



GREEN economy

Sectoral Study

BioTrade

A catalyst for transitioning to a green economy in

Peru



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List of acronyms

ADEX	Peruvian Exporters Association
AFP	Agence France-Presse
APTAE	Association of Peruvian Adventure and Ecological Travel Agencies
BMZ	German Ministry for Economic Cooperation and Development
BTFP	BioTrade Facilitation Program
CAF	Andean Development Corporation
CANDELA	Alternative Trade in Non-Traditional Products for the Development of Latin America
CBD	Convention on Biological Diversity
CBBT	Capacity Building for BioTrade
CBTF	Capacity Building Task Force on Trade, Environment and Development
CCL	Chamber of Commerce of Lima
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CITEs	Technological Innovation Centers
COFIDE	Financial Corporation for Development
CONADIB	National Commission for Biodiversity
CONAM	National Environmental Council
CONAPI	National Commission Against Biopiracy
CONCYTEC	National Council of Science and Technology
CSR	Corporate Social Responsibility
CUC	Control Union Certification
DIGEMID	General Directorate of Medicine and Drugs
DIGESA	General Directorate of Environmental Health
DINT	Directorate of Inventions and New Technologies
EFTA	European Free Trade Area

EU	European Union
FDA	American Food and Drug Administration
FDI	Foreign Direct Investment
FINCYT	Science and Technology Program
FFDCA	Federal Food, Drug, and Cosmetic Act
FL	Fair for Life
FLO	Fairtrade Labelling Organizations International
FOB	Free on Board
FSC	Forest Stewardship Council
FTA	Free Trade Agreement
FW	Fair Wild
GC	Global Compact
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	German Society for International Cooperation
GMOs	Genetically Modified Organisms
GRI	Global Reporting Initiative
GRAS	Generally Regarded as Safe
IFOAM	International Federation of Organic Agriculture Movements
IIAP	Peruvian Amazon Research Institute
ILO	International Labour Organization
IMO	Institute for Market Ecology
INEI	National Institute of Statistics and Computing
INNOVATE – FIDECOM	Research and Development Fund for Competitiveness
INCAAGRO	Peru Agricultural Research and Extension Program
INDECOPI	National Institute for the Defense of Competition and Intellectual Property Rights
IPPN	Peruvian Institute for Natural Products and Ingredients
MINCETUR	Ministry of Foreign Trade and Tourism
MINAG	Ministry of Agriculture
MINAM	Ministry of Environment
MEF	Ministry of Economy and Finance
MRE	Ministry of Foreign Affairs
NBC	National BioTrade Commission
NBS	National BioTrade Strategy
NFR	Novel Food Regulation
NGO	Non Governmental Organization
P&C	BioTrade's Principles and Criteria
PROCYT	Science and Technology Projects
PROCOM	Projects to improve competitiveness, productivity and corporate profitability
PRODUCE	Ministry of Production
PROSAAMER	Service Program to Support Access to Rural Markets
PNPB	The National BioTrade Promotion Program
PPP	Public-Private Partnership
PROMPERU	Peru's Export and Tourism Promotion Board
RAS	Rainforest Alliance Certification
REDD	Reducing Emissions from Deforestation and Forest Degradation
R&D	Research and Development
SECO	State Secretariat for Economic Affairs of Switzerland
SIPPO	Swiss Import Promotion Programme in Peru
SUNAT	Superintendence of Tax Administration
SMEs	Small and Medium-sized Enterprises
SPS	Sanitary and Phytosanitary Standards
TPP	Trans-Pacific Partnership Agreement
UEBT	Union for Ethical BioTrade
UNCTAD	United Nations Conference on Trade and Development
UNA LM	University of La Molina
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UPCH	University Cayetano Heredia

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A Peruvian woman selling natural dyes in powdered form at the Pisac Market, Peru. © Joel Shawn/Shutterstock.com

Foreword

According to the national trade liberalization policy implemented in recent years, Peru currently has access to more than 2.4 billion consumers and a market that represents a Gross Domestic Product (GDP) exceeding USD 38 trillion per year. Peru also has agreements into force with principal economic countries and blocks, such as USA, China, the European Free Trade Area (EFTA), Canada and Japan.

Furthermore, Peru signed Free Trade Agreements (FTA) with the European Union, Venezuela, Guatemala and Costa Rica; while an additional four trade agreements are in process with Alianza del Pacífico, El Salvador, Honduras, Trans-Pacific Partnership Agreement (TPP) and Thailand.

It is mainly in these markets that the trade of biodiversity-based products has gained impressive results. BioTrade in Peru is opening doors to an increasingly globalized economy, whilst also bringing about an awareness of the issues that go hand in hand with trends such as social and environmental responsibility – an increasingly important factor in the purchasing decisions of consumers.

Peru's BioTrade sector offers tremendous potential, with its vast biodiversity, to develop new production lines that will help consolidate its current range of goods and services. Our country has 84 of the world's 104 climate zones and is amongst the top 10 countries that account for the world's greatest biodiversity of plant and animal species. Peru is recognized internationally as the leading exporter of organic coffee and bananas; as the second largest producer of organic cocoa; and is one of the largest producers of nutraceuticals and functional foods, such as maca, yacon, sacha inchi, camu-camu and various Andean grains.

The primary links of the BioTrade products' value chains are mainly located in rural areas of extreme poverty and fragile ecosystems. In this context, BioTrade constitutes a priority tool that offers even greater potential to promote sustainable development through the sustainable use and conservation of traditional biodiversity, whilst simultaneously supporting pro-poor development.

Peru's strategy rests on a National BioTrade Program, the main objective of which is to promote and support the creation and consolidation of traditional biodiversity-based businesses through research and product innovation, applying environmental, social and economic sustainability criteria. The Program is based on an inter-institutional coordination with the National BioTrade Commission, a platform comprising public and private sector institutions that contribute to the development of BioTrade in Peru.

The best example of the work currently being done by these institutions is the development of Peruvian exports of biodiversity products, which have grown almost 10.8 per cent in 2011 as against 2010, reaching USD 351 million. Today, more than 10,000 people, mainly in rural areas and working for the sector, are being paid a fair price for their products. These prices reach about 30 per cent above the average minimum in the country, generating a positive impact on social inclusion.

Today's challenge is to guide these businesses under the framework and principles of sustainable BioTrade, to ensure sustainability over time, as well as to promote better income generation throughout the entire value chain, working in coordination with the private sector and with the support of international organizations.

José Luíz Silva Martinot
Ministro de Comercio Exterior y Turismo
Minister of Foreign Trade and Tourism

Key messages

Peru is one of the most biodiverse countries in the world. It has a strong BioTrade sector.

Peru has over 5,500 endemic plant species with 42 different known applications. BioTrade in Peru has experienced a steady annual growth of around 20 per cent over the last few years. Almost 95 per cent of all Peruvian BioTrade production is destined to the export market. In 2010, the sector recorded a growth of almost 200 per cent compared to 2009 and total exports valued over USD 320 million.

The enabling policy environment created by the Government; and the ability of the private sector to align its business strategies have played a key role in the growth of the BioTrade sector.

The combination of conducive policy reforms for BioTrade, creation of institutions to deal with cross-sector issues, a framework for public-private partnerships, and Government patronage for BioTrade fairs/exhibitions have played a key role in promoting this sector. The Peruvian companies involved in BioTrade have increasingly recognized the potential of the sector and aligned their business and investment strategies accordingly. The investments by the private sector – of at least USD 7 million between 2007 and 2010 – and a favourable global consumer demand for BioTrade products are some of the factors behind the growth, increasing employment and profitability of this sector.

Investments in BioTrade can have a higher impact on poverty reduction.

Most of the biodiversity-based businesses in Peru are concentrated in the Andes and the Amazon – two areas with high poverty rates. For example, BioTrade offers poverty-reduction opportunities to Huancavelica – the region with the highest poverty rate in Peru (77.9 per cent) – through the use of the area's rich biodiversity-based resources, such as quihuicha (amaranth, kiwicha), quinoa (kinwa) and tara. These products are in high demand in the international markets.

Despite steady growth, the BioTrade sector faces many challenges in terms of financing, value addition and eventually also contamination from GMOs.

Financial institutions in Peru are generally of the opinion that BioTrade businesses are not competitive enough to warrant bank financing. While the average bank interest rate for SMEs in Peru is 9 per cent, it is above 25 per cent for biodiversity-based businesses. The other major challenge is that while many companies are exporting raw materials, there was no company in Peru, at the time of the preparation of this report, which had a sustainability certificate for its value-added product. Furthermore, BioTrade enterprises are concerned that an eventual future introduction of GMOs will compromise the native species of Peru, including giant white corn (*Zea mays amyloacea*) and purple corn (*Zea mays L.*).

Applying a green economy vision to the development of BioTrade in Peru will not only benefit economic growth but also improve human well-being, enhance social equity and protect the environment.

The modelling exercise carried out in this study showed that the scaling up of BioTrade in Peru to 40 per cent annually till 2020 would increase sales from the 2009 level of USD 110 million to USD 2.7 billion by 2020. Furthermore, this annual increase would add more than 250,000 new jobs over the next decade and provide additional carbon sequestration revenues from USD 154 million to USD 750 million due to Reducing Emissions from Deforestation and Forest Degradation (REDD).

A package of policy reforms and investments can help realize the annual growth potential of the BioTrade sector in Peru, which is estimated to be as high as 40 per cent until 2020. It could be a pioneering economic sector in Peru's transition to a green economy.

The prioritized areas for further policy reforms and investment, by both the public and the private sector, include:

- (i) Inclusion of biodiversity and BioTrade considerations in the on-going trade and economic partnership agreements;
- (ii) Research and Development (R&D), especially for the 38 BioTrade products that the National BioTrade Promotion Program (PNPB) has identified;
- (iii) Development of a national investment strategy for the BioTrade sector;
- (iv) Capacity building and training in the public and private sectors, focused on building supply-side capacities, especially to design and implement successful marketing, promotion and export strategies; and to use proper skills to improve the production process and thereby the quality of products, whilst ensuring a constant supply for clients;
- (v) Introduction of economic and fiscal incentives for foreign and local companies to improve the current BioTrade business environment and develop clear laws and transparent rules to protect investors' interests and increase their confidence;
- (vi) Strengthening of the institutional coordination framework including collaboration between the Ministry of Economy and Finance (MEF) and the National BioTrade Commission (NBC);
- (vii) Fostering additional social initiatives to be implemented by the government in order to improve the situation of impoverished groups involved in BioTrade;
- (viii) Ensuring increased public awareness about BioTrade products.

Towards a green economy

Introduction

UNEP defines a green economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UNEP, 2011). BioTrade can become an important component of the greening of economies because of its contribution to poverty-reduction, job creation and to the conservation of biodiversity. In this context, Peru has the potential to become a leader and a model for other countries to follow in their transition to a green economy, due to its abundant natural resources, which have the capacity to create a unique array of products, whilst offering economic benefits to the poor, and protecting the environmental assets on which they depend for their livelihoods.

Peru has enjoyed a healthy and stable macroeconomic environment during the last decade. The growth in international trade and the positive structural reforms undertaken by the government have provided a stable basis for further economic expansion and investment. The Peruvian biodiversity-based industry, or BioTrade, has experienced its own success story as well, achieving an average annual growth of 20 per cent over the last five years. This growth was spurred by strong international consumer demand, favourable global market trends and an enhanced product offer by Peruvian businesses and producers. Peruvian companies are increasingly recognizing the potential of the BioTrade sector and are developing their activities in that direction. They have aligned their business strategies accordingly and have managed to adapt and evolve their businesses. These companies are capable of manoeuvring in an ever-changing and constantly-developing market. The year 2010 was a stellar period, as the sector recorded a growth of almost 200 per cent compared to 2009, while total exports amounted to over USD 320 million.

In the context of a green economy, BioTrade helps countries reach their socioeconomic development and environmental goals. Offering a steady source of employment and income, BioTrade provides an innovative solution for reducing poverty, whilst protecting nature. For instance, over the past decade, Peruvian endogenous plants, such as tara (*Caesalpinia spinosa*) and quihuicha (*Amaranthus caudatus*), and animal species such as cochineal (*Dactylopius coccus*), a louse used for its

red pigment, have become the hallmarks of the sector, resulting in new plantation hectares and jobs. In the Arequipa region alone, the growing area for quihuicha quadrupled from 150 to 578 hectares between 2005 and 2008 (Government of Peru, 2008). In less than 10 years, tara production in Arequipa has also expanded with more than 400 hectares, creating new jobs for local residents and generating incomes for many families.³ Arequipa also represents almost 80 per cent of the national cochineal market, with 4,400 hectares planted.⁴ Peru is responsible for 95 per cent of the global cochineal production.⁵

People engaged in the sector are well aware of the fact that the long-term success and profitability of the sector depends directly on the health of ecosystems and biodiversity. Numerous initiatives have helped attenuate deforestation, illegal logging, pollution and soil erosion. Communities and businesses operating in the sector are successfully commercializing market-valuable non-timber forest products such as Brazil nuts (*Bertholletia excelsa*), achiote (*Bixa orellana*), and cat's claw (*Uncaria tomentosa*). Most BioTrade businesses apply crop-genetic diversifying methods and do not use pesticides. It is valid to mention that ecotourism, an activity that is also based on the sustainable use of biodiversity, is one of the most profitable branches of the national tourism industry, contributing over USD 2 billion to the economy each year (MINAM, 2010).

Despite the fact that BioTrade in Peru has depicted a steady growth during the last few years, the country is far from fully utilizing its BioTrade capacity. Current success has been driven by the modest efforts of the public and private sectors, and donor organizations, but an increase in investment, reforms in policies and strengthening of institutions would be needed in order to realize more ambitious goals during the next decade.

Background of the study

The present study is part of the Capacity Building for BioTrade (CBBT) project implemented by UNEP with financial support of GIZ. The project, launched in 2010, was implemented in three countries: Namibia, Nepal and Peru – and is based on the UNEP green economy approach, which holds that

Peru has the potential to become a leader and a model for other countries to follow, in their transition to a green economy, due to its abundant natural resources, which have the capacity to create a unique array of products, whilst offering economic benefits to the poor and protecting the environmental assets on which they depend for their livelihoods.



A variety of corn, including the quintessential purple corn, on sale at a market in Peru. © Kobby Dagan/Shutterstock.com

interventions are needed to mobilize and re-focus the global economy towards investments and expenditure in economic sectors that can create decent jobs and livelihoods; and to stimulate and sustain economic development while reducing poverty and conserving natural resources.

The main purpose of the study is to build a framework that will strengthen Peru's BioTrade-related national programmes and will serve as a catalyst for the country's transition to a green economy. The study bases its analysis on a review of the most relevant existing literature on BioTrade; and on an extensive consultation process with stakeholders involved in the development of BioTrade in

Peru (e.g. specialists, policy-makers, donors, commercial investors). (See Annex 1 for list of stakeholders consulted.)

This study will be a useful resource for policy-makers, such as the MEF, the government authority that draws policies regarding the creation of incentives to improve the environment for additional investment opportunities. The study offers suggestions, including the use of financial and economic instruments, to promote further growth of the BioTrade sector. The study also supports the NBC efforts to build a better public understanding of BioTrade and to raise the general awareness about the sector within the Peruvian society. ►

2. Overview of Peru

2.1. Economy

Peru's economy experienced an unprecedented period of growth, sustained over a period of 100 months, making it one of the countries with the best economic performance in Latin America. According to World Bank data, high commodity prices and increased internal consumption contributed to the reaching of a GDP of USD 177 billion in 2011.⁶ Underpinned by the country's political and economic stability, investments are booming, with more than USD 7.1 billion in Foreign Direct Investment (FDI) for 2010.⁷ Exports climbed by 31.1 per cent in 2010, to a record USD 35.4 billion, and non-traditional exports (including BioTrade products) rose 30.5 per cent compared to 2009.⁸ Peru's Free Trade Agreement (FTA) with the United States (US), the European Union (EU) and China are also contributing to the rapid pace of economic expansion.⁹

The development of BioTrade in Peru depends heavily on agriculture. Although Peru's agricultural land accounts for only 16.8 per cent of all its territory and not more than 7 per cent of the country's GDP,¹⁰ the agricultural sector is an important source of employment in the country. Agriculture employs one-third of the nation's economically active population. Organic agriculture plays a very important role within the sector. In 2009, the country exported USD 225 million in organic products.¹¹ Peru is the greatest exporter of organic coffee in the world, (MINGETUR, 2010), the second-largest exporter of organic cocoa, and the fifth in organic bananas.¹²

2.2. Environment

Peru is one of the most biodiverse countries in the world.¹³ It is home to 84 of the 104 ecosystems existing on the planet.¹⁴ The known species of birds, mammals, amphibians, reptiles and vascular plants in Peru represent approximately 15 per cent of the world's biodiversity. Peru has over 5,500 endemic plant species with 42 different known applications (food, medicinal plants, wellness and cosmetics products, pigments, and others). The country is at the forefront in terms of varieties of potato, red pepper, corn, Andean grains, roots and tubers (Brack Egg, 2004). In addition, the Andean and Amazonian food baskets include

a unique range of vegetables and fruits, high in proteins and vitamins and offering a myriad medical applications (camu-camu, maca, cat's claw, purple corn and others).

Peru contains 13 per cent of the Amazon rainforest, corresponding to more than 70 million hectares (ha). The Peruvian Amazon has a potential for both timber and non-timber products, such as nuts, fruits, fungi and medicinal herbs. An example is the Brazil nut tree, which serves as an important source of income for several communities (including indigenous ones) in the region of Madre de Dios, located in the southeast of the country. This region contains 864,778 ha of Brazil nut trees, with 750 families deriving their income from the extraction of this resource from the forest, while a larger segment of the community is employed in the supply chain of this product. (MINAM, 2010).

Environmental degradation is increasing over time and damaging the natural capital of the country, posing a significant economic cost in the long run. Peru currently has 72 protected natural areas, covering 14 per cent of the country's territory. Nevertheless, deforestation remains an important challenge. According to the Ministry of Environment (MINAM), seven million ha have been deforested, causing a USD 45 million loss for the Peruvian state. Illegal mining operations and logging in the rainforest are considered to be the main causes of deforestation (MINAM and MINAG, 2010). Large portions of the Amazon rainforest's gold deposits are being exploited by illegal businesses that use toxic metals during the extraction process, causing serious harm to the environment and to human health. The number of unofficial miners has increased significantly as gold prices continue to climb.

2.3. The value of ecosystems and biodiversity for the Peruvian economy

Ecosystems and biodiversity are not mere ecological concepts but also represent economic opportunities. According to the Peruvian Ministry of Environment (MINAM, 2009), biodiversity contributes 22 per cent to Peru's GDP and 24 per cent to its total exports. Natural



The large and vibrant Scarlet Macaw is native to the Peruvian Amazon and other humid forests in the American tropics.

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habitats and biodiversity have been key factors supporting various branches of the economy, particularly industries such as agriculture, pharmaceuticals, tourism, fishing and manufacturing. Ecosystems provide raw materials for many industries, including food and beverage production and cosmetics (Box 1). A recent success story in that regard is Peruvian gastronomy. Based heavily on local products and ingredients, Peruvian cuisine has reached world-wide fame. In the last three years, the number of Peruvian restaurants in the United States has doubled to 400. The company Sodexo now serves 23 Peruvian dishes to 27 million diners in seven countries around the world.¹⁵

2.4. Social landscape

Despite the richness of Peru's ecosystems and the steady economic growth achieved during the past years, the benefits derived are not equally distributed among the Peruvian people. While the per capita GDP rose from USD 3,807 in 2007 to USD 5,401 in 2010, a trend to be maintained as Peru's economy continues to grow,¹⁷ the Gini coefficient (an indicator measuring inequality) progressed from 51.7 to 48.1, which means that inequality is declining, but is still considerable.¹⁸ Furthermore, economic growth has mostly taken place in the urban centers, without significantly affecting the existing rural poverty and urban-rural disparities. The percentage of people living in poverty remains high, posing a major burden on the country's transition to a more

stable economy. It is valid to highlight that there still exist major gaps in the Peruvian society in terms of access to natural resources and distribution of income. 5.9 per cent of the population is classified as extremely poor (below USD 1.25 per day) and 31.3 per cent of the population lives under the USD 2 per-day poverty line. In rural areas, 54.2 per cent of the population lives under the poverty line.¹⁹ The unemployment rate is 6.3 per cent (2009), but the figure in rural areas is significantly higher. ▶

Box 1. Industries based on Peruvian biodiversity products¹⁶

Agriculture – Approximately 65 per cent of the national agriculture industry depends on local biodiversity resources. Peru exports approximately USD 9 billion in biodiversity-related products and services. In Peru, there are 48 different possible applications for 4,400 species of traditional plants (food, medicine, fibre, timber, natural dyes, etc.) (Brack Egg and Mendiola, 2000). It is estimated that the economic value they represent is equivalent to 10 per cent of the country's GDP.

Tourism – 71 per cent of all tourists visiting Peru undertake nature-related activities such as trekking, rain-forest excursions and visits to the numerous natural protected areas, mainly in the regions of Loreto, Madre de Dios and Cusco. Ecotourism is one of the fastest-growing industries in Peru.

3. Policies and institutions driving BioTrade in Peru

Peru defines BioTrade as “*activities of collection, production, transformation and commercialization of goods and services derived from the native biodiversity, developed in conformity with the criteria of economic, social and environmental sustainability.*”²⁰ A critical input for the definition of BioTrade in Peru has been the UNCTAD BioTrade initiative which developed BioTrade Principles and Criteria (P&C) (UNCTAD, 2007).

3.1 National regulations

Peru has taken important legal steps to support the access, protection, sustainable use and commercialization of biodiversity products under the following national laws and regulations:

- Law on the Conservation and Sustainable Use of Biodiversity (Law 26839)
- National Biodiversity Strategy (2001)
- National Program for Agro Biodiversity (2004)
- Establishment of the National Commission for Biodiversity (CONADIB)
- Establishment of the National Environmental Council (CONAM), which in 2009 was transformed into the MINAM
- National Environmental Policy (2009), which incorporates the concept of BioTrade
- Law 27811 of 2004, which protects the interests of indigenous and tribal people, based on the International Labour Organization (ILO) Convention C-169
- Peru has established a Regulatory Framework (2005) implementing the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and formally identifying 170 threatened species of fauna and 11 threatened species of flora.

The responsibility of regulating BioTrade in Peru is divided among MINAM, the Ministry of Agriculture (MINAG), the Ministry of Production (PRODUCE), the Ministry of Health (MINSA) and the Ministry for Foreign Trade and Tourism (MINCETUR). In addition, several independent institutions also regulate certain BioTrade related activities, such as the National Institute for the Defense of Competition and Protection of Intellectual Property (INDECOPI); the National Commission Against Biopiracy (CONAPI); the Directorate of Inventions and New Technologies (DINT, a part of INDECOPI); the Commission for the Promotion of Peru for Export and

Tourism (PromPeru); the National Superintendence of Tax Administration (SUNAT); and regional government agencies (Regional Offices of Forestry and Wild Fauna).

There are approximately 4,200 environmental laws in effect in Peru. Of these, 500 were adopted in the past decade. In general, the policies concerning natural resources that are currently upheld by the Peruvian government are geared towards boosting efficiency, profit levels and the competitive edge of those producers that exploit natural resources responsibly and conserve ecosystems. These regulations are beneficial to BioTrade players. However, enforcement is weak and subject to bureaucratic difficulties. An estimated 877 government employees have varying degrees of responsibility on the subject of biodiversity, which makes it difficult to monitor and ensure the coordination and effectiveness of final decisions (MINAM, 2009a).

3.2. The National BioTrade Promotion Program

In 2003, the government established Peru's National BioTrade Promotion Program (PNPB), combining the efforts of various governmental institutions such as MINAM, MINCETUR and PRODUCE as well as that of international cooperation partners such as GIZ and the State Secretariat for Economic Affairs of Switzerland (SECO). The Program follows UNCTAD's BioTrade P&C promoting sustainable management of natural capital and strengthening the participation of local businesses and organizations engaged in BioTrade activities. The Program has identified around 38 local biodiversity-based products with high production and commercialization potential; and 10 products which have been prioritized for assistance and promotion (Annex 3). The PNPB advocated that these products contain extraordinary nutritional efficiency, a high concentration of vitamins and micronutrients and additional highly-beneficial health and medicinal properties.²¹

The PNPB is implemented through the National BioTrade Strategy (NBS), which is divided into four components: (i) market access (ii) development of competitive products (iii) promotion of Research and Development (R&D) and (iv) strengthening of policies and institutions.

In 2010, the Peruvian government created the NBC to provide political support and technical guidance to the PNPB. The Commission is a multi-sectoral body, formed by 13 institutions: Eight public - MINAM, PRODUCE, MINCETUR, PromPeru, National Council of Science and Technology (CONCYTEC), Ministry of Foreign Affairs (MRE), Association of Peruvian Adventure and Ecological Travel Agencies (APTAE), MINAG; three private: Peruvian Chamber of Commerce (CCL), Peruvian Institute for Natural Products and Ingredients (IPPN) and Peruvian Export Association (ADEX); and two universities: University Cayetano Heredia (UPCH) and the University of La Molina (UNALM).

The Commission's main objectives include:

- Monitoring the actions and activities entrusted to executive institutions/agencies for projects developed under the PNPB framework.
- Proposing and approving modifications to BioTrade-related policies, strategies and lines of action.
- Promoting partnerships and cooperation in the development and evolution of the BioTrade strategy.
- Sharing and promoting BioTrade activities at national and international levels.

The PNPB also carries out its activities through the implementation of international cooperation projects that

promote BioTrade practices in the entire Andean region, including Peru. The four most important projects implemented in the country are:

- Andean Regional BioTrade Project – Global Environment Facility (GEF)/ Andean Development Corporation (CAF)²²
- BioTrade Facilitation Program (BTFP) – UNCTAD
- Capacity Building for BioTrade Project (CBBT) – UNEP/GIZ
- PeruBiodiverso – SECO/GIZ.

3.3. International BioTrade-related legal framework

Peru's BioTrade sector operates under the conceptual framework of the following international conventions:

- Convention on Biological Diversity (CBD), which sets out principles and obligations regarding conservation, sustainability and equitable distribution of benefits derived from access and use of biodiversity resources.
- C169 – ILO Convention concerning Indigenous and Tribal Peoples in Independent Countries, which establishes the protection of the collective knowledge of indigenous people with respect to biodiversity.
- CITES, which regulates international trade in endangered species of wild fauna and flora.



Slash and burn cultivation in the Peruvian Amazon - a clearing in the rainforest planted with corn seedlings. © Dr. Morley Read/Shutterstock.com

3.4. Certification and labelling

In line with trends in the fields of natural and eco-products, consumers are increasingly interested in socially and environmentally sustainable products. In general, people are willing to pay a higher price for products sold by a company that has obtained guarantee seals for its environmentally or socially responsible operations. However, there is no particular certification and labelling system for BioTrade.

International organizations, however, are providing certifications for practices and products that have positive impacts on biodiversity. Some of these are:

- Fairtrade Labelling Organizations International (FLO)
- Forest Stewardship Council (FSC)
- International Federation of Organic Agriculture Movements (IFOAM)
- Fair Wild (FW)
- Fair for Life (FL)
- Rainforest Alliance Certification (RAS)

All the above mentioned eco-labelling and certification programmes are voluntary and represent a major incentive for companies and producers that follow sustainable practices. Up to 90 per cent of Peruvian BioTrade companies hold organic and/or fair trade certifications. Given that these seals attest the credibility of the companies' operations, they help businesses overcome trade and export barriers.

The main certification agencies in Peru are the Control Union Certification (CUC), the Institute for Marketecology (IMO),

Biolatina and OCIA International. These agencies certify products for the main BioTrade market destinations, such as the United States, the European Union and Japan. The presence of local certification agencies has had a positive effect on companies, allowing them faster market access and lower operating costs.

Although there is no specific certification system for BioTrade, a verification process has been introduced and implemented by the Union for Ethical BioTrade (UEBT) – a non-profit association built in partnership with the CBD Secretariat, UNCTAD and other stakeholders promoting BioTrade. The UEBT ensures the sustainable management of resources and encourages producers to constantly improve the quality of their products. The UEBT is proving to be an important tool for guiding businesses and producers in sustainable biodiversity practices, and it provides an additional competitive advantage for companies participating in the programme.

The entire certification process takes five years and is divided into five stages:

- Self-assessment by the company to meet the UEBT's minimum requirements²³
- Verification of the UEBT's minimum indicators by an independent verification body
- Preparation of a work plan and an audit report
- Implementation
- Final verification

In Peru, 10 companies are currently certified with the UEBT seal (Table 1). ▶

Table 1. List of Peruvian UEBT-verified companies and their respective products

Company	Product
Andean Food	quinoa and quihuicha
Peruvian Nature	medicinal plants, maca, yacón, quinoa, quihuicha and aguaymanto
BISAC	maca and other products
HAPSSA	aromatic herbs (fresh and dried)
Aurandina	natural medicine
Villa Andina	aguaymanto, instant native potato puree, mushrooms and yacón
Roda	sacha inchi and sacha inchi oil
Koken	maca
Candela	Brazil nut
Inversiones 2A	maca, yacón, camu-camu, cat's claw, lúcuma and aguaymanto

Source: UEBT²⁴

4. The economy of BioTrade in Peru

4.1. BioTrade production

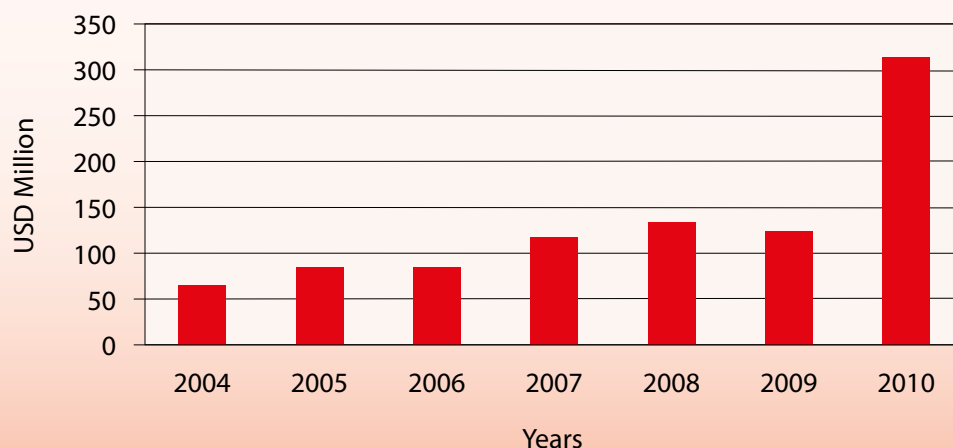
Almost 95 per cent of all Peruvian BioTrade production is exported, with a steady growth of 20 per cent per year (Figure 1). The major export destinations are the United States, the European Union and Japan. Cochineal, tara and Brazil nuts are among the best performing products. The case of cochineal is especially positive as the exports of this product increased by almost 200 per cent in 2009. The price also rose from USD 20 per kilo in 2009 to almost USD 150 per kilo, peaking in the last quarter of 2010. Total sales of cochineal increased by almost USD 150 million, making it the largest contributor to the rise in total BioTrade exports.²⁵ The demand for tara has also increased considerably, reaching sales of over USD 43 million. Other products, such as giant corn, purple corn, achiote, quinoa and Brazil nuts, reached sales figures of over USD 10 million per year (Refer to Annex 2 for additional information on export figures of specific products).

The domestic BioTrade product market is also growing rapidly. Unfortunately, as no data is available on domestic



Fresh maca roots, or Peruvian ginseng, with maca powder and maca cookies. © Ildi Papp/Shutterstock.com

Figure 1. Peru's total biodiversity exports 2004-2010²⁶ (in million USD, FOB)



Source: PromPeru²⁷



Roasted Peruvian coffee is a leading organic export of the country.
© Ildi Papp/Shutterstock.com

consumption, it is difficult to estimate the size of the market. What can be observed, however, is that consumption of natural products is on the rise, and that some of them are now available in local supermarkets. Leading stores such as Wong, Vivanda and Plaza Veja are beginning to display and sell new lines of bioproducts. The donor community and local businesses have launched interesting initiatives, such as weekly eco-markets (*bio-ferias*), where some of the BioTrade companies certified by the UEBT sell their products. The total annual turnover of the *bio-ferias* is estimated at USD 3 million.²⁸ Five local natural-product store chains also have a strong product proposition tailored at the domestic market. The leaders, such as Santa Natura and Bionaturista, have a combined strength of 54 stores nationwide.

The foregoing figures represent the growing local trend and rising local demand for more sophisticated natural products. However, effective promotional and advertising campaigns to develop a stronger domestic market are still lacking.

4.2. The private sector

The private sector has played a key role in the development of BioTrade in Peru. Currently, more than 228 companies in PromPeru's portfolio are exporters of products drawn from local biodiversity. It comprises Small and Medium-

sized Enterprises (SMEs) as well as rural associations and communities.²⁹

The majority of the businesses in the BioTrade sector have a high degree of implementation of national obligatory labour, health and safety standards.³⁰ Peru has two important business associations: IPPN and ADEX. The former is a private institution promoting productive and commercial activities within the natural ingredients sector. Its goal is to facilitate dialogue and partnerships with promotion and trade entities. The IPPN brings together approximately 26 export companies to resolve structural and other problems affecting the sector.

The current business landscape among BioTrade companies varies considerably. The majority are micro-companies with not more than 10 employees (Table 2). Their level of competitiveness varies as well. While SMEs are considerably well-established, a high percentage of small and micro-companies lack the necessary financial resources, business and organizational skills to compete against the large, established industry players. The larger companies are capable of exporting, while smaller companies have to improvise, adapt and innovate in order to remain competitive.

4.3. Public-private partnerships

According to all PNPB participants interviewed during the preparation of this report (2011-2012), there has been significant progress towards the strengthening of the BioTrade sector in Peru. The government and the private sector, supported by international donor organizations such as GIZ/SECO, have created various successful collaborative platforms. In 2009-2010, in order to promote and strengthen R&D in the sector, a BioTrade Research Competition was held in cooperation with GIZ and CONCYTEC, and the first public-private partnership experience (Box 2) was established. The first edition of an annual exhibition, *Peru Natura*, and the first MINAM-sponsored National BioTrade Competition were organized in 2009 to showcase and identify niche markets for Peru's

Table 2. BioTrade companies in Peru

Company size	Export value (in USD)	Number of companies
Large companies	Between 25 million and 10 million	1
Medium-sized companies	Between 10 million and 1 million	21
Small companies	Between 1 million and 100,000	63
Micro companies	Up to 100,000	143
	Total	228

Source: PromPeru

Box 2. First BioTrade public-private partnership initiative

The public-private partnership initiative between APROMACA (an association of 87 families producing and processing maca in the regions of Carhuamayo, Junín, San Pedro de Cajas and Ondores) on the one hand, and the company BISAC, the Ministry of Foreign Trade and Tourism (MINCETUR), together with the German and Swiss development agencies GIZ and SECO on the other, is a clear success story. The partnership is based on a risk-benefit sharing contract between APROMACA and BISAC, as part of the broader cooperation agreement for technical assistance with GIZ. The purpose of the initiative is to implement ecological practices in maca production and to introduce innovative and effective technology approaches in the harvesting and post-harvesting processes. The partnership has been an undeniable success. The association has obtained the BCS OKÖ – Guarantee organic certification, and BISAC has become a full UEFT member, seeing a significant rise in both production and quality of the product.

vast array of biodiversity products. Both donor organizations and government institutions are helping to boost the participation of local businesses at international natural product exhibitions and events, such as Natural Products Expo West, BioFach and Supply Side West. In 2009, at the German BioFach fair, Peruvian BioTrade companies closed deals valued at more than USD 9.75 million.

4.4. Finance: Investors and donors

4.4.1. Public investments

There are no exact figures on the portion of Peru's budget that has been allocated to BioTrade. However, it can be estimated that from 2007 to 2010 at least USD 7 million has been invested in BioTrade-related activities since six main government institutions have a specific sector-related budget for this end (Table 3). Other institutions, such as MINCETUR and MEF, are linked to the sector but have not made funds available for industry-related activities.

Table 3. Main BioTrade public sector stakeholders, brief description of their work and budgets

Main stakeholders	Main objectives	Public expenditure, 2007 – 2010 (USD) ³¹
MINAM	To promote and support BioTrade initiatives that contribute to the conservation and sustainable use of biodiversity	487,026
PRODUCE	To liaise with the sector through its Agro-Industrials Technological Innovation Centres (CITEs). CITEs are the R&D area of those value chains or clusters.	2,000,000
MINAG	To contribute to biodiversity-based businesses through the Program for Agriculture Competiveness. The main products under the Program framework are camu-camu, purple corn, quihuicha, sasha-inchi and others. The financial resources are directed mostly towards the development of the value chain and towards organic production.	1,023,557
PROMPERU –Technical Secretariat of PNPB	To implement the BioTrade Promotion Department based on its special relationship with export companies; to promote a new way of doing business drawing from the country's natural resources. PromPeru has implemented the BioTrade Area, entrusted with promoting companies that practise sustainable production methods.	123,185
CONCYTEC	To promote, execute and finance research activities related to BioTrade; to prepare the agenda for BioTrade research and development; and to organize industry-related promotion of technology and innovation.	177,000
Peruvian Amazon Research Institute (IIAP)	To support the development of technology and capacity building for the production of Amazonian native species.	3,000,000
	Total investment	6,810,768

4.4.2. Private sector

The private sector's financial investment in the BioTrade sector in Peru is estimated at USD 11 million.³² The most significant private investment targets tara (approximately USD 5 million) and camu-camu (approximately USD 3.5 million). The ability of companies to introduce sustainable long-term initiatives that contribute to poverty alleviation in the communities in which they work, apart from their regular business activities, is still very limited. Although these companies operate under the framework of the BioTrade principles and criteria, firm corporate social responsibility concepts are not always in place. The BioTrade private sector can play a much more active role in the government's poverty-reduction strategies, if it can draw from firmly implemented standards such as the Global Compact (GC) or the Global Reporting Initiative (GRI).

Around 228 enterprises export biodiversity-based products from Peru. These companies are structured around three main business associations – ADEX, IPPN and CCL; as well as various product-based production associations, such as the

Association of Maca Producers and the Association of Sacha-inchi Producers. Around 50 per cent of sector enterprises are rural and native associations. In general, these associations bring together around 10 families to work as a larger entity, applying local traditional knowledge to production and development. Many of these businesses are not yet profitable, as quantities are small and the quality of products is still not suitable for export. In order to create real development opportunities for these communities, supply chains for commercially-valuable products must be created.

4.4.3. International donor organizations

The donor community has participated very actively in the development of the Peruvian BioTrade sector, primarily by providing funds for technical assistance and capacity building through a number of projects and programmes. In recent years, approximately USD 4.1 million in donor funding has been channelled through these three leading projects (Table 4), which represent the most important sources of funding for the sector. The main programmes operating

Table 4. List of main BioTrade-related projects and programmes from the donor community, with key objectives and corresponding financial contribution

List of main BioTrade projects and programmes	Programme objective	Financial contribution (USD)
BTFP	The project, implemented in two phases beginning in 2002 and ending in 2010, emphasized the establishment of international BioTrade policies, the introduction of a UEBT verification framework and the strengthening of regional governments.	456,110 (11.1 %)
PeruBiodiverso	The general objective of the programme is to improve the quality of life of the rural population through sustainable use of biodiversity. Prioritized products include natural ingredients and products such as tara, maca, yacón, sachá inchi and camu-camu. The first phase of the project started in 2007, with the successful development of the tara, sachá inchi and camu-camu BioTrade value chains. The second phase (June 2010 to June 2013) aims to increase the revenue of companies and producers adhering to the BioTrade P&C, thus preserving biodiversity through sustainable use.	3,5 million (83.2 %)
CBBT	The project, implemented during the last two years (2010-2012), aims to strengthen BioTrade-related capacities in Peru along with Namibia and Nepal. A set of national and international, interrelated and mutually-supportive activities were carried out, involving national institutions, NGOs, local businesses, the private sector and government. By providing a hub for effective exchange of experiences and lessons learned, the project also promoted south-south cooperation between participating countries (Nepal-Namibia-Peru). This enabled the replication of successful models for seizing opportunities and overcoming barriers in BioTrade.	130,000 (3.2 %)
	Total investment	4,086,110

in the country are BTFP, PeruBiodiverso and CBBT. An additional UNEP administered project, GEF-CAF, started in 2011, will be contributing approximately USD 2 million over the next four years.

4.5. BioTrade market incentives and public awareness of bioproducts

Consumers are becoming increasingly aware and discerning in their product choices, rapidly changing their preferences based on product properties and integrity. Although prices of these products are normally 20 to 30 per cent higher than those of conventional products, this does not pose a purchasing barrier for consumers who understand that natural products provide health benefits and entail higher quality standards. This shift has resulted in greater financial benefits for the supply chain of these products, the majority of which are produced in developing countries. There is a market preference not only for “eco” or “bio” products, but also for products that are certified as socially-responsible and environmentally-friendly. According to the BBMG Conscious

Consumer Report (2009), consumers want companies to be transparent about their practices and accountable for their impact on people and on the planet.³³ The report indicates that in the United States, nearly 9 out of 10 people interviewed said that they are more likely to buy from companies that manufacture energy-efficient products (90 per cent); promote health and safety benefits (88 per cent); support fair labour and trade practices (87 per cent); and commit to environmentally friendlier practices (87 per cent) – if products are of equal quality and price.

The global market for natural products has quickly adapted to consumer requirements and has experienced an important shift – from being a niche to a mainstream market during the past 10 years (Table 5). Sales of natural products are growing five times faster than conventional products. Accordingly, leading cosmetics, food and pharmaceutical corporations have changed their product range, replacing synthetic and artificial components with natural ingredients. Many top global brands are becoming more “eco-friendly”, investing in natural alternatives. According to Organic Monitor, a company that provides research, consultation and training on this issue, the revenues of natural/organic companies have increased by more than 20 per cent during the last decade.³⁴

Colourful Peruvian handicrafts, with the mountains in the background, in La Raya, Peru. © Katie Dickinson/Shutterstock.com



Table 5. Sales data, 2010

High-value product lines ³⁵	Value (USD billion)
Functional foods / Beauty foods	2.5 (US market)
Pet supplements and nutraceuticals	1 (US market)
Pharmaceutical supplements	25 (US market)
Natural anti-aging products	200 (Global market)
Cosmeceuticals	4 (European market) 21 (US market)

Source: Packaged facts: Foods, Flavors and Ingredients Outlook³⁶



The main trends in natural food and cosmetic markets are directed towards new and ethnic flavours and smells that provide an important market-driven incentive for Peruvian products (e.g. lúcuma, aguaymanto, yacón, camu-camu and Andean grains). Moreover, the current boom in the demand for products rich in omega-3 paves the way for a market niche for sachu inchi-based products. With the pharmaceutical industry continually on the look-out for new drugs that combine traditional and modern knowledge, there is a strong potential for products based on camu-camu, cat's claw, maca, and purple corn. There may also be a sizeable international market for detox products, such as manayupa (*desmodium molliculum*) and purple corn, if correct marketing and commercial efforts are introduced.

In view of its high biodiversity, Peru can generate substantial demand in international markets. The worldwide “bio,” “eco” and “green” trends seen in recent years create excellent opportunities for local businesses and small-scale producers. The global success and acceptance of these products are indisputable. Trends indicate that foreign demand will remain high. There is also an emerging domestic demand for these products, which can be gauged from the growing number of natural product stores in Peru and the growing variety of products available in local retailers. This represents an important incentive for local producers and companies. The Peruvian business sector is aware that BioTrade is “*the better and healthier form of making business*”, but still lacks competitiveness, mainly due to the absence of sufficient private and public financial resources for promotion, R&D, facilitation and management strategies.³⁷ ▶

Peruvian ginseng is widely used in Peru for its high nutritional value.
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5. Major challenges facing the sector

The green economy approach holds that the global economy must be mobilized and refocused towards investments and expenditure in economic sectors that result in improved human well-being in the long term, and that do not expose future generations to environmental risks and ecological scarcities. Although the BioTrade sector has made great progress in Peru, certain challenges continue to curb full-potential growth. This section provides information on the main barriers facing the sector, based on interviews conducted, information from the first national multi-stakeholders' workshops and evidence from secondary data research.

5.1. Limited resources for public policies

To date, limited public resources and the low priority that the State generally places on environmental issues have kept public expenditure for this sector at a minimum. In 2010, expenditure for environmental endeavours was estimated at USD 5.4 million, or 1.84 per cent of total public expenditure (including pollution control and restoration, and water and energy-efficiency measures).³⁸ With respect to specific biodiversity conservation funding, the current budget allocates just 0.22 per cent, with minimal investment in equipment and additional capital costs. Currently, the budget is supplemented by funds from international donors but this remains insufficient to support the needs of biodiversity-based businesses in Peru. In 2010, the BioTrade-related budget for public-sector institutions was only approximately USD 7 million.

In addition to the general budget, the government channels additional capital expenditure as further investment resources for projects and programmes. Some of the most relevant initiatives of this kind for the sector include the Agricultural Research and Extension Programme (INCAGRO) and the Service Program to Support Access to Rural Markets (PROSAAMER), conducted in collaboration with the MEF and MINAG. These programmes focus on three components: i) development of information systems; ii) providing capacity building services to businesses; and iii) providing capacity building services to public officials. Currently, most of the capacity building efforts place priority

on agro-industrial products alone, and BioTrade projects and programmes are given minimal consideration. To qualify for public sector support, recipients are required to outlay a 20 per cent guarantee of the total project amount in advance. The same observations can also be made with regard to business competitions promoted and financed by the State, such as the Science and Technology Programs FINCYT and PROCYT; as well as the Research and Development Fund for Competitiveness (INNOVATE); and Projects to improve Competitiveness, Productivity and Corporate Profitability (PROCOM), which are not open to companies in the BioTrade sector.

Foreign investors and entrepreneurs are discovering Peruvian biodiversity-based products and businesses as a new and innovative way to ensure a profitable business model. Unfortunately, Peru does not have a governmental investment strategy for the sector, and no special assistance is given to foreign investors interested in BioTrade. The country still lacks adequate tools to protect investors and increase their confidence. In addition, domestic investment is limited, mainly due to a lack of specific initiatives to tie the Corporate Social Responsibility (CSR) policies of companies with BioTrade. In this regard, one such opportunity could be found in the mining sector, where companies operating in biodiversity-rich areas are looking for projects and programmes to offer support to local rural and native communities as a part of their social investment policies.

5.2. Lack of access to financing for producers and SMEs

Small holder producers and SMEs actively involved in biodiversity-derived products and services frequently encounter difficulties in attracting both short and long-term financing. Obstacles for companies include securing debt-financing and start-up capital, securing patents, developing and testing new products, expanding sustainable practices, and converting or moving into value-added products. Commercial banks are not familiar with the concept of BioTrade, and many companies seeking financing are too small to receive direct financing. Applicants are subject to a strict assessment of their financial status and credit history, which greatly limits access to funding for rural communities

and small businesses. Financial institutions generally hold the opinion that BioTrade businesses are not competitive enough to warrant bank financing. They are also not lucrative enough to attract traditional venture capital funds. The average bank interest rate for SMEs in Peru is nine per cent; however, it is 28 per cent for biodiversity-based businesses because such businesses are categorized as very risky.³⁹ In addition, credits for wild harvested products are not granted at all (Table 6).

Table 6. Credit information

	Commercial credit (%)	SME credit (%)
Average interest rate	6,43	32,31

Source: AFP, Peru

Although BioTrade verification and certification are complex and costly processes (approximately USD 5,000 for inscription fees; and USD 5,000 for maintenance fees), the majority of BioTrade enterprises interviewed stated that they have found certification to be beneficial. Benefits mentioned include improved market access and sales growth, greater credibility and reputation, and technical assistance and aid received. However, the majority cannot afford these certifications due to the high cost of securing and maintaining verification.

In addition, as many of these companies pointed out, the multiple certification alternatives and choices available give rise to confusion over which certification is most useful for their type of products.

While many companies have secured certifications that help them to export raw materials, there is currently no company in Peru with value-added product certification. In the domestic market, local consumers still lack the awareness to value organic or fair trade products. Rather, consumers generally look for the approval seals of the General Directorate of Medicine and Drugs (DIGEMID) or the General Directorate of Environmental Health (DIGESA), which merely attest the safety of the product. There is still

a long road ahead before local consumers fully understand and adopt the concepts of “fair trade” and “organic.”

5.3. Lack of investments in R&D

In 2010, Peru allocated just 0.1 per cent of its GDP to R&D (this ratio is four times as large in Chile). According to the latest CITEs survey (2010) on the subject, general Peruvian R&D investment is just USD 4 per person/per year, compared to USD 60 in Brazil and USD 30 in Argentina.⁴⁰

Some of the main challenges mentioned for this area are:

- BioTrade companies are too small to be able to finance their own research;
- Local research is basic and, therefore, not patentable;
- Lack of understanding about the relationship between products, industry and market potential; and
- Lack of proper technology results in costly production processes that impact the final price of the product (e.g. the price of camu-camu extract in Peru is USD 65-70/kg whereas Brazil produces the same extract for USD 28-30/kg)⁴¹.

There is enormous potential for value-added propositions, given that Peru is currently a net exporter of raw materials. In order to tap this potential, investment in research and development, technology and innovation is critical (Table7). According to Gaston Vizcarra, Director of Candela, *“The failure to allocate sufficient funds for marketing has resulted in the country being unable to effectively compete in international markets with its own value-added products.”*⁴²

Although Peruvian entrepreneurs are aware of the tremendous opportunity attached to value-added products, investment by public institutions is insufficient to support such endeavours. In general, these products are only handled by raw material importers who transform them into richer products later sold at much higher prices. However, in this framework, the additional benefits are not shared with all the actors in the value chain.

Table 7. Higher profitability of value-added products versus raw material price

Product	Cost of raw material in Peru (USD/kg)	Retail price of equivalent product per ounce (organic powder) (USD/oz. bag)	Retail price equivalent per kilo (USD/kg)	Variation (%)
Maca	6,25	18/16	39/kg	500
Lúcuma	5,00	17,30/8	76/kg	1,500
Camu-camu	6,00	28/8	123/kg	2,000

Source: Amazon.com

5.4. Limited capacity building

The ability of the government and other sector-related public institutions to perform effectively is key to overcoming current BioTrade barriers and to responding appropriately to the challenging demands of global and domestic market conditions and private sector necessities. Financial and technological resources need to be mobilized. The current capacity building efforts of sector-related public institutions are very limited, and this forms a key challenge to BioTrade on the national policy agenda. Since rotation of personnel in this sector is very high, the strengthening of human resources is a challenging task. Although some resources are being earmarked for organizational development, much of the support is allocated to short-term training, seminars, workshops and similar activities. More attention, however, must be given to the long-term development of critical skills in the public sector, in order to complement the ongoing efforts to strengthen the capacities of organizations.

Although the private sector in Peru is well developed, it is still not competitive enough. The main gaps in private-sector capacity building and training relate to the ability of enterprises to design and implement successful marketing, promotion and export strategies, and to use proper skills to improve the production process, especially towards

increasing the quality of products and ensuring a constant supply for clients.

The consensus of organizations in Peru is that investments in capacity building initiatives to improve overall effectiveness or ensure higher levels of individual and institutional performance pay off, albeit over a prolonged period of time. The shortfalls in inter-institutional collaboration and networking across the different stakeholders represent one of the main barriers to the further development of the sector.

5.5. Quality and sustainability standards and market power

In order to compete in international markets, Peruvian companies must comply with a set of Sanitary and Phytosanitary Standards (SPS); and Non-Tariff Barriers including Technical Barriers to Trade. Regulations such as Novel Food Regulation (NFR) and Generally Regarded as Safe (GRAS) represent potential barriers for BioTrade products aiming to enter the EU/US markets.^{43,44} The regulations have a particularly negative impact on small producers and businesses, since securing compliance with these standards is a long and costly process. Although there is a growing awareness of this problem amongst development agencies such as UNEP, UNCTAD, Swiss Import Promotion Programme

A Llama at the historic lost Inca city of Machu Picchu, Peru. © Yaro/Shutterstock.com



in Peru (SIPPO), GIZ and trade promotion organizations (such as the Dutch Center for the Promotion of Imports from Developing Countries (CBI), and others), lack of financial resources and supply-side capacity to meet these standards and regulations makes them a strong deterrent for businesses and producers.

According to the specialists and officials interviewed, both regulations, NFR and GRAS, have important socio-economic implications, mostly because the BioTrade business is concentrated in the Andes and the Amazon – two areas with high poverty rates. The IPPN estimates that these regulations had a negative impact on more than 3,000 families that depend directly on the business. The chances of admission to EU markets for the majority of Peruvian exotic food species are currently nil, unless extensive data allowing a stringent food safety assessment are available. GIZ has estimated that the preparation of necessary dossiers for *sacha inchi* alone costs approximately USD 350,000. This has discouraged many otherwise pioneering companies from investing in “novel” traditional products.

The stakeholders interviewed also mentioned two additional issues that could present future challenges to the sector:

- *Genetically Modified Organisms (GMOs)*. In April 2011, the Peruvian government issued a decree allowing the import and planting of Genetically Modified Organisms (GMOs) in the country.⁴⁵ BioTrade enterprises interviewed

for this study expressed concern that the introduction of GMOs would compromise the native species of Peru, including giant white corn and purple corn. However, in December 2011, the Peruvian government issued a law that put a moratorium of 10 years on the introduction of living GMOs (such as seeds, plants and animals), in order to allow for an adequate assessment of the eventual biosecurity risks.⁴⁶

- *New European Union regulations on traditional herbal remedies*. New European Union rules have come into force banning hundreds of traditional remedies coming mostly from biodiversity-rich developing countries, including Peru. Peruvian herbal manufacturers fear they could be forced out of business. Enterprises will have to prove that their products have been made in observance of strict standards, and that they contain a consistent and clearly-marked dose. In order to be considered a traditional herbal medicinal product, a status that allows for a simplified registration procedure in the EU, products must have been in use for the past 30 years, including 15 years in the EU,⁴⁷ which makes it unattainable for traditional medicines to be newly introduced into the European common market.

Finally, foreign market power is a key problem pushing producers to lower prices. International buyers of raw materials have price-setting power across the industry value chain. Most exporters earn very low profits from their operations, impacting all stakeholders. ▶



A street market in Peru featuring products traditionally used for medicinal purposes. © Michael Zysman/Shutterstock.com

6. Potential returns of scaling up BioTrade in Peru

This study envisages a scenario in which the BioTrade sector in Peru has an annual growth rate of 40 per cent until 2020. This growth projection for BioTrade can be compared to the growth of similar sustainability trade practices such as organic, fair trade and rainforest alliance movements, which have expanded at a rate of up to 35-40 per cent in the last two years. By way of example, in 2010, global sales of organic products reached USD 60 billion; fair trade certificated products brought in USD 1.5 billion; and sales of rainforest alliance agriculture products totaled USD 1 billion.

Sustainable trade practices are increasingly contributing to economic growth in many countries. The majority of the organizations interviewed believe that if investment in the sector increases and finance and support can be accessed through a set of favourable policies, the industry should be able to double its annual growth rate, from the current 20 per cent to 40 per cent per year. This is a bold prediction, but it should be taken into account that the sector has already secured unprecedented growth with very limited governmental support. So far, enterprises have relied almost exclusively on their own capital. The favourable consumer trends *vis-à-vis* Peruvian natural bioproducts should also help to achieve the growth targets. However, the potential 40 per cent growth can only be achieved for cultivated crops, given that wild harvested products, such as Brazil nuts, camu-camu and anchote, have a limited elasticity of supply.

To forecast potential economic development and impact on various macroeconomic indicators, such as employment, export, carbon trading, and land use, the “time series analysis method and forecasting model” was applied. Current

trends, seasonal and irregular components were taken into consideration. Given the Peruvian BioTrade sector’s development during the past five years, a Business-as-Usual scenario was assumed. Key variables of growth were identified with forecasts till 2020 to help the related public sector institutions in strategic decision-making.

The 40 per cent growth assumed for the BioTrade sector till 2020 in Peru in this study does not only contribute to the economic performance of the country but also to social and environmental factors. In this report, key macroeconomic social, economic and environmental indicators were assessed:

- Economic: Sales and exports
- Social: Employment
- Environmental: Carbon trading

6.1. Economic Returns: Impact on sales and export

This section presents the results of a modelling exercise conducted for this study. It is estimated that the ambitious scenario of 40 per cent growth in the sector (double the current growth rate of 20 per cent) would entail substantial sales results, transforming the current industry into a potential multi-billion dollar sector. Above-average sales growth could have a positive impact on many areas, such as job creation, hectares used, and carbon trading. If this scenario is reached, sales would increase from the current level of USD 110 million to almost USD 2.7 billion by 2020.

Table 8. Sales projections 2011-2020, in USD FOB*

Exports (USD) 000's	2010	2011	2012	2014	2016	2018	2020	Var 2020/2010
Baseline scenario, total 20% growth	109,582	131,498	157,798	222,229	327,210	471,182	678,502	519.17%
Ambitious scenario with total 40% growth	109,582	131,498	184,097	360,831	707,229	1,386,169	2,716,890	2379.33%

*Excluding cochineal⁴⁸

Table 9. BioTrade exports versus total exports

Biotrade export vs total export	2010	2011	2012	2014	2016	2018	2020
Peru Export in thousands of USD*	35,042,000	42,050,400	48,357,960	63,953,402	84,578,374	111,854,900	147,928,105
BioTrade GDP in thousands of USD**	109,582	131,498	184,097	360,831	707,229	1,386,169	2,716,890
Percentage of BTD/PE Export	0,31%	0,31%	0,38%	0,56%	0,84%	1,24%	1,84%

*Assuming 15 per cent growth in total exports over the next decade, **excluding cochineal

Peru's overall economic performance has been outstanding in recent years. On an average, total national exports grew between 15 and 20 per cent in the past five years. The overall export trends are likely to remain stable throughout 2020, with an average growth of 15 per cent per year (considering total export growth in the last five years). In the scenario of 40 per cent growth for the BioTrade sector, the sector will become a more relevant part of total Peruvian exports. BioTrade (excluding cochineal) currently represents 0.3 per cent of total exports; in 2020, the industry could represent almost two per cent of the country's total exports. Considering these numbers, BioTrade will be much more attractive for local and foreign investors, who today see it as a very promising yet still emerging sector.

6.2. Social Returns: Impact on employment

There is growing evidence that BioTrade offers additional direct employment effects, especially for the low-income population associated with the first steps in the trade flow. Currently, more than 10,000 agricultural workers depend on the sector as a source of income and employment.⁴⁹ Assuming that the BioTrade sector maintains a growth rate of 20 per cent until 2020, the industry would employ approximately 60,000 workers. An annual increase of

40 per cent would add more than 250,000 new jobs over the next decade, providing employment opportunities for over 258,000 workers. The effect on poverty reduction would be even higher taking into account that an average worker in the agricultural sector supports a family of four to five, and workers are paid an average of 30 per cent more than the minimum monthly salary in Peru.⁵⁰ However, for a trickle-down effect to happen, additional government social initiatives and policies to improve the situation of impoverished groups need to be put into place.

6.3. Environmental Returns: Impact on carbon trading

Carbon trading, the approach used to control pollution by providing economic incentives for reducing pollutant emissions, is relatively new in Peru. It can be an additional source of income for BioTrade enterprises, especially those working in the Amazon rainforest. The following example looks only at forest land used for wild harvested products. The model calculates the additional hectares that can contribute to carbon trading and uses a benchmark of 20 per cent of the total hectares. According to the data collected, over 54,000 hectares are used in BioTrade production, distributed between the regions of Junín, Cajamarca, Madre de Dios, Huánuco, Huaraz, Loreto and

Table 10. New job openings for the sector till 2020

Employment	2010	2011	2012	2014	2016	2018	2020	Var 2020/2010
Baseline scenario, total 10 000 Workers	10,000	12,000	14,400	20,736	29,860	42,998	61,917	619%
Ambitious scenario with total 40% growth	10,000	13,150	18,410	36,083	70,723	138,617	271,689	2,717%
Total workers added			5,260	10,309	20,207	39,605	77,625	258,539

Table 11. Impact on carbon sequestration

Carbon sequestration	2010	2011	2012
Baseline scenario with total 40% growth			2,592
Ambitious scenario with total 40% growth			5,184

Additional revenue due to increased hectare utilization
 1 Hectare = 300 tons of Cos @ USD 10/ton

USD impact on carbon sequestration	2010	2011	2012
Total (20% growth)			7,776,000
Ambitious scenario with total 40% growth			15,552,000

20% of the hectares can be used for carbon trading since this part is used in wild forest

Ucayali (UNCTAD and UNDP, 2000). The percentage is multiplied by the difference between both the 20 and 40 per cent scenarios, the result being additional hectares, which are then measured using the following formula:

One hectare of farmland used for BioTrade activities produces approximately 300 tons of carbon credits, which are traded at USD 10 per ton. This figure gives rise to additional revenues from carbon sequestration as follows:

The total additional carbon sequestration revenue, assuming a constant 20 per cent growth, would be worth almost USD 154 million. A more ambitious scenario would yield an additional USD 750 million until 2020. As shown in the table above (Table 11), additional hectares can, in general, represent a very important source of revenue for the BioTrade sector.

6.4. BioTrade and poverty

BioTrade offers a unique opportunity to producers of bioproducts to benefit from a fair trade that contributes to rural development and poverty reduction in the areas of operations, as is the case of CANDELA (Box 3 and Box 4). However, as a general rule for the Peruvian case, there is no positive correlation between richness in biodiversity and human wellbeing. For instance, Andean highlands have the highest poverty rate in the country although they have some of the most important biodiversity-based resources (Table 12). As mentioned earlier in the report, Huancavelica, the region with the highest poverty rate in Peru (77.9 per cent), currently has the opportunity to reduce this alarming rate. This is possible due to the richness of biodiversity-based resources, such as quihuicha, quinoa and tara – demand for which is high in international markets. In contrast, the Madre de Dios region is also very rich in natural resources and has a poverty rate of only 12.2 per cent. Almost 30 per cent of all the families in Madre de Dios work directly or indirectly in the

Box 3. Fair trade certificates: A successful tool for improving life in local communities

CANDELA is a Peruvian BioTrade Brazil nut company, owned partly by smallholder cooperatives. It has secured fair trade certification, attesting that it pays the minimum fair-trade price of USD 1.92/lb for organic Brazil nuts, plus an additional fair-trade premium of USD 0.17/lb to the members that make expenditures on approved business development programmes or community projects. The higher, stable fair-trade price translates into better living standards for members. The premium fund has been used to help families with expenses such as school tuition and home improvements. The premium has also been used to strengthen the cooperative, including rental of office space, purchase of a computer and payment of staff wages.

Box 4. Success stories from Peru

Villa Andina and CANDELA are two companies that have managed to respond successfully to the positive development of the BioTrade sector due to their innovative spirit, world-class products and visionary management skills. They have managed to adapt to a changing economic environment as they foresaw the changing trends of the international consumer and redirected their managerial tactics. It is important to mention that both companies have focused on different products and markets, achieving economies of scale, reducing production costs and investing in marketing, product development and added value to their product offerings. Both continue to operate and grow above average in Peru and are expanding into new products and markets.

Table 12. Top five Peruvian regions in terms of poverty rates and biodiversity

Region	Poverty rate (%)	Main biodiversity-based resources
Huancavelica	77,9	quihiucha (<i>Amaranthus caudatus</i>), lúcuma (<i>Pouteria lúcuma</i>), quinoa (<i>Chenopodium quinoa</i>), rhatany (<i>Krameria triandra</i>), tara (<i>Caesalpinia spinosa</i>)
Apurimac	74,8	pasuchaca (<i>Geranium dielsianum knuth</i>), rhatany, sauco (<i>Sambucus peruviana</i>), tara, yacón (<i>Smallanthus sonchifolius</i>)
Ayacucho	71,1	cochineal (<i>Dactylopius coccus</i>), aguaymanto (<i>Physalis peruviana</i>), hercampure (<i>Gentiana alborosea</i>), quihiucha, lúcuma, molle (<i>Schinus molle L.</i>), rhatany, tara
Puno	67,2	hercampure, savory (<i>Satureja odora</i>), quinoa, rhatany, dragon's blood (<i>Croton dracooides</i>), yacón
Huánuco	64,9	stonebreaker (<i>Phyllanthus niruri L.</i>), chuchuhuasi (<i>Maytenus macrocarpa</i>), molle, savory, rhatany, sacha inchi (<i>Plukenetia volubilis</i>), dragon's blood, sauco (<i>Sambucus peruviana</i>), tara, yacón, mahogany (<i>Swietenia macrophylla</i>), tornillo (<i>Cedrelinga cateniformis</i>)

Source: Fairlie (2010).

production, transformation or commercialization of products and services (mostly ecotourism) related to biodiversity (MINAM, 2010). Sustainable commercialization of products such as quinoa and quihiucha, which carry a price premium in organic and biomarkets of almost 30 per cent above

regular production, is a positive driving force for the livelihood of many people (IFOAM, 2010). As a consequence of price premiums paid and low costs of production, these products obtain a greater value in the production chain. The demand is already in place and growing for organic products. ►



Herbal tea with the Peruvian herb muna, a digestive aid with mint-like flavour. © Ildi Papp/Shutterstock.com

7. Recommendations – Towards the consolidation of BioTrade in Peru

Reaching the 40 per cent target growth for 2020 will depend on the creation of a successful policy framework that encourages BioTrade development. Based on stakeholder criteria and on an analysis of sector-related information, this study proposes enabling conditions necessary for the further development of the BioTrade sector. If these policies are implemented, Peru will secure long-term sustainable benefits of participating in the global trade of natural products and ingredients. These policies must also actively aim to integrate all stakeholders. An overarching condition should be the strengthening of the institutional coordination framework between MEF and NBC.

7.1. Increased availability of finance

Additional public and private investment is needed. An increase in public funding for the sector through budget surges for sector-related government institutions is required; as is access to State investment programmes that provide public goods and services. The process should be initiated by introducing a set of strong public policy reforms to prioritize the BioTrade sector and place it firmly on the MEF agenda, encouraging the possible participation of MEF as a full NBC member. The decision-making process requires a clear political agenda and specific efforts towards shortening the extensive timelines of government procedures. Roles and responsibilities must be well defined in programmes; and goals must be stated clearly.

The overall opinion and assessment of the BioTrade community (gatherers, producers, transformers and exporters) is that the State offers the industry very limited incentives, guarantees and protection mechanisms. A safe business environment, complemented by strong government protection, would bolster BioTrade's future growth. The sector requires the State to provide well-established financial and economic mechanisms that can help reduce production and sales costs, increase profits and stimulate further business investments. The current pace of expansion in the BioTrade sector must be backed by a solid financial system.⁵¹ As discussed in this study, the majority of BioTrade enterprises are associations and SMEs unable to finance their operations or pay the high taxes and interest rates.

The government must play a major role as a facilitator and promoter of the industry, thereby helping to change the BioTrade “risk perception” among financial institutions.

Furthermore, there is a need to improve the current BioTrade business environment for foreign and local companies keen to invest in the sector, by introducing economic and fiscal incentives such as State lending programmes; access to credits, grants and subsidies; reduced interest rates and taxes; increased public awareness; and measures to reduce the sector's risk perception among commercial banks and other financial entities.

Finally, there is a need for placing more awareness on non-tariff trade barriers hindering the export of BioTrade products, and identifying ways and designating public funds to overcome them.

7.2. Increased support for R&D

It is necessary to enhance production and productivity through investments in R&D activities prioritizing the development of value-added products. There is an urgent need for appropriate funding mechanisms for R&D, new technology and infrastructure. A strong political and financial commitment is needed to meet the sector's growing R&D requirements. BioTrade requires not only more investment but also more efficient management of funds, linking the efforts of the R&D institutions to the needs of the business sector. Peru is characterized as a country that predominantly exports raw materials. However, as value-added products are more competitive and have higher profit margins, specialists consider that they should take priority in future government initiatives.

7.3. Increased awareness of bioproducts

The governments of China, Brazil and South Africa have aggressively promoted natural products such as ginseng, açai berry and baobab, respectively. These products now dominate the current global bioproduct market. Peru's present product offering includes BioTrade products that could compete



Lake Titicaca, Peru, has a dense water reed that is used to build boats, homes and even floating islands. © meunierd/Shutterstock.com

globally but have not been promoted or advertised to the same degree as the aforementioned products. Increased investment in policies promoting BioTrade will help raise global awareness of the Peruvian natural heritage and the specific attributes of its BioTrade products. Market demands must be fully understood and market research must be carried out for the local industry. In addition, as domestic spending is growing, assistance should also be provided to producers and companies selling within Peru. Sales to the domestic market can help companies improve their cash flow and these revenues can, in turn, be used for global expansion.

7.4. Strengthened capacity building

In order to strengthen the capacity of the Peruvian BioTrade sector, it is necessary to expand financial resources earmarked for capacity building and training, to provide adequate guidelines for better collaboration between the public sector, the private sector and communities, to foster expertise in the promotion of environmental and social practice, and to provide demand-driven support for integrating the BioTrade business into the global natural products market. Public and private institutions have expressed their interest in capacity building services and training towards improving management skills, as this would enhance production, promotion and sales. Further investment in capacity building is needed to overcome technical barriers, meet phytosanitary standards, secure BioTrade certifications and support the supply chain. Investment in training and capacity building to improve business practices is vital for BioTrade, and contributes to full-potential growth. Furthermore, the government has recently decentralized the management of forest and agriculture land, giving rise to a need for capacity building and institutional strengthening at regional and municipal levels. ▶

Conclusions

The example of BioTrade in Peru showcases how a strong business model, with an extremely positive spill-over effect for the poor and for nature, can be built. However, this finding is still not mainstreamed in the political agenda of the Peruvian government. The BioTrade community is optimistic about the potential development over the next decade, provided that government and financial institutions play a more active role. So far, businesses and associations have undertaken most of the initiatives, which poses a limit on development and growth.

BioTrade enterprises yearn for an environment with financial and market support. Entrepreneurs believe that their growth will help the Peruvian government achieve the two goals of reducing poverty; and protecting the Peruvian natural heritage for both present and future generations.

Ambitious growth scenarios for BioTrade, presented in this study, can be a reality if public and private funds are reallocated appropriately. The sector could represent 1.8 per cent of the country's total exports, with annual sales of BioTrade products totaling USD 2,700 million, and an additional USD 750 million of revenue from carbon trading. These numbers are impressive and will provide an important incentive for the value chain in terms of profits; and for families in terms of job creation. It is important to understand

that carbon trading by itself will represent 25 per cent additional income to the sector.

In order to place BioTrade at the heart of Peru's transition to a green economy, it is necessary to establish and implement appropriate conditions and reforms of public and financial institutions. UNEP supports Peru through a project entitled: 'Biodiversity Conservation through its Sustainable Use'.

The project has the following components:

- Strengthening of policies
- Accessing markets
- Creating competencies
- Preparing information pertaining to products and markets;
- Leveraging financial resources
- Developing pilot projects for biodiversity businesses; and
- Disseminating and exchanging experiences in the region.

The future of the sector is expected to remain positive as long as all stakeholders commit to working towards a common goal: To protect the natural heritage of the country while facilitating and encouraging the development of the industry. Peru has the potential to adopt the green economy vision and benefit from its results in terms of improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. ▀

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Notes

- 1 EFTA includes Iceland, Liechtenstein, Norway and Switzerland.
- 2 TPP currently includes Brunei Darussalam, Chile, New Zealand and Singapore, and is negotiating the entry of Australia, Canada, Malaysia, Mexico, Peru, the United States and Vietnam.
- 3 Source: www.andina.com.pe/espanol/Noticia.aspx?id=f483HyQRIEM (online magazine of the Peruvian Online Agency)
- 4 Source: www.cepes.org.pe/notiagro/node/11009 (CEPES-Peruvian Center for Social Studies)
- 5 Source: exportacionesdelperu.blogspot.ch/2009/07/peru-es-el-principal-exportador-de.html.
- 6 Source: World Bank database, available at databank.worldbank.org/data/
- 7 Source: World Bank database, available at databank.worldbank.org/data/
- 8 Non-traditional product exports, of which BioTrade forms part, stood at USD 7.6 billion in 2010. MINCETUR (2010). Annual Report-2010. Available at www.mincetur.gob.pe/newweb/portals/0/Memoria_Mincetur_2010.pdf
- 9 The country has already signed FTAs with the United States, Canada, and China; has concluded negotiations with the European Union and has trade talks underway with South Korea, Thailand, Japan, Mexico, and some Central American countries. FTAs cover more than 90 per cent of the non-traditional commodities exported, part of which are BioTrade products.
- 10 Source: World Bank database, available at databank.worldbank.org/data/
- 11 Equivalent to 34'500 tons.
- 12 Source: www.directorioadex.com/Documentos/ppEN.html
- 13 Peru is the 14th most biodiverse country on the planet. Source: www.environment.gov.au/soe/2001/publications/theme-reports/biodiversity/biodiversity01-3.html.
- 14 Unless otherwise stated, the data in this section came from INEI and MINAM.
- 15 Source: An interview with the Peruvian chef Gastón Acurio, for www.livinginperu.com, published on 7 November 2006. Available at archive.peruthisweek.com/blogs/features/202
- 16 Unless otherwise stated, this data came from statistics of MINAG, MINAM and MINCETUR.
- 17 Source: World Bank. Country's overview: Peru. Available at web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/PERUEXTN/0,,contentMDK:22252133~pagePK:1497618~piPK:217854~theSitePK:343623,00.html
- 18 Source: World Bank Gini Index. Available at data.worldbank.org/indicator/SI.POV.GINI/
- 19 Source: www.tradingeconomics.com/peru/poverty-gap-at-dollar2-a-day-ppp-percent-wb-data.html, and World Bank database, available at data.worldbank.org/indicator/SI.POV.NAHC/countries/PE?display=graph.
- 20 Definition used by the National Program for BioTrade Promotion (PNPB), retrieved from: www.biotrade.org/MeetingsEvents/tarapoto/Exposici%C3%B3n%20Biocomercio%20Pucallpa%20Martin%20Pinedo.pdf
- 21 Perfect examples are camu-camu, which has up to 2000 mg vitamin C/100 g, and the cañihua grain, with up to 15-30 mg Fe/100 g.
- 22 The project started in 2011. Its main objective is to facilitate financing for biodiversity businesses and to support market development activities in the Andean region.
- 23 The UEBT's minimum requirements are available at www.ethicalBioTrade.org/membership/requirements.html
- 24 Source: www.ethicalBioTrade.org
- 25 It is important to mention that although demand for cochineal continues to be strong, the past few months have shown how volatile prices can be: prices dropped from USD 135/kg to USD 80/kg in less than four weeks due to new regulations in natural colorant markets. Although the price of cochineal is unpredictable, recent interviews with the key market players confirm that demand continues to grow and that prices are expected to recover quickly. It is difficult to predict whether prices are sustainable in the long run, but in the short term, they will remain high. There are no natural substitutes to cochineal, and no other country in the world has managed to produce the product with the same high quality as has Peru.
- 26 For details of biodiversity-based product exports, see Annex 2.
- 27 Retrieved from diverse programme annual reports of GIZ/SECO, Perubiodiverso
- 28 Source: Grupo Eco-Lógica Perú. Available at www.grupoecologicaperu.org
- 29 Of the 152 participants in the first BioTrade Contest, 62 per cent were associations or cooperatives.
- 30 Opinion based on data collected during the first Peruvian BioTrade Contest, 2009.
- 31 Since data collection started in 2007, the documented data available covers a time span of just three years. The amounts only include government funds, without official development assistance.
- 32 It could be concluded from the interviews that infrastructure investment of 228 companies is around USD 50,000 per company.
- 33 Source: www.bbmj.com/pdfs/BBMJ_Conscious_Consumer_White_Paper.pdf
- 34 Source: www.organicmonitor.com
- 35 Functional foods are expected to grow 21 per cent by 2015
- 36 Source: www.packagedfacts.com
- 37 Interview with Rolando Aliaga, Director, Inversiones 2A.
- 38 Interview with Fernando León, Chief Economist, MINAM
- 39 Data obtained from an interview with representatives of COFIDE in Lima, Peru
- 40 Data obtained from an interview with Mercedes Cardoso, Director of Technological Innovation Centers (CITEs), Ministry of Production (PRODUCE).
- 41 Data obtained from an interview with Mark Hein, Director of Peruvian Heritage company
- 42 Interview with G. Vizcarra, General Manager of CANDELA PERU.
- 43 Novel foods are foods and food ingredients not used for human consumption to a significant degree within the European Community before 15 May 1997. Regulation EC 258/97 of the European Parliament and the European Council lays out detailed rules for the authorization of novel foods and novel food ingredients. Available at ec.europa.eu/food/food/biotechnology/novelfood/index_en.htm.
- 44 GRAS is an American Food and Drug Administration (FDA) designation indicating that a chemical or substance added to food is considered safe by experts, and is thus exempted from the usual Federal Food, Drug, and Cosmetic Act (FFDCA) food additive tolerance requirements. More information available at www.fda.gov/Food/FoodIngredientsPackaging/GenerallyRecognizedasSafeGRAS/default.htm.
- 45 Supreme Decree Nr. 003-2011-AG, available at: www.cepes.org.pe/apc-aa/archivos-aa/4a15e4303d8c04d4de2018292e444138c/DS_003_2011_AG.pdf.
- 46 Law Nr. 29811, available at www.minag.gob.pe/portal/download/pdf/marcolegal/normaslegales/leyes/ley29811_ley_prod_organismos_vivos.pdf.
- 47 European Directive on Traditional Herbal Medicinal Products, available at eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:136:0085:0090:EN:PDF.
- 48 Cochineal (which is a success story in and of itself) has been excluded from these projections, given the fact that it is difficult to calculate sales growth over the next decade. Prices fluctuate greatly, making them impossible to predict. In three similar situations over the past three decades, prices increased by almost 1,500 per cent within one year (early 80s, late 90s and late 2009). The authors of this report believe that as the historic demand will continue to drive the need for cochineal, the sales potential of this product should be realized.
- 49 This figure has been confirmed by IPPN and the other BioTrade Commission members interviewed.
- 50 The minimum monthly wage in Peru is approximately USD 200.
- 51 Biodiversity-based businesses are niche markets with high-growth potential for financial institutions. The international financial community has developed a range of new initiatives, such as eco-capital private and venture capital funds, in order to enhance the development of those businesses. Good examples of these initiatives are the Terra Capital Fund and the Eco-Enterprise Fund. Both funds focus on supporting business development of innovative endeavours with positive economic and environmental performance. This initiative provides grants to financial intermediaries – commercial and retail banks, leasing companies, and microfinance institutions – that service SMEs whose activities benefit the global environment.
- 52 Taken from diverse programme reports of GIZ/SECO, Perubiodiverso

Annexes

Annex 1: List of interviewed stakeholders

Name	Organization
Government organizations	
Daniel Espinosa	MINCETUR
Miriam Cerdan	MINAM
Fernando León	MINAM
Vanessa Ingar	PROMPERU
Juan Haro	MEF
Carlos Soncco	MEF
Mercedes Cardoso	PRODUCE
Private companies	
Gaston Vizcarra	CANDELA
Alfonso Bustamante	Agroinca
Rolando Aliaga	Inversiones 2A
Pedro Martinto	Villa Andina
Cesar Barriga	Pebani
Carlos Samaniego	Ecoandino
Carla Vaca	ADEX
Eduardo Ferré	IPPN
Donor organizations	
Roberto Duarte	GIZ
Jaime Cárdenas	UNEP-GEF-CAF Project on BioTrade
External specialists GEF/CAFGIZ	
Frank Schreiber	Yanapai

Annex 2: Exports of Peruvian BioTrade products, 2007-2010 in USD⁵²

PRODUCT	2007	2008	2009	2010
Cochineal	37,624,127,51	40,796,365,53	43,068,275,71	208,708,784,39
Tara	31,756,831,34	41,324,982,74	25,373,503,08	43,084,647,84
Brazil nut	14,026,374,66	12,629,363,39	11,605,006,35	15,042,963,95
Achiote	7,077,423,35	8,043,214,82	10,359,908,67	11,089,051,32
Corn	5,065,231,26	7,596,240,05	9,782,563,55	9,536,132,77
Quinoa	2,514,412,55	5,455,561,49	7,619,645,32	13,552,561,83
Maca	3,921,270,37	4,274,342,33	4,978,309,26	6,155,515,68
Quihuicha	2,431,461,47	2,300,399,98	1,914,905,76	1,863,468,72
Purple corn	1,530,855,45	1,477,862,79	1,688,277,24	1,877,456,41
Cat's claw	1,299,786,07	1,150,367,29	1,026,354,76	1,375,882,85
Sacha Inchi	629,928,80	714,523,76	847,849,65	1,047,041,52
Camu-Camu	5,024,563,05	1,769,193,02	663,456,97	596,809,59
Lúcuma	152,074,55	343,188,22	546,938,15	629,970,90
Yacón	196,749,45	331,367,64	351,098,22	633,193,12
Aguaymanto	39,233,13	53,377,21	54,104,85	148,296,55
Other products	2,950,095,63	2,817,994,88	2,333,533,10	2,948,848,15
TOTAL	116,240,418,64	131,078,345,14	122,213,730,64	318,290,625,59

Annex 3: BioTrade lines and products prioritized by PNPB

Prioritized lines	Prioritized products	Benefits and applications
Functional food and nutraceuticals	maca, yacón, cat's claw, sachá inchi, camu-camu	<p>Maca (<i>Lepidium meyenii</i>) is a natural energizer used in drinks, tablets and powder. It is a nutritional food and very effective against malnutrition and for convalescence. It is used as a dietary supplement for women, men and for high-performance sportsmen. Furthermore, it helps to regulate menstrual cycles and improves menopause symptoms. Supports feminine fertility.</p> <p>Cat's claw (<i>Uncaria tomentosa</i>) is used to treat asprostatitis, ulcers, diabetes, and diarrhea. It relieves pains produced by sciatica and lumbago, and fights off rheumatic, arthritic ailments and certain epidemic illnesses. It strengthens the immune system and therefore prevents organic deterioration that leads to premature aging and many illnesses.</p> <p>Sachá inchi (<i>Plukenetia volubilis</i>) is rich in Omega-3 and currently used to produce oils as a nutritional food. Its high content of fatty acids of the omega group reduces cardiovascular accidents. The two fatty acids: Alpha Linoleic Omega-3 and Omega-6 (84 per cent) in its composition are very important for controlling and reducing cholesterol levels. They also help to form nerve tissue, eye tissues and the structure of cell membranes.</p> <p>Camu-camu, (<i>Myrciaria dubia</i>) rich in Vitamin C, is used as a strong anti-oxidant and food supplement. It increases the body's defence mechanisms and stimulates the immune system. It prevents infections and scurvy.</p>
Functional food	Andean grains (quinoa, quihuicha, purple corn, giant white corn from Cusco) and Brazil nuts	<p>Quinoa and quihuicha are great sources of minerals and are used in cereals.</p> <p>Giant white corn is used as a snack that is becoming very popular.</p> <p>Purple corn contains anthocyanines which are natural colorants. It gives colour to drinks, sweets and candies, bakery products, vegetables, canned fish fats and oils, marmalades and jellies, crystallized fruits and syrups, soups and flavourings.</p> <p>The pharmaceutical use of anthocyanines is recognized in ophthalmology for its properties: it increases visual acuteness and improves night vision.</p> <p>Purple corn prevents cancer of the large intestine; and also acts as a regulator of high blood pressure.</p> <p>Brazil nuts (<i>Bertholletia excels</i>) are high in calories and contain good quantities of vitamins, anti-oxidants and minerals. They contain exceptionally high levels of selenium – an important co-factor for anti-oxidant enzyme glutathione peroxidase. Just 1-2 Brazil nuts a day provides enough of this trace element. Adequate selenium foods in the diet help prevent coronary artery disease, liver cirrhosis and cancers. The nuts are also a very good source of vitamin E, which is important for maintaining the integrity of cell membranes, mucus membranes and skin by protecting the body from harmful oxygen free radicals.</p>
Cosmeceuticals	sachá inchi, camu-camu and maca	<p>Camu-camu serum is gaining in popularity as more and more companies have identified its strong anti-ageing properties.</p>

Continuing with business-as-usual is not an option in a world of increasing environmental scarcities, growing economic uncertainty and inequalities, and the continued existence of widespread poverty. UNEP launched its Green Economy Initiative in 2008 and is currently supporting over 20 countries around the world in their transition towards a green economy.

This report suggests that in the context of a green economy, BioTrade has the potential to help countries reach their socioeconomic and environmental goals. Offering a steady source of employment and income, especially for the poor, BioTrade promotes an innovative solution for reducing poverty, while protecting nature. Peruvian companies are increasingly recognizing the potential of BioTrade. After all, Peru is one of the most biodiverse countries in the world and most Peruvian BioTrade production is destined for the export market. With biodiversity-based products concentrated in the Andes and the Amazon – two areas with high poverty rates – investment in BioTrade will have an important impact on poverty reduction in Peru, particularly in these two regions.

The enabling environment created by the government through initiatives such as The National BioTrade Promotion Program, which combines the efforts of national institutions and international cooperation partners, has played a key role in the growth of Peruvian BioTrade.

This study is part of the Capacity Building for BioTrade (CBBT) project implemented by UNEP, with financial support from GIZ, in three countries: Peru, Namibia and Nepal. The study includes suggestions to promote further growth of the BioTrade sector in Peru.

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