and exponential growth of turnover from international sales.
- In collaboration with producers in San Juan Bautista de Locuto, Piura region, tangible steps to sustainably harvest algarrobo were made by implementing organic and biodiversity-friendly

¹⁹ This case study was developed with the support of with the support of MINAM and PromPerú.

²⁰ The project was implemented from 2010 to 2015 in the Andean Region with the support of the [United Nations Environment Programme](#) and the [Global Environment Facility](#) (GEF) and was implemented in Peru by PromPeru. The objective of the project was to contribute to the conservation and sustainable use of the biodiversity of the Andean region, through the implementation of the BioTrade business models.

agricultural methods. These actions include utilizing organic fertilizers, implementing water conservation techniques, and other biodiversity-friendly farming practices.

4.6.3. Results

- **Economic benefits:** The PNPB, the Biocomercio Andino project, and rising global demand for healthy 'superfoods' have driven exports of algarrobo-based products across 5 continents. This is reflected in US\$4.5 million sales turnover in 2023. Moreover, the project strengthens the economic prospects for small-scale producers by securing their role in value chains by increasing demand and exports.
- **Livelihood benefits:** Algarrobo production generates employment for over 500 producers from various regions of Peru, including small-scale farmers and rural communities in Piura. Their enterprise's livelihoods are sustained through inclusive value chains, ensuring fair prices for producers while enhancing market access for their products. Additionally, training programs and capacity-building are provided for local communities involved in algarrobo cultivation and processing.
- **Biodiversity benefits:** Carob trees play a crucial role in local biodiversity, enhancing soil quality and contributing to carbon sequestration. Biodiversity assessments are routinely conducted by the enterprise to actively monitor and mitigate potential negative ecosystem impacts, including greenhouse gas emissions associated with exports.

4.6.4. Success factors

- **Strategic support for algarrobo exporters:** PNPB aids companies and entrepreneurs in accessing new markets and promoting organic and sustainable products, including algarrobo, that are derived from Peru's biodiversity. Additionally, PromPerú improves market access by organizing events and activities to enhance Peruvian companies' competitiveness in international markets, showcasing their products. It also provides services such as the "Exporters Route" program and business-to-business (B2B) connections via the Peru Marketplace platform to strengthen exporters' competitiveness.
- **Global promotion strategy of algarrobo products:** PromPerú promotes Peru's sustainable and biodiversity-based products globally. Through marketing campaigns and initiatives, it strategically positions Peruvian products on the international stage. This strategy has been particularly effective for the algarrobo value chain, highlighting its unique qualities and benefits as well as showcasing Peru's rich biodiversity.
- **Certification support for algarrobo products:** PNPB has been assisting in the implementation of various sustainability certifications for algarrobo products. Currently, algarrobo products have obtained several certifications, including BioComercio Peru and Hazard Analysis and Critical Control Points (HACCP). Prior compliance with the BioTrade P&C has also helped streamline the certification process, further enhancing market competitiveness and sustainability efforts.

4.6.5. Way forward

- **Incorporation of more standards:** As the algarrobo value chain continues to expand its production and export to more countries, it is crucial to comply with various international certifications building upon the strong foundation provided by the BioTrade P&C.
- **Continued emphasis on working with local communities:** Although algarrobo is cultivated sustainably, deforestation is advancing at an alarming rate in Northern Coastal Peru. This underscores the importance of providing incentives and generating sustainable livelihoods for local communities to continue conserving the ecosystem for long-term, sustainable use of algarrobo production and the well-being of their communities.

- **Promoting sustainable and equitable value chains:** PNPB is continuing to increase awareness and understanding among producers to adopt practices that ensure fairness, sustainability, and community well-being throughout their production processes. Additional emphasis on knowledge-building in combination with the above-mentioned incentives are essential (elements) for empowering producers to structure their operations in a way that benefits all stakeholders, while conserving biodiversity.

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4.7. Promoting Legal, Sustainable, and Traceable Queen Conch Trade in the Caribbean²¹

Featured BioTrade Principles: 2, 3, 4, 5

Relevant Sustainable Development Goals: 1, 8, 9, 12, 14, 17

4.7.1. Overview

- **Product:** Caribbean queen conch (*Strombus gigas*) or “lambi” is a large marine shellfish found primarily in the Caribbean Sea and adjacent waters.

²¹ This case study was developed with the support of the Ocean Economy and Fisheries Programme team at UNCTAD.

- **Context:** Queen conch is one of the Caribbean's most iconic and valuable fishery resources strongly linked to the region's gastronomy, culture and economy. Global demand for queen conch has grown leading to overfishing and illegal landings. Hence, it has been included in the [Appendix II](#) list of the [Convention on International Trade in Endangered Species of Wild Fauna and Flora \(CITES\)](#) since 1992, which means that its international trade is regulated to ensure it is legal, sustainable and traceable.
- **Partnership:** The project, "[Seizing the trade and business potential of Blue BioTrade products for promoting sustainable livelihoods and conservation of marine biodiversity in selected OECS Countries](#)" has been implemented jointly by UNCTAD and the [Organisation of Eastern Caribbean States \(OECS\)](#) in cooperation with CITES since 2020. The first phase of the project was co-funded by the [European Union](#) and the OECS under the [Regional Integration Through Growth Harmonisation And Technology \(RIGHT\) project](#).
- **The issue:** In 2015, Caribbean countries adopted the [Regional Queen Conch Fisheries Management and Conservation Plan](#) and have implemented it with varying levels of success and outcomes. Due to limited knowledge of CITES regulations and lack of capacity to establish food safety management systems such as Hazard Analysis and Critical Control Points (HACCP), small-scale fishers and producers are limited in their ability to tap into the potential of the international queen conch trade.

4.7.2. Actions

The project focused on Grenada, Saint Lucia, and Saint Vincent and the Grenadines as beneficiary countries with key initiatives including:

- **Stakeholder mapping:** Identifying and engaging key stakeholders in the queen conch value chain.
- **Country case studies:** Conducting participatory value chain assessments and producing case studies for each beneficiary country to identify challenges, opportunities, and potential actions
- **Coordinated initiatives:** Facilitating country and regional activities to empower small-scale coastal fishers and producers to capitalize on sustainable management and trade of queen conch through the application of the [BioTrade Principles and Criteria \(P&C\)](#).

4.7.3. Prospective Impacts

- **Economic impacts:** Queen conch is a booming market valued at \$74 million in 2017, with the three beneficiary countries accounting for 10-15% (approximately 350 tonnes of conch meat annually). Beyond the trade of conch meat, untapped economic opportunities lie in the commercialization of various by-products such as conch opercula, meat trimmings, shells, pearls, biochemicals, and eco-tourism activities like non-intrusive diving. These present significant prospects for boosting local and regional economies through value addition and diversification of the queen conch value chain.
- **Impacts on livelihoods:** Sustainable and legal trade of queen conch can provide small-scale fishers, producers, and women engaged in processing with more secure and safer livelihood opportunities as well as access to bigger markets.
- **Biodiversity benefits:** Queen conch plays a vital role in marine ecosystems. Furthermore, improving conch processing techniques and diversifying its end-uses through value addition can contribute to reducing seafood waste. Promoting the concept of 'Blue BioTrade Queen Conch' can also help raise awareness about the importance of environmentally sustainable management and trade.

4.7.4. Success factors

- **Knowledge-sharing through stock assessments:** Participatory and regular stock assessments are crucial for effective management and stewardship of the queen conch fishery, enabling legal and sustainable trade. However, these assessments are often not conducted routinely due to high costs and limited capacity within countries. To address this, the project has facilitated cooperation and

knowledge exchange with countries like Belize that have established stock assessment practices. Additionally, cost-sharing approaches for conducting stock assessments have been explored for implementation in the project's second phase.

- **Implementation of a permit system backed by evidence-based national policies and regulatory frameworks:** This will not only help prevent overfishing and illegal, unreported and unregulated (IUU) fishing activities, but will also facilitate legal and sustainable trade. This enables access to international markets, providing higher earnings for fishers and producers. This also creates economic incentives for private sector stakeholders along the value chain to adopt sustainable and responsible fishing practices.
- **Implementation of a co-management strategy:** Social solidarity entities and active participation from stakeholders and the coastal community enable comprehensive and effective strategies to maintain sustainable stocks whilst balancing the need to improve livelihoods.

4.7.5. Way forward²²

- **Value chain assessment:** Data-driven economic analyses have been undertaken in each target country. The country case studies examined the local conch value chains, identified the challenges they face, and presented opportunities to enhance value through the Blue BioTrade concept.
- **Creation of synergies amongst stakeholders:** By bringing together policymakers, regulators, businesses, exporters, and partner institutions, the project aims to facilitate coordinated efforts to implement the Blue BioTrade Regional Plan of Action. The recommendations derived from the country-specific case studies will serve as a model for sustainable management and trade of other marine biodiversity-based value chains, not just within the Caribbean region, but also potentially in other regions facing similar challenges.
- **Capacity building activities:** Technical assistance and capacity building support will be continuously provided in the priority areas outlined in the Blue BioTrade Regional Plan of Action. These initiatives will not only create opportunities for generating additional income for stakeholders, but will also emphasize ensuring environmental sustainability and promoting positive social impacts in line with the BioTrade P&C.

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²² Strategic objectives in accordance with the BioTrade P&C were adopted by the OECS at the Regional workshop and validation in Kingstown, Saint Vincent and the Grenadines on 26-27 May 2022.

V. Case studies from other regions

The chapter includes one case study from France that was identified and drafted with the support of BioTrade partners.

5.1. Reviving Botanical Heritage through Agroecological Practices in Northern France²³

Featured BioTrade Principles: 2, 3, 4

Relevant Sustainable Development Goals: 1, 3, 4, 8, 9, 11, 12, 13, 15, 17

5.1.1. Overview

- **Value chain:** Traditional herbs such as edulis, calendula, chamomile, roman chamomile, arnica and cornflower that are grown in the region of Brittany, France which have been used as the main ingredients for the cosmetics sector.
- **Context:** Brittany's mild, maritime climate and fertile soil create an optimal environment for cultivating a diverse range of herbs for culinary and medicinal purposes. Historically, the coastal region played a significant role in introducing exotic plants and seeds through trade, which have then been cultivated in private and botanic gardens.
- **Partnership:** The [Union for Ethical BioTrade \(UEBT\)](#) is a non-profit association dedicated to promoting responsible sourcing of natural ingredients and biodiversity conservation. Through its [certification program](#), based on the [BioTrade Principles and Criteria \(P&C\)](#), UEBT ensures companies implement practices that conserve biodiversity, respect traditional knowledge, and ensure fair benefit-sharing. UEBT also provides capacity-building workshops, tools, and advisory services to support companies in implementing Ethical BioTrade practices.
- **The issue:** With its diverse landscapes harboring a wide range of flora and fauna, including many endemic species, mild climate and diverse habitats have made Brittany one of the leading agricultural areas in France. However, intensive agricultural practices such as livestock rearing, and large-scale crop cultivation have contributed to environmental challenges like biodiversity loss, soil degradation, and water pollution in certain areas.

5.1.2. Actions

- With a strong cultural connection to the use of herbal plants, Brittany has a growing cosmetics sector comprising around 170 businesses operating across the entire value chain. In the late 2010s, UEBT began collaborating with one of these companies, which has long advocated for natural, plant-based ingredients in cosmetic formulations. Driven by a desire to further its commitment to biodiversity conservation and respect for people's rights, the company sought to enhance its sourcing practices.
- In 2020, the company was granted UEBT membership, requiring adherence to the UEBT standard which ensures that companies utilize plants in a manner that respects people and biodiversity while promoting the sustainable use of natural resources.
- As an initial step in its commitment, the company created a biodiversity action plan – a strategic framework which helps implement practices that contribute to the sustainable use and conservation of biodiversity when growing and sourcing natural ingredients.
- In 2021, the company's core herbal ingredients, accounting for 20% of all their product ingredients and cultivated at its Brittany cosmetic production site, obtained the UEBT Certification. This certification verifies that the company's supply chains, and sourcing practices have minimal negative impact on the environment.

²³ This case study was developed with the support of with the support of Yves Rocher.

5.1.3. Results

- **Economic benefits:** Brittany's cosmetics industry generates EUR 1.8 billion in sales and provides over 6,000 jobs. About 1,000 of them are currently employed by the UEBT certified company
- **Livelihoods benefits:** The company operates a 2 hectares botanical garden, free and open to the public, which hosts education programs activities for local residents. These programs raise awareness of biodiversity's importance and promote sustainable practices within the community. The garden, housing over 1,500 plant species, serves as a conservatory for local flora and fauna while connecting people with nature and fostering understanding of botanical research and innovation.
- **Biodiversity benefits:** The company's mission to use agroecological methods for cultivating ingredients aligns with UEBT's initiative on regenerative practices based on agroecology principles. The herbal plants grown on the production site follow organic and agroecological farming techniques, adhering to the UEBT Ethical BioTrade Standard. Additionally, installation of 200 beehives on-site helps preserve pollinators and produce honey, contributing to the local ecosystem.

5.1.4. Success factors

- **Shared vision and commitment:** Both UEBT and the cosmetics company share a strong vision and commitment to biodiversity conservation, sustainable sourcing practices, ethical business operations and respect for people's rights. This alignment of values has been crucial in fostering a successful partnership.
- **Comprehensive support and guidance:** UEBT offers comprehensive capacity-building workshops, tools, and advisory services to support companies in implementing Ethical BioTrade practices effectively. This support has been instrumental in helping the company develop and execute its Biodiversity Action Plan.
- **Leveraging regional expertise and resources:** Brittany's rich history of cultivating diverse herbs and its expertise in the cosmetics industry have been leveraged by the company to implement sustainable practices more effectively and efficiently. Through educational programs, the company transfers this knowledge to current generations. These programs raise awareness of biodiversity's importance and promote sustainable practices among the local community, ensuring the preservation and continuation of the region's traditional knowledge.

5.1.5. Way forward

- **Comprehensive sourcing certification:** The company has set a target to achieve certification for its entire global sourcing by 2025, demonstrating its long-term commitment to sustainable and ethical practices. To reach this goal, the company will maintain close collaboration with UEBT and its suppliers, ensuring adherence to the BioTrade P&C throughout the supply chain.
- **Scaling up agroecological practices and knowledge sharing:** The company plans to extend its agroecological practices that promote biodiversity conservation and regenerative agriculture to partner producers and suppliers globally. This initiative will involve hands-on training, sharing best practices, and facilitating knowledge exchange among stakeholders to ensure the successful implementation of agroecological practices on a broader scale.
- **Driving industry collaboration and leadership:** In 2021, the company and UEBT were among the first signatories to commit to the 'Sharm El-Sheikh to Kunming Action Agenda for Nature and People' under the Convention on Biological Diversity (CBD). This commitment focuses on sustainably cultivating, collecting, and procuring ingredients while addressing biodiversity loss, aligning with the Kunming-Montreal Global Biodiversity Framework (KMGBF) adopted in 2022.