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Every time you spend money,

you're casting a vote for the kind of world you want.

— Anna Lappé

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Abstract

Quinoa (*Chenopodium quinoa Willd.*) is a pseudocereal, representing one of the basic foods domesticated in the Andes of South America since more than 7,000 years ago. Due to the *International Year of Quinoa* which was declared by the United Nations in 2013, the demand for quinoa increased significantly on international markets, thus export prices rose and cultivation areas were expanded. Owing to the worldwide boom, high revenues have been recorded through quinoa trade. However, the actors do not benefit equally.

A global oversupply and the increased competition with Peru have a strong impact on the Bolivian sales volume to foreign markets and the retail prices. In addition, research revealed that sharp fluctuations in demand lead to volatile prices. Moreover, the chain of organic and fair trade certified quinoa is heavily buyer-driven; thus regulations for local farmers are established by consumer nations. In general, fair trade offers higher prices than conventional and/or organic quinoa exports. Hence, the economic conditions of quinoa-growing smallholders are improved under this certification system, even though only small financial differences can be achieved due to the currently low price level.

Based on these considerations, a value chain analysis for organic fair trade certified quinoa from Bolivia was conducted in the course of this study in order to determine to what extent Bolivian quinoa farmers profit from fair trade. During the period from March to May 2016 28 semi-structured interviews were carried out in the Bolivian Altiplano. Afterwards, this data was evaluated through the software *ATLAS.ti*, chain mapping and economic analysis.

In this context, the current market trend is outlined, actors and stakeholders along the chain are identified, factors which establish the retail price are detected and profit distributions are examined. Furthermore, the trading conditions of organic fair trade quinoa are compared to those of conventional quinoa and the functions of associations are analyzed. As a result of the findings obtained in these analyses, the suitability of the concept of fair trade for Bolivian quinoa is questioned and the

possibility of alternative certification labels, such as the Small Producers' Symbol (SPP), is discussed.

Keywords: Associations, Bolivia, Fair Trade, Organic Quinoa, Profit Distribution, Value Chain

Resumen

La quinua (*Chenopodium quinoa Willd.*) es un pseudocereal que representa uno de los alimentos básicos domesticados en los Andes de Súdamerica, donde fue cultivado hace más de 7,000 años. Dado al *Año Internacional de la Quinua,* que fue declarado por las Naciones Unidas en 2013, la demanda de quinua aumentó significativamente en los mercados internacionales, por lo que los precios de exportación incrementaron y las áreas de cultivo fueron extendidas. Debido al auge global, altos ingresos han sido registrados a través del comercio con quinua, sin embargo, los actores no están beneficiando de la misma manera.

El exceso de oferta mundial y una mayor competencia, especialmente con el Perú, tiene un fuerte impacto en el volumen de ventas de Bolivia en los mercados extranjeros y sobre los precios de venta. Asimismo, investigaciones previas revelaron que las intensas fluctuaciones de la demanda han provocado precios volátiles. Otro aspecto importante es que la cadena de quinua orgánica de comercio justo es fuertemente impulsado por los compradores, siendo esta la causa por la que los agricultores locales han sido obligados a seguir los reglamentos y estándares que fueron establecidos por las naciones consumidoras.

En general, a través del comercio se logran precios de exportación más altos en comparación con venta de quinua orgánica y/o convencional. Por consiguiente, bajo este sistema de certificación las condiciones económicas de los pequeños productores han sido mejoradas, aunque sólo menores ventajas financieras se han alcanzado debido al recientemente bajo nivel de precios.

Partiendo de estas consideraciones, se realizó un análisis de la cadena de valor para quinua orgánica de comercio justo de Bolivia para determinar en qué medida

los productores de quinua se ven beneficiados por el comercio justo. En el periodo de Marzo a Mayo del 2016 se realizaron 28 entrevistas semiestructuradas en el Altiplano Boliviano. Dicha información fue evaluada mediante el software *ATLAS.ti*, chain mapping y un análisis económico.

En este contexto, se abordó la tendencia actual del mercado, se identificaron los actores y partes interesadas dentro de la cadena de valor, se determinaron los factores que establecen el precio de venta y se examinó la distribución de ganancias. Además, se llevó a cabo una comparación entre las condiciones comerciales de quinua orgánica de comercio justo fueron comparadas y las de quinua de venta convencional. Incluso se analizó el papel que asumen las asociaciones de productores. Como resultado de los hallazgos, se cuestionó la idoneidad del concepto de comercio justo para quinua boliviana y se discutió la posibilidad de certificaciones alternativas como el Símbolo de Pequeños Productores (SPP).

Palabras clave: Asociaciones, Bolivia, cadena de valor, comercio justo, distribución de ganancias, quinua orgánica

Zusammenfassung

Quinoa (*Chenopodium quinoa Willd.*) ist ein Pseudogetreide, welches eines der Grundnahrungsmittel in den Anden Südamerikas darstellt; einer Region, in der es seit mehr als 7.000 Jahren angebaut wird. Nachdem die Vereinten Nationen (UNO) das Jahr 2013 zum internationalen Jahr der Quinoa erklärten, stieg die internationale Nachfrage nach Quinoa erheblich an, was zu einer Erhöhung der Exportpreise und einer Ausweitung der Anbauflächen führte. Aufgrund des weltweiten Booms erzielte der Handel mit Quinoa hohe Umsätze, wovon die beteiligten Akteure allerdings nicht gleichermaßen profitierten.

Ein globales Überangebot und zunehmender Wettbewerb, insbesondere mit dem Nachbarland Peru, haben deutliche Auswirkungen auf das bolivianische Absatzvolumen und den Verkaufspreis in ausländischen Märkten. Wissenschaftliche Forschungen ergaben, dass hohe Nachfrageschwankungen

Preisvolatilität hervorrufen. Darüber hinaus wird die Wertschöpfungskette von organischer Fairtrade-Quinoa stark von Käufern gesteuert. Dementsprechend müssen lokale Bauern Vorschriften und Verordnungen folgen, die in Absatzländern festgelegt worden sind.

Im Allgemeinen können durch Fairtrade höhere Exportpreise erreicht werden als durch den Verkauf von konventionell oder organisch angebauter Quinoa. Durch das Zertifizierungssystem von Fairtrade lässt sich zwar die wirtschaftliche Lage von kleinen Quinoa-Bauern verbessern, dennoch können aufgrund des derzeit niedrigen Preisniveaus nur geringe Profite erreicht werden.

Ausgehend von diesen Überlegungen führt diese Arbeit eine Analyse der Wertschöpfungskette (Value Chain) von bolivianischer Quinoa aus organischem Anbau und mit Fairtrade-Zertifizierung durch. Im Zeitraum von März bis Mai 2016 wurden 28 halbstrukturierte Interviews im bolivianischen Hochland durchgeführt. Im Anschluss wurden diese Daten mit Hilfe der Software *ATLAS.ti* ausgewertet, durch Value-Chain-Mapping abgebildet und für wirtschaftliche Analysen verwendet. Die zentrale Zielsetzung der vorliegenden Arbeit besteht darin, zu ermitteln inwiefern Fairtrade einen Vorteil für bolivianische Quinoa-Bauern schafft.

Vor diesem Hintergrund wird die aktuelle Marktentwicklung aufgezeigt, es werden Akteure und Interessenvertretungen der Wertschöpfungskette identifiziert, Einflussfaktoren auf den Verkaufspreis bestimmt und die Gewinnverteilung analysiert. Außerdem werden die Handelsbedingungen von organisch angebauter Fairtrade-Quinoa mit denen von Quinoa aus konventionellem Handel verglichen und die Bedeutung von Bauernkooperativen untersucht. Unter Berücksichtigung dieser Erwägungen wird die Eignung des Fairtrade-Konzeptes für bolivianische Quinoa infrage gestellt und die Möglichkeit der Einführung von alternativen Zertifizierungen, wie beispielsweise das Kleinproduzenten-Symbol (SPP), wird diskutiert.

Schlüsselwörter: Bauernkooperativen, Bolivien, Fairtrade, Gewinnverteilung, Quinoa aus organischem Anbau, Wertschöpfungskette (Value Chain)

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List of Abbreviation

AIPROCA	Association of Organic Producers Capura
ANAPQUI	National Association of Quinoa Producers
AOPEB	Association of Ecological Producer Organizations in Bolivia
APQUISA	Association of Quinoa Producers Salinas
BOB	Bolivian Boliviano
CABOLQUI	Bolivian Chamber of Quinoa Royal and Organic Products Exporters
CECAOT	Central Cooperativa Agropecuaria Operación Tierras
CIQ	International Quinoa Center
CLAC	Latin American and Caribbean Network of Small Fair Trade Producers
CNPQ	National Chamber of Quinoa Producers
CONACOPROQ	National Council of Quinoa Traders and Producers
EFTA	European Fair Trade Association
EU	European Union
EUR	Euro
FAUTAPO	Foundation AUTAPO
FLO	Fairtrade Labelling Organization
FOB	Free on Board
FT	Fair Trade
FUNDEPPO	Foundation of Organized Small Producers
GEPA	Gesellschaft zur Förderung der Partnerschaft mit der Dritten Welt mbH
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
IBCE	Bolivian Institute of Foreign Trade
IFOAM	International Federation of Organic Agriculture Movements
INIAF	National Institute for Agricultural and Forestry Research Innovation
IYQ	The International Year of Quinoa
m.a.s.l.	meters above sea level
MDRyT	Ministry of Rural Development and Land

MINCETUR	Ministry of Foreign Trade and Tourism of Peru
n/d	no data
NGO	Non-Governmental Organization
NOP	National Organic Program
QR code	Quick Response Code
SA	Sociedad Anónima (corporation, corp.)
SENASAG	National Service for Agricultural Health and Food Safety
SPP	Small Producers' Symbol
SRL	Sociedad de Responsabilidad Limitada (limited liability company, LLC)
UNCTAD	United Nations Conference on Trade and Development
US	United States of America
USD	US Dollar
USDA	United States Department of Agriculture
VAT	Value Added Tax
WFTO	World Fair Trade Organization
WHO	World Health Organization

Units of Measure

Weight

1 quintal	46.0093 kilogram
1 ton	21.74 quintal
	1,000 kilogram
1 container	20 tons

Currency *(September 2016)*

1 EUR	BOB 7.74
	USD 1.12
1 USD	BOB 6.94
	EUR 0.90

1. Introduction

1.1 Problem Statement

Quinoa (*Chenopodium quinoa Willd.*) is a pseudocereal originated from the Andes of South America; Bolivia, Ecuador and Peru constitute the main producing countries. In Bolivia, quinoa is cultivated principally in the Southern Altiplano which comprises the departments of Oruro and Potosí. Due to the fact that this region is located at an altitude of 3,500 to 4,000 m.a.s.l., it is exposed to extreme climatic and topographic conditions. Compared to other agricultural crops, such as beans, potatoes, rice and wheat, quinoa possess a high capacity to adapt to different climate and soil factors owing to its efficient use of water. Due to this characteristic, the cultivation of quinoa is deeply rooted within the region's economic and cultural history.

According to the extraordinary nutritional properties, many consumers in foreign markets who follow the recent trend for healthy and nutritious food developed a strong interest for this Andean grain. Parallel to this, the International Year of Quinoa, which was announced by the United Nations in 2013, lead to a growing worldwide demand. Hence, prices increased, exports boomed and production areas were extended. However, even though quinoa trade generated more revenues, farmers profited only very little from the rising demand. In order to address this problem, fair trade appeared as commercial alternative ensuring higher returns for quinoa growing families than conventional trade.

Based on these considerations, this paper analyzes the value chain of Bolivian quinoa as an organic fair trade product in order to determine in how far and in which ways the introduction of the fair trade system to quinoa cultivation and trade provided benefits for farmers, and to assess to what extent an advantage has been gained.

1.2 Justification

Previous research[1] about quinoa was limited to the production sector (genetic varieties, nutritional properties, cultivation methods, sustainable agriculture, etc.), to commercialization, or it focused on certification systems in general, rather than on the impact of fair trade on farmers in particular.

This illustrates the need to examine the value chain of organic and fair trade certified quinoa from Bolivia in order to determine market trends, identify actors and analyze the distribution of profits and trading conditions in order to evaluate the socio-economic impact of fair trade on quinoa-growing producers.

During the last decade, the trend for healthy food products from organic agriculture, preferably originating from fair trade, emerged, and it did so especially in industrialized countries. The Fairtrade approach seeks to reduce the imbalance of power in global supply chains which are characterized by extreme competition and price pressure, where smallholders are often excluded from the benefits of international trade. Bolivia, which has commercial relations with several major Fairtrade companies since the 1990s, has been chosen as an example of a quinoa producing country. The concept of Fairtrade is currently perceived as a viable commercial alternative for Bolivian quinoa farmers to secure their livelihood in times characterized by low prices owing to an oversupply on the world market.

1.3 Research Questions

In order to evaluate the advantages farmers gain from the introduction of the fair trade system, this paper will focus on the following research questions:

- What are the recent tendencies for quinoa on national and international markets?
- Who are the actors and stakeholders involved in the supply chain of Bolivian quinoa?
- Which factors determine the retail price?

[1] See, for example, Gabriel, 2013; Medrano Echalar, 2010; Schneider, 2014.

- How are profits distributed along the value chain?
- Which share do producers receive from the retail price of fair trade certified quinoa?
- What is the socio-economic impact of fair trade on farmers' conditions?
- Which role do associations assume in the context of fair trade?

1.4 Objectives

General Objective

Analyze the value chain for Bolivian quinoa as an organic fair trade product.

Specific Objectives

- Determine the current market trend of Bolivian quinoa.
- Identify the stakeholders involved in the supply chain of Bolivian quinoa and examine the factors which establish the retail price.
- Analyze the trading conditions and impacts of organic fair trade compared to conventional trade of Bolivian quinoa.

2. Background and Theoretical Framework

2.1 Fair Trade

The term “fair trade“ designates the consumer movement, in which consumers in developed countries are willing to pay a fair price, through higher prices for products from Third World nations which have been produced under certain conditions (Kröning Mogensen, 2013). *Fair trade is trading partnership, based on dialogue, transparency and respect that seeks greater equity in international trade. It contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers – especially in the South. Fair trade organizations, backed by consumers, are engaged actively in supporting producers, awareness rising and in campaigning for changes in the rules and practice of conventional international trade* (WFTO, 2014).

There are different spellings for fair trade, combined in one word or separated in two words, either with capital or small letters. Scientific literature consulted for this research paper has been obtained from different information sources related to fair trade. However, the major part of this information originates from Fairtrade International, the leading organization in the field of commercialization of fair trade quinoa. In the following paper, the term “Fairtrade“ will be used with reference to Fairtrade International, whereas “fair trade“ comprises the organized social movement and market-based approach (Kröning Mogensen, 2013).

The concept of fair trade intends to encourage sustainable development and economic growth by means of fair trading conditions. Compared to conventional trade structures, this commercial alternative pursues practices for the benefit of small-scale farmers and workers in developing countries, while providing direct access to globalized markets. As can be seen in *Figure 1*, the concept reflects the contextual interaction between good governance, accountability and continual improvement, as well as growth with integrity and a trade system oriented towards the idea of change (Fairtrade International, 2015c).

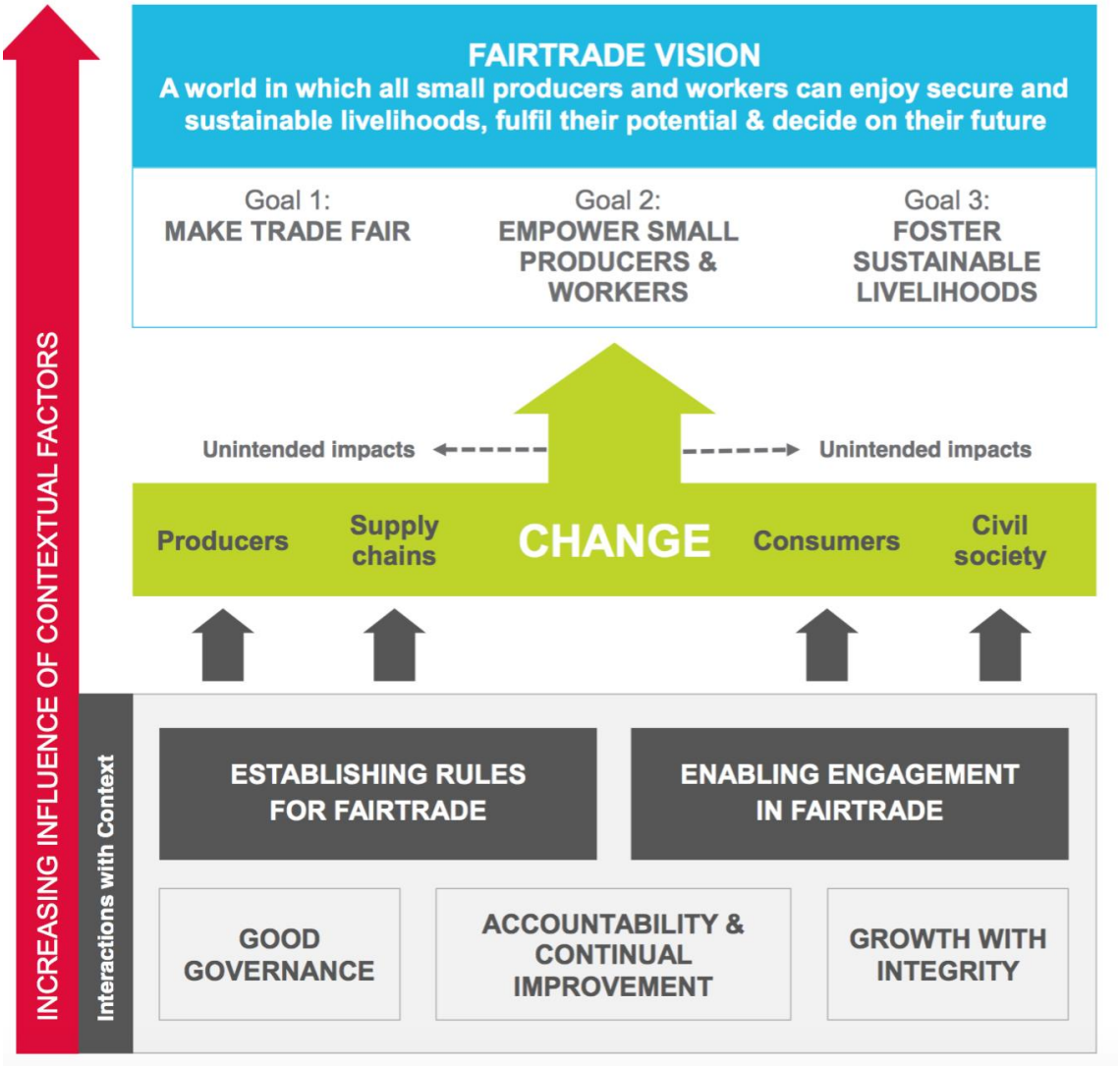


Figure 1: The Fairtrade concept (Fairtrade International, 2015c).

The theory of change was developed based on the assumption that conventional trading practices failed in relation to the provision of economic opportunities and sustainable livelihoods for small-scale farmers and workers from development countries. The reasons for this market failure and unfair trade conditions are to be found in various conditions at global, national and local levels. Therefore, fair trade seeks to contribute to the improvement of this trade deficit, pursuing the vision of *a world in which all small producers and workers can enjoy secure and sustainable livelihoods, fulfill their potencial and decide on their future*[2] (Fairtrade International, 2015b).

[2] Fairtrade's official vision uses the single term 'producer' to denote both small producers and workers in hired labour situations. However, employers and managers in hired labor situations are also commonly referred to as producers (Fairtrade International, 2015b).

To achieve the proposed vision, three long-term goals have been established which aim to make trade fair, empower small producers and workers and foster sustainable livelihoods. The first goal addresses the working conditions and rights of small producers and advocates support for fair trading practices through public and private policies in order to achieve sustainable trade, integrating economic, environmental and social dimensions. The second goal refers to the empowerment of farmers and workers with regard to the strengthening of their negotiating capacities, creation of democratic and independent producer organizations, improvement of their collective performance and assurance of economic stability.

The third goal has been implemented to encourage sustainable livelihoods in terms of adequate payment, improved working and living conditions and sustainability of ecosystems. The main goals of fair trade are closely interconnected and concern small producer and worker organizations, supply chain business practices, consumer behavior and civil society action. Based on this, internal and external communication is required to create a common understanding of the goals and their general approach (Fairtrade International, 2015b).

Figure 2: Ten principles of fair trade (WFTO, 2013).

Ten principles of fair trade have been established by the World Fair Trade Organization (WFTO), which all fair trade organizations in everyday business have to follow, especially due to the fact that the compliance with the obligations is constantly monitored (see *Figure 2*) (WFTO, 2013). According to the principles laid down, fair trade prohibits child labor, encourages gender equality, ensures fair wages, promotes environmental conservation and contributes to economic growth and poverty eradication in developing countries (Fairtrade International, 2011).

2.1.1 Historical Background and Institutional Framework

In 1946, the global fair trade movement originated in the import of needleworks from poor communities in Puerto Rico to the United States and was based on the idea of combating poverty through a market-oriented approach. The first Fair Trade Organization (previously named Alternative Trade Organization) was founded in 1964. A few years later, Fair Trade Original was established in the Netherlands being the first importing organization (WFTO, 2015). During the second United Nations Conference on Trade and Development (UNCTAD) in New Delhi in 1968, the slogan of “trade not aid“ has been announced, promoting the concept of equitable trade relations with developing countries. In 1969, the first Third World Shop has been inaugurated in the Netherlands as not only a point of sale, but also to increase public awareness and launch campaigns for global justice (Fair Trade Resource Network, 2016).

In 1988, under the label of “Max Havelaar“, the first fair trade certification system was created in the Netherlands aiming at the expansion of the sales market for fair trade products in compliance with ethical principles (Fairtrade International, 2016c). Since the late 1980s and the beginning of the 1990s, the above-mentioned concept has spread through the European and North American markets and gave rise to the emergence of similar organizations (Fairtrade International, 2015a). As a result of this, both northern and southern trading organizations established the WFTO as a global network for fair trade organizations (WFTO, 2015). In 1997, Fairtrade International was founded in Bonn, Germany, with the aim of consolidating the national fair trade organizations under a single roof and set up equal standards and certifications with global recognition.

Since 2004, Fairtrade International is divided into two different segments: One segment comprises the Fairtrade Labelling Organizations International (FLO) which establishes the standards of Fairtrade and grants support to producer associations Fairtrade International, 2015a). The other segment consists in FLO-CERT, representing an independent certification and verification authority that validates the production process and audits traders according to FLO. Products which comply with the standards can be distributed under the label of Fairtrade (WFTO, 2015).

In 2004, producers built up regional and national fair trade associations in Africa, Asia and Latin America (Fair Trade Resource Network, 2016). Three years later, producers were recognized as full members within the governance framework of Fairtrade International and, since 2012, they receive 50 per cent of the vote in the General Assembly, which is considered as the supreme decision-making body (Fairtrade International, 2016c).

In 2010, the Fair Trade Advocacy Office (FTAO) was founded, consisting of Fairtrade International, the WFTO and the European Fair Trade Association (EFTA). FTAO constitutes a political advocacy group, developed by and for the fair trade movement, whose work is oriented towards EU policies. Considering that, the European Union represents the largest market for fair trade products and assumes a leading role in the formulation of global policies related to international trade, the work of FTAO is crucial for the international development and worldwide spreading of fair trade (FTAO, 2013).

Fair trade has thus become a growing global movement which has earned a worldwide recognition. The products are distributed to customers in numerous world-shops or Fairtrade shops, supermarkets and many other points of sale in the US American and European market (WFTO, 2015). Between 2012 and 2013, Fairtrade products generated a worldwide sales volume of EUR 5.5 billion sales, to which coffee contributed 55 per cent, bananas 15 per cent, cocoa ten per cent, cane sugar seven per cent and flowers five per cent. Nowadays, half of all Fairtrade producers are certified as being organic (Fairtrade International, 2014).

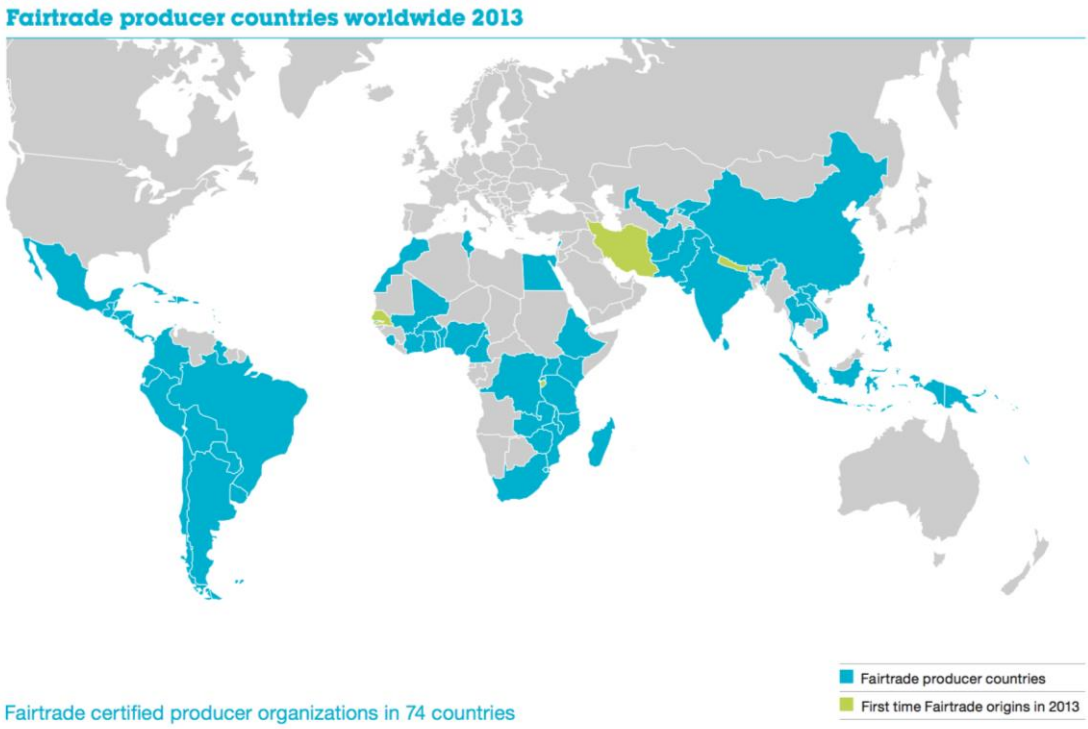


Figure 3: Fairtrade producer countries worldwide 2013 (Fairtrade International, 2014).

Figure 3 shows that there are 1,210 Fairtrade certified producer organizations in 74 countries. Worldwide, more than 1.5 million people work for Fairtrade International as farmers or workers on certified plantations, of which almost 60 per cent are situated in Africa and 22 per cent in Latin America and the Caribbean.

There is a considerable variation in the size of Fairtrade producer organizations. In practice, it is possible that the smallest organization is composed of only three members, whereas the largest unit comprises over 80,000. On average, around half of the organizations have a workforce of less than 300. Currently, one quarter of all famers and workers employed in the producer organizations consists of women. Concerning the production of quinoa, women represent 33 per cent of all farmers.

From 2012 to 2013, the worldwide sales volume of Fairtrade quinoa achieved EUR 6.8 million with an amount of 2,400 tons. In 2013, the total area of cultivated quinoa certified as fair trade covered 20,000 hectare and producer organizations achieved EUR 228,300 due to the Fairtrade premium. At the same time, Bolivia registered 31 Fairtrade small producer organizations in the agricultural sector (Fairtrade International, 2014).

2.1.2 The Fairtrade System

According to the Fairtrade product classification, quinoa falls into the category of cereals, together with fonio and rice (Fairtrade International, 2013). The Fairtrade standard for cereals must be complied by both, small producer organizations and traders, as the codes of fair trade comprise the entire production process of cereal marketing (Langen, 2013). The geographical scope for processed quinoa (rinsed from saponin), produced either organically or conventionally, encompasses only the region of South America. In 2012, the Fairtrade minimum price for organic quinoa was fixed at USD 2,600 per ton and the Fairtrade premium was at USD 260 (see *Table 1*).

Table 1: Fairtrade prices for quinoa (in USD/t) (based on Fairtrade International, 2016b).

	Prices in USD/t
Geographic scope	South America
Product form	Processed quinoa
Price level	FOB
Minimum Fairtrade price for organic quinoa	2,600
Minimum Fairtrade price for conventional quinoa	2,250
Fair trade premium	260

In contrast, the Fairtrade minimum price for conventional quinoa was determined at USD 2,250 per ton, whereas the Fairtrade premium is the same as mentioned above. The Fairtrade minimum price does not apply to secondary products and their derivatives as these are established by negotiations between sellers and next buyers. Nevertheless, a default Fairtrade premium – equivalent to 15 per cent of the negotiated market price – has to be charged additionally.

The Fairtrade minimum price indicates *the minimum price that must be paid by buyers to producers for a product to become certified against the Fairtrade Standard*. It can be understood as a rock-bottom price to cover at least the average production costs, ensuring market access for producers and providing a safety net which prevents the sale of products at excessively low prices (if the market price is less than the Fairtrade minimum price) (Fairtrade International, 2016b).

If the market price exceeds the Fairtrade minimum price, producers should be paid according to the current market price. Furthermore, price differences can be identified between conventional and organically produced quinoa which is reflected in a higher Fairtrade minimum price for organic grains than for conventional ones.

The Fairtrade premium represents the amount which the producer receives in addition to the sales price. In the case of quinoa, 30 per cent of it have to be invested in environmental sustainability, whereas the remaining 70 per cent are destined to the development of the organization and its community. Any decision about its use requires a democratic approval. According to the determination of the definitive premium amount, no differentiation between conventional and organic production is made, since the established premium is equally valid for both (Fairtrade International, 2016b).

The costs for Fairtrade certification vary depending on the type of organization (small producer organization, trader, contract production or hired labor) and other factors, such as organizational size, number of certified products, scope of sales activities, etc. Moreover, a distinction is made between initial and annual certification fees (Fairtrade International, 2015c).

2.1.3 The Fairtrade Supply Chain

According to the product and its countries of origin and destination, the range of actors and functions within a fair trade supply chain can vary significantly. *Figure 4* provides a general overview of the key actors involved. Individual small farmers or farmers' cooperatives represent the first link in the chain, performing diverse activities related to the cultivation of food and to the elaboration of goods which require skilled craftsmanship (Fairtrade Ibérica, 2015).

Figure 4: Actors in the supply chain (based on Forum Fairer Handel, 2013).

Depending on the degree of processing, different operations of industrial processing of raw material are required to manufacture a product. Exporters commercialize the fairly traded goods on foreign markets, while providing storage, transportation and insurance. Fair trade buyers import certified products, constituting a broker between the producers in developing countries and consumers in industrialized nations (ALADI & FAO, 2014).

Manufacturers assume various responsibilities and functions, ranging from further product processing, packaging and repackaging (retail packages in small quantities) to labelling in accordance with the EU packaging guidelines. Brand holders own the proprietary rights of their products, are responsible for identifying points of sale in order to offer their product portfolio in the country of destination (Forum Fairer Handel, 2013).

Due to the provision of global coordination, international organizations assume the role of an umbrella association. In order to reduce the gap between producers and consumers, fair trade networks commonly imply less intermediaries than the conventional supply chain (Fairtrade Ibérica, 2015). According to the second principle of transparency and accountability, fair trade provides a transparent information chain, while profits are distributed equitably among the actors in order to generate an honest and reliable business relationship (Ceccon Rocha & Ceccon, 2010).

Figure 5: The Fairtrade supply chain (Fairtrade South Africa, 2016).

Figure 5 represents an extension of *Figure 4* which comprises actors in the Fairtrade supply chain. In contrast, *Figure 5* also incorporates responsibilities which are assumed by the actors and components of the certification process, such as fair trade standards, payment of the minimum price and the premium, product traceability and licensing, clarifying where these elements apply in each link of the chain (Fairtrade South Africa, 2016). According to this approach, producers have to meet the Fairtrade standard for small producer organizations, whereas traders have to accomplish the Fairtrade trader standard (Fairtrade International, 2015c).

Farmers receive their payment of the Fairtrade minimum price and premium from the buyer who is either the exporter or the importer (Fairtrade South Africa, 2016). In this context, traceability refers to the ability to trace the origin of a product and its process. Based on this principle, traders are obliged to provide physical product differentiation between Fairtrade certified and non-certified products. Detailed documents enable the identification of the labeled goods along the entire supply chain. Finally, the brand owner holds the license for the usage of the Fairtrade label on his products (Fairtrade International, 2015c).

2.2 Organic Agriculture

According to the International Federation of Organic Agriculture Movements (IFOAM), a global umbrella organization for organic farming, *organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved*. This definition reflects the four interrelated principles of care, health, ecology and fairness on which ethical farming practices in the organic movement are based (IFOAM, n.d.).

2.2.1 Organic Certification

Organically certified products are produced, processed, stored, transported and traded in accordance with certain technical regulations in order to obtain the organic label through a certification body. The label indicates that a product meets specific organic standards and relies on the evaluation of the productive operations carried out by an approved certification body (accreditation). Due to the labelling, consumers receive information about the certification authority and the respective standards.

On the international level, the following voluntary standards are to be found: The Codex Alimentarius Commission, which has been established by FAO in collaboration with WHO, provides an international guideline for the production, processing, labeling and marketing of organically grown food products. In the private sector, this corresponds to the International Basic Standards for Organic Production and Processing which have been formulated by IFOAM. On the national level, the above-mentioned standards can be applied to provide orientation for governments in order to create mandatory standards within national organic agriculture programs (FAO, 2014).

2.2.2 Organic Food Trend

Consumers are becoming more health-conscious, with rising responsibility for balanced nutrition, leading to a growing demand for healthy food products. Many consumers, particularly from North America and Europe, are increasingly attracted by natural, organic, sustainable and locally or regionally produced food commodities, being willing to pay more for these products due to their characteristics. Nowadays, society is facing global challenges like growing population density, overexploitation of natural resources and environmental degradation. This leads to an increased consumer awareness of the impact of their individual lifestyle on the environment. At the same time, it encourages consumers to actively get involved through conscious purchasing decisions which are made based on information available (IICA, 2015a).

Worldwide, more than 43 million hectares of land are occupied by organic farming owing to a growing demand for organic products. *Figure 6* indicates that, in 2013, the global sales of organic products achieved USD 72 billion, whereas the United States represented the greatest producer of organic food with a sales volume of almost USD 27 billion (Statista, 2015).

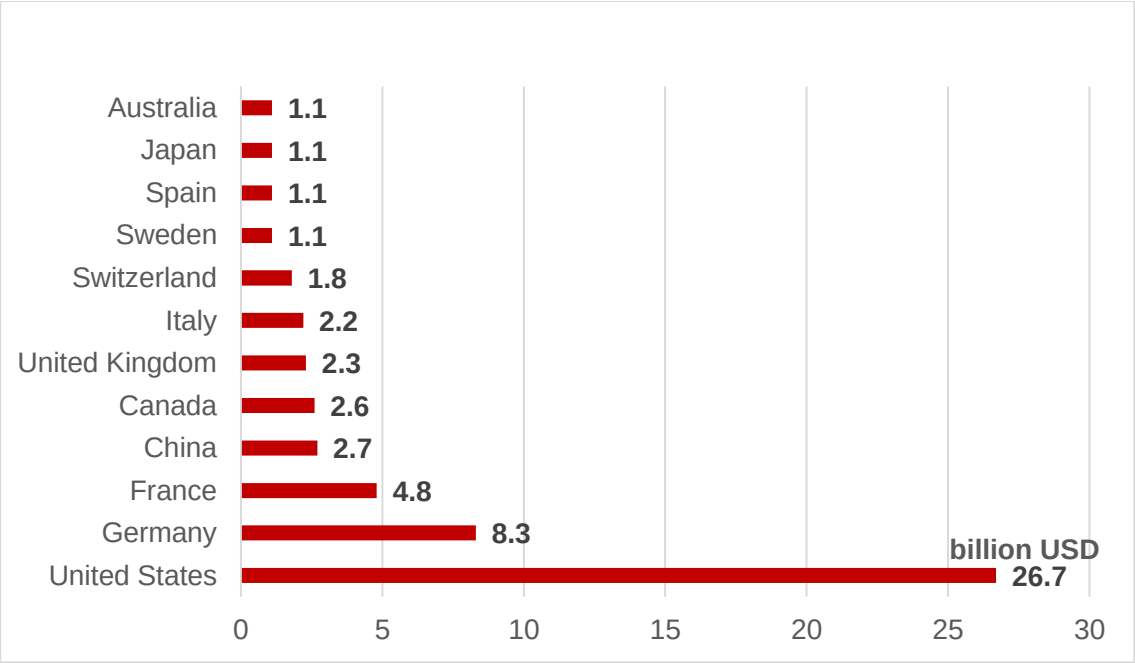


Figure 6: Organic retail sales value by country in billion USD (2013) (based on Statista, 2015).

In this context, Germany occupied the second position with retails of USD 8.3 billion and France reached the third position with USD 4.8 billion. In comparison with the US, considering the EU as a whole, the European countries achieved organic retail sales of USD 24.56 billion (Statista, 2015).

Organic certified products are positioned in niche markets, addressing a specific target market and developing marketing strategies according to the respective segment. In this context, Bolivian quinoa as an organic product is positioned in a small organic niche market with growth potential (FAO, 2011). More than 20 companies (including the producer associations ANAPQUI and CECAOT) sell organic quinoa on the international market (MDRyT & CONACOPROQ, 2009).

Many consumers of organic quinoa appreciate the value of its extraordinary nutritional properties and its natural origin. Nowadays, organic certification constitutes an important prerequisite to access international markets, which established different regulations regarding organic production following the principles of sustainable management of natural resources, non-use of agrochemicals and respect for the environment. Nevertheless, certified organic farming does not constitute a formal obligation for export, but facilitates access to markets due to product differentiation (IICA, 2015a).

2.3 Quinoa Cultivation

Quinoa *(Chenopodium quinoa Willd.)* is a pseudocereal originating in the Andean region of South America where it is grown at altitudes ranging from sea level to the highlands (3,500-4,000 m.a.s.l.) in arid and semiarid areas (FAO & UNALM, 2016). Quinoa possesses the ability to adapt to different kinds of soil and climatic conditions because of its efficient use of water. It is resistant to temperatures between -7 and about 30°C, can grow in areas with an annual precipitation from 0-1,000 mm per square meter, in soils of different textures possessing a pH value varying from 4.5 to 9.0 (CONDESAN, 2013; FAO & UNALM, 2016). The height of the plant ranges between 30 and 300 cm, whereas the size of the seed is small (IBCE, 2013).

A differentiation is made between traditional, conventional and organic quinoa production systems. Traditional cultivation practices are based on indigenous knowledge and ancestral techniques are applied. Conventional cultivation implies an intensification of farming through the use of machinery, fertilizers, fungicides, herbicides and pesticides. In contrast, in organic production the focus is laid on the rational and sustainable management of natural resources, including practices for the preservation of soil fertility without the application of chemical products, such as pesticides and/or fertilizers.

According to the Bolivian Ministry of Rural Development and Land (MDRyT), semi-mecanized production represents the most used system for quinoa cultivation (MDRyT & CONACOPROQ, 2009). Due to the topographical conditions in the Southern highlands with their many slopes, only limited mechanized agricultural operations can be performed, thus manual labor assumes a greater significance (IICA, 2015a).

Depending on the cultivation technology and the interaction of factors such as climate and soil, the productivity fluctuates between one and seven tons per hectare (FAO & UNALM, 2016). There is an extensive genetic variation of quinoa with more than 3,000 ecotypes, although only few are cultivated (CBI, 2015). Royal Quinoa differs from many other varities in its larger grain size and a greater number of amino acids in a more balanced proportion (MDRyT & CONACOPROQ, 2009).

2.3.1 Historical Background

Quinoa is one of the basic foods domesticated in the Andes of South America more than 7,000 years ago. During the Incan Empire (1438-1533), quinoa was widely spread in Bolivia, Chile, Ecuador, Peru and the North West of Argentina. At this time, quinoa represented a food of great importance for cultural traditions and religious ceremonies of the Inca culture. Due to this fact, the Spanish conquerors tried to eradicate the crop and thereby suppress the traditional religious rites of the Incas, leading to marginalisation and replacement of quinoa by other cereals like wheat and barley (FAO, 2011).

Nevertheless, peasant communities which inhabited the area enabled the survival of the Andean crops. As a result, quinoa as well as corn and potatoes, constituted the main staple food in the average Andean diet after the Spanish conquest (FAO, 2011).

In modern times, the cultivation of quinoa declined due to migration from rural areas to urban centers, encouraging the cultivation of barley, beans and oatmeal instead of quinoa, which generated a growing dependence on food imports and the fall in the production of quinoa (39,000 hectares in 1975). However, in the mid-1970s, the extraordinary nutritional benefits of quinoa were discovered which again lead to an increase of its popularity (Kole, 2007).

The United Nations recognized the value of quinoa for the reduction of hunger and malnutrition in the world, so the increase in demand and production contributed to the improvement of the economic prospects of small farmers. The year 2013 was declared *International Year of Quinoa* by the United Nations (UN, 2016) in recognition of *the Andean indigenous peoples who have maintained, controlled, protected and preserved quinoa as food for present and future generations through their traditional knowledge and practices living in harmony with nature*. Furthermore, this appreciation highlighted the nutritional qualities of quinoa and its adaptability to different agro-ecological conditions, as an *ally in the fight against hunger and food insecurity* (FAO, 2013).

2.3.2 Uses and Nutritional Properties

Until relatively recent times, quinoa has been considered a traditional staple food for small-scale Andean farmers with a high cultural value. The growing interest in quinoa on international markets and the recent expansion of its production generating a diversification of its uses, which can be classified as follows: The main form of use is the grain in various forms, roasted or processed into flour and incorporated into mixtures and food preparations as value-added industrial innovations (ALADI & FAO, 2014).

In order to be consumable, quinoa needs to be processed through heat and washing to remove bitter saponins and improve its nutritonal value (CBI, 2015). There is a wide range of products made from quinoa, such as energy bars, flakes, flour, pasta, puffed grain, etc. (see *Appendix A* for further details) (FAO, 2011).

According to FAO, quinoa has a high nutritional value due to being rich in proteins and complex carbohydrates, while providing important minerals and vitamins, elements which are essential for the vitality of the human body (see comparison with other staple foods in *Table 2*) (ALADI & FAO, 2014). The quinoa seed is composed of 57 per cent starch, 14 per cent protein, 13 per cent water and six per cent fibre (PIEB, 2013). Quinoa is considered as the only crop that provides a relatively balanced composition of all essential amino acids and minerals, thus achieving a significantly higher level than conventional cereals. In addition, the Andean grain is gluten-free and does not contain cholesterol (FAO, 2011; ALADI & FAO, 2014).

Depending on the variety, the protein content of quinoa ranges from 14 to 22 per cent (FAO, 2011). The quality of protein varies according to its origin (animal or vegetable), which is reflected in the value of amino acid composition, digestibility and texture. In this context, high quality proteins are easily digestible and contain the essential amino acids in quantities that correspond to requirements in human nutrition.

Considering that the protein efficiency ratio[3] of quinoa is similar to that of milk protein, quinoa can be used as an excellent substitute for animal protein (PIEB, 2013) like eggs, meat, milk and other dairy products ensuring the necessary calcium supply, particularly suitable for the treatment and prevention of malnutrition among malnourished populations, pregnant women, nursing mothers and children (ALADI & FAO, 2014).

[3] The protein efficiency ratio (PER) illustrates the relation between the amount of consumed protein (input) and the gained weight (output) and sets up an indicator for dietary protein quality (FAO, 1990a).

Table 2: Nutritional composition of quinoa compared with staple foods (per 100 gram in dry weight) (based on USDA, 2014).

	Energy	**Protein**	**Fat**	**Carbohydrate**	**Calcium**	**Iron**	**Magnesium**	**Phosphorus**	**Potassium**
Measurement	*kcal/100g*	*g/100g*	*g/100g*	*g/100g*	*mg/100g*	*mg/100g*	*mg/100g*	*mg/100g*	*mg/100g*
Meat (Beef)	332	14.3	30.0	0.0	24	1.6	14	132	218
Butter	717	0.9	81.1	0.1	24	0.0	2	24	24
Egg	143	12.6	9.9	0.8	53	1.8	12	191	134
Milk (3.7%)	64	3.3	3.7	4.7	119	0.1	13	93	151
Gouda Cheese	356	24,9	27.4	2.2	700	0.2	29	546	121
Wheat	339	13.7	1.9	72.6	34	3.9	138	346	405
Amaranth	371	13.6	7.0	65.7	159	7.6	248	557	508
Quinoa	368	14.1	6.1	64.2	47	4.6	197	457	563
Blue Corn	364	8.7	5.1	76.4	5	1.7	110	263	381
Rice	366	5.9	1.4	80.1	10	0.4	35	98	76
Couscous	376	12.8	0.6	77.4	24	1.1	44	170	166

In comparison with other grains such as corn, rice and wheat, quinoa shows a higher level of fat and protein. The carbohydrates of quinoa seeds contain between 58 and 68 per cent starch and five per cent correspond to sugar, making it an ideal source of energy due to its high total dietary fibre content. Furthermore, the Andean grain records a high value of oil, the major part represents omega-6 (alpha-linoleic acid), omega-9 and omega-3.

Quinoa is a good source of minerals, as it contains nine times more calcium, which represents an essential element for bone formation and nervous system, than corn and almost five times more than rice, thus its supply prevents decalcification and osteoporosis. It incorporates almost twelve times more iron than rice, with the vital function of strengthening the immune system. The so called “mother of all grains” demonstrates much higher amounts of magnesium than other crops, being considered an activator of many enzymes. Quinoa includes Vitamin E to 2.4mg/100g, which maintains the structure of cell membranes and protects the nerves from oxidation (FAO, 2011).

2.3.3 Global Quinoa Production

Quinoa is known worldwide as “golden grain of the Andes” because of its high nutritional value and its Andean orign. The world map in *Figure 7* (see following page) illustrates that Bolivia, Ecuador and Peru constitute the main countries of production. During the last decades, the cultivation of quinoa has been expanded to over other 70 countries, among them Denmark, England, France, Italy, the Netherlands and Sweden. Moreover, quinoa has been successfully established in Kenya, India and the United States (FAO, 2016).

As a response to global challenges such as climate change, food insecurity and hunger, quinoa represents an interesting alternative because of its *extraordinary adaptive capacity to extreme ecological conditions* (FAO, 2011). In 2014, more than two thousand tons of quinoa have been produced in Europe, with France as the main European producer. Through major improvement projects new varieties and modern production techniques are being developed worldwide; nevertheless, there are still striking differences in quality, size and yields (CBI, 2015)

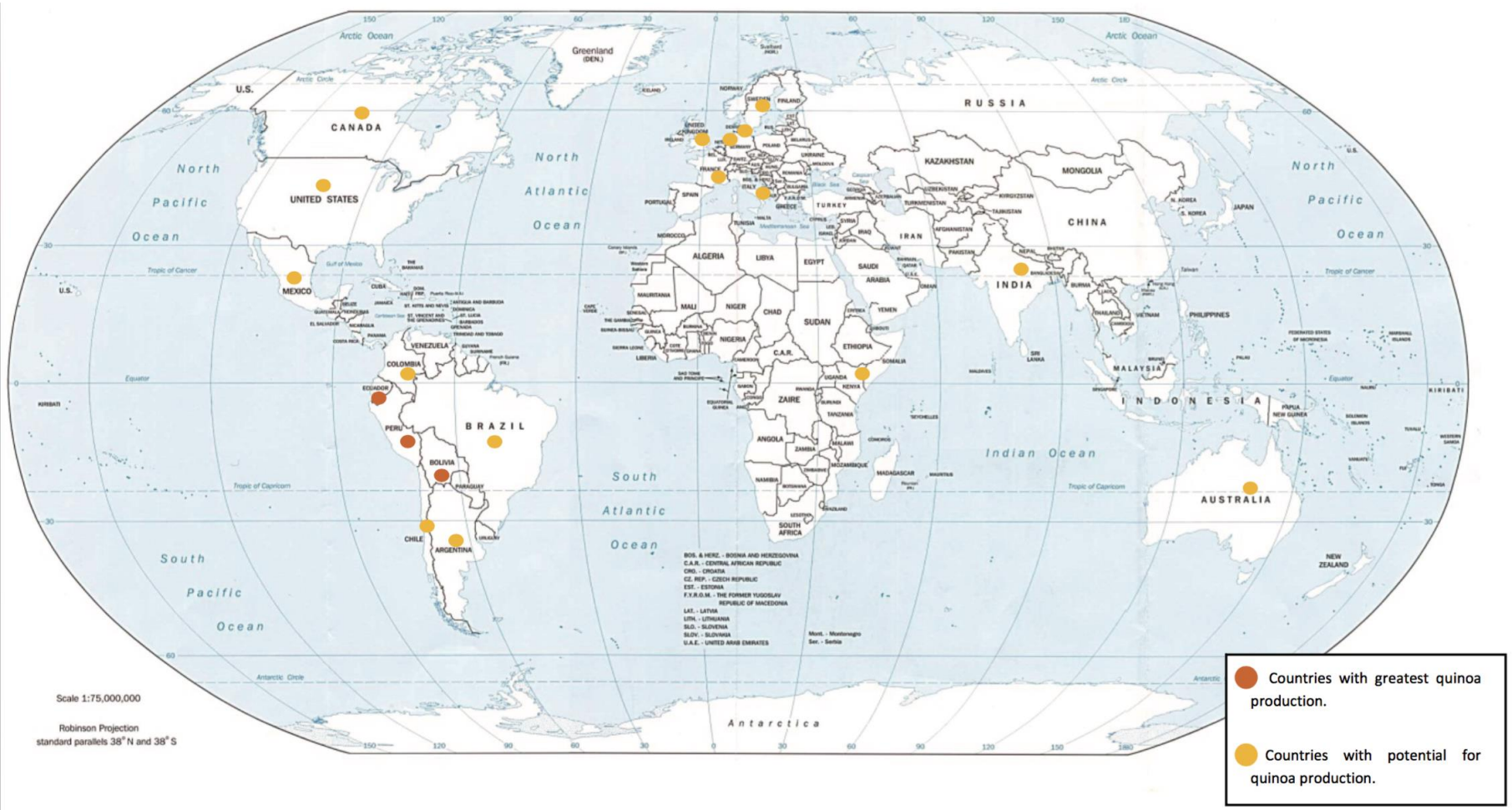


Figure 7: Geographic distribution of world quinoa production (FAO, 2011).

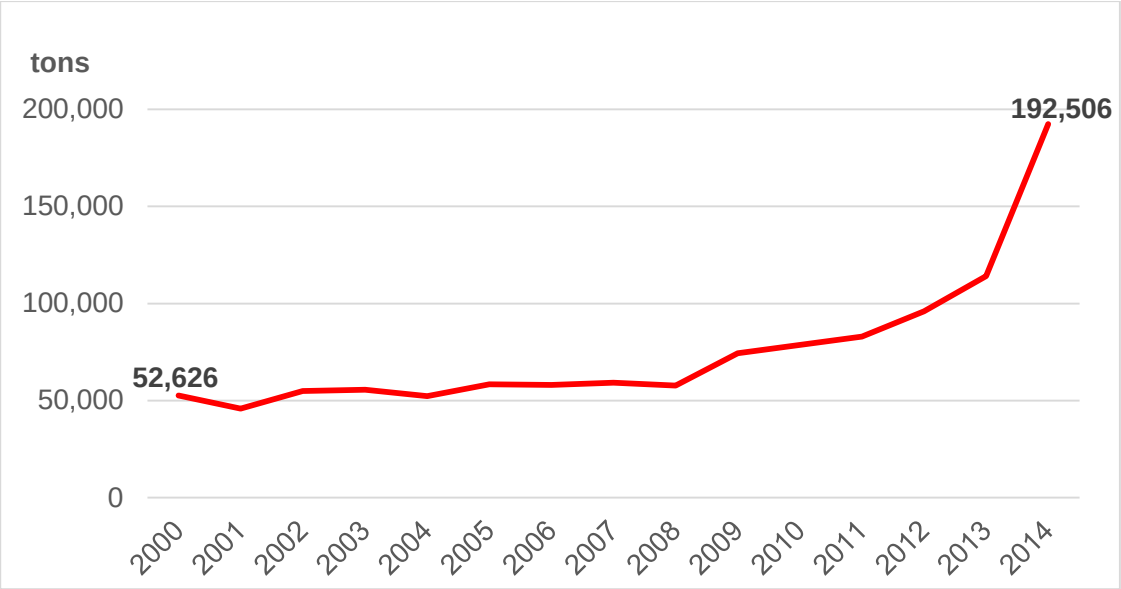


Figure 8: Quinoa production in South America in tons per year (2000-2014) (based on FAOSTAT, 2015).

As can be seen in *Figure 8*, in the years between 2000 and 2014 the quinoa production in South America increased from 52,626 tons to 192,506 tons, which constitues a rise of almost 366 per cent. In 2014, Peru provided 59.40 per cent of the South American quinoa production, while Bolivia and Ecuador achieved 40.18 per and 0.42 per cent, respectively (FAOSTAT, 2015). Since 1998 Peru is recognized as the world's leading quinoa producer; Ecuador, in contrast, only assumes a marginal role in quinoa world trade (IICA, 2015b).

2.3.4 Main Export Destinations, Value and Volume

Over the last years, a strong growth in global exports of quinoa it has been identified, resulting in quadrupled sales in the period from 1992 to 2002, whereas sales multiplied by forty between 2002 and 2012, generating an annual average increase of 23 per cent. At the same time, the European Union has declined in significance as target market for quinoa exports from South America as a result of launching domestic production of quinoa within many European countries and a general rise in volumes of quinoa traded on the world market (Salomón et al., 2015).

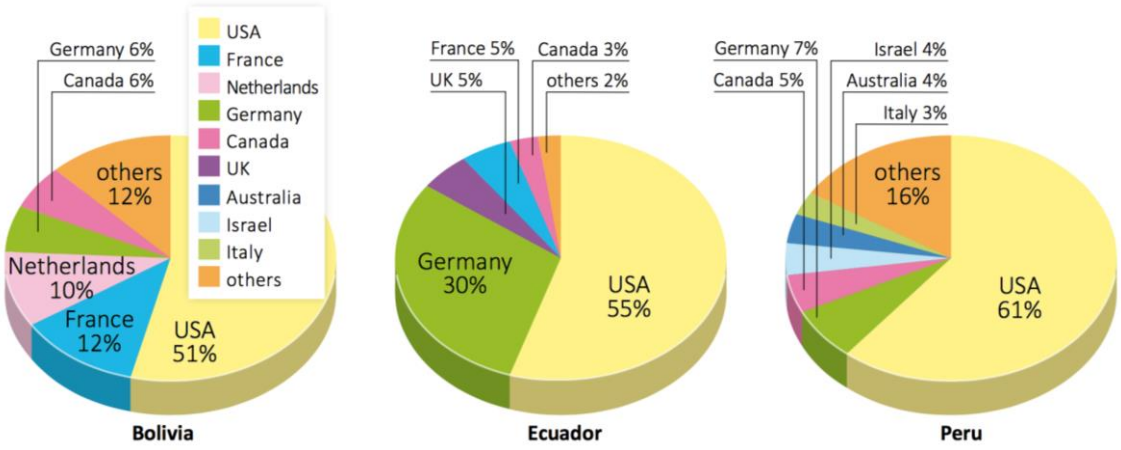


Figure 9: Destination of quinoa exports for each country (2008-2012) (Salomón et al., 2015).

Figure 9 portrays that, between 2008 and 2012, quinoa exports from the three major producers (Bolivia, Ecuador and Peru) were mainly destined for the US American market and to a lesser extent for Europe, Canada and other countries (Salomón et al., 2015). In 2014, more than 83 per cent of quinoa imports to the European Union were distributed between the top five European importers (France, Germany, Italy, the Netherlands, and the United Kingdom), with France assuming the role of the main importer holding a share of 25 per cent (CBI, 2015).

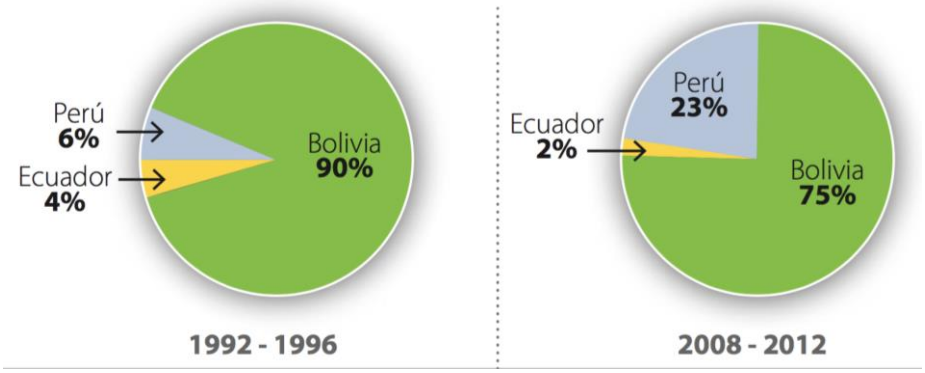


Figure 10: Orign of regional quinoa exports (ALADI & FAO, 2014).

Figure 10 shows that between 1992 and 1996, quinoa exports originated mainly from Bolivia, whereas in the period from 2008 to 2012 a significant rise in Peruvian share of quinoa exports can be observed, leading to a percentage reduction of the Bolivian contribution (ALADI & FAO, 2014).

In 2012, more than half of the total quinoa production was destined for exports, almost one quarter was sold on the domestic market and the remaining quarter represented a surplus production. The informal market, trading illegally with quinoa smuggled from Bolivia to Peru, was estimated to represent 28 per cent of the national production (IICA, 2015a).

In 2015, quinoa achieved the twelfth position on Bolivia's export list, after natural gas, gold and zinc, which corresponds to 1.23 per cent of the total amount. At this time, the quinoa export volume reached over 25,000 tons with a value of almost USD 108 million (IBCE, 2013). Around 60 per cent of the Bolivian quinoa exports have been destined for the US American market, which equals 13,853 tons with a value of almost USD 60 million.

In comparison, Peru supplied a volume of 16,790 tons to the US., worth more than USD 62 million and corresponding to 47 per cent of their total quinoa exports. Since November 2015, a significant increase in exports of Peruvian quinoa to the US has been identified, exceeding the Bolivian sales to this sales market by 3.7 per cent. Due to the fact that Peru achieves two harvests seasons per year, whereas Bolivia only performs one annual harvest, Peru offers quinoa to a more competitive price, in addition to having significantly lower production costs (La Razón, 2016).

2.3.5 Evolution of Export Prices

From the mid-seventies to the late nineties, the export price of Bolivian quinoa has doubled (see *Figure 11* on the following page). In the period between 2000 and 2007 quinoa prices stabilized at an average level of USD 1,200 per ton. From the middle of the year 2007 until 2009 export prices have steadily grown and more than doubled up to almost USD 3,000 per ton. This price level consolidated for more than four years (IICA, 2015a). The International Year of Quinoa launched by the United Nations in 2013, led to a rising international demand and to booming export prices of quinoa (Salomón et al., 2015). Between 2013 and January 2014, the FOB export price almost doubled, increasing from USD 4,338 up to USD 7,443 per ton, and being almost fourteen times higher than in the mid-seventies (IICA, 2015a).

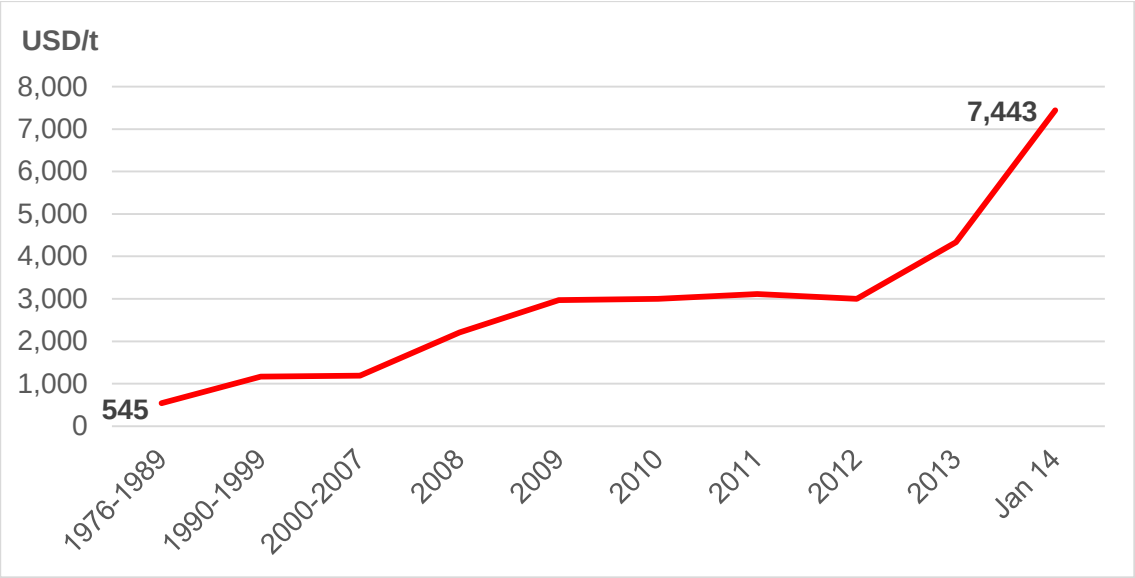


Figure 11: Evolution of export prices in USD/t (1976-Jan 2014) (based on IICA, 2015a).

Due to the strong demand of the US American and European markets, quinoa cultivation has been expanded, especially by Peruvian farmers, providing greater supply and offering products at lower prices (Salomón et al., 2015). Finally, the excess of global supply, resulted in a significant drop of quinoa export prices. This became apparent in February 2014, when prices started to fall by around 30 per cent in two months, until April 2014, and continued to decline both on the domestic and export markets, making the prediction of the long-term development of prices difficult (IICA, 2015a).

According to data from the Bolivian Institute of Foreign Trade (IBCE), the export price of conventional quinoa grain is significantly lower than organically certified quinoa, although the price difference between conventional and organic products varies continuously, both on the national and on the international market (IBCE, 2013). In this context, Royal Quinoa represents the most internationally demanded and at the same time the most expensive variety due its greater nutritional value and higher quality. Among 1,800 existing crop varieties, Royal Quinoa is exclusively cultivated in Bolivia, providing Bolivian farmers with a competitive advantage (FAO, 2011).

2.3.6 Importance of Quinoa Production in Bolivia

Quinoa production is fundamental to the economy of many rural communities in the Bolivian highlands. There are 70,000 quinoa producers in Bolivia, about 80 per cent consist of small-scale farmers. In the Southern Altiplano, 14,426 producing families from 351 communities are registered, making up one fifth of the total estimated quinoa farmers in Bolivia (IICA, 2015a). In this region quinoa cultivation is the main source of income (GIZ, 2013) due to the fact that quinoa represents one of the few crops which can be grown under these rough climatic conditions.

In 2012, the quinoa-growing areas exceeded 100,000 hectares (IICA, 2015a), in 2001, when the cultivation area of quinoa encompassed only 35,000 hectares (FAO, 2011). According to the National Institute of Statistics (INE) of Bolivia, quinoa production has more than quadrupled within 30 years, from 32,609 tons in 1983 to approximately 131,192 tons in 2013 (INE, 2014).

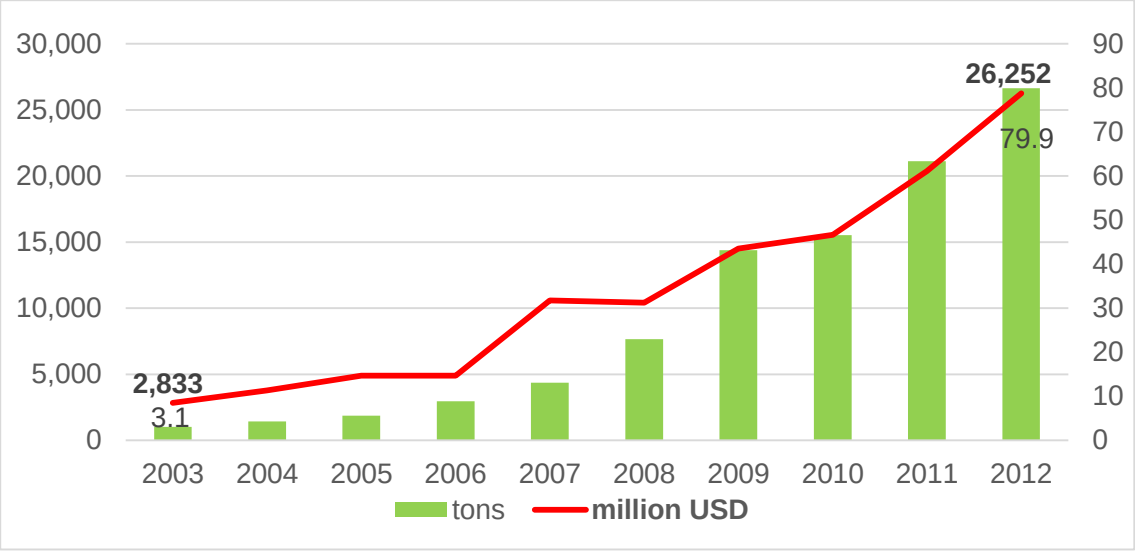


Figure 12: Bolivian quinoa exports in million USD per year (2003-2012) (based on Gabriel, 2013).

Figure 12 represents the development of quinoa exports from Bolivia between 2003 and 2012, considering both conventional and organic grain of all varieties (black, red and white), providing information on value (expressed in USD million) and volume (expressed in tons). Within nine years the worth of exports increased by 26 times, while the quantity was nine times higher compared with the year 2003. Thus, in 2012 a near tripling of export prices for quinoa was recorded – especially due to strong growth rates which have been observed since 2007.

The growing international demand for quinoa alleviated poverty for around 20,000 farming families (IICA, 2015a). According to GIZ, the higher income generated through the rising export volume improved the livelihood of many small-scale producers of quinoa in Bolivia (GIZ, 2013).

The total income of quinoa-growing families has increased significantly during the last decade from 3.17 to USD 106.27 million (*Figure 13*). Considering the period from 2011 to 2013, their income has more than doubled (from 46.31 to USD 106.27 million). However, it has to be considered that the quinoa boom not only lead to an income growth, but also to the rise in the total number of farmers (IICA, 2015a). In addition, the access of producers to credits was improved owing to the fact that they had more financial resources available and thus were classified with higher creditworthiness (IBCE, 2013).

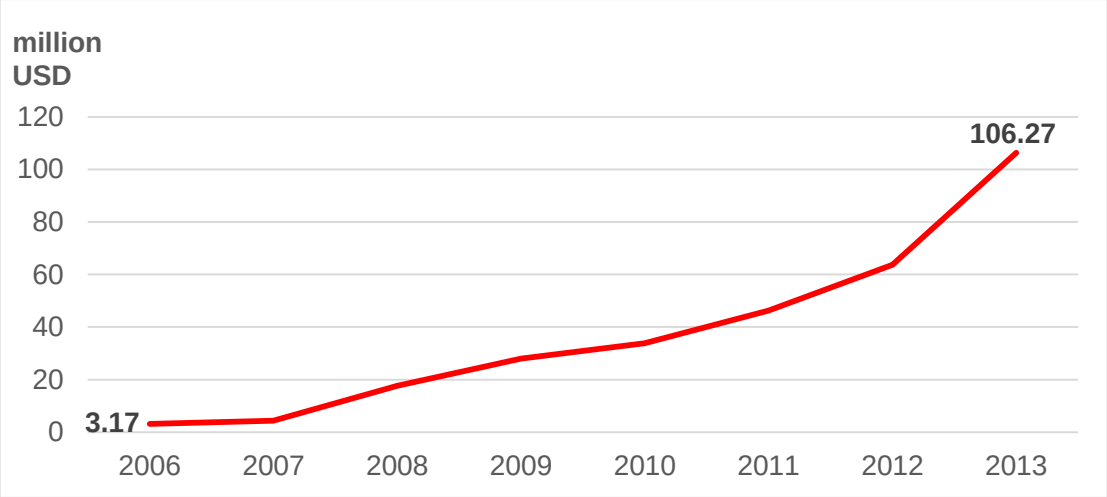


Figure 13: Income of Bolivian quinoa producers in million USD (2006-2013) (based on Gandarillas, Rojas, Bonifacio & Ojeda, 2015).

Quinoa production is fundamental for the life of many peasant communities in the Bolivian Altiplano in order to ensure food security at the household level. In the Northern highlands, quinoa is mainly produced for self-consumption, whereas in the Central and Southern highlands the production is destined for both sale and self-consumption (Montoya Choque, 2007).

In the past quinoa has been regarded as food of the poor, but due to the spread of knowledge about its preparation and particular nutritional properties, the national consumption has increased significantly. However, quinoa-growing families still represent the main consumers (IICA, 2015a). Based on the results of several studies, self-consumption declined significantly due to high prices for quinoa on international markets, which created a priority of export over self-consumption. Therefore, poor people could no longer afford this staple (GIZ, 2013).

Quinoa used to be consumed daily by farmers' households, whereas nowadays almost three quarters of the producing families only eat quinoa between two and four times a week (IBCE, 2013). This lead to a change in the dietary habits and other food products such as rice, pasta and tuna have been incorportated into the local diet. According to data provided by the INE, in 2008, the national per capita quinoa consumption reached 0.35 kilogram, whereas in 2012 it rose up to 1.11 kilogram. However, it is difficult to estimate the domestic consumption owing to unregulated quinoa exports to Peru and other countries which are not recorded in the official registers (IICA, 2015a).

2.4 Value Chain Model

In 1985, Michael E. Porter introduced the term "value chain", which is understood as an instrument to measure the competitiveness of a company depending on the performance of its activities. According to this approach, a competitive advantage can be gained by generating added value through a modification of business activities (Walsh, 2011).

Porter differentiates between "primary activities" (inbound logistics, operations, outbound logistics, marketing and sales, service) that are product-related and "support activities" (infrastructure, human resource management, technology development, procurement) which contribute to the main activities (see *Figure 14* on the following page). Despite this functional division, the activities are closely interconnected (Kaplinsky & Morris, 2002).

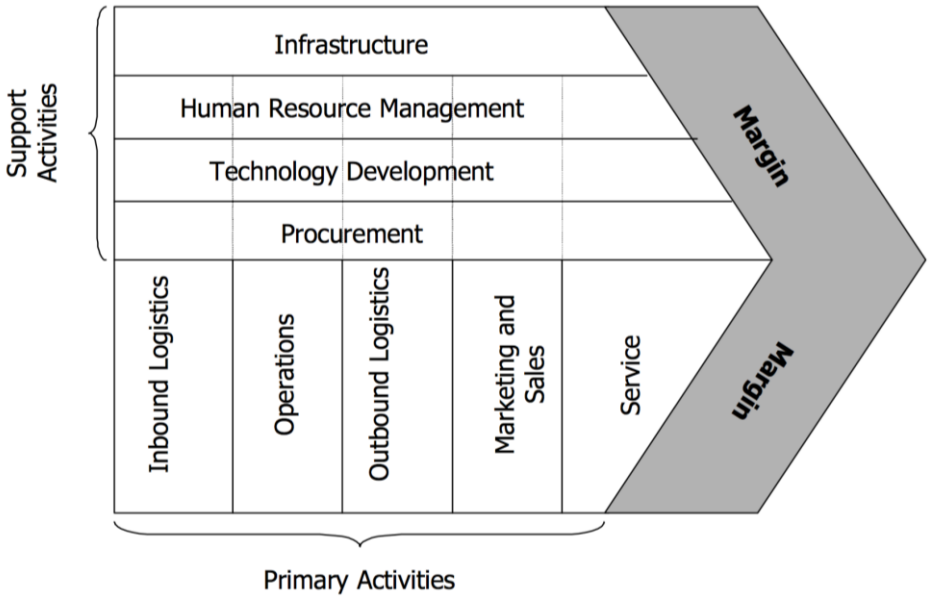


Figure 14: Basic model of Porter's value chain (Porter, 1985).

In this context, Porter underlines the vital importance of linking the activities among the value chain, owing to the fact that *linkages can lead to competitive advantage in two ways: optimization and coordination*. Parallel to this, he emphasizes that *the ability to coordinate linkages often reduces costs or enhances differentiation* in accordance with the approach of cost minimization and the differentiation strategy (Porter, 1985; Shapiro, 2006).

According to the value chain model, all operations which are related to the transformation process, from input to output, require the purchase and consumption of resources, such as financial and material resources, labor force, machinery, infrastructure and administrative services (Porter, 1985). The term "margin" indicates that the organization generates profits, while the profit margin of a company is expressed in the difference between turnover and costs per unit. In this context, an economic analysis of value chains adressess the performance-related efficiency from an economic point of view in order to calculate the added value comparing the production costs with obtained profits (GTZ, 2007).

The value system is composed of input suppliers, farmers, traders, processors, transporters, wholesalers, retailers and final consumers (Hellin & Meijer, 2006). Initially, the focus of the concept was set on the microscale, but then has been extended to a macroscale approach (Walsh, 2011). Nowadays, value chain

analyses are considered as a fundamental component in the strategic planning of businesses in order to represent the full life cycle of a product or service. In addition to the distribution of costs, margins and revenues, it also encompasses the distribution of economic power within the value chain (Hellin & Meijer, 2006).

The term “supply chain“ emerged in the 1990s as a result of globalization in the manufacturing industry, while the concept derived from microeconomic theories (Shapiro, 2006). A supply chain possesses an *input-output structure of value-adding activities, beginning with raw materials and ending with the finished product* (Lechner & Boli, 2015), thus demonstrating similarities with Porter’s value chain approach.

It consists of three or more organizations which are connected in the up- or downstream flow of products information, finance and services from the producer to the consumer. The physical flow comprises the storage, transformation and transport processes of goods and materials, whereas the information flow involves the coordination between the various supply chain partners, both internal and external, in order to control the flow of goods and materials along the chain (Monczka, Handfield, Giunipero & Patterson, 2015).

It is difficult to make a precise distinction between supply and value chain as they are often used as synonyms. According to Ayers, the supply chain approach represents an adaptation to the value chain model introduced by Porter (Ayers, 2003). The value chain represents a broader concept, particularly in its focus on the organizational level, due to the fact that all employees contribute to the value chain through their performance, but are not necessarily involved in the supply chain (Monczka et al., 2015). Therefore, supply chain activities can be considered as elements of the value chain (Ayers, 2003).

In this thesis “supply chain“ and “value chain“ are used interchangeably owing to the fact that in the literature consulted, both terms are applied equally. In the analytical section, the case of Bolivian quinoa as a fair trade product will be examined with regard to the actors and organizations involved, operations and resources required, information shared and value added among the chain.

3. Methodology

3.1 Study Area

Bolivia is located in the western center of South America. In the northeast it borders on Brazil, in the northwest on Peru, in the southwest on Chile, in the south on Argentina, and in the southeast on Paraguay (*Figure 15*). Its territory comprises an area of 1,098,581 square kilometers and is divided into nine departments, 112 provinces, 314 sections and 1,384 districts. According to the INE, in 2014 the total population of Bolivia amounted to 10,549,640 inhabitants. Around 40 per cent suffer from poverty, which corresponds to half of the population in rural areas and almost one quarter of people living in urban areas (INE, 2015). The agricultural sector employs almost half of the economically active population (EAP)[4] and represents approximately four per cent of the national exports. In the sub-Andean zone, the following agricultural products are cultivated: beans, cocoa, coffee, corn, nuts, potatoes, quinoa, rice, soya, sugar cane and wheat (CAO, 2014).

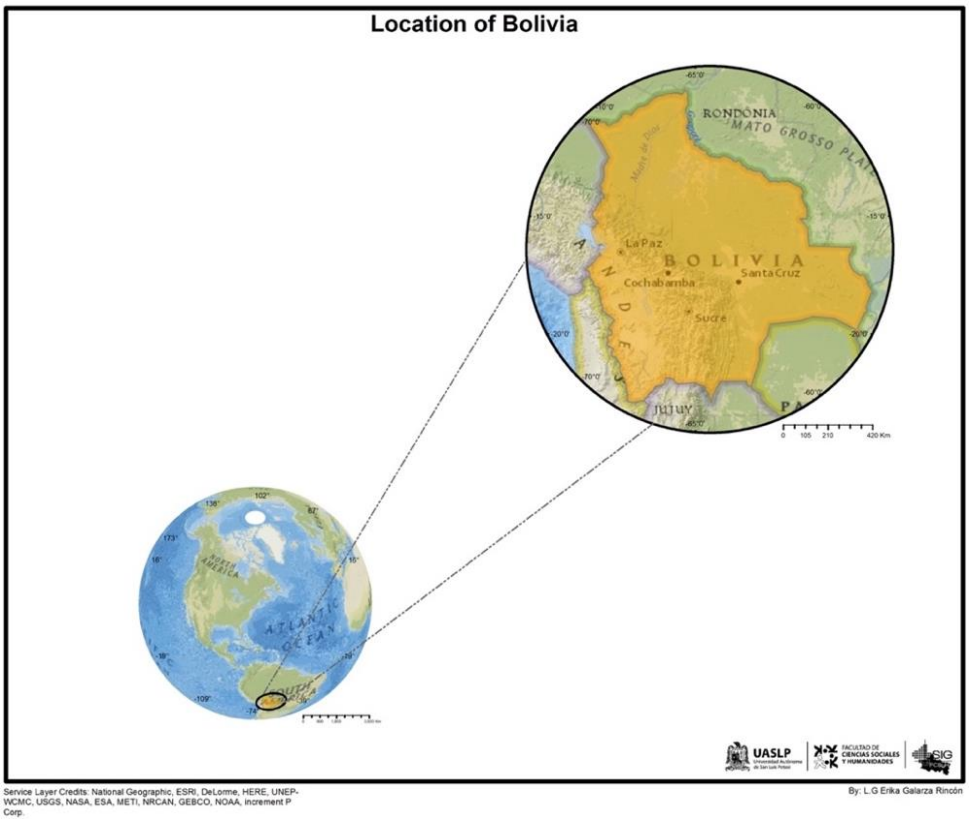


Figure 15: Location of Bolivia on the world map.

[4] According to the definition of the United Nations System of National Accounts, an economically active population includes all people, irrespective of gender, who contribute to the national labor market for the production of economic goods and services during a specific period of time.

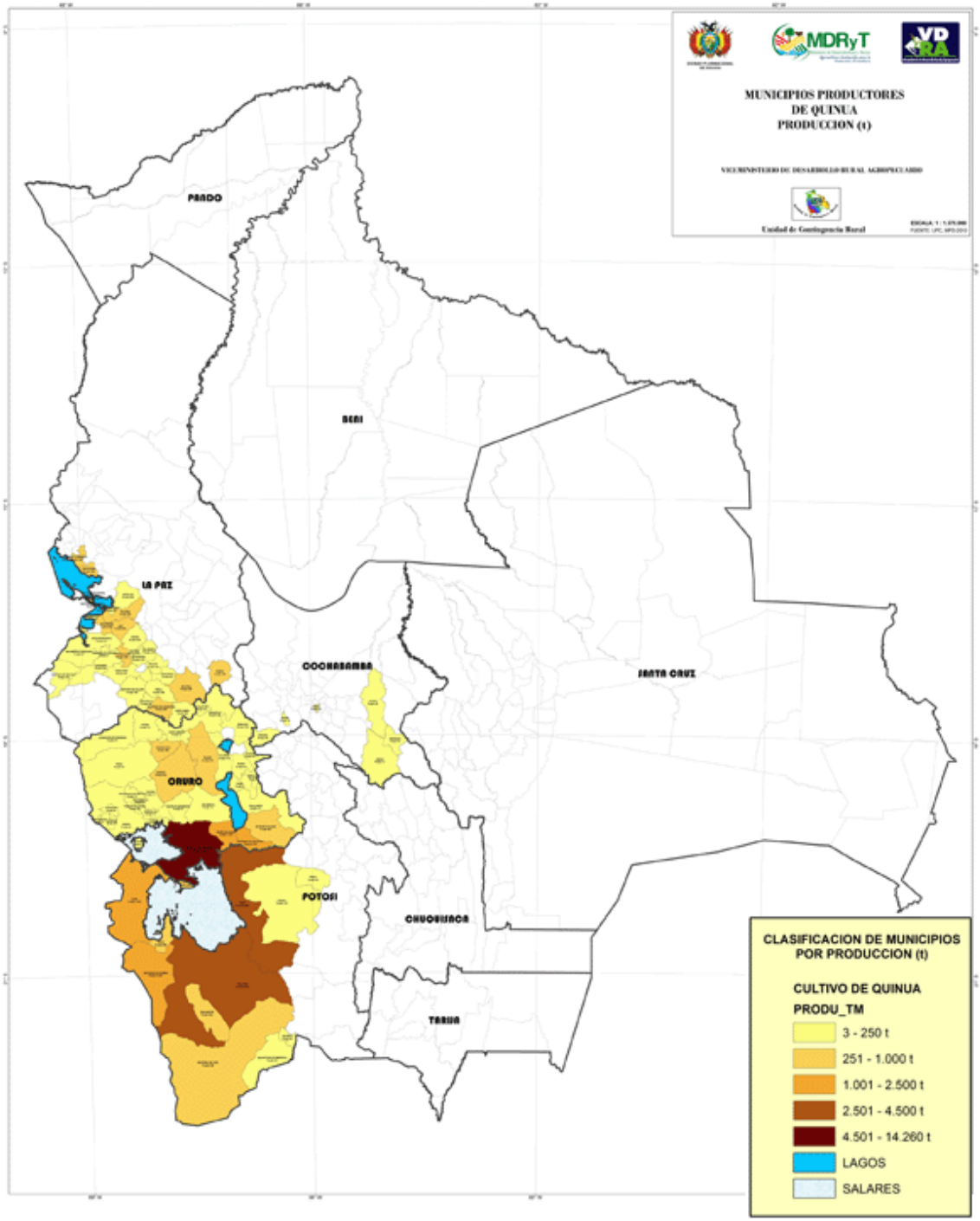


Figure 16: Quinoa production areas in Bolivia (SENASAG, 2012).

The Bolivian Altiplano constitutes the main production area for quinoa - especially due to the strong contribution of the departments of Oruro and Potosí. As can be seen in *Figure 16*, in the Southern Altiplano (including the southwest of the department of Potosí South and the territory around the *Salar de Uyuni*) large quantities of quinoa are cultivated for exports. The area possesses an average altitude of around 3,700 meters above sea level, thus being exposed to extreme climatic and topographic conditions. Due to high harvest yields, the department of Potosí is considered as particularly suitable for quinoa cultivation, especially for the highly demanded variety Royal Quinoa.

The Central Altiplano (mainly covered by the department of Oruro) represents an important region for the expansion of quinoa cultivation. In the Northern highlands (in the south of the La Paz Department), where mainly sweet quinoa is cultivated (MDRyT & CONACOPROQ, 2009), the production surfaces are reduced, even though there is a major diversity of agricultural crops (IICA, 2015a). In the production region (Northern, Central and Southern Altiplano) alpaca, cattle, llama, pig, sheep and vicuna breeding is practiced (MDRyT & CONACOPROQ, 2009).

3.2 Data Collection

The literature review was based on data obtained from academic studies, books, institutional reports, journals, official statistics from national authorities and organizations, scientific research papers, internet publications and websites of multi-stakeholders from the public and private sector providing a general overview of quinoa production and trade in Bolivia, organic labeling, the value chain, Fairtrade and its certification system.

The fieldwork was carried out in the period from March to May 2016 in the Bolivian Altiplano, in the cities of La Paz, Potosí, Oruro, Challapata and Uyuni. The primary data was collected through interviews with key representatives from various areas of the quinoa sector. Parallel to this, data has been generated through company and field visits, meetings, photographic material, participatory observation and communication with local actors.

A total of 28 interviews was conducted with different stakeholders involved in the supply chain of Bolivian quinoa. The selected people were chosen based on internet research and by means of the shared contact database which has been provided before. The personal conversations were oriented towards the established research objectives and focused on topics such as dynamics in quinoa production and trade, identification of key target markets, evolution of prices, importance of organic and Fairtrade certification, membership in producer associations, existing cooperations with other organizations, etc. When the interviewed person agreed, the interviews were recorded, transcribed and translated from Spanish into English.

The interviews were semi-structured, carried out in form of a dialogue or guided conversation with open questions, providing more flexibility than structured interviews which consist of a standardized questionnaire with closed questions in order to generate quantitative data. In contrast, the sequence of questions in a semi-structured interview is not fixed as many questions are being raised during the conversation. Based on the discussion and clarification of issues (sensitive topics can also be dealt with) qualitative data is provided (FAO, 1990b).

In the *production sector* four interviews were performed with representatives of the main quinoa producers' association (ANAPQUI, AIPROCA, APQUISA and CECAOT) which are Fairtrade certified by FLO-CERT. Moreover, a fifth interview has been conducted informally with a local producer of conventional quinoa in Uyuni who cultivates quinoa to generate an additional income.

Ten interviews were conducted with representatives of *processing and export companies of quinoa*; three in La Paz/El Alto (Andean Valley, Quinoa Foods and SINDAN Organic), two in Challapata (ANAPQUI and SINAI) and two in Uyuni (CECAOT and Real Andina). Parallel to this, various interviews were carried out with producer associations dedicated to the processing and distribution of the Andean grain. Qualitative and quantitative data was collected.

The interviewed companies were selected according to their activities (primary processing, industrialization, internal and external marketing), location and size with the attempt to include companies with different characteristics in the sample. The selection of the sample was determined by the availability of managers for personal interviews, applying the method of convenience sampling as one type of non-probability sampling technique.

In the *academic and research sector* five interviews were held with representatives of the following institutions:

- A project coordinator of the Promotion and Research for Andean Products Foundation (PROINPA Foundation) in La Paz.
- A quinoa expert, researcher and profesor at the Faculty of Agronomy of the Tomás Frías Autonomous University in Potosí.
- Two professors from the Faculty of Agronomy of the Technical University of Oruro in Oruro.
- The national coordinator for the Quinoa Program of the National Institute for Agricultural and Forestry Research Innovation (INIAF) in Oruro.

Eight interviews were carried out with representatives of the *quinoa supporting sector*.

- The general manager of the Bolivian Chamber of Quinoa Royal and Organic Products Exporters (CABOLQUI) in La Paz.
- A member of the Chamber of Quinoa Producers in La Paz.
- An engineer of the National Council for Quinoa Traders and Producers (CONACOPROQ) in La Paz.
- The national representative of Fairtrade International in Bolivia.
- The regional coordinator of foundation AUTAPO (FAUTAPO) in Oruro.
- The administrative director of the certification authority BOLICERT in La Paz.
- A representative of Mundo Orgánico, a recently founded non-governmental organization providing supporting activities related to the certification process of FLO-CERT for producer organizations in Oruro.
- An administrator from the commercial promotion unit of PROMUEVE BOLIVIA in La Paz.

To compliment the interviews and conversations, the method of participatory observation has been applied in the following occasions in La Paz in order to collect data through the record of presentations and dialogs, the creation of photographic material and the systematization of the information gathered. Due to the fact that the two-day conference took place at the beginning of the field work in Bolivia, it served to provide an overview of relevant actors in the quinoa sector, as well as of current issues and challenges.

- A two-day conference organized by the Vice-Ministry of Domestic Trade and Foreign Trade, the Ministry of Rural Development and Land (MDRyT) and the Centre for the Promotion of Imports from Developing Countries (CBI) on trademark of Bolivian quinoa and designations of origin from 21st to 22nd March 2016.
- An event celebrating the World Fair Trade Day with Bolivian fair traders on 12th May 2016.
- A workshop on building a communitarian approach for social solidarity economy and on the creation of a seal of approval for fair trade held on 20th May 2016.

3.3 Data Analysis

An initial basic map was created as a visual representation of the value chain, illustrating actors, functions, operations, links and distribution channels. By means of this, a first overview of the scope of the chain is offered (GTZ, 2007). Afterwards, data was interpreted and compared with information obtained during field work.

In order to identify actors, operations and links within the chain, an economic analysis was carried out with respect to the prices paid and the percentage of the value received from each link (GTZ, 2007). A distinction was made between conventional, organic and fair trade quinoa. Due to the fact that financial data reveals confidential information which is safeguarded by companies for competitive purposes, the interviewed persons could not always provide precise financial data. The lack of data for calculation was complemented by information from available secondary data.

The interviews were analyzed using *ATLAS.ti 7.5.10*, a research software for qualitative data analysis, which was introduced in 1993. The computer program facilitates the management and analysis of audio, graphical and text-based data, such as transcripts of interviews, in order to illustrate relations and create networks through settings (codes, memos, quotations, etc.) which are assigned by the user.

Due to this systematic evaluation, a more comprehensive understanding of the topic can be provided (ATLAS.ti, 2016). In this research project, the following codes have been assigned in the software: “association membership”, “fair trade”, “governmental support”, “Peruvian competiton”, “quinoa boom” and “value chain” (see *Appendix B*).

4. Results

4.1 Analysis of Organic Certification

Since the nineties a consumer trend for organic quinoa emerged in Bolivia which originated from industrialized countries in Europe and the US. Due to this shift in demand, quinoa farmers started to focus on organic rather than on conventional production, owing to the fact that organic grains achieved higher market prices.

Thus, organic certification arose before the fair trade movement and originated in the quinoa natural production program (PROQUINAT) which was established by ANAPQUI in 1992 in reaction to the customer demand of quality assurance within the fair trade concept. The producer associations ANAPQUI and CECAOT assumed the role of pioneers through the organization of trainings and collective certifications for their farmer members. Additionally, numerous companies started to export organic quinoa through contracts with certified producers.

On the national level, organic quinoa cultivation has to correspond to legal regulations according to the Association of Ecological Producer Organizations in Bolivia (AOPEB). The National Service for Agricultural Health and Food Safety (SENASAG) represents a governmental entity which monitors the compliance of these laws within Bolivia. The International Basic Standards for Organic Production and Processing in the private sector were established by IFOAM EU, which has been founded by the European Union, and for the US the guidelines of the National Organic Program (NOP) have been set by the United States Department of Agriculture (USDA). Since 2012 certified products with these standards are recognized as equivalent and marketed as organic in both markets, Europe and the US (USDA, 2015).

Besides these governmental regulations, there are organic standards which have been created by private organizations. These private organic labels are not mandatory, but rather aim at creating confidence among consumers in the target markets, such as BIO SUISSE (Switzerland), Demeter (worldwide), KRAV (Sweden), Naturland (Germany and worldwide), Soil Association (Great Britain), etc.

In Bolivia, there are four main accredited independent certifying companies: (1) Boliviana de Certificación (BOLICERT) was founded in 1995 as a non-profit association for the inspection and certification of organic agricultural products (such as amaranth, beans, coffee, cocoa, quinoa and sesame). This certification authority only conducts certifications within Bolivia.

(2) BIO LATINA is a Latin American company which certifies agricultural production systems (livestock and wildlife) of more than 400 individual and collective operators with up to 50,000 producers. BIO LATINA was established in 1998 as the result of a merger between four independent certification organisms. The headquarter is located in Lima (Peru). This authority performs certifications in Bolivia, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama and Venezuela (BIO LATINA, 2015).

(3) The Certification of Environmental Standards (CERES) awards certifications for organic farming and food processing of agricultural goods as well as manufacturing practices in the food industry, organic textiles and biofuels. CERES is based in Happurg (Germany) but operates worldwide through respective country offices in Bolivia and other Latin American countries as well as in the Caribbean (CERES, 2009).

(4) IMOcert Latinoamérica Ltda (IMOcert) was founded in 1995 as a service entity, providing inspection and certification of ecological and sustainable agricultural, livestock and aquaculture products as well as of wild collection, forest management, ecological inputs for agriculture and certification of products (such as bananas, bee honey, cocoa, coffee, chia seeds, citrus fruits, etc.). Moreover, IMOcert issues certifications of social responsibility and fair trade to the agricultural, handicraft, mining and tourism sectors and others. The headquarter of IMOcert Latin America is situated in Cochabamba (Bolivia) with member offices in Latin America and the Caribbean (IMOcert, 2011).

Table 3: Leading certifying authorities, their range of standards and respective certifications of interviewed institutions (based on data obtained during field work and on IICA, 2015a).

Certifying Authorities	Certified Standards	Institutions	Certifications and Range of Validity
BOLICERT	Canadian Organic Regime (COR) European Standards 834/2007 and 889/2008 Basic Standards for Organic Production and Processing (IFOAM) National Organic Program NOP-USDA	ANAPQUI	CANADA CAN/CGSB-32.310-32.311/2009 European Standard 834/2007 Basic Standards for Organic Production and Processing (IFOAM) National Organic Program NOP-USDA
		Andean Valley	
		APQUISA	CANADA CAN/CGSB-32.310-32.311/2009 European Standards 834/2007 and 889/2008 National Organic Program NOP-USDA
BIO LATINA	Canadian Organic Regime (COR) European Standards 834/2007 and 889/2008 Japanese Agricultural Standards (JAS) National Organic Program NOP-USDA Private standards: BIO SUISSE, SOIL Association	Real Andina	Certification equivalent to the European Standards 843/2007 and 889/2007
CERES	European standard 834/2007 Japanese Agricultural Standards (JAS) National Organic Program NOP-USDA Private standards: BIO SUISSE, Demeter, Naturland, SOIL Association	Quinoa Foods	Certification equivalent to European Standards and the National Organic Program NOP-USDA
		SINAI	
		SINDAN Organic	
IMOcert	Canadian Organic Regime (COR) European standard 834/2007 Japanese Agricultural Standards (JAS) National Organic Program NOP-USDA Private standards: BIO SUISSE, Naturland, SOIL Association, KRAV	CECAOT	National Organic Program NOP-USDA

Due to the fact that organic certifications are related to the production process, the soil is certified rather than the grain. However, additionally, samples are taken of the crop, its plant and seeds for laboratory analysis. This is connected to the idea of traceability, which is one of the main ideas behind the certification of organic goods and means the ability to receive information on the origin of a product through its documents.

The transformation process from conventional production systems to organic farming requires a transition period of three years, only then are crops recognized as being organically certified. During this time, necessary changes in biological, chemical and physical properties of the soil occur. In the meantime, crops can be sold as transitional or conventional, but not as an organic product. The transition period covers the time from the date when the last chemical substance was applied, to the date when the first organic grain is harvested. An exception is made for plots which demonstrably have not been exposed to prohibited materials for more than three years; in such a case production can be certified immediately as organic.

The certification process is divided into the following functions:

a) **Application**

   The required documents (letter of application and signed contract) have to be completed and submitted by the applicant. Moreover, it is necessary to develop an organic production and/or management plan including contact details, localization of the production unit and/or processing site with a process description. Furthermore, information on previously refused certification and measures taken to correct the non-compliance have to be provided. Afterwards, the application is reviewed by the corresponding certifying authority.

b) Inspection

Once the application has been approved, an initial inspection of each production unit and its installations is conducted, during the course of which the inspector takes samples for examination in a European laboratory. Inspections of producer groups evaluate the performance of the internal control system. Finally, an inspection report is created by the certifying authority which confirms the approval of certification auditors. If the certification is refused, the applicant can make necessary corrections and submit a new application. Due to the fact that the export of conventional quinoa is permitted, however, rejected organic certified quinoa can be sold as conventional quinoa on international markets.

c) Accreditation

The certification document comprises the following information: contact details of the certified operator, scope of the certification, starting date, date of issue and date of validity, bestowal of the label organically certified according to the respective standard. After the certification, annual site inspections and additional unannounced inspections will be performed.

The costs for organic certification vary depending on the size of the project, which involves factors such as the dimension of the inspected territory, the number of products and/or processes, the distance between plots and related accesability. Inspections and certifications can be given to both, individual producers and groups of farmers.

In the case of BOLICERT, the certification costs for providing an individual producer with one certification amount to USD 1,600 per year. In comparison with a group of 100 producers, on average each farmer would have to pay an annual amount of USD 16, on average (BOLICERT, 2016). However, there is a legal difference between individual and group certifications. Certified goods originated from farmer cooperatives only guarantee certification within the association and are not valid for individual producers. In many cases, export companies pay collective certification costs for their affiliated farmers in order to become the owner of the certification.

Taking the example of BOLICERT, an advance payment of half of the certification costs has to be made before inspection and the remaining amount must be paid after inspection. *Table 4* shows the implementation costs for organic certification of a simple operation conducted by BOLICERT. The total costs amount to around USD 1,701, plus the respective accommodation and transport expenses generated by the inspector.

Table 4: Fees for organic certification by BOLICERT (in USD) (based on data obtained during field work).

	Costs (USD)
Inspection Fee for Plot per Day	169
+ Inspection Fee for Processing per Day	170
+ Laboratory Analysis	450
+ Inspection Review	169
+ Travel Expenses	169
+ Translations into Other Languages	169
+ Annual Certification	405
+ Accommodation and Transport	According to Expenditure
Total Costs	**1,701 + Accommodation and Transport**

4.2 Value Chain Analysis

Figure 17: Functions and actors within the value chain of organic and Fairtrade certified quinoa destined for international markets (based on data obtained during field work).

4.2.1 Functions

Activities carried out within the commercial value chain of Bolivian quinoa sold on the export market:

- The production process implies the preparation of soil, sowing of seeds, implementation of conventional or integrated pest management, weeding, harvesting and post-harvest activities, such as threshing, sifting and winnowing (varying from manual operations to mechanized technology).
- The grain is packed in 46-kilogram bags (one quintal) and transported to the processing plant.
- During the industrialization process pearled quinoa is either packaged for retail or used for manufacturing of derivative products, such as flakes, flour, pasta, etc.
- Contracts with international wholesalers include information on the export volume and prices, product specifications, packaging, port of departure and destination, method of payment and further specifications.
- The ordered goods are transported to the shipping point. At the port of departure export customs clearance is conducted. At the port of destination import customs clearance is carried out and the goods are transported to the importer's warehouse.
- Quinoa is either repackaged and labelled or used as raw material in the food industry. Then, the product is sold to retail companies and transported to the point of sale. Retailers develop marketing strategies and undertake product placement in order to promote the sale of Bolivian quinoa marketed as an organic and/or Fairtrade certified product.

4.2.2 Actors

4.2.2.1 Producers and Producer Associations

Considering that quinoa fields in Bolivia are legally regarded as communitarian land, the territory cannot be sold to private investors. Due to the size of the cultivated area, quinoa producers are classified in the categories of small-scale farmers (up to five hectares of land), medium-sized farmers (between five and 20 hectares of land) and large-scale farmers (more than 30 hectares of land). Moreover, a differentiation is made between conventional, organic and/or fair trade certified quinoa growers and the respective level of mechanization within the production system.

Associations of quinoa farmers emerged in order to collectively achieve organic certification and to consolidate export markets. This process has been accelerated through the implementation of projects to enhance the market access of organized small-scale farmers through a bilateral productive collaboration with buyers. In this context, associations provide support in production improvement and offer programs of technical assistance and administrative training to their affiliated farmers.

ANAPQUI, APQUISA and CECAOT are considered as the leading producer associations. In Bolivia there are more than 70,000 quinoa production units, but only around 3,500 are affiliated to the main associations. In addition, many quinoa farmers belong to producer organizations such as the National Chamber of Quinoa Producers (CNPQ), the National Council for Quinoa Traders and Producers (CONACOPROQ), the Departmental Association of Quinoa Producers of La Paz (CADEPQUIPAZ), the Departmental Chamber of Quinoa Producers of Oruro (CADEPQUI-OR) or the Departmental Chamber of Royal Quinoa Producers of Potosí (CADEQUIR).

Figure 18: Sign in front of the ANAPQUI processing plant in Challapata (Stöcker, 2016).

ANAPQUI (National Association of Quinoa Producers) was founded in 1983 and represents the largest independent association of quinoa producers in Bolivia. The smallholder cooperative aims at selling and distributing quinoa in order to increase the living standards of quinoa-growing peasants of the Bolivian Altiplano. ANAPQUI is an umbrella organization which consists of nine regional cooperatives with around 2,500 members, mainly belonging to the ethnic group of *Aymara* and *Quechua*. The association generates an annual production volume of more than 3,640 tons, using crop varieties of Blanca Real, Rosada and Pisankalla.

The cultivation area covers the highlands region of Potosí and Oruro. ANAPQUI has implemented many programs for soil conservation following the principles of sustainable agriculture. In 1998, the association started to produce certified organic quinoa and joined Fairtrade in 2001. Around 80 per cent of the affiliated farmers possess the Fairtrade certification (FLO ID 3658), thus ANAPQUI represents the biggest organization of quinoa producers certified by FLO-CERT, while being considered as the main supplier of Fairtrade quinoa to Europe (Carimentrand & Ballet, 2010).

To become a member of ANAPQUI an application has to be submitted to the respective regional cooperative. Moreover, the farmers have to comply with the minimum of ten hectares; the average ranges between ten and 15 hectares. Based on this information, ANAPQUI develops a plan which indicates how much quinoa will be provided by each farmer to the association in a harvest season.

Figure 19 reveals the collaboration of ANAPQUI with Alter Eco, an alternative trading organization which imports and distributes Fairtrade products, a cooperation which has existed since 2003. The main activities of ANAPQUI comprise collection, processing, packaging and export of quinoa, following the principles of traceability, transparency, direct monitoring and the negotiation of long-term contracts. Around 85 per cent of sales are attributed to pearled white quinoa, whereas its derivatives assume a small revenue-share, being primarily destined for the domestic market.

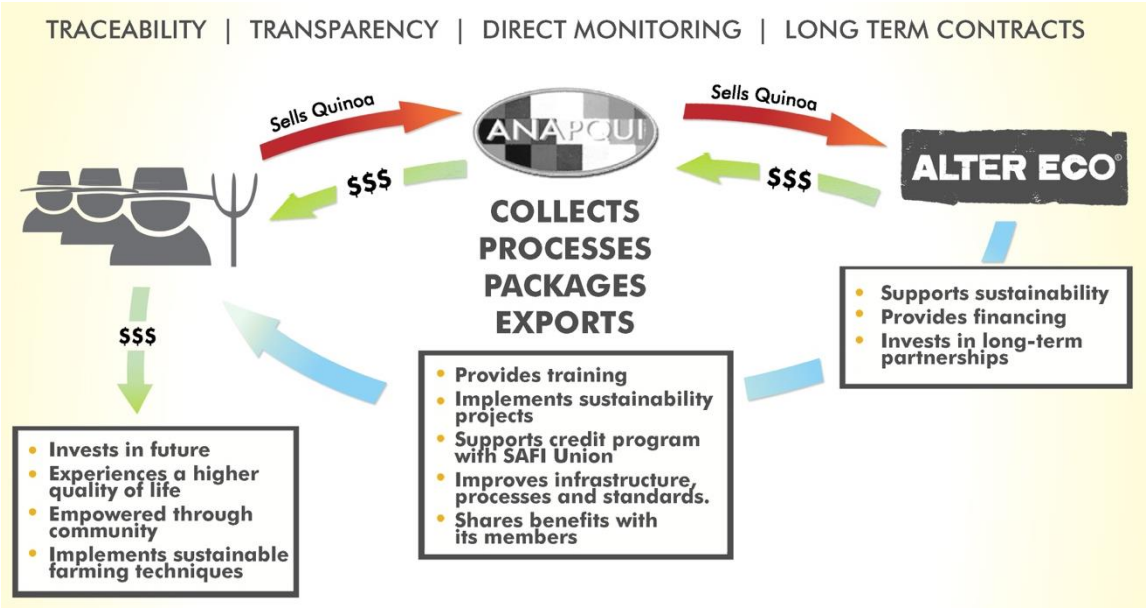


Figure 19: Supply chain between ANAPQUI and Alter Eco (adapted from Alter Eco, 2013).

The Association of Quinoa Producers Salinas (APQUISA) was founded in 2007 and represents a legally established community-based non-profit company of Royal Quinoa producers. Currently, the affiliated farmers amount to more than 400 with cultivation areas between five and 50 hectare (less than 15 hectare on average) which are located in the intersalar region[5] of the Southern Altiplano.

The product range includes Royal Quinoa as black, red or white grain and value-added products like flour, soup, pasta and cookies, which are sold on to the national and international market. APQUISA is organically certified and holds the Fairtrade label (FLO ID 5300) in compliance with the Fairtrade standards and FLO-CERT

[5] The intersalar region comprises a volcanic area at an altitude of more than 3,500 meters a.s.l., which is located between the two main salt flats in Bolivia: *Salar de Uyuni* and *Salar de Coipasa*.

certification requirements since 2009. APQUISA invested in the expansion of infrastructure in production areas order to facilitate the transport of quinoa to the processing plant. Moreover, the organization holds regular workshops on methods for organic farming.

The Central Cooperativa Agropecuaria Operacion Tierra (CECAOT) was founded more than 40 years ago as a self-managed organization operated by farmers. It encompasses 14 producer cooperatives with more than 450 members which are located in the region of Uyuni in the department of Potosí. The producers own a cultivation area of minimum four and maximum of between 40 and 50 hectare. CECAOT covers organic and Fairtrade certification in collaboration with ETHIQUABLE, a French fair trader. Both ANAPQUI and CECAOT, provide support to food and nutrition security programs of the Bolivian government through the sale of pearled quinoa and derivative products for public school breakfasts (CECAOT) and subsidzed products for pregnant and breastfeeding women (ANAPQUI).

Since 2011, the Association of Organic Producers Capura (AIPROCA) holds the Fairtrade certification for 40 members (FLO ID 26592) under an agreement with SINDAN Organic since 2010. Between 15 and 20 per cent of their production is destined for self-consumption. SINDAN Organic provides a guarantee for AIPROCA to obtain credits from national banks and offers pre-financing payment, thus the producer association is able to cover financial obligations on time, such as certification costs.

4.2.2.2 Processing and Export Companies

Private profit-oriented enterprises have entered the Bolivian quinoa market since the beginning of the 2000s, which lead to a higher level of complexity among the commercial chain. These trading companies buy quinoa from individual producers or organized groups of small farmers in order to be processed, transformed and sold on the national or international markets. Producers enter into a contract with the companies as suppliers, including the determination of purchase volume, time period and price.

Moreover, enterprises provide technical assistance and offer prefinancing for the introduction of organic certification systems to farmers, thus the enterprise is considered as the owner of the certificate. Many companies prefer to collaborate with a limited number of producers who provide them with the required quantity of raw material in order to be processed and transformed at their own plant facilities.

The Bolivian Chamber of Royal Quinoa and Organic Products Exporters (CABOLQUI) is a non-profit organization which was founded in 2005. At present, the chamber comprises a group of nine companies oriented towards the processing, transformation and export of organic quinoa:

- Andean Valley SA,
- Complejo Industrial y Tecnológico Yanapasiñani-City SRL,
- COMRURAL XXI SRL,
- Coronilla SA,
- Empresa Exportadora e Importadora de Productos Ecológicos Andinos (EIPEA SRL),
- Irupana Andean Organic Foods SA,
- Sociedad Industrial Molinera SA,
- Quinoabol SRL,
- Quinoa Foods Company SRL.

Currently, the CABOLQUI member enterprises contribute a share of almost 60 per cent to the total exports of Bolivian quinoa. The chamber receives an economic contribution from the export volume of the allied companies. CABOLQUI aims at the establishment of long-term cooperations, the increase of production and employment in the quinoa sector as well as the opening up of new markets.

Table 5 displays an overview of the interviewed processing and export companies for conventional and organic quinoa. More information on their respective export countries and sales volumes regarding organic and Fairtrade certified quinoa is provided in *Table 7* in section *Export Volumes and Target Markets*.

Table 5: Overview of information on interviewed processing and export companies of Bolivian quinoa (based on data obtained during field work).

Name	Foundation	Location (Headquarters & Processing Plant)	Affiliated Producers	Product Range	Membership
Andean Valley SA	2001	El Alto	50 producers	black, red, white and tricolor quinoa (processed grain), derivate products: brownies, flakes, flour, hamburgers, pasta, pizza dough, pudding, soups.	Andean Valley Corporation (since 2009), CABOLQUI
Quinoa Foods Company SRL	2002	El Alto	37 producers (average cultivation area: five to six hectare, average production performance: half ton per hectare)	black, red, white and tricolor quinoa (processed grain), derivate products: flakes, flour, popped quinoa	CABOLQUI
Real Andina SRL	2004	Uyuni	265 producers (cultivation area min. three hectare, max. 100 hectare)	black, red, white and tricolor quinoa (processed grain)	no affiliation
SINAI SRL	2000	El Alto (headquarters) Challapata (processing plant)	100 producers (average cultivation area: 50 hectare, but only one third is cultivated per growing season)	black, red, white and tricolor quinoa (processed grain), derivate products: flakes, flour, popped quinoa	no affiliation
SINDAN Organic SRL	2011	El Alto	400 producers	black, red, white and tricolor quinoa (processed grain)[6]	no affiliation

[6] Besides quinoa, the product range of *SINDAN Organic* also comprises other grains such as amaranth, chia, cañahua and sesame. However, the sales volume of quinoa corresponds to 80 per cent of the total volume.

4.2.2.3 Importers and Retailers

Within the supply chain of Bolivian quinoa, the following importers of organic and/or fair trade certified quinoa have been identified. In this context, a differentiation has been made between enterprises whose main activities are oriented towards the import of quinoa and institutions which operate both import and retail, including the whole commercial chain from direct purchase of quinoa from Bolivian farmers to sale to final consumers in Germany and Europe.

GEPA – The Fair Trade Company is the biggest European non-profit organization for alternative trade. All products are certified with the FLO-label, while three quarters are organically certified in accordance with EU standards. GEPA covers the whole supply chain, purchasing raw material directly from local producers (GEPA, 2015a). Since 1988 GEPA acquires organic Fairtrade certified quinoa from ANAPQUI.

ETHIQUABLE was founded in 2003 as a French fair trade company which collaborates with small-scale farmers from Latin America in order to distribute their products under the Max Havelaar label in France, Belgium and Germany (BTC, n.d.). ETHIQUABLE purchases organic Fairtrade certified quinoa from CECAOT.

The company Rapunzel Naturkost GmbH is divided into four business segments: (1) direct import of food raw materials, (2) retail of organic food products under the brand of Rapunzel in organic supermarkets as well as (3) export and (4) development of private labels for supermarket chains. Rapunzel established the *HAND IN HAND program* (HIH), a company-owned label for fair trade which complies with the requirements of the FLO label, but rather implies further benefits for producers, such as the payment of organic certification costs (Rapunzel, 2012). Since 1995 Rapunzel obtains organic quinoa from ANAPQUI amounting to almost 100 tons per year.

Eco Terra GmbH represents an enterprise dedicated to import, processing and distribution of primarily organic products, certified with the Fairtrade label (FLO ID 19314) for the import and manufacturing of quinoa and other products such as cocoa, nuts, rice and sugar cane (Eco Terra, n.d.).

Ziegler & Co. GmbH is a company for import, processing and trading of organic food ingredients according to European and US American standards (IFOAM EU, n.d.). Moreover, Ziegler constitutes a certified Fairtrade buyer (FLO ID 22875) for cocoa and quinoa, purchasing organic quinoa from Bolivia, Ecuador, Peru and European countries (Ziegler, 2016). Both Eco Terra and Ziegler, receive organic Fairtrade quinoa from the producer association APQUISA.

In addition, brokers assume an important role as intermediaries between exporters and importers within the quinoa supply chain. Their functions include establishing trade contacts and supporting the activities related to import and export. Brokers receive their economic compensation through commission (a determined percentage of the traded value) which is paid by the importer.

4.2.2.4 Supporting Institutions

Table 6: Overview of supporting institutions in the Bolivian quinoa sector (based on data obtained during field work and on Schneider, 2014).

Sector		Abbreviation	Institution	Function
Governmental Institutions and Entities		CIQ	International Quinoa Center	decentralized public entity under the responsibility of the MDRyT
		INIAF	National Institute for Agricultural and Forestry Research Innovation	
		INSA	National Institute for Agricultural Insurance	
		MDRyT	Ministry of Rural Development and Land	
			PROMUEVE BOLIVIA	decentralized public entity, reporting directly to the Ministry of Production and Plural Economics
		SEDAG	Departmental Agricultural Service	decentralized body, coordinated by the government of each department
Certifying Authorities			BOLICERT	main accredited independent companies for organic certification
			BIO LATINA	
		CERES	Certification of Environmental Standards	
			IMOcert	
Financial Institutions		BDP	Bank for Productive Development	with support of Banco Unión
	Private Microfinance		Banco FIE SA	
			CIDRE	research center and regional development
			Crecer	development finance institution
			Ecofuturo	bank for small and medium-sized enterprises
			Fubode	Bolivian development foundation
			IDEPRO	institute for the development of small-scale production
NGOs			Foundation AUTAPO	research promotion and technical assistance
			PROINPA foundation	
Sectorial Chambers		CNPQ	National Chamber of Quinoa Producers	
		CADEPQUI-OR	Departmental Chamber of Quinoa Producers of Oruro	
		CADEQUIR	Departmental Chamber of Royal Quinoa Producers of Potosí	
		CABOLQUI	Bolivian Chamber of Quinoa Royal and Organic Products Exporters	
International Cooperation		CBI	Centre for the Promotion of Imports from Developing Countries	agency of the Ministry of Foreign Affairs of the Netherlands
		FAO	Food and Agriculture Organization of the United Nations	
		MDRyT & EU	Ministry of Rural Development and Land in collaboration with the European Union	

Until recently, the cultivation of quinoa has received discontinuous and limited support by public and governmental entities. Due to the growing recognition of its nutritional properties and the international demand, particularly from 2008 onwards, quinoa has been incorporated in the field of policies and actions of public authorities.

As early as in 2000 the project for organic quinoa production (PROQUIOR) was launched to enhance sustainable cultivation in the department of Oruro (IICA, 2015a). Furthermore, INIAF created a program for the certification of quinoa seeds. In 2006, the Bolivian government introduced the program “Bolivia cambia, Evo cumple*“ (Bolivia changes, Evo fullfils).* It benefits the processing sector through the provision of direct funds to communities and municipalities for investments in machinery and infrastructural development (Bolivian Ministry of Communication, 2013). Parallel to this, the Bank for Productive Development (BDP) started to grant credits at low interest rates to organic quinoa-growers to purchase manure, camelids, equipment and machinery (BDP, 2011).

In 2009, the National Policy for Quinoa was formulated by the MDRyT and the National Council of Quinoa Traders and Producers (CONACOPROQ) (MDRyT & CONACOPROQ, 2009). Since 2011, the MDRyT and the National Institute for Agricultural Insurance (INSA) developed the universal crop insurance called “Pachamama“ (INSA, 2013).

In order to promote a national food security strategy, the government implemented measures like subsidies of quinoa for pregnant and breastfeeding women as well as the nutritional supplementation through the incorporation of quinoa in school breakfasts with the aim of combating malnutrition. In 2013, the International Quinoa Center (CIQ) was founded in order to conduct research and promote quinoa production and consumption.

The foundation AUTAPO designed the program “Strengthening the Quinoa Complex in the Southern Altiplano“ to improve farmers’ living standards, encourage sustainable production of organic Royal Quinoa and enhance exports of value-added products (FAUTAPO, 2013). In addition, many Bolivian universities, such as the Technical University of Oruro, conduct research on technological development in the quinoa sector.

The following two projects have been implemented as an institutional collaboration of the MDRyT and its decentralized unit Empoderar with financial support of the World Bank: The project “Community Investment in Rural Areas“ (PICAR) was launched in 2011 and is valid until 2019, dealing with the improvement of access for poor rural communities to sustainable basic infrastructure and services (WBG, 2016). The project “Support for the Quinoa and Camelid Production Complex*“* started in 2014 and aims at enhancing sustainable development (IBCE, 2013).

Moreover, the Bolivian Chamber of Quinoa Royal and Organic Products Exporters (CABOLQUI) created a project promoting the sustainable production of organic quinoa in collaboration with the Inter-American Development Bank (CABOLQUI, 2016). Parallel to this, FAO established the project “Semillas Andinas“ to improve the access to land and high-quality seeds in order to enhance food security among the Andean farming families (IBCE, 2013). In 2013, the International Year of Quinoa (IYQ) has been declared by FAO, which represented a great promotion for worldwide quinoa consumption.

4.2.3 Distribution, Export and Transport

Distribution Points

El Alto represents one of Bolivia´s largest and fastest growing urban centers which covers more than 351 square kilometers (see orange area in *Figure 20*), while the population encompasses about 847,000 people. Due to its location (good transport connections), El Alto assumes a high industrial importance, thus many quinoa processing plants are located there. The administrative headquarters of many producer associations and private companies from the quinoa sector are located in La Paz (see green area).

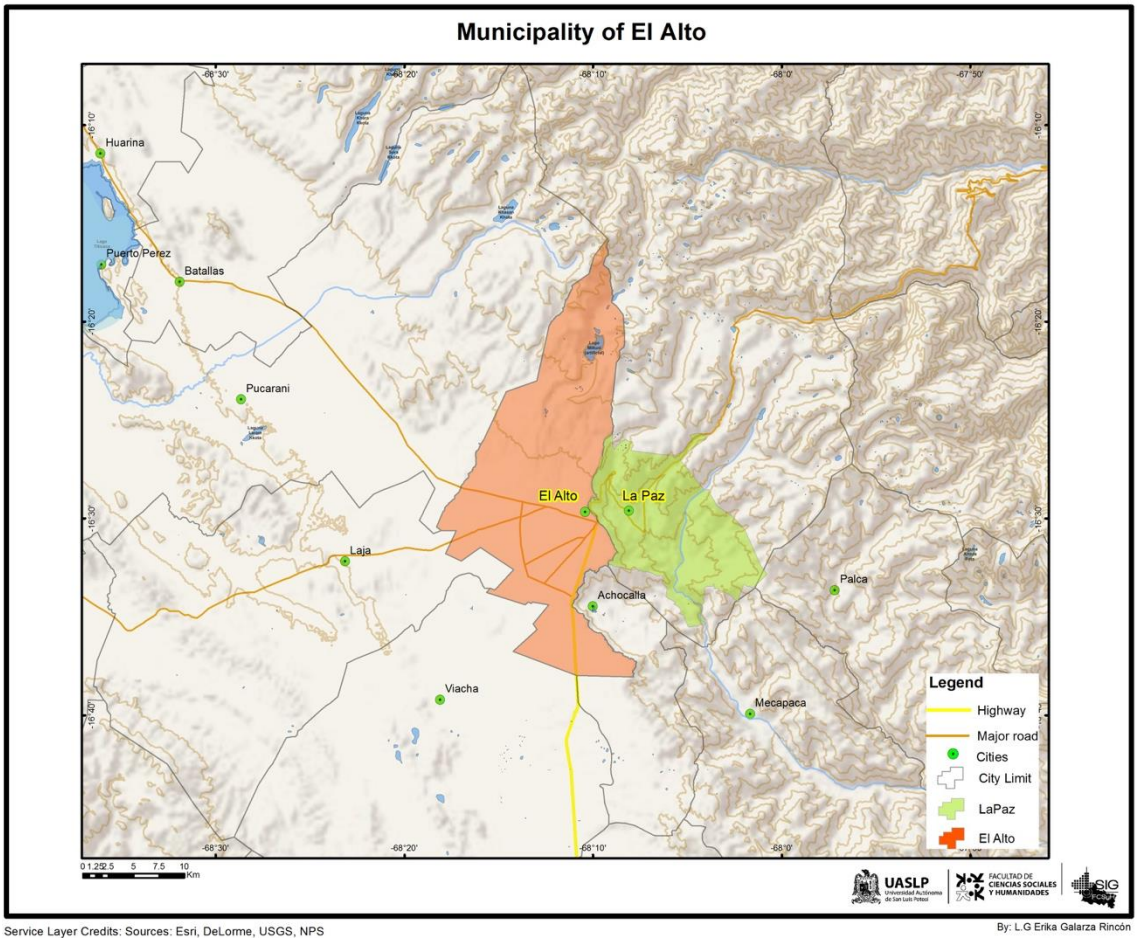


Figure 20: Municipality of El Alto.

Challapata constitutes the capital of the Challapata municipality in the deparment of Oruro, counting around 10,000 inhabitants. As can be seen in *Figure 21*, Challapata is located near the lake Poopó between the cities of Oruro (120 kilometers away) and Potosí (distance of around 200 kilometers).

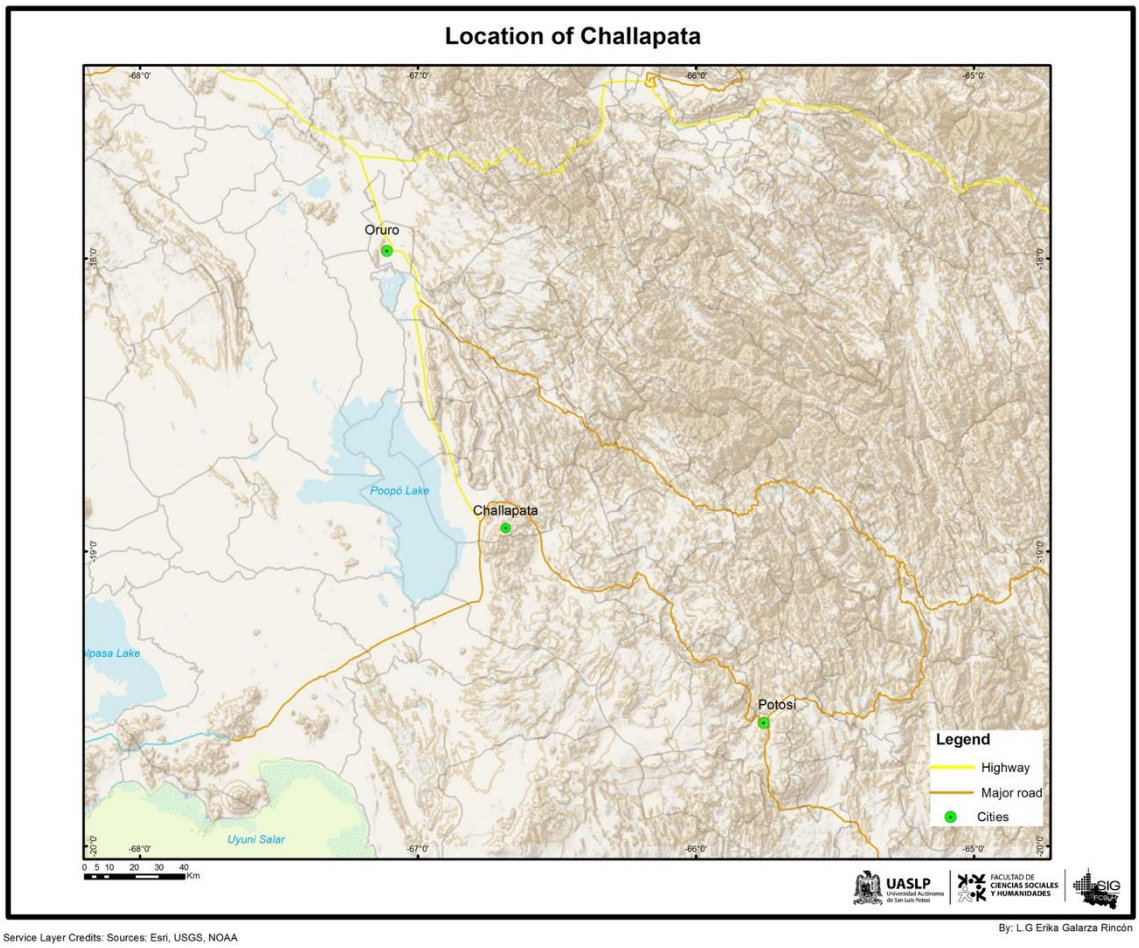


Figure 21: Location of Challapata.

The national quinoa price is determined on a weekly basis in relation to the Challapata market, which takes place on Saturdays and Sundays. Buyers and wholesalers visit the small town in order to purchase quinoa directly from producers or intermediaries. The fair represents an informal market where mainly conventional unprocessed quinoa is traded, while payment is received immediately in form of cash. The quinoa price at the Challapata market is generally lower than the amount remunerated by producer associations or private companies. However, the fair represents an important point of sale for conventional quinoa farmers.

The price for organic quinoa is established depending on the evolution of prices for conventional grain in Challapata, although the price for organic is slightly higher. For example, the purchase price for organic quinoa of the marketing company Quinoa Foods is calculated on the basis of the current value for conventional quinoa in Challapata plus an organic bonus of 100 BOB.

Due to the fact that Challapata constitutes a distribution channel for smuggled quinoa to Peru, it is known as black market. Many Peruvian wholesalers export purchased quinoa from Challapata to Peru via the overland route to Desaguadero using their own means of transport.

Figure 22: Views of the quinoa market in Challapata:
loading of bags in vehicles, weighing and quality evaluation (Stöcker, 2016).

Desaguadero is a town in the cross-border area between Bolivia and Peru, situated around 100 kilometers west of La Paz and 150 kilometer south-east of Puno (see *Figure 23*). Many goods are illegally imported and/or exported through the Desaguadero market, especially quinoa which is smuggled from Bolivia to Peru.

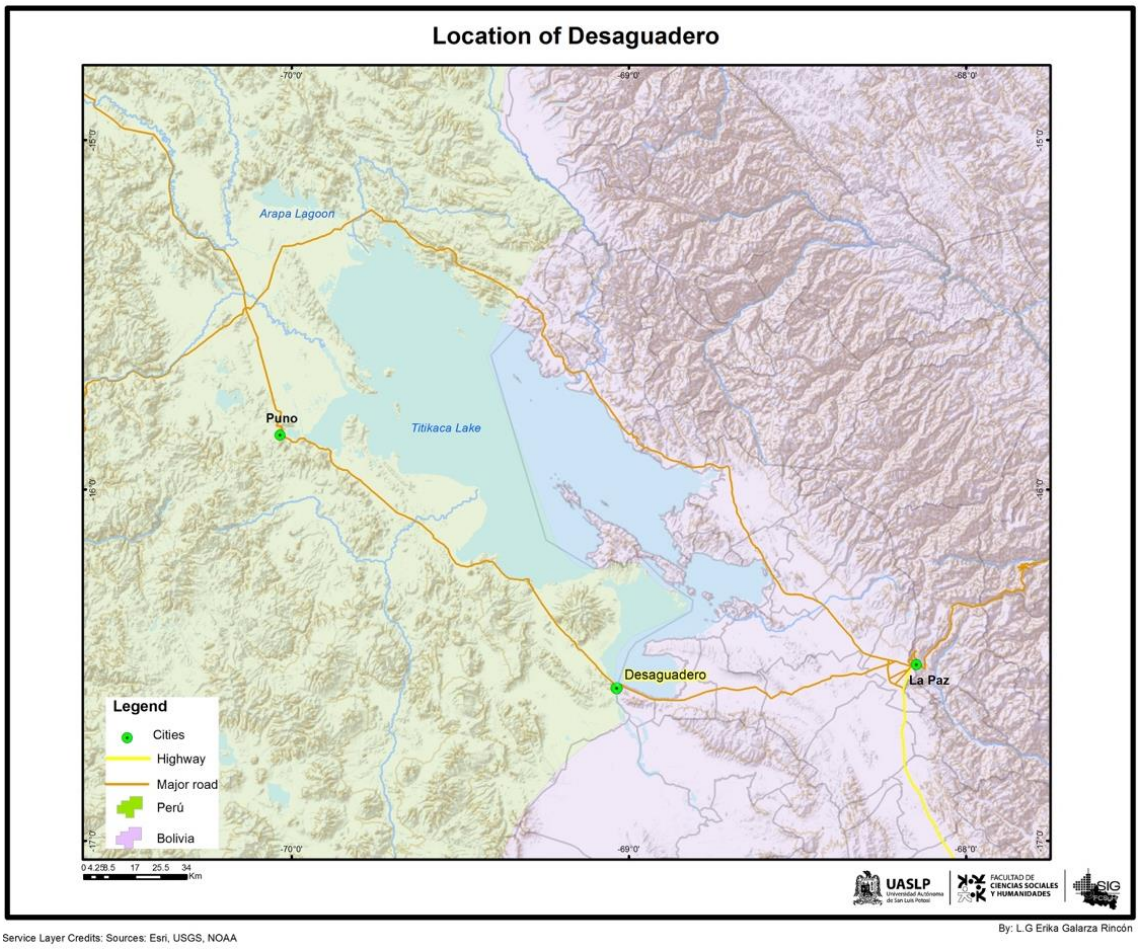


Figure 23: Location of Desaguadero.

Collection Centers and Processing Plants

As can be seen in *Figure 24*, Challapata is considered as the main collection centre for bulk quinoa grain in South America. However, Desaguadero, El Alto, Oruro, Uyuni, as well as Caracollo and Patacamaya (Peru) represent other smaller collection points (IICA, 2015a).

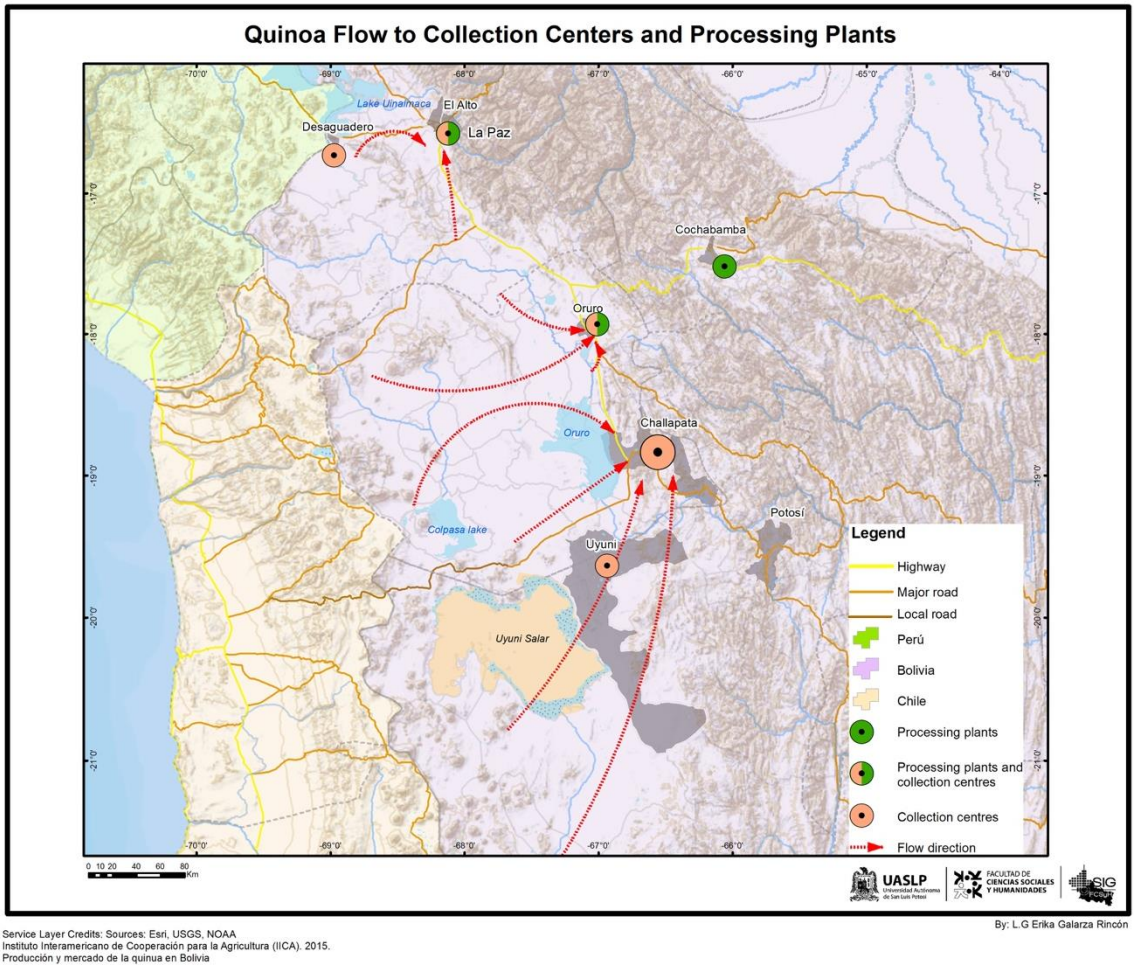


Figure 24: Quinoa flow to main collection centers and processing plants.

After purchase, quinoa is processed in one of the 62 processing plants in Bolivia. Around 16 per cent operate by means of traditional methods, 27 per cent are equipped with semi-industrial facilities and the remaining 57 per cent represent fully-mechanized industrial installations. Almost 70 per cent of the processing plants are located in the departments of Oruro (36 per cent) and La Paz (32 per cent) (IBCE, 2013).

Comparative Analysis of Distribution Channels

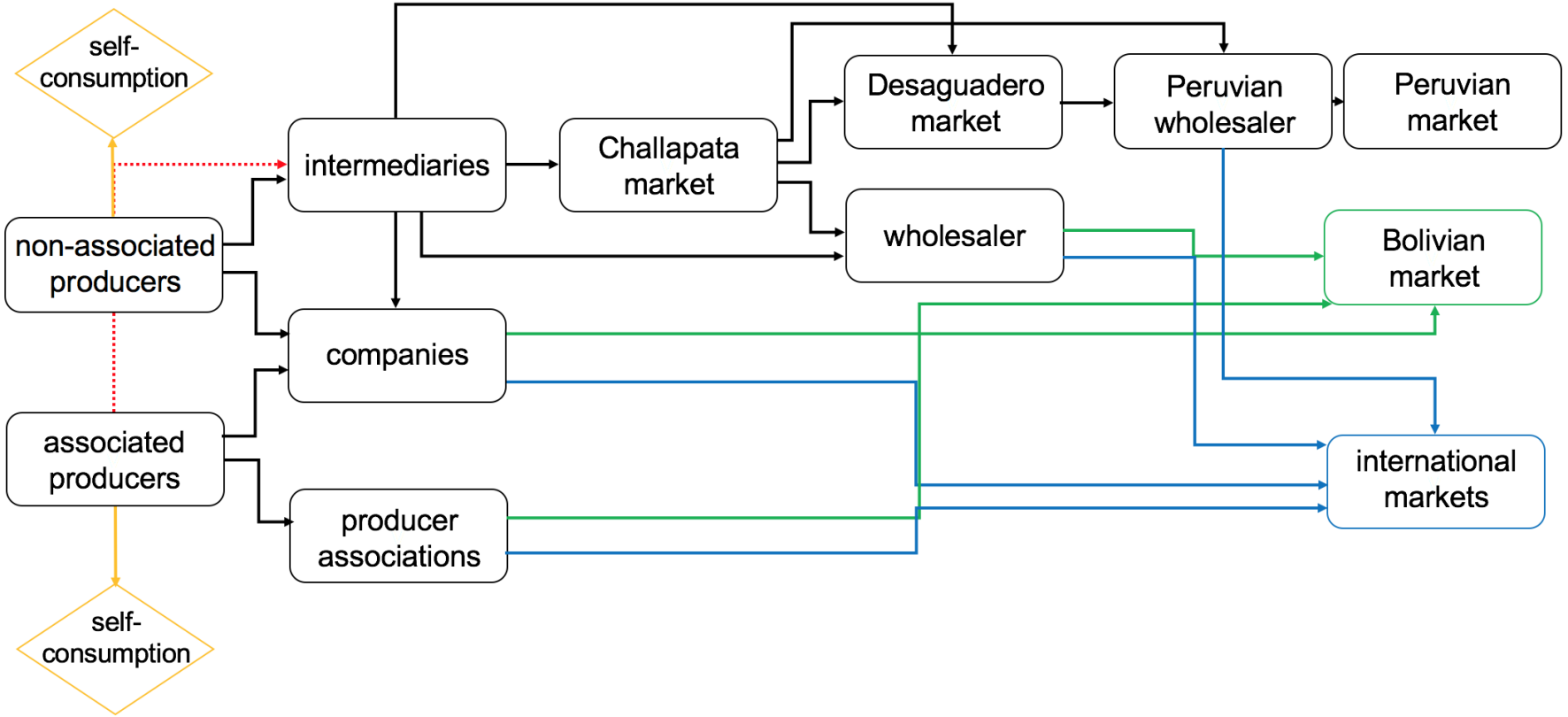


Figure 25: Comparison of associated and non-associated producers in distribution channels of Bolivian quinoa (based on data obtained during field work).

Figure 25 shows the distribution channels of quinoa produced in Bolivia from non-associated and associated farmers. Organized quinoa growers are either affiliated to a producer association or to a private company. Both focus mainly on trade with organic quinoa, although they also commercialize conventional quinoa, primarily destined for the domestic market.

As can be seen in the flow diagram, both associated and non-associated farmers use a share of their production volume for self-consumption (yellow line). Non-associated quinoa growers sell their crops either to private companies or intermediaries. These middlemen cooperate with enterprises and wholesalers and distribute quinoa to the market of Challapata and/or Desaguadero. Especially Royal Quinoa from the Southern Altiplano is highly demanded owing to the fact that the grain size is bigger. Thus, Bolivian quinoa traded in Desaguadero is distributed on the Peruvian market and/or sold on the international market as Peruvian quinoa. Many wholesalers buy unprocessed quinoa at the Challapata market in order to complete large export orders and/or sale it to the domestic market.

In many cases, producer associations and private companies assume the functions of collection, processing and industrialization in order to sell quinoa on the national and/or international markets. Within the export market quinoa is either sold to a broker or directly to an importer. The associations ANAPQUI, APQUISA and CECAOT as well as many enterprises cannot purchase the entire production from their affiliated farmers due to the low demand on the market (the sales volume is smaller than the total production).

Real Andina, for example, nowadays buys less than half of the quinoa from their associated farmers, whereas in the past the rate was up to 70 per cent. Thus, associated farmers have to seek other distribution channels for the remaining production quantity of their quinoa, although it has to be marketed without organic certification, rather as conventional quinoa, to private companies or via intermediaries to the Challlapata market. In contrast, some companies, such as Quinoa Foods, acquire additional quinoa from intermediaries in order to meet the required export demand.

Export Volumes and Target Markets

Table 7: Overview of domestic sales, export volumes and target markets for organic and/or Fairtrade certified Bolivian quinoa (based on data obtained during field work).

Institutions	Domestic Sales	Exports (average in containers per year)	Asia (Japan)	Australia	Canada	Europe	Latin America	US
ANAPQUI	15%	85% 125 containers 70% organic 30% organic FT	X			France, Germany, the Netherlands		X
APQUISA	-	30 containers 65% organic 35% organic FT				Germany, the Netherlands		X
CECAOT	40% 12-15 t/month	60% 16 containers 75% organic 25% organic FT			X	France, the Netherlands		
Andean Valley	5%	95% US: 120, Europe 22 containers (organic)	X			X	X	X
Quinoa Foods	-	75 containers (organic)				England, France, Germany	Chile	X
Real Andina	-	6 containers (organic)		X				X
SINAI	-	36 containers 50% Europe 50% Canada & US			X	X		X
SINDAN Organic	5%	95% 150 containers 80% organic 20% organic FT		X		X		X

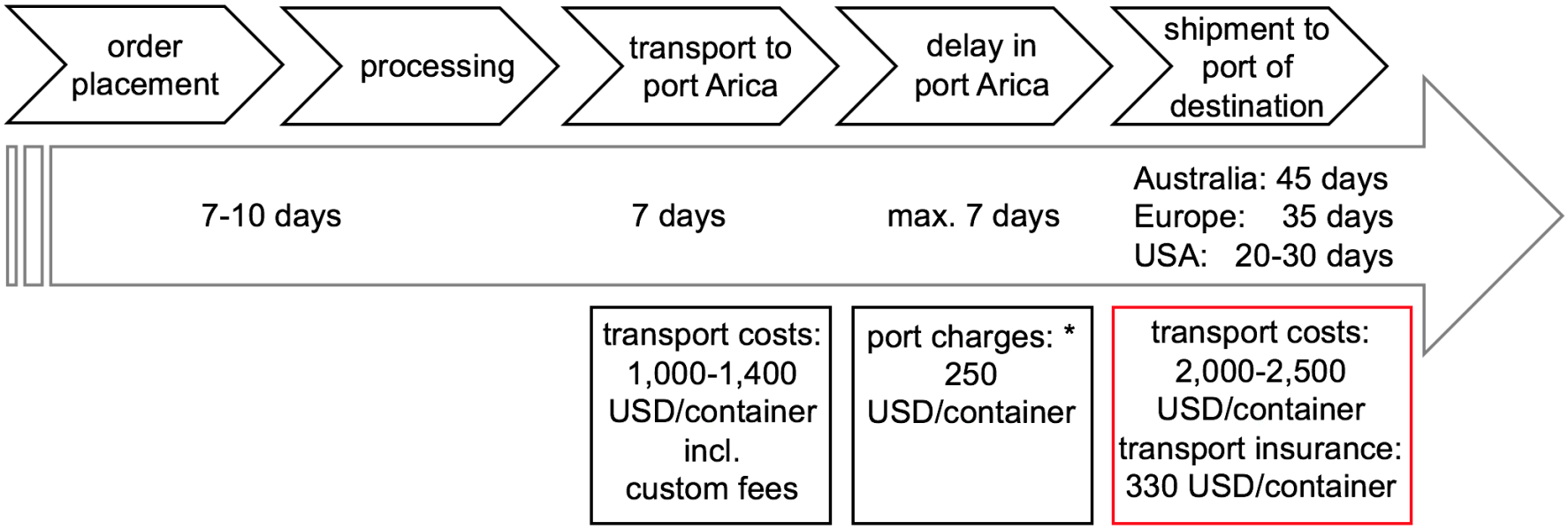
Table 7 illustrates the sales volume of organic and/or Fairtrade certified quinoa, target markets and the port of shipment used for exports. All interviewed institutions except CECAOT sell quinoa to the US American market. At the same time, all respondents declared that they would distribute the Bolivian grain to Europe (mainly destined for importers in France, Germany and the Netherlands), apart from Real Andina.

Two institutions export quinoa to Asia, Australia, Canada and Latin America. Half of the companies and producer associations surveyed market quinoa as organic Fairtrade certfied product. Parallel to this, half of the organizations trade quinoa and/or derivative products on the national market.

Export Routes, Transport Time and Costs

According to the IBCE, in 2012 almost 98 per cent of Bolivian quinoa exports were carried out via the Chilean port of Arica. The remaining two per cent were exported via port Iquique (Chile), as well as using the land route to Desaguadero (Peru), to Pocitos and port Concepción (Argentina). Only 0.6 per cent were transported by air (IBCE, 2013). All interviewed institutions realize quinoa exports through Arica, only Andean Valley uses both Chilean ports, Arica and Iquique. The respective port is reached by land route.

In accordance with the incoterm *FOB origin*, the producer association and/or exporting company assumes costs for the transport to the respective shipping point (here: port Arica), including custom fees and port charges to upload the containers on the vessel, as shown on the following page (*Figure 26*).



*estimation according to tariff list of *Terminal Puerto Arica*, 2014.

Figure 26: Overview of costs and time from order placement to arrival at port of destination (based on data obtained during field work).

The scheduling of export operations varies depending on the size of order, processing time and logistical handling of each institution. In general, it takes between seven and ten days from order placement to the processing of raw material[7], which implies the recollection of quinoa from producers, transfer to the plant, processing and/or industrialization as well as packaging. In the case of organic production, after processing one sample per order is taken and sent to a European laboratory, generating additional costs of approximately USD 600.

The distance between industrial sites (e. g. in El Alto) and port Arica amounts to approximately 500 kilometers, while the transport costs are calculated between USD 1,000 and 1,400 per container including custom fees. The transport is estimated to be seven days, considering additional time which is needed for loading on trucks, which is also determined by other factors, such as the availability of transport vehicles, traffic volume, road blockades (mainly in Bolivia) owing to strikes and border control entering Chile.

The shipment may be delayed up to seven days, for example when the port is closed due to tides or bad weather conditions. The problem for Bolivian export goods is that if there is a delay in Chilean harbors, afterwards national cargo will be executed first, whereas Bolivian and other foreign freights for international trade are placed in a queue. Moreover, custom control is conducted at the port of shipment in order to obtain the authorization for export and only then the goods are loaded into containers which are uploaded onto the vessel.

The time frame for maritime transport depends on the port of destination. For example, to Australia it takes 45 days, to Europe 35 days and to the US between 20 and 30 days. Accordingly, different shipment costs are generated, ranging between USD 2,000 and 2,500 per container, in addition to a transport insurance which amounts to around USD 300 per container.

[7] Due to the fact that neither producer associations nor export companies hold a warehouse with stored quinoa.

In the case of *FOB origin*, the importing company bears the full cost for maritime transport from Arica to the port of destination and the transport insurance (see red box in *Figure 26*), additionally covering the unloading of containers from the vessel and the transport to the importer's warehouse. The risk is transferred from the exporter to the importer when the goods are loaded onto the vessel. If the contract is agreed on *FOB destination*, the exporting company bears the costs and risks for shipment until the arrival in the port of destination.

For example, Quinoa Foods operates quinoa sales to European importers according to the term *FOB Hamburg*. Many producer associations and/or exporting companies choose *open account transaction* as method of payment for international quinoa sales. In this case, the importer settles the order after the reception of the goods (between 30 and 90 days).

In general, one container has capacity for 20 tons. However, APQUISA distinguishes between containers destined for Europe which carry up to 22 tons and containers exported to the US American market which load 17 or 20 tons. In Europe, the principal ports of destination for Bolivian quinoa are Hamburg (Germany) and Rotterdam (the Netherlands) - both are considered as the most important European container ports.

According to the Fairtrade standards for cereals, the buyer of Fairtrade certified quinoa has to make a 60 per cent advance payment of the total amount of the order as pre-finance to the farmer after signing the contract and at least six weeks before shipment. The remaining 40 per cent and the premium has to be paid within 30 days after the reception of documents confirming ownership.

4.3 Price Analysis

4.3.1 Analysis of the Purchase Price Development

In the years 2010 and 2011 the Challapata market price for white conventional and unprocessed quinoa ranged between BOB 700 and 900 per quintal.

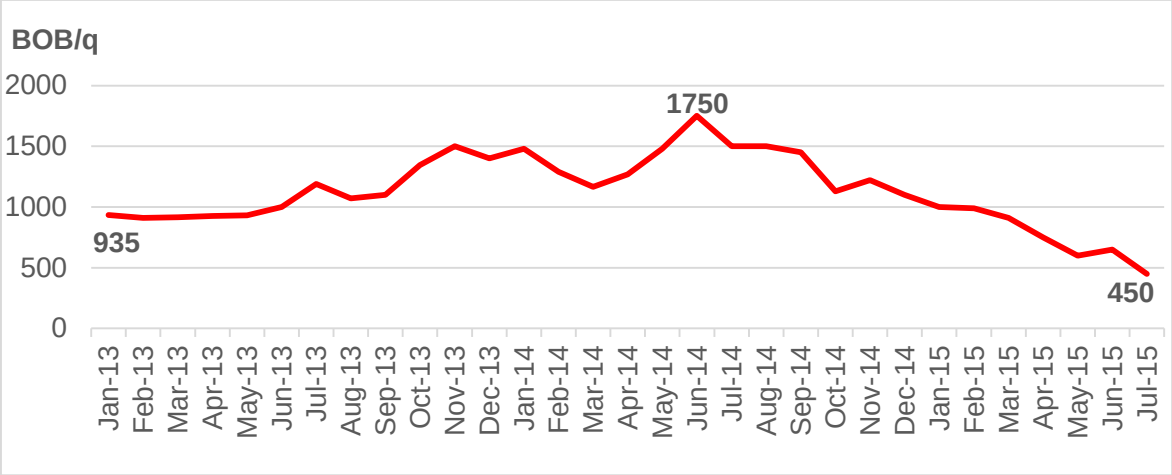


Figure 27: Development of Challapata market price for white quinoa in BOB/q (Jan 2013-Jul 2015) (based on data obtained during field work and on Mercadero 2014 and 2015).

Figure 27 shows the development of the price at the Challapata market from January 2013 to July 2015, whereas prices are quoted in BOB per quintal (q). It can be observed that quinoa prices increased slowly until they reached a peak at BOB 1,750 in June 2014, and from then on dropped to their lowest level in July 2015 (BOB 450).

The current market price for quinoa (BOB 350 per quintal in May 2016) is almost 75 per cent lower than in 2014, when one quintal amounted to an average of BOB 1,360. Based on the recent price level, farmers are unable to cover their production costs. According to quinoa growers, they require a price of at least BOB 600 per quintal to cover their production costs, thus advocating the introduction of a minimum price. It has to be considered that the production costs and the crop performance vary depending on the production system (traditional, semi-mechanized or mechanized and conventional or organic). In comparison with other crops, quinoa requires little input, thus the production costs are relatively low, since the major part of the labor force is provided by family members.

Although the production expenses for black, red and white quinoa are similar, the profits are exposed to significant price volatility and market fluctuations, depending on the demand from major target groups. It was observed that during the last years, prices for red grain were stated higher than for black and white quinoa, according to the prices set in Challapata. Due to the fact that chefs started to prefer red quinoa for the preparation of dishes, farmers expanded cultivation areas of red grain, while prices rose.

In the meantime, the trend has shifted towards black quinoa, which is marketed as “caviar of the Andes“. However, nutritional properties and taste are very similar, with only small differences in their texture. At present, white quinoa has reached the lowest market price, while the second place is occupied by black grain, whereas red quinoa achieves the highest price level. For example, Andean Valley purchases white organic quinoa from their affiliated producers for BOB 500 and red quinoa for BOB 1,200, whereas Real Andina buys black organically certified quinoa at BOB 700.

4.3.2 Comparative Analysis between Purchase and Export Prices

Associations buy white organic quinoa from their affiliated farmers at a higher price than private companies. ANAPQUI, for example, pays BOB 725 per quintal to their members, of which BOB 25 consist of a regional producer bonus. However, the average purchase price of both, associations and private companies, of BOB 503 per quintal (equivalent to USD 1,576 per ton) lies above the current Challapata market price, which amounts to BOB 350 per quintal (see *Table 8*).

Table 8: Purchase and export prices for white organic quinoa in BOB/q and in USD/t (based on data obtained during field work).

Institutions	Organic Purchase Price[8]		Organic Export Price (FOB)	Organic Fair Trade Export Price (FOB)
	BOB/q	*USD/t*	*USD/t*	*USD/t*
ANAPQUI	725	2,271	n/d	min. 2,600
APQUISA	n/d	n/d	2,000-2,500	min. 2,600
CECAOT	520	1,629	2,300	min. 2,600
Andean Valley	500	1,566	2,000-2,500	no FT
Quinoa Foods	450	1,410	2,000	no FT
Real Andina	400	1,253	2,000-2,500	no FT
SINAI	400-450	1,253-1,410	2,300 (US) 2,500 (Europe)	no FT
SINDAN Organic	500	1,566	2,300	2,700

The (FOB) export price for organic quinoa ranges between 2,000 and USD 2,500 per ton, although prices on the European market are higher than on the US American market. In this context, it has to be considered that the FOB price for conventional quinoa reached USD 7,443 per ton in January 2014, being about three times higher than now, although also the purchase price was correspondingly higher.

The current Fairtrade minimum price for organic quinoa has been established at USD 2,600 per ton. However, only SINDAN Organic has set a higher price, whereas ANAPQUI did not provide information on their organic export prices. Moreover, farmers receive a Fairtrade premium of USD 260 per ton, which is additionally charged to the importer.

[8] In general, raw material prices for food commodities are quoted in Bolivian Boliviano per quintal (BOB/q), whereas the export prices for processed grain or finished products are defined in USD per ton (USD/t). In order to facilitate the comparison of prices along the entire value chain, prices are indicated in BOB/q and USD/t, assuming an exchange rate of BOB 6.94 per dollar. For quantity conversion, it has to be considered that one quintal corresponds to 46.0093 kilogram, thus, one ton is equivalent to 21.74 quintal.

4.3.3 Price Calculation

4.3.3.1 Comparison of Retail Prices

Table 9 shows four examples of retail prices for organic and/or fair trade certified Bolivian quinoa in the German market. Prices are stated in EUR and USD including seven per cent value-added tax in order to be used for further calculations. The examples illustrate that the price difference between organic and fair trade certified quinoa is minor. However, the sales price for organic quinoa from Naturkorn Mühle Werz is more than twice as high as the prices of other retailers. In this context, it has to be considered that many retailers not only focus on direct sales, but also distribute their products under their own brand names to other points of sale, such as world shops, organic food stores, drugstores and online shops.

Table 9: Overview of retail prices for organic and/or fair trade certified Bolivian quinoa (based on Alnatura, 2016; GEPA, 2016b; Naturkorn Mühle Werz, 2016; Rapunzel, 2016).

Retailer	Exporter	Packaging	Certification	Price (incl. 7% VAT)	Photo
Alnatura	n/d	500g	organic	EUR 4.95 USD 5.54	
GEPA	ANAPQUI	500g	organic, Fairtrade	EUR 5.49 USD 6.15	
Naturkorn Mühle Werz	n/d	500g	organic	EUR 11.95 USD 13.38	
Rapunzel	ANAPQUI	500g	organic, fair trade (own label: HIH)	EUR 5.99 USD 6.71	

For instance, Asthelia, a German internet provider for organic and/or Fairtrade certified food products, purchases fairly traded goods from the importers GEPA, EL PUENTE and ETHIQUABLE. Asthelia offers organic quinoa from Peru, Ecuador and Bolivia, but with the label of FLO-CERT only from Ecuador (ETHIQUABLE) and Bolivia (GEPA) (Asthelia, 2016). The research revealed that Asthelia re-sells GEPA's Bolivian quinoa, using GEPA's packaging and their logo, as shown in the photo of *Table 9*. Yet, the final consumer price is set at EUR 7.49 which corresponds to USD 8.39 (including VAT, excluding delivery costs). Compared to the GEPA retail price of EUR 5.49 which is equivalent to USD 6.15, the price of Asthelia is more than 36 per cent higher. Thus, it can be assumed that the price difference of two Euros is fully assigned to the online retailer.

4.3.3.2 Retail Price Allocation

In 2015, the Centre for the Promotion of Imports from Developing Countries (CBI), an agency of the Ministry of Foreign Affairs of the Netherlands, conducted a retail price allocation[9] for organic quinoa distributed on the European market. *Figure 28* represents the proportional distribution of the retail price, indicating which percentage relates to each function.

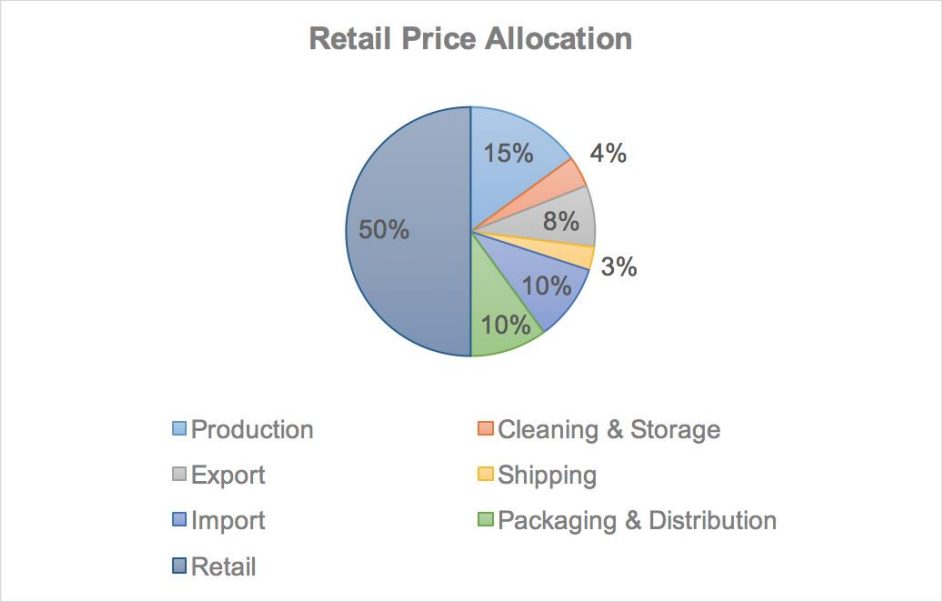


Figure 28: Purchase price allocation of organic quinoa (based on CBI, 2015).

[9] Based on the indicative retail price. The term "indicative price" originates from stock exchange trading and, in general terms, can be understood as the price at which a product might be purchased by consumers.

This data has been used to carry out a forward and a reverse price calculation for organic Fairtrade quinoa. In this context, the forward calculation is based on the production price and the reverse calculation takes the retail price as a basis. In the following example, production prices of farmers from ANAPQUI, CECAOT and SINDAN Organic served as starting point for the forward calculation (highlighted in blue), whereas the reverse calculation is based on retail prices of GEPA and Rapunzel (marked yellow).

Table 10: Forward price calculation beginning with production costs of ANAPQUI, CECAOT and SINDAN Organic (based on data obtained during field work).

		ANAPQUI	**CECAOT**	**SINDAN Organic**	**Average**
Percentage	**Function**	*USD/kg*	*USD/kg*	*USD/kg*	*USD/kg*
15%	Production	**2.27**	**1.63**	**1.56**	**1.82**
+ 4%	Processing	0.61	0.43	0.42	0.49
+ 8%	Export	1.21	0.87	0.83	0.97
+ 3%	Shipping	0.45	0.33	0.31	0.36
+10%	Import	1.51	1.09	1.04	1.21
+10%	Packaging & Distribution	1.51	1.09	1.04	1.21
50%	Retail	7.56	5.43	5.20	6.07
Net of Tax		15.12	10.87	10.40	12.13
+ 7%	VAT	1.06	0.76	0.73	0.85
Total with Tax		**16.18**	**11.63**	**11.13**	**12.98**

Table 11: Reverse price calculation beginning with retail prices of GEPA and Rapunzel (based on data obtained during field work).

		GEPA	**Rapunzel**	**Average**
Percentage	**Function**	*USD/kg*	*USD/kg*	*USD/kg*
Total with Tax		**12.30**	**13.42**	**12.86**
- 7%	VAT	0.80	0.88	0.84
Net of Tax		11.50	12.54	12.02
-50%	Retail	5.75	6.27	6.01
-10%	Packaging & Distribution	1.15	1.25	1.20
+10%	Import	1.15	1.25	1.20
+ 3%	Shipping	0.35	0.38	0.36
+ 8%	Export	0.92	1.00	0.96
+ 4%	Processing	0.46	0.50	0.48
15%	Production	**1.73**	**1.88**	**1.80**

The data on production prices was taken from *Table 8* and the information on retail prices was derived from *Table 9*. It has to be considered that retail prices are indicated including the legal value-added tax of seven per cent. In both cases, the average value has been established (see right column). The results obtained by applying the CBI calculation method verify the correctness of this approach, because the outcomes of both price calculations, forward and reverse, largely correspond to the percentage of purchase price allocation established by CBI (highlighted in green).

It has been approved that the factor *retail* comprises half of the net sales price, whereas *production* only assumes around 15 per cent. However, it has to be considered that this calculation does not take into account the Fairtrade minimum price for organic quinoa (USD 2,600 per ton) and the received premium (USD 260 per ton). In this regard, the calculation provides a general overview and can be used as an approximation to the percentage distribution of functions within the commercial chain of organic quinoa.

In the case of SINDAN Organic, the enterprise purchases organic quinoa from their farmers at USD 1.57 per kilo in order to offer it at an export FOB price of USD 2.3 per kilo for organic grain and at USD 2.7 for those products possessing organic and Fairtrade certification (see *Table 8*). In this context, the break-even point[10] for processed organic grain corresponds to USD 1.85 per kilo. According to this, the minimum profit margin of SINDAN Organic amounts to seven per cent, lying over the bank interest rate which is set at six per cent.

[10] Break-even point indicates the price level at which the total expenses (fixed and variable costs) are covered; neither profits nor losses are generated at this point.

4.3.3.3 Calculation of Fairtrade Certification Fees

The example of the association ANAPQUI is taken in order to estimate the respective Fairtrade certification fees. The following information is required to determine the annual and/or initial certification costs by means of a calculator which has been established by FLO-CERT (FLO-CERT, 2016b): ANAPQUI is categorized as a second-grade small producer organization, due to the fact that democratic control is excecuted by their direct members (FLO-CERT, 2016a).

Only 80 per cent of the total affiliated farmers are Fairtrade certified, which corresponds to 2,000, they are divided in nine regional cooperatives. The product to be certified consists in quinoa in different forms, such as pearled grains (white, red, black and tricolor), flour, flakes and pops, which are processed in ANAPQUI's principal plant in Challapata with around 15 workers. The producer association does not subcontract additional entities.

The initial certification costs for ANAPQUI correspond to EUR 6,000 which is equivalent to USD 6,721, whereas the annual certification amounts to EUR 3,873, being equivalent to USD 4,338 (*Table 12*). The initial certification fees are valid for the first twelve months and have to be paid before the audit. Afterwards, a certification cycle of three years begins, while auditing is carried out once a year.

Table 12: Estimate of certification fees in EUR and in USD (initial and annual) (based on data obtained during field work and calculated by means of FLO-CERT, 2016b).

	Initial Certification Fees		**Annual Certification Fees**	
Factors	*EUR*	*USD*	*EUR*	*USD*
Application Fee	538	603	0	0
Certification Fee	3,474	3,891	2,490	2,789
Additional Fees	1,988	2,227	1,383	1,549
Total Fees	**6,000**	**6,721**	**3,873**	**4,338**

The example shows that the annual certification costs are around 35 per cent lower than the initial fees. In the case of non-compliance during a regular audit, follow-up verification is required, which generates an additional fee of EUR 358 per day (including travel and reporting days) plus travel expenses (FLO-CERT, 2016b).

5. Discussion

The value chain analysis for organic quinoa which has been conducted in this study revealed that the commercial system of fair trade implies less intermediaries. At least in Bolivia, being considered as country of origin, direct trade relations between producer associations or export companies and importers, such as ETHIQUABLE, GEPA and Rapunzel, have been identified.

According to the results, it has been found out that the value chain of quinoa is strongly buyer-driven, which means that retailers from target markets exercise control through the establishment of quality standards for organic and/or fair trade certified quinoa, whereas farmers in producing countries are obliged to fulfill these requirements in order to become accredited (Laguna, 2008).

5.1 Impact of Associations and Private Companies

In this context, both producer associations and export companies assume an important role in quinoa trade on national and international markets. Regarding producer organizations, it has to be considered that the building of cooperative structures constitutes a requisite for farmers' introduction to the Fairtrade system. However, the level of mechanization among affiliated smallholders might vary, which provokes an unequal development, owing to the fact that through intensified production systems larger territories can be cultivated and higher profits are generated (Carimentrand & Ballet, 2010). Additionally, not all members share the same benefits, for example, among ANAPQUI only 80 per cent of the producers are certified under the label of FLO-CERT. These inequalities among quinoa growers might lead to internal tensions within the organization.

Besides the economic aspects, associations hold a representational function. In the case of APQUISA, the board of directors is democratically elected in a three-year cycle and consists of five members, who assume the functions of president, vice president, communicator, secretary and treasurer. Despite the existence of participatory mechanisms for representative democracy, affiliated quinoa growers are still little functionally integrated, due a lack of coordination and communication within the association.

Among ANAPQUI it was reported that individual interests of influential people from the organization would have been hierarchically positioned above collective interests (Carimentrand & Ballet, 2010). Thus, few people would exercise control on the association; this does not correspond to Fairtrade standards for small producer organizations, according to which democracy, participation and transparency constitute important factors (Fairtrade International, 2011).

In 1998, the associations ANAPQUI and CECAOT accounted for a market share of almost 80 per cent of the total Bolivian quinoa exports. With the emergence of private companies, however, producer organizations have lost their former monopoly position in quinoa trade. Hence, in 2004, the market share of ANAPQUI and CECAOT was reduced to 34 per cent. Parallel to this, enterprises have gained significant influence on the setting of export prices. Due to the strong competitive situation, the organizational structure of the supply chain became more complex. Moreover, associations faced higher barriers to market entry owing to a sharp increase in quality requirements from target groups – mainly in industrialized countries (Cáceres, Carimentrand & Wilkinson, 2007).

The collaboration between individual quinoa growers and private companies is based on a contract system securing a functional division of labor. In this context, enterprises perceive farmers more as suppliers of raw material limited to the function of agricultural cultivation, rather than as an integral part of the company. Producers do not have the possibility to generate additional profits through value-added activities related to the processing of bulk grain[11].

At the same time, they have to comply with strict requirements according to the enterprise (regarding production volumes, product specifications, quality standards, delivery time, etc.). This reveals an unequal distribution of power which relies on the buyer-driven commodity chain and demonstrates the weak negotiation position of farmers (Laguna, 2008).

[11] The term “bulk grain“ comprises unprocessed quinoa.

Compared to producer associations, private companies do not guarantee democratic involvement of their affiliated farmers in business operations, but rather pursue a strictly profit-oriented approach. Based on these conditions, a large number of quinoa growers indicated that they would prefer to distribute their products directly to importers (AIPROCA, 2016). Many quinoa farmers operate individually (not affiliated to producer associations or private companies) and are widely scattered geographically, with little access to processing facilities and distribution channels (Cáceres et al., 2007). Many producers request authorization to export unprocessed quinoa (Laguna, 2008).

The function of intermediaries is perceived as quite ambivalent. On the one hand, these middlemen provide services, such as the collection and the transport of quinoa to trading points. Moreover, they possess a wide network of contacts and connections in quinoa business, while distinguishing themselves from private companies and/or associations in their ability to also purchase small quantities. In addition, many intermediaries buy conventional grain, and thus not request certifications or compliance with quality requirements. On the other hand, intermediaries use their growing market power to exercise significant influence on quinoa prices, which is revealed in their dominance on the market in Challapata (Schneider, 2014).

5.2 Influence of Peruvian Competition

With the worldwide quinoa boom, the number of quinoa producing nations increased significantly and reached more than 70 countries (FAO, 2013), which lead to an oversupply of quinoa on the global market. In this context, Bolivia's strongest competitor is its neighbouring country Peru which offers quinoa at lower prices. This generated a price decline on the Bolivian market and provoked a decrease in exports.

During the last decade, Peru extended its cultivation areas, with a focus on large-scale production of conventional quinoa (more than 50 hectares per farmer). Peru obtains two annual quinoa harvests, but Bolivia only one. In addition, Peru's yields are three times as high as those of Bolivia, although less agricultural land is

occupied, because farmers operate more efficiently. In 2014, an average of 1.68 tons per hectare was achieved by Peruvian producers (IICA, 2015b), whereas in 2013, Bolivian quinoa growers accomplished an average harvest of 0.47 tons per hectare (IICA, 2015a). Furthermore, in Peru the production costs for quinoa are considerably lower than in Bolivia.

Inquiries revealed that many actors in the quinoa sector advocate the introduction of a protected designation of origin for Royal Quinoa from Bolivia (ANAPQUI, 2016; CABOLQUI, 2016; CECAOT, 2016; CONACOPROQ, 2016; FAUTAPO, 2016). This process is supported by the CBI in order to differentiate Bolivian quinoa from products originating from other quinoa producing countries, such as Peru. Due to this legal status, Bolivia would obtain the exclusive right to use the registered and protected name Royal Quinoa, ensuring certain quality standards and authenticity (EUFIC, 2013). However, Peruvian farmers also applied for the denomination of origin for their quinoa (IICA, 2015b); hence it is only a question of time until one of the two nations achieves this monopoly based on the protected origin.

Some years ago, Peruvian intermediaries entered the Bolivian market to purchase Royal Quinoa, which only grows in the Southern Altiplano of Bolivia, and offered the grain on international markets as if it had been harvested in Peru. At the same time, these intermediaries introduced conventional quinoa to Bolivia, being distributed at cheap prices as organically certified. According to this, smuggled quinoa from Peru has been mixed with Bolivian crops in order to be sold on the export market.

Yet, the use of chemical inputs, such as fertilizers and pesticides, was detected and the goods were returned, causing mistrust towards organic certification of quinoa among foreign importers over a certain period. Irrespective of the negative effects on the credibility of certifications, the mixing of different qualities of quinoa is illegal (Laguna, 2011). Regarding the smuggling of quinoa, many Bolivian institutions demand the introduction of sanction measures and mechanisms to combat the illegal cross-border trade of quinoa (CABOLQUI, 2016; CECAOT, 2016; PROINPA Foundation, 2016). Moreover, the implementation of quality control criteria has been suggested in order to detect qualitative deviations (MDRyT & CONACOPROQ, 2009).

During the last years, the Peruvian government made high investments in the agricultural sector, with particular emphasis on quinoa, providing marketing support to promote this product worldwide. Official statistics provided by the Ministry of Foreign Trade and Tourism of Peru (MINCETUR) revealed that the South American country possesses many commercial relationships on the international level, which has been shown, among others, through the opening up of the Chinese market. In contrast, in Bolivia there would be no direct access to many export markets owing to a deficit in business relations and because of legal barriers and regulations imposed by the country's government (Cáceres et al., 2007).

5.3 Governmental Support

The large majority of respondents indicated that the commercialization of quinoa on international markets would require support of the Bolivian government. Already existing supportive programs are nonetheless destined to the production and processing sector (Schneider, 2014), not to sales and distribution.

The National Policy for Quinoa was formulated by MDRyT and CONACOPROQ in 2009. Among others, it includes a strategic action program for export promotion which aims at enhancing sales to international markets, especially of organically and/or fair trade certified quinoa, through the support for organizations' participation in domestic and foreign fairs. Moreover, the program implies measures to strengthen the coordination between actors of the quinoa sector in order to improve the information flow and to grant access to price information (MDRyT & CONACOPROQ, 2009).

However, in 2014 the National Policy for Quinoa was denounced by the president of CONACOPROQ, despite being one of the main responsible persons for the initial implementation of this policy, owing to the fact that no progress had been achieved through this political instrument (ERBOL Digital, 2014). The International Year of Quinoa, though, generated an increased worldwide recognition of quinoa, although Bolivia was not prepared for the quinoa boom (CABOLQUI, 2016), due to missing additional capacities and processing plants (Quinoa Foods, 2016).

Supportive measures of the Bolivian government should address the field of research, technological development (CABOLQUI, 2016) and infrastructural improvement in order to expand access to production areas (Quinoa Foods, 2016). Parallel to this, it is necessary to establish promotion measures for foreign quinoa trade, such as are to be found in Peru (FAUTAPO, 2016).

Yet, in Bolivia there are no appropriate institutions to undertake this task of promotional assistance. Regarding the operations of PROMUEVE BOLIVIA, the approach is evaluated as too wide by organizations such as CONACOPROQ. Low participation of stakeholders from the quinoa sector in international fairs was registered (MDRyT & CONACOPROQ, 2009) due to the fact that no funds were allocated. The inquiries revealed that only few organizations and enterprises possess sufficient financial resources to exhibit their products on foreign markets and fairs.

5.4 Effects of Price Volatility

Sharp price increases during the quinoa boom provoked conflicts between farmers and export companies and lead to a growing level of informal negotiation. According to the current market development, exporters tried to renegotiate retail prices with their importers, but price modifications were not always granted, thus exporters were forced to reduce their profit margins (Quinoa Foods, 2016; SINDAN Organic, 2016). This illustrates that governmental intervention might serve as a useful instrument to stabilize prices in quinoa trade.

When market prices dropped, farmers stored their crops with the aim to achieve better prices in the future. In the long term, though, many quinoa growers were obliged to sell their products at very low prices due to a lack of storage facilities and the need of economic remuneration in order to secure their livelihoods (CECAOT, 2016). Hence, small-scale producers are more vulnerable to volatile prices.

According to INIAF, price instability emerges only among producing countries, whereas retail prices in target markets remain quite stable, which is linked to an unequal distribution of profits and a lack of transparency along the supply chain

(INIAF, 2016). Moreover, contracts with importers are conducted on a long-term basis, whereas market prices are subject to severe fluctuations, which causes internal pressure among exporters (Quinoa Foods, 2016; SINDAN Organic, 2016).

Despite these price fluctuations, it has to be considered that farmers still receive a relatively large share of the export price in comparison with other agricultural food commodities, such as coffee (Schneider, 2014). However, there are negative examples for unfair distribution of profits among the Fairtrade system, such as the case of Asthelia. The internet retailer sells quinoa from GEPA and hence no additional costs for processing or repacking are generated. Nevertheless, the retail price is more than one third higher than the price established by GEPA, representing a maximization of profits at the expense of the Fairtrade concept.

Due to the fact the Challapata market does not imply any legal regulations or quality requirements, it represents a secure sales channel for quinoa, especially for conventional grain. Still, smallholders who operate on this fair hold a weak negotiation capacity owing to the fact that Challapata constitutes a distribution channel for quinoa which could not have been sold neither to associations nor to export companies, who mostly offer higher purchase prices (Carimentrand & Ballet, 2010).

Export prices are oriented towards the current market price in Challapata, although, in a certain sense, global dynamics of supply and demand are also reflected in the price level (Cáceres et al., 2007; Schneider, 2014). Hence, price development on the Challapata market is hard to understand due to the influence of trade unions and local traders (CECAOT, 2016), while intermediaries try to create a monopoly (FAUTAPO, 2016). In this regard, the National Policy for Quinoa included the measure to implement an information management system and to provide dissemination services for quinoa prices from Challapata, Puno and Desaguadero (MDRyT & CONACOPROQ, 2009). Even seven years later, however, this issue has still not been attained.

5.5 External Threats to Quinoa Trade

An additional factor influencing the quinoa trade is the sudden emergence of changes in climatic conditions. For example, during the last few years the event of *El Niño* lead to low precipitation, creating water scarcity in the agricultural regions and provoking loss of soil fertility (SENAMHI, 2016). Thus, poor harvests and a decrease of income among Andean farmers were recorded.

However, quinoa producers who are certified under FLO-CERT obtain a crop insurance through Fairtrade, so when massive crop losses occur due to extreme weather conditions, producers still receive a compensation payment. In contrast, this benefit does not apply to farmers who only hold the organic certification or produce conventionally; hence, smallholders who do not conclude harvest insurance contracts are directly exposed to the risk of farm bankruptcy.

Regarding the production of organic quinoa, it is important to take the element of livestock breeding into account with regard to the supply of animal manure – considering that llama and sheep manure serve as organic fertilizer for quinoa cultivation, and that smallholders usually kept large herds of these animals. In the last decade, though, an imbalance was registered (CECAOT, 2016). The rising global consumer demand for quinoa lead to an expansion of cultivation areas, which started to displace grazing ground and camelid livestock breeding. Additionally, the quinoa boom required yet more manure for the provision of organic nutrient sources. Today, the price for animal manure is five times higher than ten years ago. Due to the significant price increase, many quinoa farmers began to use chemical fertilizers instead of organic inputs, which is considered incompatible with organic agriculture and the respective certification.

On the long term, it seems necessary to develop adequate measures to address this imbalance between quinoa cultivation and livestock breeding in order to guarantee sustainable agriculture. From an economic perspective, the availability of animal manure assumes an essential role to offer organically produced quinoa at competitive prices to foreign target markets.

According to Quinoa Foods, enterprises are exposed to external factors which have a direct influence on the delivery time of their goods, such as emerging traffic volume, road blockades and border control. However, the particular challenge lies in the fact that Bolivia constitutes a landlocked country, being completely reliant on the use of harbors and maritime infrastructure of its neighboring states, especially the Chilean ports Arica and Iquique. Another issue is that national cargo is prioritized in these ports, so in the event of delay or close down of harbors, Bolivian maritime freight is postponed. Due to delivery delays, importers might charge a contractual penalty fee (Quinoa Foods, 2016).

5.6 Organic and Fair Trade Certification

It has to be considered that quinoa is not a traditional Fairtrade product, such as coffee or cocoa, due to the fact that the grain is intricately related to the idea of food sovereignty in the Bolivian Andes, thus representing a special case because of its historical background (Cáceres et al., 2007). Hence, quinoa serves as an example of a previously unknown product which has only been recognized through organic and/or Fairtrade certification by consumers from industrialized nations (Carimentrand & Ballet, 2010).

Organic certifications are contractually regulated and issued by private certifying companies. In most cases, the certification costs are covered by export companies or producer associations, holding the ownership of the certificate. Due to high expenses of the certification process, it is almost unaffordable for individual farmers to obtain certifications for their production system. Thus, many quinoa growers become contractually bound to organizations or enterprises (UTO, 2016).

Nevertheless, often not the entire production volume is purchased, so farmers are obliged to find other distribution channels and sell the remaining quantity without certification, as conventional quinoa. This situation has currently been worsened by a lack of demand in organic markets (Laguna, 2011). Hence, regulation is required to address the problem regarding the legal scope of organic labels (UTO, 2016). A possible alternative is the export of conventional grain with the FLO-CERT label. By

means of this measure, producers who not comply with organic certification could also contribute to the Fairtrade market (Fairtrade International, 2016a).

Moreover, it has to be considered that the transformation from a conventional to an organic production implies a transition period of three years, since only then are crops legally reconginzed as organic. In the meantime, farmers do not obtain any benefit from the certification and are forced to sell their products still as conventional quinoa and thus at a lower price than organic grain (BOLICERT, 2016). Considering these aspects, the process of organic certification is time-consuming, cost-intensive and generates an additional administrative burden for smallholders.

Since organic agriculture is embedded in a buyer-driven market, producing countries are obliged to meet standards established by consuming countries. In this context, some enterprises prefer trade with conventional grain, achieve lower prices but subject to less restrictions (SINAI, 2016).

In general, the fair trade market offers higher prices than conventional and/or organic quinoa exports (Cáceres et al., 2007). The difference between the minimum fair trade prices for conventional and organic quinoa amounts to USD 350 per ton. If the market price exceeds the minimum fair trade price, producers are paid according to the market price (see *2.1.2 The Fairtrade System*) (Fairtrade International, 2016b). However, due to strong price volatility of quinoa during the last years, in practice it is difficult to constantly adjust export prices – considering that supply contracts with importers are concluded on a long-term basis (SINDAN Organic, 2016).

The minimum fair trade price for organic quinoa is set at USD 2,600 per ton, compared with the recent export price for organic quinoa which lies around USD 2,250 per ton (Fairtrade International, 2016b). Currently, there is a price difference of almost 16 per cent. In accordance with this, interviewed Fairtrade certified farmers confirmed that the alternative trading practice generates an economic benefit of 20 per cent on average (AIPROCA, 2016; APQUISA, 2016; CECAOT, 2016).

Research revealed that the development of fair trade corresponds more to a commercial trend than to growing consumer awareness. When export prices stagnated at a high level, the concept of fair trade did not assume a siginificant role for quinoa farmers. Moreover, at that time importers rejected Fairtrade quinoa because conventional prices were already high, thus Fairtrade certified quinoa producers were obliged to sell their crops as conventional on the international market (SINDAN Organic, 2016).

Meanwhile, owing to the current price decline, producers became aware that the incentive provided by Fairtrade would be required to safeguard their incomes during economically difficult periods. However, there is very little price difference between organic and the fair trade certification systems (AIPROCA, 2016). Due to volatile prices, in particular during 2013 and 2014, quinoa is not considered as a product suitable to the concept of fair trade (Quinoa Foods, 2016). Parallel to this, a lower demand for fair trade certified quinoa has been registered, especially in the US American market due to changing consumer behavior. (CABOLQUI, 2016).

Considering the social and working conditions, there is no significant difference between conventional or organic quinoa cultivation and Fairtrade certified production, but rather in the membership in associations and the affiliation to private companies (AIPROCA, 2016). According to these organizational forms, grouped quinoa producers get support during the cultivation process (through the provision of inputs), receive administrative and technical assistance, while obtaining capacity building in sustainable farming methods (ANAPQUI, 2016; CECAOT, 2016; SINDAN Organic, 2016).

5.7 Deficiencies in Certification Systems

According to the national representative of Fairtrade International in Bolivia, it is important that producers become aware that fair trade does not constitute the solution to their economic problems, but rather should be understood as an approach to improve their living conditions (Fairtrade International, 2016a).

Nevertheless, fair trade cannot be seen an efficient instrument for the reduction of social inequalities among quinoa growers, due to the fact that the most marginalized farmers are often not even affiliated to Fairtrade organizations. Thus, many producers who cannot afford the certification costs are automatically excluded from the system. It was observed that the FLO standards for quinoa consider neither economic inequalities among farmers nor unbalanced distribution of power within associations (Carimentrand & Ballet, 2010). In order to reduce these socio-economic disparities among smallholders, producer programs could be implemented with the support of FAUTAPO (Gabriel, 2013).

Due to globalization, the traditional division between the North and the South is undermined. Following this approach, the labeling of products pursued the idea of providing greater market access for local farmers, but it rather created a buyer-driven market to whose requirements smallholder groups have to adapt. Since the Fairtrade system relies on standards and related audits, it generates interpersonal distance between producers and consumers (Cáceres et al., 2007).

Although traceability is strongly linked to organic production systems and practices of fair trade, the actions are characterized as purely unilateral along the supply chain (Carimentrand & Ballet, 2010), whereas transparency only addresses consumers (Laguna, 2008). This assumption has been confirmed by many associations who declared that they received very little information on the distribution channel of their product once it has left Bolivia. But if they participated in international fairs, they would benefit from the occasion and visit the respective points of sale in foreign target markets (APQUISA, 2016).

Through improved information access, knowledge of market developments can be acquired – and thus a strengthening of farmers' negotiating power could be achieved (UTO, 2016). In this regard, it is necessary to enhance the degree of transparency on both sides of the fair trade supply chain and create a bilateral dialogue (Cáceres et al., 2007).

The modification of requirements for membership in Fairtrade lead to the fact that private companies entered as partners into the Fairtrade system, whereas in the past only producer organizations were granted access. Due to the entrance of enterprises to the Fairtrade market new suppliers of certified quinoa appeared, which lead to an increased competition pressure within the network (Carimentrand & Ballet, 2010). Additionally, it has to be considered that Fairtrade contracts and agreements are concluded with associations or enterprises, rather than with individual farmers (Cáceres et al., 2007), while certifications are awarded by third parties, creating dependency on these private labeling institutions (Laguna, 2008).

CLAC (Latin American and Caribbean Network of Small Fair Trade Producers) constitutes a founding member and co-owner of Fairtrade International, holding the functions of operational assistance (e. g. provision of technical support), organizational strengthening (guarantee effective participation of stakeholders), promotion of products and the fair trade concept (spread principles and values) as well as facilitation of market entrance (CLAC, 2016).

Following this approach, on the national level it is recommended to establish a council of Fairtrade in Bolivia which assumes the role of a coordinating entity (Fairtrade International, 2016a; Laguna, 2008), providing advocacy and consulting services (e. g. assistance during auditing). In addition, this institution could serve to develop an information system as well as to create communication and collaboration channels between actors (Cáceres et al., 2007). Regarding the building of networks, CABOLQUI could adopt a supportive role, owing to deep knowledge and long-standing experience in foreign trade of Bolivian quinoa (Gabriel, 2013).

Moreover, a significant gap in the policy of Fairtrade has been identified regarding purchase operations between associations and their members. In general, organizations receive a specific quantity of quinoa from each affiliated farmer according to an annual plan (ANAPQUI, 2016; CECAOT, 2016). However, there are no specific regulations which aim at buying from the economically weakest member, nor are there mechanisms of redistribution among the association.

Instead, all producers obtain the same remuneration per quintal, but it has to be considered that harvest volumes vary between the farmers owing to different sizes of cultivation areas and levels of mechanization. Thus, large producing units achieve higher harvest performance and generate more income. This might trigger a process of self-exclusion of quinoa-growing smallholders from organizations (Carimentrand & Ballet, 2010). Another problem lies in insufficient monitoring of certified sales volumes. It has been assumed that some private companies started to export more certified quinoa than actually recorded by FLO-CERT, through mixing with cheap grain from Challapata (APQUISA, 2016).

Considering that the fair trade concept is oriented towards the creation of safe working conditions, the provision of decent wages and dignified living conditions, it is difficult to measure its success. However, the development of an indicator to determine the performance of this alternative commercial system is regarded as crucial (Cáceres et al., 2007), in particular owing to the fact that the share of the retail price which is received by farmers varies widely according to products and respective producing countries.

5.8 Comparison with Other Fairtrade Products

In the case of fairly traded coffee, farmers earn twice as much as from conventional coffee trade (Bara, 2012). This applies equally to cocoa growers who sell their crops as raw materials for the production of Fairtrade chocolate. Producer groups of Fairtrade certified orange juice, mainly from Brazil, gain almost 60 per cent more compared to world market prices for orange juice concentrate. In relation to the worldwide Fairtrade sales (from 2012 to 2013), coffee represented 55 per cent, cocoa ten per cent and fruit juice 0.2 per cent (Fairtrade International, 2014).

A comparison of the percentage share which corresponds to each link can draw on examples of retail price allocation for coffee, chocolate and orange juice concentrate from GEPA[12] (see *Figure 29*) (GEPA, 2014; GEPA, 2015b; GEPA, 2016a).

[12] The retail price of GEPA is based on the world market price, plus the difference to the Fairtrade minimum price (whether conventional or organic farming), plus the Fairtrade premium and an additional amount which is compensated by GEPA for many products.

It has to be considered that the link *production* comprises raw material input and labor costs, whereas *processing and transport* include industrialization, packaging and freight charges. The segment *state and licensing* encompasses taxes, customs duties and license fees, while GEPA covers all costs for import, distribution, personnel and premises. Producers receive between 22 and 28 per cent of the final retail price. On average, GEPA occupies 19 per cent, while *retail* obtains 26 per cent, together comprising 45 per cent of the total retail price. The links *processing and transport* as well as *state and licensing,* strongly dependent on the product, both amount to a total average of 37 per cent (GEPA, 2014; GEPA, 2015b; GEPA, 2016a).

The collaboration between GEPA and ANAPQUI demonstrates that ANAPQUI members currently receive around 23 per cent of the retail price for processed organic Fairtrade quinoa (considering the Fairtrade minimum price for organic grain of USD 2,600 per ton plus the Fairtrade premium of USD 260 per ton). The purchase price of ANAPQUI is set at USD 1.43 per half a kilo, while GEPA established a retail price of USD 6.15, which is more than four times higher. Considering that profits are concentrated on the lower levels of in the supply chain (Laguna, 2008), GEPA and the factor *retail* receive a proportionally larger share of the profits.

This can be explained as follows: Due to the fact that the grain has already been processed, further processing costs are estimated at a relatively low level. Transport costs within Bolivia amount to a maximum of USD 70 per ton plus minor port charges, while the calculated shipping costs lie around USD 125 per ton plus transport insurance. Thus, national and international transport costs correspond to approximately two per cent of the total retail price (converted from kilogram to ton). Moreover, quinoa is classified as cereal, with a tax rate of seven per cent for Germany. In the case of the Andean grain, no further product-related taxes, such as the coffee tax which applies in the German tax system, are added.

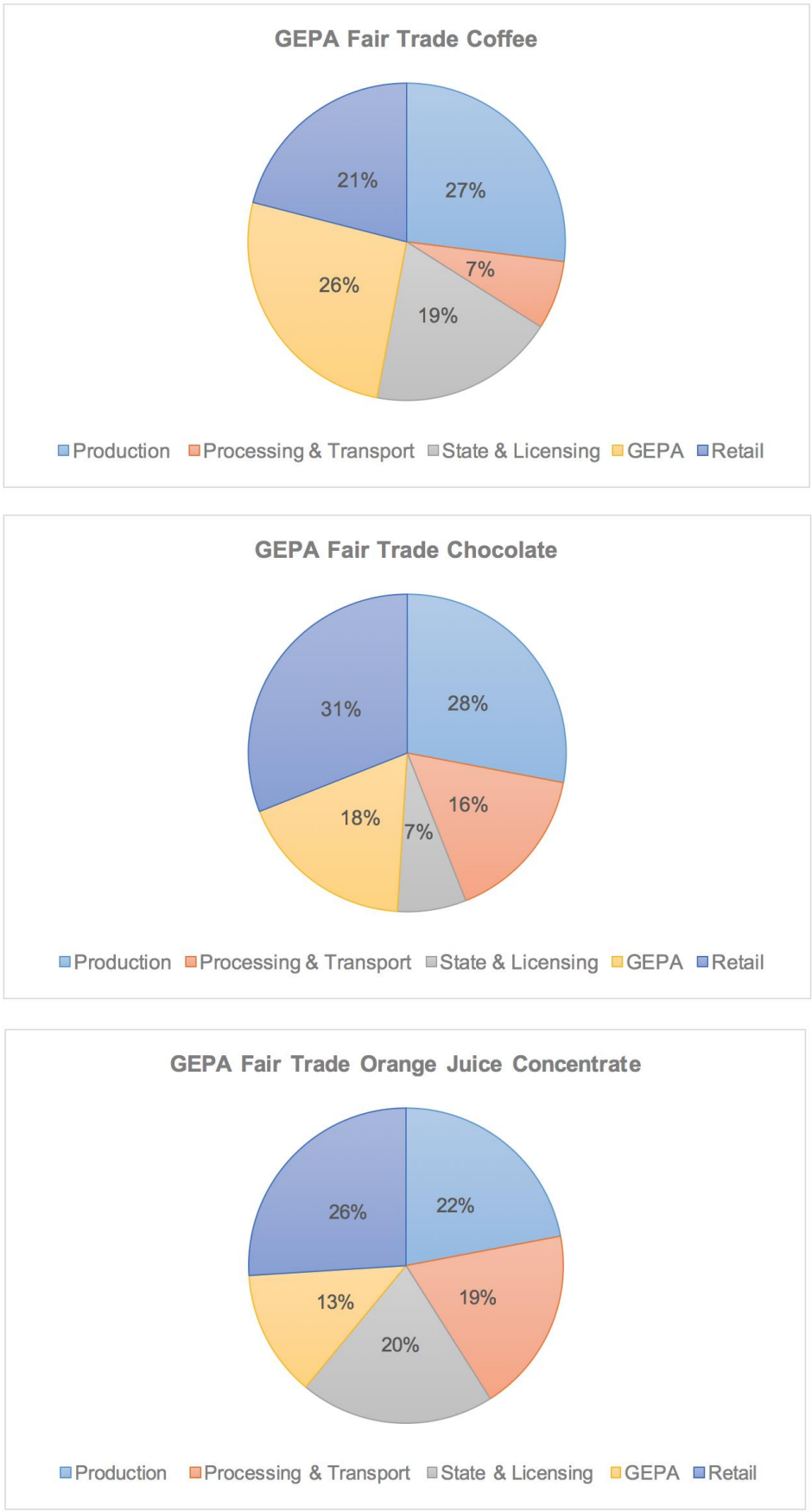


Figure 29: Comparison of retail price allocation of GEPA fair trade coffee, chocolate and orange juice concentrate (based on GEPA, 2014; GEPA, 2015b; GEPA, 2016a).

5.9 Problem Resolution Approach

Additional information could be provided to customers in target markets through the introduction of QR codes, which have already been implemented by the WFTO for some fairly traded products destined for the US (*Figure 30*). This marketing measure serves to establish a stronger connection between producers and consumers (Muñoz, 2016). In the case of quinoa the following data could be incorporated: information on farmers, the production process, the location of their cultivation areas, nutritional properties and traditional preparation forms of quinoa as well as data on the impact of Fairtrade on smallholders.

Figure 30: Example of a QR code by the WFTO (Muñoz, 2016).

Inquiries revealed that many institutions from the quinoa sector considered the SPP as a suitable alternative to existing fair trade certifications (CECAOT, 2016; INIAF, 2016): The Small Producers' Symbol (SPP) (*Símbolo de Pequeños Productores*) was established in 2010 by CLAC in order to correct the current Fairtrade standards' lack of focus on smallholders (ITC, 2015). The label – as shown in *Figure 31* - is embedded in an independent certification system and owned by small-scale farmers from developing countries who are represented by the Foundation of Organized Small Producers (FUNDEPPO).

Figure 31: Label of the Small Producers' Symbol (ITC, 2015).

The SPP is oriented towards the principles of sustainability, social justice and solidarity. Under this approach, the size of the production unit is limited to 15 hectare in agriculture to avoid large-scale operations (Pruijn, 2016). It is authorized in Canada, the European Union, Latin America and the Caribbean, Switzerland and the United States. Compared to Fairtrade certification fees (see section *4.3.3.3 Calculation of Fairtrade Certification Fees*), the implementation costs for SPP are significantly lower (ITC, 2015).

6. Conclusions and Outlook

During the last decade, the number of quinoa-producing countries rose sharply; hence in 2013 more than 70 quinoa-growing nations were recorded. This led to an oversupply of quinoa on the global food markets. Since Bolivia constitutes one of the main quinoa exporting countries, it was exposed to demand fluctuations and volatile prices.

The value chain analysis for organic fair trade quinoa originated from Bolivia revealed that, compared to conventional trade, less intermediaries are involved, although the chain is strongly buyer-driven. Organic certification represents a time-consuming and costly procedure. Due to the fact that these costs cannot be covered by farmers themselves, they are obliged to group-certifications. But the implementation of the Fairtrade system and its membership imply great certification costs.

In this context, producer organizations and export companies assume an important role in quinoa trade because they are legally recognized as owners of both certifications, organic and Fairtrade, whereas smallholders suffer from a lack of bargaining power. Moreover, a lack of coordination was spotted between actors which are involved in the Fairtrade supply chain. Furthermore, a deficit in transparency was identified, which can be seen in the fact that producers have limited access to information on prices, distribution channels, etc.

Additionally, there is low financial support from the Bolivian government in order to promote quinoa in international fairs, especially in comparison with neighboring countries, such as Peru. According to this, the denomination of origin is viewed as a promising measure to differentiate Bolivian quinoa from other producing nations.

All in all, it seems that quinoa constitutes a product currently not suitable for the Fairtrade concept due to several deficits in the certification system, and because of the fact that benefits are recently manifested in only very small economic profits. Hence, the implementation of alternative certification labels, such as the Small Producers' Symbol (SPP), should be contemplated.

The focus of this study is restricted to the value chain analysis for organic fair trade quinoa originated from Bolivia. However, many cross-cutting issues arise which could be addressed in future research. For instance, an analysis of target markets could be performed for European and/or US American countries, since these represent main consumer nations. In this context, an examination of the perception of customers is recommended as well as a comparison between quinoa and substitute grains, such as bulgur, couscous, etc., in order to determine its degree of differentiation and market power.

Moreover, an assessment of the impact of growing quinoa exports on domestic consumption is required and an estimation of the effect on food security in producing countries is necessary due to a strong connection with economic growth, while both issues need to be tackled simultaneously. This paper suggests to evaluate the utility of alternate certification systems for this product, such as the SPP.

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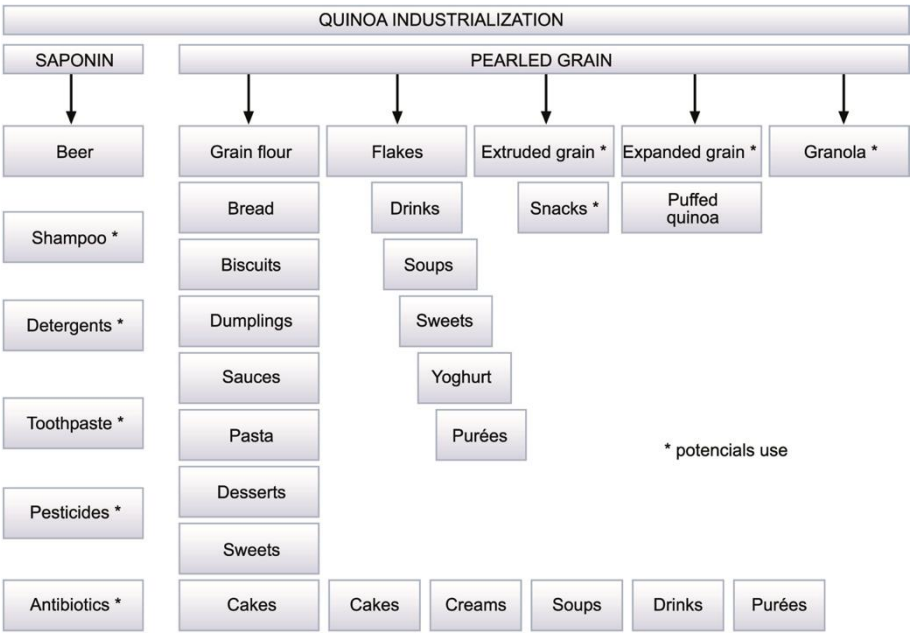
Appendices

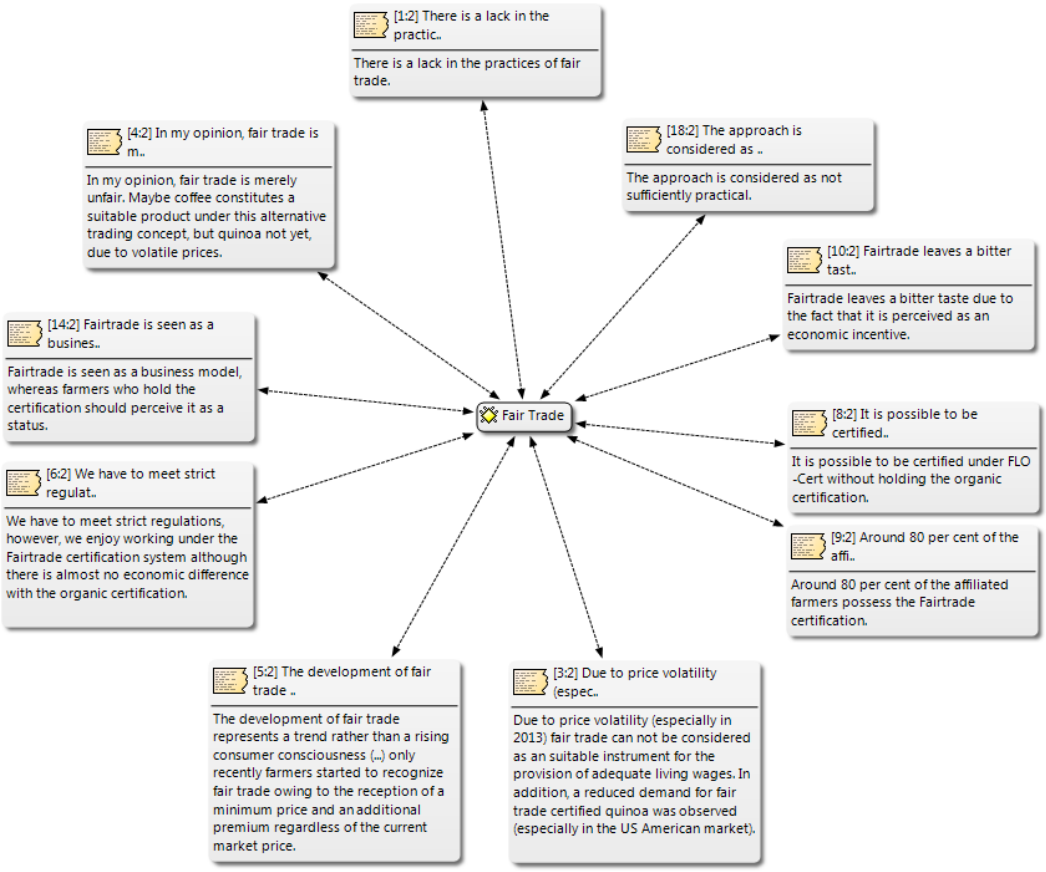
Appenix A

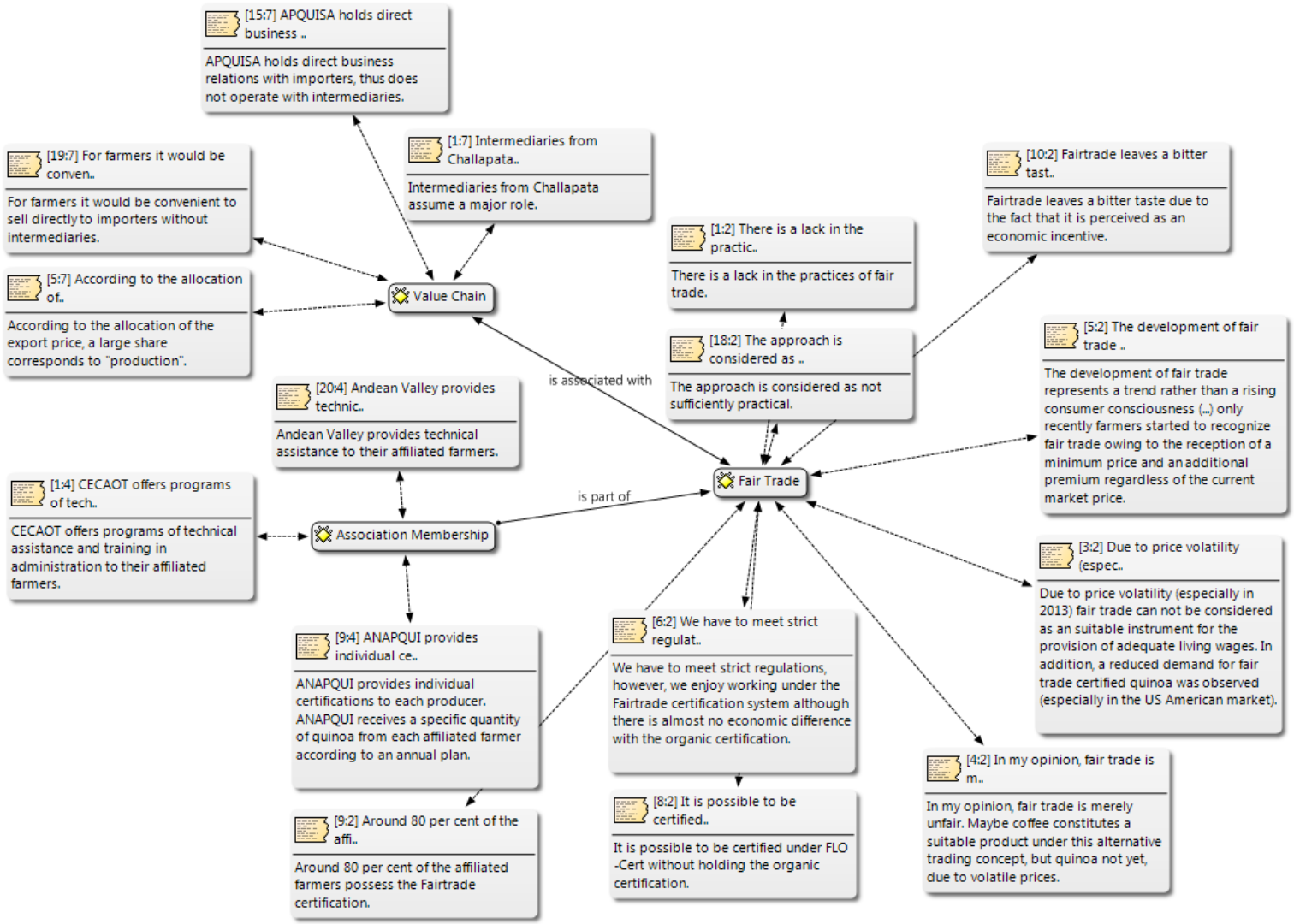
Derivates of Quinoa (FAO, 2011)

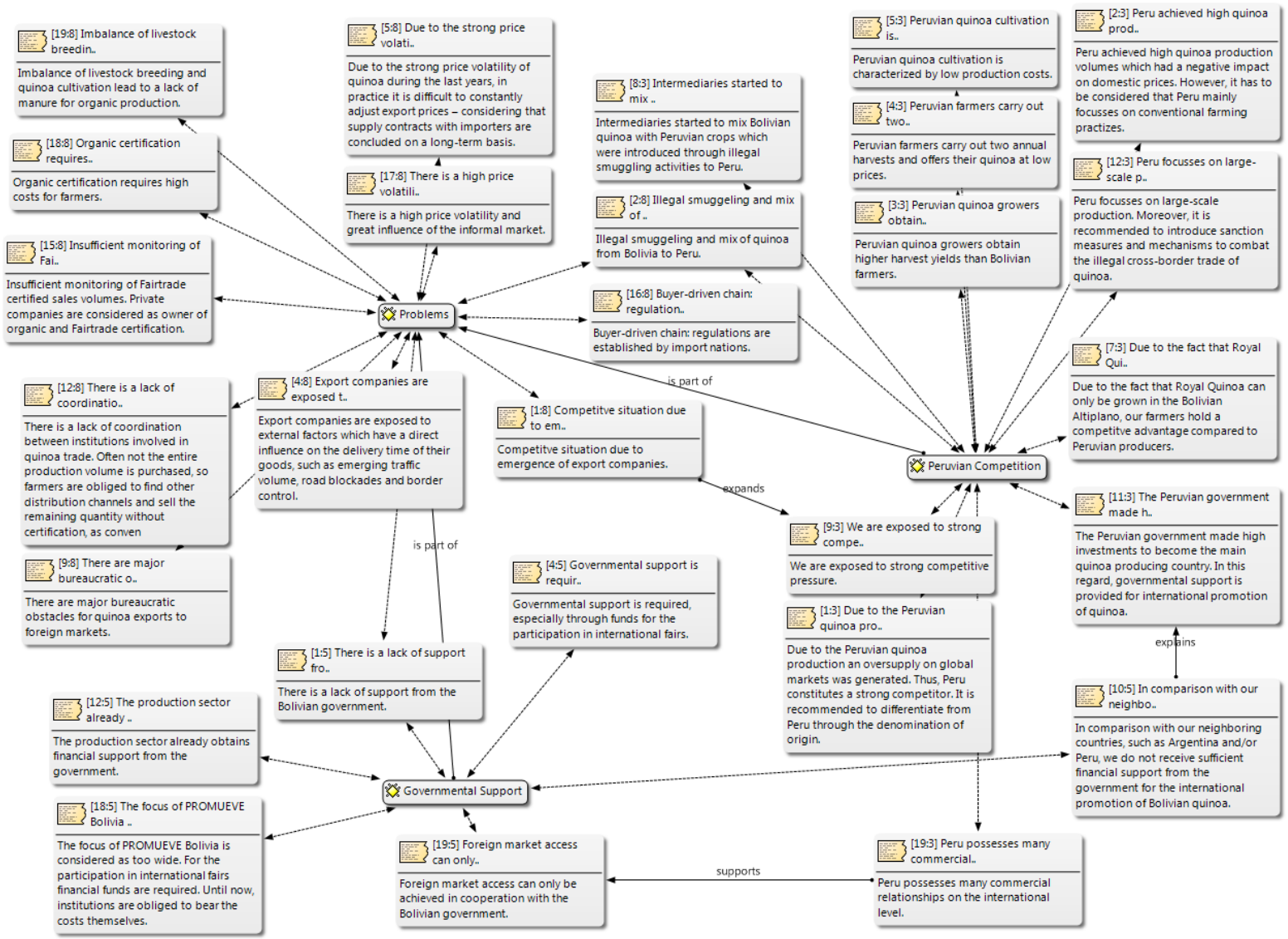


Appendix B

Data Analysis through the Software *ATLAS.ti*




[15:7] APQUISA holds direct business ..
APQUISA holds direct business relations with importers, thus does not operate with intermediaries.
[1:7] Intermediaries from Challapata..
Intermediaries from Challapata assume a major role.
[19:7] For farmers it would be conven..
For farmers it would be convenient to sell directly to importers without intermediaries.
[5:7] According to the allocation of..
According to the allocation of the export price, a large share corresponds to "production".
Value Chain
[1:2] There is a lack in the practic..
There is a lack in the practices of fair trade.
[10:2] Fairtrade leaves a bitter tast..
Fairtrade leaves a bitter taste due to the fact that it is perceived as an economic incentive.
[18:2] The approach is considered as ..
The approach is considered as not sufficiently practical.
[5:2] The development of fair trade ..
The development of fair trade represents a trend rather than a rising consumer consciousness (...) only recently farmers started to recognize fair trade owing to the reception of a minimum price and an additional premium regardless of the current market price.
is associated with
[20:4] Andean Valley provides technic..
Andean Valley provides technical assistance to their affiliated farmers.
[1:4] CECAOT offers programs of tech..
CECAOT offers programs of technical assistance and training in administration to their affiliated farmers.
Association Membership
is part of
Fair Trade
[3:2] Due to price volatility (espec..
Due to price volatility (especially in 2013) fair trade can not be considered as an suitable instrument for the provision of adequate living wages. In addition, a reduced demand for fair trade certified quinoa was observed (especially in the US American market).
[9:4] ANAPQUI provides individual ce..
ANAPQUI provides individual certifications to each producer. ANAPQUI receives a specific quantity of quinoa from each affiliated farmer according to an annual plan.
[6:2] We have to meet strict regulat..
We have to meet strict regulations, however, we enjoy working under the Fairtrade certification system although there is almost no economic difference with the organic certification.
[4:2] In my opinion, fair trade is m..
In my opinion, fair trade is merely unfair. Maybe coffee constitutes a suitable product under this alternative trading concept, but quinoa not yet, due to volatile prices.
[9:2] Around 80 per cent of the affi..
Around 80 per cent of the affiliated farmers possess the Fairtrade certification.
[8:2] It is possible to be certified..
It is possible to be certified under FLO -Cert without holding the organic certification.


[19:8] Imbalance of livestock breedin..
Imbalance of livestock breeding and quinoa cultivation lead to a lack of manure for organic production.
[18:8] Organic certification requires..
Organic certification requires high costs for farmers.
[15:8] Insufficient monitoring of Fai..
Insufficient monitoring of Fairtrade certified sales volumes. Private companies are considered as owner of organic and Fairtrade certification.
[5:8] Due to the strong price volati..
Due to the strong price volatility of quinoa during the last years, in practice it is difficult to constantly adjust export prices – considering that supply contracts with importers are concluded on a long-term basis.
[17:8] There is a high price volatili..
There is a high price volatility and great influence of the informal market.
Problems
[8:3] Intermediaries started to mix ..
Intermediaries started to mix Bolivian quinoa with Peruvian crops which were introduced through illegal smuggling activities to Peru.
[2:8] Illegal smuggeling and mix of ..
Illegal smuggeling and mix of quinoa from Bolivia to Peru.
[16:8] Buyer-driven chain: regulation..
Buyer-driven chain: regulations are established by import nations.
[5:3] Peruvian quinoa cultivation is..
Peruvian quinoa cultivation is characterized by low production costs.
[4:3] Peruvian farmers carry out two..
Peruvian farmers carry out two annual harvests and offers their quinoa at low prices.
[3:3] Peruvian quinoa growers obtain..
Peruvian quinoa growers obtain higher harvest yields than Bolivian farmers.
[2:3] Peru achieved high quinoa prod..
Peru achieved high quinoa production volumes which had a negative impact on domestic prices. However, it has to be considered that Peru mainly focusses on conventional farming practizes.
[12:3] Peru focusses on large-scale p..
Peru focusses on large-scale production. Moreover, it is recommended to introduce sanction measures and mechanisms to combat the illegal cross-border trade of quinoa.
[7:3] Due to the fact that Royal Qui..
Due to the fact that Royal Quinoa can only be grown in the Bolivian Altiplano, our farmers hold a competitve advantage compared to Peruvian producers.
[12:8] There is a lack of coordinatio..
There is a lack of coordination between institutions involved in quinoa trade. Often not the entire production volume is purchased, so farmers are obliged to find other distribution channels and sell the remaining quantity without certification, as conven
[4:8] Export companies are exposed t..
Export companies are exposed to external factors which have a direct influence on the delivery time of their goods, such as emerging traffic volume, road blockades and border control.
[1:8] Competitve situation due to em..
Competitve situation due to emergence of export companies.
is part of
Peruvian Competition
expands
[9:8] There are major bureaucratic o..
There are major bureaucratic obstacles for quinoa exports to foreign markets.
is part of
[9:3] We are exposed to strong compe..
We are exposed to strong competitive pressure.
[11:3] The Peruvian government made h..
The Peruvian government made high investments to become the main quinoa producing country. In this regard, governmental support is provided for international promotion of quinoa.
[4:5] Governmental support is requir..
Governmental support is required, especially through funds for the participation in international fairs.
[1:3] Due to the Peruvian quinoa pro..
Due to the Peruvian quinoa production an oversupply on global markets was generated. Thus, Peru constitutes a strong competitor. It is recommended to differentiate from Peru through the denomination of origin.
explains
[1:5] There is a lack of support fro..
There is a lack of support from the Bolivian government.
[10:5] In comparison with our neighbo..
In comparison with our neighboring countries, such as Argentina and/or Peru, we do not receive sufficient financial support from the government for the international promotion of Bolivian quinoa.
[12:5] The production sector already ..
The production sector already obtains financial support from the government.
Governmental Support
[18:5] The focus of PROMUEVE Bolivia ..
The focus of PROMUEVE Bolivia is considered as too wide. For the participation in international fairs financial funds are required. Until now, institutions are obliged to bear the costs themselves.
[19:5] Foreign market access can only..
Foreign market access can only be achieved in cooperation with the Bolivian government.
supports
[19:3] Peru possesses many commercial..
Peru possesses many commercial relationships on the international level.

Appendix C

Semi-structured Interviews

Institution	Name	Position	Place	Date	Sector
CECAOT	Freddy Ticona Baptista	General Manager	La Paz	April 1, 2016	Producer Association
PROINPA	Wilfredo Rojas	Project Coordinator	La Paz	April 5, 2016	Research
CABOLQUI	Paola Mejia	General Manager	La Paz	April 6, 2016	Chamber
Quinoa Foods	Carol and Juan Pablo Seleme	Directors	El Alto	April 6, 2016	Processing & Export Company
Quinoa Foods	n/d	Supervising Engineer	El Alto	April 6, 2016	Processing & Export Company
SINDAN Organic	n/d	Supervising Engineer	El Alto	April 14, 2016	Processing & Export Company
AIPROCA	Gregorio García	President	El Alto	April 15, 2016	Producer Association
Tomás Frías Autonomous University	David Soraide	Professor in the Faculty of Agronomy	Potosí	April 18, 2016	Research
BOLICERT	Carmen Murillo Quiroga	Administrative Director	La Paz	May 4, 2016	Certifying Company
PROMUEVE BOLIVIA	Abraham Egibar	Administrator	La Paz	May 4, 2016	Marketing
ANAPQUI	Benjamin Martínez Martínez	President	La Paz	May 4, 2016	Producer Association
Fairtrade International	Tito Medrano	National Representative	La Paz	May 11, 2016	NGO, Fairtrade certification
Technical University of Oruro	Willy Choque	Professor in the Faculty of Agronomy	Oruro	May 12, 2016	Research
Technical University of Oruro	Christian Cortéz	Dean of the Faculty of Agronomy	Oruro	May 12, 2016	Research
INIAF	Jorge Guzmán	Project Coordinator	Oruro	May 13, 2016	Research
FAUTAPO	Pedro Claver Mamani	Regional Coordinator	Oruro	May 13, 2016	Research
Mundo Orgánico	Gilka Prado	Representative	Oruro	May 13, 2016	NGO
APQUISA	Jhon Garcia	General Manager	Oruro	May 14, 2016	Producer Association
ANAPQUI	Veronica del Carpus	Supervising Engineer	Challapata	May 14, 2016	Producer Association
ANAPQUI	Claudia Llanos	Quality Management	Challapata	May 14, 2016	Producer Association
ANAPQUI	Diego Inarra	Sub Manager in Processing	Challapata	May 14, 2016	Producer Association

Institution	Name	Position	Place	Date	Sector
SINAI	Raúl Grover Chambi Huayllani	General Manager	Challapata	May 14, 2016	Processing & Export Company
CECAOT	Heriberto Copa Cayo	Supervising Engineer	Uyuni	May 19, 2016	Producer Association
Local Producer	Anonymous	n/d	Uyuni	May 19, 2016	Producer
Real Andina	Luis Oscar Beliz Ramos	General Manager	Uyuni	May 19, 2016	Processing & Export Company
CONACOPROQ	Flavio Bazan	Engineer	La Paz	May 20, 2016	Council
CNPQ	Roman Huayllani	Member	La Paz	May 24, 2016	Chamber
Andean Valley	Diego Mendoza	Responsible for Logistics	El Alto	May 25, 2016	Processing & Export Company