Ager. Revista de Estudios sobre Despoblación y Desarrollo Rural
ISSN: 1578-7168
ager@ceddar.org
Centro de Estudios sobre la Despoblación y Desarrollo de Áreas Rurales
España

Loconto, Allison; Jimenez, Alejandra; Vandecandelaere, Emilie; Tartanac, Florence
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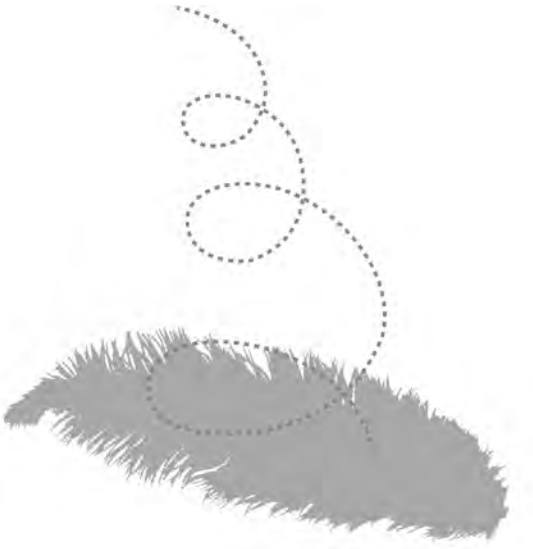
Ager. Revista de Estudios sobre Despoblación y Desarrollo Rural, no. 25, 2018, July-, pp. 13-42
Centro de Estudios sobre la Despoblación y Desarrollo de Áreas Rurales
España

DOI: https://doi.org/10.4422/ager.2018.15

# *Agroecology, local food systems and their markets*



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DOI: 10.4422/ager.2018.15

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Revista de Estudios sobre Despoblación y Desarrollo Rural
Journal of Depopulation and Rural Development Studies

Páginas: 13-42

***Agroecology, local food systems and their markets***

*Abstract:* We examine the emerging phenomenon of markets for 'agro-ecological' products and ask two fundamental questions: 1) Do they exist?; and 2) What forms do they take? Based on qualitative analysis of 12 case studies from different initiatives in developing countries, we focus on how different types of actors (producers, consumers and intermediaries) create markets for agro-ecological products. Preliminary results show that around 18 different market channels are used to sell products that are recognized as 'agro-ecological'. Supply chains are short (2-3 links), even in export markets. The main values defined for agroecology and searched for by actors relate to health and organoleptic characteristics of agro-ecological products, thus indicating that there is not a clear demand for 'agro-ecological' products per se. We characterize these initiatives as 'nested market networks' where intermediaries have a strong role to play in ensuring the diversity that we found in these networks.

*Keywords:* territorial markets, agroecology, local food systems, quality, fair price.

***La agroecología, los sistemas alimentarios locales y sus mercados***

*Resumen:* Examinamos el fenómeno emergente de los mercados de productos "agroecológicos" y planteamos dos preguntas fundamentales: (1) ¿Existen?; y (2) ¿Qué formas adoptan? Basándonos en un análisis cualitativo de doce estudios de caso de diferentes iniciativas en países en vías de desarrollo, nos centramos en el modo en que diferentes tipos de actores (productores, consumidores e intermediarios) crean mercados de productos agroecológicos. Los resultados preliminares muestran que alrededor de 18 canales de comercialización diferentes son usados para vender productos reconocidos como "agroecológicos". Las cadenas de producción son cortas (2-3 eslabones), incluso en los mercados de exportación. Los principales valores definidos para la agroecología y buscados por los actores tienen que ver con la salud y las características organolépticas de los productos agroecológicos, lo cual indica que no hay una clara demanda de productos agroecológicos per se. Caracterizamos estas iniciativas como "redes de mercado incorporadas", en las que los intermediarios tienen un gran papel que cumplir a la hora de asegurar la diversidad que encontramos en estas redes.

*Palabras clave*: mercados territoriales, agroecología, sistemas alimentarios locales, calidad, precio justo.

Received: 30 May 2017
Sent back for revision: 27 March 2018
Accepted: 19 July 2018

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# *Introduction*

The Food and Agriculture Organization of the United Nations' (FAO) symposium on Agroecology in 2014 highlighted the importance of agro-ecological practices in the development of sustainable food systems, particularly for its contributions to the sustainability of family and traditional farming systems. Specifically, one of the conclusions was that "the ecological foundation and food system focus of Agroecology provides an action-oriented approach for simultaneously developing alternative food systems, while transforming the current industrial model" (FAO 2015: 11).

While the term 'agroecology' is still in the process of being defined globally and is often used to cover a large range of approaches to 'ecologized' agriculture (Ollivier and Bellon 2013), agroecology has received a lot of attention based on the agronomic practices and the ecosystem services that this approach to farming provides. The first use of the term has been traced to 1928 (Wezel *et al.* 2009), but gained significant attention in the 1980s because of its scientific development by a group of natural and social scientists (e.g., Altieri 1987; Francis *et al.* 2003; Gliessman *et al.* 1981; Gliessman 2007; Perfecto *et al.* 1996; Sevilla Guzmán 2006). However, as concluded in the FAO Regional Seminar on Agroecology in Africa: "Agroecology, stressing adaptation of agriculture to natural conditions and cycles, as well as to local needs – has been carried out by African farmers and pastoralists for millennia. Thus, while often not explic-

itly termed "Agroecology", many actors and initiatives exist within sub-Saharan Africa that build on agroecological principles" (FAO 2016a: 4).

The idea of a food system calls for looking at the ways through which production practices meet consumption practices, as is highlighted in farming systems research and the recent calls for food systems approaches (Darnhofer *et al.* 2012; FAO 2014c). There are a variety of ways through which this can happen: through self-subsistence farming whereby the farmers are the consumers; it can happen through in-kind, non-monetary exchanges or gifting of food; or this can happen through monetary exchanges between producers, consumers and a whole range of intermediaries who help to turn farmed produce into marketable products. It is through a combination of these types of exchanges that markets and food systems are built.

The most well-known food system for agroecologically produced crops is referred to as organic agriculture (FAO 1999). Organic agriculture has become a relatively stable term that is increasingly recognized around the world, with both positive and negative connotations (Freyer and Bingen 2014). What began as a number of isolated experiments in the 1920s, is found today in 110 countries where there are active or draft organic regulations and at least 121 private organic standards (UNCTAD et al. 2012). These standards, and the certification and labelling systems that have been developed to enforce them (Fouilleux and Loconto 2017), have contributed to the creation of national, regional and global markets for organic products. For instance, the State of Sustainability Initiatives (SSI) estimates that there is a total production value of USD 50.3 billion across a range of standards for sustainable commodities in agriculture, forestry and fisheries (Potts *et al.* 2014). The value of the global market for certified organic products alone reached USD 80 billion in 2014 (Willer and Lernoud 2016), but this number captures only those products in consumer markets that are officially recognized as organic through public and private systems of standards, certifications, accreditations and labels.

Significant critiques of a dilution of agroecological principles as they have been interpreted in public organic standards and large-scale commercial organic farming (Darnhofer *et al.* 2010; Gibbon 2008; Jaffee and Howard 2009) demonstrate that if we are to examine markets for products that come from production following agroecological principles, we cannot limit ourselves to only those markets that trade 'organic' products. Moreover, organic third-party certification is not the only way –and perhaps not the method that is most adapted to agro-ecological food systems that rely upon small-scale production (FAO 2014b; Fouilleux and Loconto 2017)– through which the products and services from agro-ecological production can be valued. The value of agroecological products can be determined through a range of activities, particularly through the cre-

ation of a diversity of market channels through which produce can move from producers to consumers. Specifically, we need to look at the diversity of markets that are being built from the bottom up in order to capture the variety of ways through which agroecology is becoming commercialized in line with, or separately from, organic.

This line of research fills an important data gap in our understanding of rural transformation and transitions to agroecology-based food systems as there are currently not enough systematic studies on the role of markets in facilitating the creation of local food systems in developing countries. In order to understand the extent to which food systems can become sustainable, and how markets can become beneficial to small-sale producers and family farmers and can promote food security, we must first know what the different food systems look like.

## *Study methodology*

This study explores how those products that come from agroecological cultivation are being valued in markets. Given the current lacunae in the literature that examine markets for products that are recognized as 'agroecological', we conducted an exploratory study with the aim of collecting small samples of empirical data that can shed light on interesting topics related to how agroecology is valued in the market. This study used a case study method (Yin 1984) in order to collect systematic evidence from multiple case studies. This approach permits a meta-analysis of the opportunities and challenges of creating agroecology-based food systems across a range of diverse cases. This type of data enabled the following research question to be asked: are there markets for "agroecological" products and what forms do they take?

To answer this question we investigated the relations between markets and agro-ecology by purposively selecting (Patton 1990) six agroecological case studies that had the most developed market data in a previous study conducted by the first author (FAO and INRA 2016) and by adding six case studies of "agroecology-based food systems" that were known to the authors through previous collaboration[1]. The

1• The first six case studies are from: Bénin, Bolivia, Colombia, Ecuador, Uganda and Namibia. The additional six case studies are from: Brazil, Chile, China, France, Mozambique, and Kazakhstan.

purpose of this sampling was to focus on the diversity of situations (production systems, market practices, geographic distribution) and to develop an understanding of the sustainability of these systems (based on cultural, economic, environmental, and social elements)[2]. We selected for those cases that self-identified as "agro-ecological". Even though FAO does have a definition of agroecology, we wanted to understand what the diversity of this word meant when it is expressed by the actors. Therefore, while we do not judge what can be considered agroecological or not, we do make self-identification as 'agroecological' a selection criterion. We administered a five-part questionnaire theoretically derived from our analytical framework to members of the 12 initiatives through semi-structured (n=221, 78 per cent completed). These interviews were conducted by the first two authors, or by local enumerators who were members of the initiatives. Therefore, these interviews were used to collect quantitative and qualitative information from initiatives that the researchers were very familiar with based on participant observations either as members of the initiatives (in terms of local enumerators) or via participatory research with the initiatives since 2013 (for the first author). All enumerators were trained in the administration of the questionnaire by the first author so that interpretation of the question and responses could be calibrated. In eight cases, focus groups (Morgan 1997) were used to facilitate discussions among consumers and farmers. Individual interviewees were identified purposively through dialogue between the local enumerators and the first author to select members of the initiatives who could best represent the different types of actors in each system. We tried to ensure an equitable distribution among producers, consumers and intermediaries.

2• The full case studies and examples can be found in FAO (2018).

*Table 1.*
*Purposive sampling criteria*

| Type | Region | Country/ initiative name | Crop/ product | Agroecology practice | Institutional innovation | Certification | Commercialization strategy |
|---|---|---|---|---|---|---|---|
| Innovative market cases | AFR | Benin Songhaï Centre | FFV[3], fish, rice, soy, meat | Integrated production system/effective micro-organisms | Innovation platform | No chain | Closed-circuit value |
| | AFR | Uganda Freshveggies | FFV | Small gardens, raised beds, native varieties | PGS | Private label, no 3PC | Internet sales |
| | AFR | Namibia NOA PGS | FFV, dairy, beef | Holistic rangeland management | PGS | Private label, no 3PC | Long and short value chains |
| | LAC | Bolivia Tarija PGS | Quinoa, potatoes | Agricultura Ecológica (national standard) | PGS | Public label, no 3PC | Public procurement |
| | LAC | Colombia Familia de la Tierra | Beans, maize, coca | Intercropping | PGS | Private label, no 3PC | Consumer movement, alternative economy |
| | LAC | Ecuador Canasta Comunitaria Utopía | Tubers, FFV | Crop rotation, native plants | CSA | No | Box scheme |
| Slow Food cases | ASIA (central) | Kazakhstan (ATDP) | Livestock (dairy products) | Organic production, restoration of pastureland, green belt system | Presidium | No | Processed products, direct sales |
| | LAC | Brazil (Sateré-Mawé) | Guaraná production system | Traditional | Geographical indication | Organic, fair trade, PGS | Geographical indication, fair trade |

3• Fresh fruits and vegetables (FFV)

| Type | Region | Country/ initiative name | Crop/ product | Agroecology practice | Institutional innovation | Certification | Commercialization strategy |
|---|---|---|---|---|---|---|---|
| | AFR | Mozambique (Maputo Earth Market) | Various, including from 1 000 gardens | Family farming | Earth market | No | Maputo farmers' market |
| | LAC | Chile (Wemapu) | Quinoa and others | Agroecology | Ethical label | Yes | Cooperative and consumer mobilization |
| | ASIA | China (Shared Harvest) | Vegetables | Organic | CSA | No | CSA model and consumer mobilization |
| | EU | France (Grabels market) | All products | Local | Consumer driven | Municipal label or organic | Consumer mobilization |

Source: FAO and INRA 2018

Notes: AFR = Africa; LAC = Latin America and the Caribbean; FFV = fresh fruit and vegetables; 3PC = third-party certification.

Based on an analysis of the demographic data that we collected from all 221 interviews, the average age of respondents was 46 and 64 per cent were women. The average level of education was at university level and the average income level was middle income. On average, respondents claimed that agroecological products made up 54 per cent of their diet. These demographic data show that our respondents are mostly middle class and many of the farmers interviewed can be considered as "back-to-the-land" farmers, which means that these producers have chosen to return to farming as an occupation after higher education. Given our non-random sampling procedure, we cannot claim that these respondents are statistically representative of the entire population. However, based on our knowledge of the whole population for each initiative, we argue that they do represent the dominant profiles for each initiative (table 2).

*Table 2.*
*Characteristics of the respondents*

| Country | Actor | Number | Age | % Female | Education | Income | % diet |
|---|---|---|---|---|---|---|---|
| Benin | P | 5 | 43 | 0 | Secondary | Middle | 58 |
| | I | 9 | 35 | 66 | University | Middle | 41 |
| | C | 4 | 72 | 0 | Masters | High | 45 |
| | Average | 18 | 50 | 22 | University | Middle | 48 |
| Uganda | P | 16 | 47 | 81 | Secondary | Low | 52 |
| | I | 4 | 39 | 100 | Masters | Middle | 31 |
| | C | 10 | 39 | 100 | University | Middle | 28 |
| | Average | 30 | 42 | 94 | University | Middle | 37 |
| Namibia | P | 7 | 50 | 43 | Secondary | Middle | 48 |
| | I | 7 | 52 | 50 | University | Middle | 47 |
| | C | 6 | 43 | 100 | >University | Middle | 83 |
| | Average | 20 | 51 | 64 | University | Middle | 60 |
| Bolivia | P | 10 | 40 | 100 | Primary | Low | 71 |
| | I | 5 | 44 | 40 | University | Middle | 66 |
| | C | 7 | 45 | 71 | Secondary | Middle | 19 |
| | Average | 22 | 43 | 70 | Secondary | Middle | 52 |
| Colombia | P | 5 | 47 | 60 | Secondary | Low | 64 |
| | I | 3 | 40 | 33 | University | Middle | 40 |
| | C | 15 | * | 26 | University | High | * |
| | Average | 23 | 44 | 40 | University | Middle | 52 |
| Ecuador | P | 15 | 47 | 53 | Primary | Low | * |
| | I | 4 | 50 | 50 | Secondary | Middle | * |
| | C | 15 | 53 | 93 | University | Middle | 64 |
| | Average | 34 | 50 | 65 | Secondary | Middle | 64 |
| Kazakhstan | P | 2 | 51 | 50 | >Secondary | Middle | * |
| | I | 2 | 42 | 50 | >Secondary | Middle | 30 |
| | C | 5 | 31 | 100 | Secondary | Middle | 63 |
| | Average | 9 | 41 | 67 | Secondary | Middle | 47 |
| Brazil | P | 4 | 51 | 100 | Vocational | Low | 53 |
| | I | 5 | 39 | 100 | >University | Middle | 8 |
| | C | 6 | 50 | 67 | >University | Middle | * |
| | Average | 15 | 47 | 89 | University | Middle | 31 |
| Mozambique | P | 4 | 52 | 50 | Secondary | Low-Middle | 42 |
| | I | 1 | 45 | 0 | Masters | Middle | 70 |

| Country | Actor | Number | Age | % Female | Education | Income | % diet |
|---|---|---|---|---|---|---|---|
| | C | 0 | * | * | * | * | * |
| | Average | 5 | 49 | 50 | Secondary | Middle | 56 |
| Chile | P | 4 | 58 | 50 | Secondary | Low | 85 |
| | I | 7 | 53 | 57 | Secondary | Middle | 71 |
| | C | 2 | 38 | 100 | University | Middle | 50 |
| | Average | 13 | 50 | 69 | Secondary | Middle | 69 |
| China | P | 4 | 55 | 25 | Secondary | Middle-High | 83 |
| | I | 3 | 30 | 67 | University | Low | 90 |
| | C | 11 | 39 | 100 | >University | Middle | 67 |
| | Average | 18 | 41 | 64 | University | Middle | 80 |
| France | P | 3 | 40 | 67 | Secondary | Low | 15 |
| | I | 5 | 48 | 67 | University | Middle-low | 38 |
| | C | 6 | 49 | 83 | Masters | Middle | 46 |
| | Average | 14 | 46 | 72 | University | Middle | 33 |
| Total Averages: | | 46 | 18.4 | 64 | University | Middle | 54 |

Source: FAO and INRA 2018

### *Case study descriptions*

Established in 1985, the *Songhaï Centre in Benin* integrates five regional centres – Kétou, Kinwédji, Savalou, Parakou, and Zagnanado – into a close-knit network that is run from the main location in Porto-Novo. The system integrates sustainable production and processing with a training centre for young people based on promoting value, knowledge and expertise. Through this scheme of synergies and complementarities, three product categories can be found in local markets. These are organic inputs such as seeds, organic fertilizers, fish and livestock fodder; fresh products such as fruit, vegetables, meat and eggs; and processed labelled products such as purified water, syrups, oils, cakes, juices and yoghurt. Since its inception, agricultural entrepreneurs have learned the technical, ethical and functional skills necessary to create, promote and manage sustainable agriculture in their local communities.

The *Freshveggies Participatory Guarantee System* (FV-PGS) is a private agroecological production and marketing initiative operating in the rural areas of Kampala, *Uganda* since 2009. The initiative was set up by a community network of smallholder farmers in autonomous groups working under a common production and marketing model for organic fruit and vegetables. It began in response to the need to

promote healthy food and sustainable practices through a PGS approach – on-farm training and collective sales, economic empowerment, food sovereignty and healthy communities able to produce organic food and supply nutritious high-quality food to meet growing consumer demand. This integrated approach supports the FV-PGS business model and its vision of linking smallholder farmers to available markets.

The *Namibian Organic Association* (NOA) was created in 2009. It is a pioneer member-based organization of organic farmers and consumers demanding high-quality, organic, ecofriendly and healthy food. NOA is unique in the agricultural sector of *Namibia* as it has contributed to building recognition of the organic concept in the country. It provides training (from small-scale vegetable gardening techniques to international organic courses); an electronic newsletter, the annual Living in Organic Times publication; social events/farm visits; and a vibrant business community. It is actively leading efforts to promote sustainable agriculture and livestock practices. NOA organizes its food system around a locally adapted Participatory Guarantee System (PGS) to support farmers in accessing local markets and guarantee organic and sustainable practices and products. As of 2015, NOA's PGS consisted of a network of 11 certified farmers who cultivate about 30,000 ha organically.

In *Yunchará municipality, of Tarija Department in Bolivia*, 100 per cent of schools have access to the national Complementary School Feeding Programme (ACE), which provides breakfast and lunch for 38 schools and had more than 1,380 final beneficiaries in 2015. This program allows municipal level governments the autonomy to develop their own priorities and sourcing program for the ACE. In Yunchará, the local government has prioritized the reduction of malnutrition in its rendition of the ACE, and as a result malnutrition has been reduced by 15 per cent since 2012. To do this the government started to use products sourced principally from local producers and processors, as another public policy of the municipality is to support small producers and promote quality, freshness and accessibility. The principal local products in Yunchará are *api* (traditional Bolivian drink from the highlands –*altiplano*– based on ecological purple maize), *tojorí* (traditional *altiplano* drink made from maize), amaranth and broad bean cakes, and a chocolate and milk drink made from broad beans (Nutrihaba; Yunchará is the only Bolivian municipality that processes broad beans into these kinds of product). Other products are quinoa, flour, *charque* (dry llama meat), honey, oil, sugar and rice.

Initiated in 2004, the *Familia de la Tierra* network is a private Colombian initiative of agro-ecological production and processing that takes a holistic approach to strengthening agro-ecological production systems through marketing management and promoting local and ecological products such as tomatoes, maize, beans, pump-

kins and potatoes. The network integrates 20 social organizations of agro-ecological producers from across *Colombia* and includes about 100 farmer and indigenous families in different regions and territories, 18 restaurants, seven organic shops and a consumers' network of public schools, cooking schools and urban and peri-urban families. The initiative was born out of the idea to deal with the political, socio-economic and environmental challenges that producers faced in the transition from conventional agriculture practices to ecological ones.

The Canasta Communitarian Utopia (CCU) was created in 2000 in *Ecuador* and began as an organization of seven low-middle income urban families seeking access to good-quality food. CCU's main objective is to work as a food cooperative with a common marketing approach that ensures access to healthy food and, at the same time, has the advantage of purchasing products in bulk to save money (30–50 percent). In the past, participants would combine their money to buy products and then divide it up into equal parts. However, in 2010, the initiative, supported by the Utopia Foundation (an urban development organization) and the EkoRural Foundation (a rural development organization), established direct market links with members of the New Generation Association, a small producers' association in Tzimbuto. This association has multi-actor direct links with demand for agro-ecological and fresh products and it seeks to create autonomy and local empowerment. CCU now includes about 100 producers and 100 families in Riobamba and these families access agroecological products primarily through *canastas* (boxes or baskets) on a specified "*Canasta* Day", for which they pay for two weeks in advance.

In 2008, to meet community demand for high quality and traditional dairy products, the *Akmola Traditional Dairy Producers* (ATDP) initiative was created. ATDP is a community initiative made up primarily of women from the village of Karabulak in the northern region of Akmola, *Kazakhstan*. The community was organized in 2008 by the Jer-Ana Astana (JAA) rural community Non-governmental Organization (NGO), the only active NGO that supports and represents the interests of rural residents in Kazakhstan, and by the Akmola Slow Food Convivium. The objective of the initiative was to unite small- and medium-sized farmers and households that are passionate about their work and safeguard traditional methods of farming and processing. The initiative was originally composed of a group of ten farmer families, but the number of participants has now risen to 410, including men and women rural residents, young activists and volunteers.

The *Sateré-Mawé*, an indigenous people living in the *Brazilian Amazon*, are known to have created and preserved *guaraná* culture. They were the first to domesticate and cultivate the plant and initiate the *guaraná* extraction process. Native

*guaraná*, discovered in the virgin forest and disseminated by the people over the centuries, has been the quintessential traditional and spiritual food of the Sateré-Mawé since time immemorial. The Brazilian Constitution grants autonomous use of this indigenous reserve to the Sateré-Mawé (approximately 13,350 people in 2014, distributed over about 100 villages). In 2002 networks were created to export fair trade and organic certified *guaraná* to France and Italy through direct trade relationships.

In 2013, the *Maputo Earth Market* (MEM) was the first Slow Food market in Africa and was located in Maputo, the capital of *Mozambique*. MEM is the result of a partnership between the Italian NGO Gruppo di Volontariato Civile (GVC) (civil society), Slow Food (Slow Food Muteko-Waho Convivium) and the NGO ESSOR. The initiative has an agroecological approach to market creation and food supply, based on the principles and practices that promote small-scale agro-ecological producers, closer ties between farmers and consumers and traditional consumption habits, prioritizing short distribution channels, added value, local products, food quality and movement of goods. The model places importance on the work of a group of small-scale producers who, despite their socio-economic difficulties, continue to produce local and traditional food without agrochemicals. MEM is organized by 14 producers, motivated by the chance to promote and sell highly valued products collectively; make direct contact with consumers to explain why what they offer is different from the conventional market; listen to expectations and products sought; and promote more awareness of responsible production and consumption.

Founded informally in 1999, the Kom Kelluhayin Corporation (CKK) was the first entirely indigenous *Mapuche* farmers' association in the Araucanía region of southern *Chile*. From 2003 to 2005, CKK decided to set itself apart in the growing market by creating an ethical label for its products [*Sello Ético Mapuche*]. In 2012, part of CKK in Villarrica that had converted to agro-ecological agriculture registered as a farmers' cooperative under the name *Wemapu* Agro-Industrial and Forestry Cooperative of Agro-ecological Producers. This initiative, with 16 families, set up a public-private partnership with six hotels/restaurants, the farmers' market network (ferias), an artisanal association, the Agroindustry Institute of Temuco University of the Frontier, and Wemapu farmers' organizations to begin direct sourcing of fresh vegetables and quinoa to local restaurants. The objective of the project was to contribute to the ecotourism industry in the Villarrica/Pucón region by promoting Mapuche agro-gastronomy.

In 2012, a group of young people in Mufang village, eastern Beijing, China created a Chinese social enterprise called *Shared Harvest Farm*. This farm, with a surface area of 5 ha, began with the idea of solving the social needs of urban dwellers for safer food and reconstructing rural China through the reconnection of young people

to agriculture through sustainable practices. It adopts the Community Supported Agriculture (CSA) model to cooperate with local farmers in Beijing in local, seasonal and organic production of fruit, vegetables and other food products. Through the main principle of "Real Food, Real Farmers, Real Community", the model places an importance on food as a bridge for people to reconnect with the soil and with their healthy bodies, and build up a close and harmonious relationship with nature.

*Grabels market* is an innovative short chain open-air market created in 2008 in Grabels, a small town (7,000 inhabitants) located outside Montpellier, *France* (500,000 inhabitants, including the peri-urban area). By establishing a market, the newly elected local authority aimed to revive the dormant town, giving its middle-income inhabitants the opportunity of finding fresher and better products, and supporting local small-scale agriculture. With support from the National Institute for Agricultural Research (INRA), a new type of open-air market was implemented, attracting producers as well as artisans and intermediaries mainly procuring products or raw materials directly from regional producers, respecting the principles of sustainable agriculture. The market is founded on a charter, which people have to sign before becoming members, as well as on a collegial steering committee of the local authority, consumers and suppliers. This committee controls the application of the charter, notably by visits to farms and enterprises. In 2010, in order to dispel any doubt about the provenance of products, the local authority, with INRA's help, implemented a labelling system whereby a coloured label on each market product shows both its geographical origin and the number of intermediaries.

## *Analytical framework*

This study relied upon perception data to gather information on how different actors in the food systems are actively constructing these systems through identifying agroecological practices and assigning a value to the products of these practices. Recent advances in economic sociology (Antal *et al.* 2015; Beckert and Aspers 2011; Bessy and Chauvin 2013; Vatin 2013) enable us to understand these practices as being constituents of the market-making process. This valuation process can be defined as the ways in which value is both assessed and produced (Vatin 2013) by a variety of actors as the goods produced agroecologically take form as "products" that can be assigned a monetary (or use) value and exchanged. We follow this process to under-

stand how agroecological produce becomes agroecological products and how the actors doing this work create "agroecological food systems".

When we speak about markets, we are referring to the "collective devices that allow compromises to be reached, not only on the nature of goods to produce and distribute but also on the value to be given to them" (Callon and Muniesa 2005: 1229). This means that markets are the rules-based exchanges of value in specific contexts where the rules can come from public regulations, private contracts, civic norms or cultural customs (FAO and INRA 2016). We see the creation of markets through the following five entry points and collected data from key informants that respond to questions about each of these five aspects of a food system.

*Diversity of sustainable market channels/practices*. Market channels can refer both to how farmers source the inputs they need to grow sustainable food and how they then sell the excess food that they produce. These channels do not necessarily have to be "market" exchanges in the classic sense of exchanging goods for money, but can also refer to other provisioning systems such as sharing or gift economies. Therefore, we take a holistic notion of market channels to try to capture the diversity of value chains or practices that circulate within agroecological farming systems. Specifically, we solicited information about volumes and sales of products that pass through each channel. We asked about the prioritization of specific channels and the perceived benefits that each provide to consumers, intermediaries and producers. These data were descriptive and quantitative.

*Valorization* of products. We ascertained how quality is determined and how price is calculated and negotiated among the different actors. We needed to understand how producers, consumers and intermediaries perceive the value of products and how they allocate a monetary measure (or not) to that value. We adopted a broad definition of quality to include organoleptic, credence (including social and cultural), and nutritional attributes of products. These aspects are not always captured in the price of a product and may be valued through alternative channels. Therefore, we gathered information about how quality and price are communicated between producers and consumers, which can take place in common spaces such as at monthly fairs, through advertising via the Internet or cell phones; captured by brand recognition or in a collective label; or by word of mouth through traders or other intermediaries. As a result, qualitative and price data were collected. Unfortunately, it was not possible to collect reliable price data for all products in every case. Therefore, we focused on understanding the perception of the fairness of prices that were received by producers and intermediaries, and paid by consumers and intermediaries.

*Business models*. We wanted to understand the organizational arrangements that are used to construct market arrangements. For example, are there geographic limitations (length of the value chain or localized in a traditional or agroecological area)? Are there specific conventions or contracts used to specify how actors can participate in these systems? What are the terms of these agreements and how is ownership shared among the different stakeholders (e.g. individual, family, employee, cooperative, collective, shareholder)? These data are descriptive and qualitative.

*Scaling up* (network stability). There is a temporal aspect to sustainability, which means that a system must be able to prevail over time. One of the questions often asked is how an "agroecological food system" evolves over time. Another question relates to the kind of support structures needed in order to transition existing food systems towards agroecological food systems. These questions refer to the scaling up (or out) of agroecological food systems via horizontal or vertical expansion (cf. Callon 1998; Hermans et al. 2013). We gathered qualitative and descriptive quantitative information about the strategies used in each case study to reach different thresholds of producers and consumers.

*Perception of sustainability*. As a way to understand the sustainability of agroecological food systems, we started with understanding how the actors involved in the initiative perceive the sustainability of what they are doing. Therefore, we adapted indicators from a range of sustainability assessments (including farm sustainability indicators [IDEA], Committee on Sustainability Assessment [COSA], *Sustainability Assessment* of Food and Agriculture [SAFA] systems), particularly the self-assessment developed by the Laboratory of Social and Solidarity Economy (LABO ESS). This approach is based on the idea that a sustainable food system is organized around on four principles: (i) the creation of social ties (trust, solidarity and reciprocity) and cooperation; (ii) equity in financial exchanges and efficiency in operations; (iii) a participatory approach to decision-making; and (iv) a "learning-by-doing" logic where interaction among participants creates greater common understanding and identity (LABO ESS 2015). This portion of the questionnaire provided us with a self-evaluation of the sustainability of each initiative by its participants and serves as a way to create a discussion about the sustainability of the initiative.

### *Analytical techniques*

The data were analyzed using a mix of quantitative and qualitative methods (Creswell 1994). We produced descriptive and inferential statistics (using Excel and

SPSS software) to analyse the closed-response questions to market channels, business models, prices and perceptions of sustainability. For open-ended responses, lexical analysis (using IRaMuTeQ software) was used for the analysis of similarity, co-occurrence of words and also to present the results in a visual form of word cloud (Reinert 1983). The lexical analysis allowed us to analyse the relationships between the words in the respondents' descriptions of agroecology, quality and strategies. This enabled us to identify key trends in how markets are forming for agroecological products. We triangulated these forms of data with actor-network maps for each initiative, based on the value chain actor categorization used in previous FAO work (FAO 2014a, 2016b). This analytical method allowed us to create market typologies based on the role of intermediaries in facilitating flows of resources and values (finance, knowledge/information, commercial transactions, culture/values, control/surveillance, political authority) within each initiative.

### *Limitations of the study*

We acknowledge the limitations of this study, which begin with the inconsistency in the use of the key term 'agroecology' by all actors across all of the case studies. Some initiatives consistently used the word organic; others used agroecology, but most used these terms interchangeably. A second limitation is that we used nine different enumerators to administer the survey. We controlled for this interpretation bias by conducting iterative trainings and restricting the analysis to two people (the first two authors) who analysed the data together. Since the key informants were selected by the initiatives, there is a sampling bias towards highly active players in each initiative. Also, given the very low number of interviews conducted per case study (average 17.7) the results are not generalizable.

There are additional limitations related to the lexical analysis (Reinert 1983), which uses co-occurrences of words to examine network relationships. We used lemmisation of the words to identify the root and other grammatical forms of the terms. Because the analysis was conducted on the open ended responses from interviewees, we had to correct the database for spelling errors, but we did not always correct for grammatical errors. This should not have an effect on the validity of this data. Finally, there is a normative bias in our data on the perception of sustainability as the coding method of analysis favors social and solidarity economies (LABO ESS, 2015).

# *Results*

In this section, we briefly present our results from the analysis of the first three entry points of our analytical framework before reflecting upon what these mean in the context of agroecological food systems in the discussion section. In our study, we identified three main characteristics that were commonly found across the 12 case studies and these results provide insights into common values of participation, diversity, organoleptic qualities and direct exchange of knowledge and products, which characterize the markets for agroecology.

*Participatory governance.* In terms of our business model analysis, the organizational forms most common across the cases were those that included producers, intermediaries and consumers directly in the governance of the initiative (nine out of 12 initiatives). Participatory decision-making was prioritized as a value across the business models as less than half of the initiatives had adopted a cooperative ownership model where participatory decision-making is a requirement of the model. Most initiatives were inclusive of anyone who wanted to join it; only a few had the specific objective of including marginalized people. This idea of inclusivity might be better referred to as openness, rather than the value-laden term of 'inclusive'. There was a strong positioning of initiatives within local environments and a specific focus on interacting with other members of the community in order to respond to a well identified social need. Moreover, it seems that the initiatives are interacting with other communities to help them to achieve their mission within their own communities. This suggests that, rather than being defensive (Winter 2003), they are learning through exchanges with other localized communities.

*Diversifying markets as a key strategy.* Diversity was a strong theme in the results on the market channels used by the initiatives and was a key strategy for stabilizing their networks. Since agroecological production systems generally do not encourage the use of synthetic inputs, ways to create markets for agroecology are to establish (i) markets for inputs to be used in agroecology, and (ii) markets to sell the cultivated produce. In the following sections, we describe the data collected on both input markets and product markets for agroecology.

Input market channels were primarily three: own production, local farmers and local supplier shops. The dominance of procuring inputs locally was justified by the

cost reductions in the production process and the reliability of purchasing from trusted local actors. Some respondents explained that relying upon one's own seeds or those from the local network meant certainty about the organic quality of the seed and multiple benefits at the same time. Specifically, using one's own seeds enables a *"reduction of production costs, efficiency and better adaptability. The production cycle is short and seeds from [my] own production have fewer diseases than when we buy the plants"* (producer from Colombia).

Market channels refer to the specific points of sale or first exchanges in a value chain, starting from the farmgate. As regards products, we found a large diversity in the channels through which agroecological products were exchanged. First, we were able to identify that on average about 45 percent of the produce farmed agroecologically is being exchanged through market channels that could be called agroecological. What this means is that when the product is exchanged, the buyer recognizes that it has been produced agroecologically. We determined that this information was communicated through an oral explanation or through an on-package label. We identified 18 different market channels plus barter/exchange and own consumption across the cases, with the average number of channels in each initiative being 8.3 channels. The farmers who participated in all initiatives also consumed a portion of what they grew. The top four market forms were: Direct sales, Farmers' markets & Ecofairs, Open air markets and restaurants/hotels. The biggest challenges to access were logistics and consumer awareness.

*Creating value through quality and price.* Across the 12 case studies, the valorization of products in agroecological markets is discussed in terms of the price for a product that has organoleptic and physical attributes, such as size and flavor. Knowledge gained about the agroecological qualities through direct contact between trusted actors can, in some cases, override preferences for typical quality attributes. Communication of 'agroecological value' is done mostly through direct communication and contact between consumers and producers. But branding and labelling are also very important for a number of cases. The consumers that were interviewed in these case studies seem to be insensitive to price – or at least they placed a lower priority on the price of the product when determining quality. This finding is in line with the literature which suggests that ethical consumers are less price-sensitive than others (Arnot *et al.* 2006). Often, this is tied to their relatively higher socio-economic status. However, our interviewees declared themselves to be mostly of middle income compared to the average incomes where they live; which offers an interesting avenue for future research.

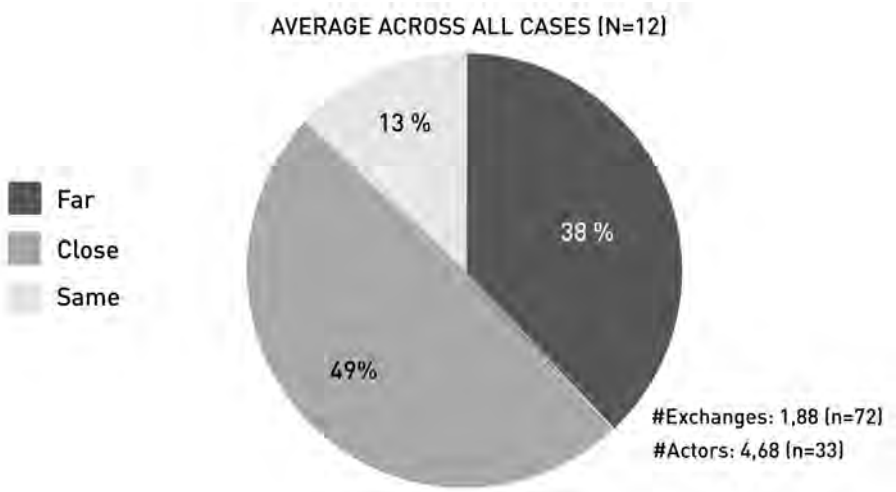
In sum, the markets that we found are dynamic and the actors are strategic in how they are positioning their products and how they are creating value for them in their markets. Very few initiatives are using certification or labels to advertise their products' qualities. When certification is used, it is farmer-led through variations in participatory guarantee systems. The more inclusive initiatives are building on existing social networks, but are also expanding, as we found significant response rates related to the role of the initiative as creating a social space for collaboration among actors who traditionally do not socialize. This points to relative network stability for the majority of the cases, even though financial autonomy is not common. There is significant potential for changing the scale of these initiatives, both in individual size and in their collective reach based on a declared, but untapped consumer demand.

## *Agroecological food systems as nested market networks*

What does this examination of the abovementioned values add to understanding the markets for agroecology? In this discussion section, we explore the intersections between our last two theoretical entry points (sustainability and scale) and argue that we can identify four types of "nested" markets (Hebinck *et al.* 2014; van der Ploeg *et al.* 2012) that rely upon a key intermediary to facilitate the recognition of 'agroecological products'. A "nested" market is formed within existing dominant markets as a response to a variety of market failures (i.e. where the market does not efficiently allocate goods and services between producers and consumers). They are the result of social struggles and mobilize the specificities of place and networks to create spaces where quality products receiving premium prices can be exchanged. Elsewhere, van der Ploeg (2014) has argued that peasant agriculture provides significant room for innovation, particularly in the forms of markets that are created, which has also been documented by FAO (2016b). Recent advances in theories of value chains and alternative agrifood systems have added the concept of markets embedded in "sociospatial territories", which are important parts of rural development strategies where community investment is focused on the development of exchanges that benefit the community (Brunori *et al.* 2016; Milone *et al.* 2015).

By examining the circular economies between food, energy and chemical systems, Colonna, Fournier and Touzard (2013) elaborated a typology of food systems that are analytically differentiated by structural, political, institutional and cognitive variables. Particularly of interest for the cases included in this study are the domestic, local and differentiated quality food systems – which ostensibly contain the same criteria as the notion of "nested" markets mentioned above. The cognitive dimension in these systems is particularly important for understanding our cases, as we found that the valuation process requires significant work on the part of actors to create a common understanding of agroecological qualities. Figure 1 shows the aggregated results from the 12 cases regarding the indicators that enable the size of these systems to be analysed. On average, there are between four and five different actors working together in network formations (non-hierarchic relationships operating within their own organizational structures) and agroecological products change hands about twice in these networks. Based on these criteria, the supply chains across the 12 initiatives can be classified as being "short food supply chains" (Chiffoleau 2012; Chiffoleau and Prevost 2012; Goodman *et al.* 2012; Renting et al. 2003).

*Figure 1.*
*How close are consumers and producers?*




Source: FAO an INRA 2018

Note: Percentages are aggregated at the level of the case. Twelve cases are examined with 221 individual responses for question 1.8: "Do you think that you live close to the producers who grow the agroecological products that you eat?". For the number of exchanges and the number of actors, the individual responses to the questions are given in the figure.

In order to take the political and cognitive aspects of distance into account, we asked respondents how close they felt that they lived from the site of production or consumption. The results are mixed, with more than half (62 percent) saying that they live close, but 38 percent saying that they live far away from their consumers or producers. This demonstrates that a short food supply chain can be conceived as either a physical distance or as a cognitive distance, based on the number of actors involved in linking production and consumption.

As a result of these findings, we use the term "nested" market rather than "local food system", because our analysis was limited to the market exchanges for agroecological inputs and products and we could not conduct a full food system analysis based on the data available. Moreover, the fact that there was a feeling of spatial distance between production and consumption – in some cases because of the types of farming systems (e.g. in Namibia) and in others because of the export market channels for some products (e.g. in Brazil and the Plurinational State of Bolivia) – we find that the term "nested" is better suited to these types of market relationships.

Through the analysis of the key actors in each of the initiatives and the flows of knowledge and other support within these networks, we identified a key intermediary as a pivotal actor whose activities changed the nature of the market exchanges. There is an emerging literature on the importance of intermediaries within food system transitions (Hargreaves *et al.* 2013; Kilelu *et al.* 2017; Klerkx and Leeuwis 2009; Steyaert *et al.* 2014), particularly because of the role that an intermediary actor plays in facilitating knowledge exchange and mobilizing collective action in the construction of markets (cf. Callon *et al.* 2007). When we examined that different roles that the dominant intermediary (that actor that was the most influential in building the local network that supported the market), we found that we could identify differences in these forms based on the extent of the diversity of this actor's roles in supporting the network that was built to support market exchanges and the level of their participation in the market transactions. For example, in Ecuador, we found that the intermediary (Canasta Utopia) provided only a market-making service in its network – that of organizing the box-scheme, which is the core market exchange of the network. Here an interactive market network was created to facilitate the exchange of products that could be identified as agroecological. However, in China, we found that the intermediary (Shared Harvest) directly organized the market exchanges, but also organized the production, training services, a restaurant and educational and research programs. In this market network, socio-cultural exchanges were also part of the value of the market.

Based on the analysis of the case study data and on the classifications already noted in the literature, we elaborated four types of nested market networks based on

the role of the key intermediary. In other words, these types are differentiated according to the activities of the most influential core actor in constructing the network that supported the market[4]. It is important to remember that all the initiatives in this study have a strong commitment to the communities in which they work and are building upon pre-existing social networks.

*Table 3.*
*Nested market networks for agroecology*

| PARTICIPATION IN MARKET EXCHANGES | DIVERSITY OF INTERMEDIARY MARKET-MAKING ACTIVITIES: LOW | DIVERSITY OF INTERMEDIARY MARKET-MAKING ACTIVITIES: HIGH |
|---|---|---|
| LOW | **Information-rich market networks**<br>• Main intermediary function is to share information among market actors (quality control system), but no market exchange<br>• Product specialization<br>• Direct sales as core site of interaction and value creation<br>*Examples*: Bolivia, Kazakhstan, Namibia | **Diversified market networks**<br>• Multifunctional intermediary provides services that add value among market actors (some trading) but does not run consumer market<br>• Product specialization and innovation<br>• Traders as core site of interaction and value creation<br>*Examples*: Uganda, Brazil, Colombia |
| HIGH | **Interactive market networks**<br>• Main intermediary function is to facilitate market exchange<br>• Product diversification<br>• Farmers' market as core site of interaction and value creation<br>*Examples*: Ecuador, France, Mozambique | **Sociocultural market networks**<br>• Multifunctional (market, knowledge, education, services, etc.) intermediaries who own/run their own markets<br>• Product diversification<br>• On-farm shops as core site of interaction and value creation<br>*Examples*: Benin, Chile, China |

Source: FAO and INRA 2018

4• We limit our typology only to the nature of market exchanges. An elaboration of how these nested markets contribute to a range of agroecological food systems (including relationships beyond the market) will require additional research.

*Information-rich market networks* are characterized by a key intermediary whose role is mainly to share information among market actors, but not actively to organize the market. In these systems, the key intermediary is often the actor who is providing the guarantee and quality controls for the network (e.g. Tarija PGS in the Plurinational State of Bolivia, the Namibia Organic Association [NOA] PGS in Namibia and the Akmola Traditional Dairy Producers [ATDP] cooperative in Kazakhstan). There is a tendency towards specialization in a core set of products on the part of the farmers, who sell their products through a range of channels. Nevertheless, there is a predominance of direct sales in these initiatives where the intermediary is not necessarily involved.

*Diversified market networks* are those where a multifunctional intermediary provides services that add value to market exchanges and among the market actors, but does not run the consumer market. The key intermediaries in the three initiatives of this type are legally registered as traders, which allows them to sell products on behalf of relatively specialized producers. This group is representative of classic market intermediaries with the exception that they also provide a range of services such as agroecological production, development of new products, conducting research and including new consumers within the networks. It is at these sites of interaction where much of the value in these networks is created.

*Interactive market networks* have key intermediaries whose main role is to set up a physical market space where agroecological products can be exchanged. Although the intermediary may provide additional services, it is the convening of the market exchange that defines the initiative. This is the case of the Canasta Comunitaria Utopía in Ecuador, the Grabels market in France and the Maputo Earth Market in Mozambique. In order to be able to run a comprehensive market exchange, these intermediaries have encouraged product diversification both by producers and by including a range of more specialized producers within the network. The main site of interaction and value creation occurs within the actual farmers' markets.

*Sociocultural market networks* rely upon significant investment in multifunctional intermediaries who not only provide a range of services (environmental, sociocultural and economic) to both producers and consumers, but are also highly involved in hosting markets. For example, in China, we found that the intermediary (Shared Harvest) directly organized market exchanges, but also organized production, training services, a restaurant and educational and research programmes. This is similar to the activities of the Songhaï Centre in Benin (albeit on a larger scale), with the additional services of input supplies, processing and machine building. In Chile, these activities are highly linked to the revitalization of Mapuche cultural and food traditions. The

main locus of exchange takes place on the farms and in their specialized shops, which serve as key sites of socialization and agroecological value creation between producers and consumers. Because of the importance of the farm as the main source of products, on-farm diversification is fundamental to these initiatives.

This typology is an interesting starting point for gaining a clearer understanding of the role of intermediaries in agroecological food systems. These ideal types could be useful for providing a base for future research on the hybridization of some or all the different forms that pragmatically emerge in practice. The typologies of nested market networks also provide an interesting avenue for future research into what may be better referred to as territorial markets that are constructed through distributed networks that are neither long nor linear, but community and geographically focused.

These networks enable us to better understand the approaches promoted to change scale across the initiatives. Indeed, each case demonstrated different changes in their operations over time and there are clearly opportunities for changing the scale of their operations in the future. We can summarize the proposals in two ways: the first is through a scaling-up approach and the second is what has been referred to in the literature as scaling-out. *Scaling-up* was referred to as the changing of the scale of influence of the initiative – often in terms of vertically expanding the reach of the core intermediary. For example: the case from Namibia proposes a model of mediated growth and diversification of markets: One producer claimed: "Should not be focusing on superspar [local supermarket], but focusing on the other markets (...) have to be careful that we don't grow grow grow (and follow the trend in the economic world) so that our quality and our human relations go down."

*Scaling-out* is a term that has been used more recently in farming systems research and refers to a horizontal expansion of a technology or idea, rather than a vertical size increase. In Uganda, the scaling up strategy is on growth in local clusters around the country that can them be connected through logistics systems. An intermediary explained that "Since we have four different geographical locations (...), through the steering committee of directors, we should support the clusters to grow to that tune (up to 800 members). (...) This structure represents replication of a business idea to other regions without compromising the autonomy of producers to own their operations."

In general, the most common opportunity for scaling up is increasing local, regional and national recognition of the initiatives. Increased visibility is helping to share these experiences beyond the borders of their communities. Diversification of

markets, in terms of both new sales outlets and new products, are actively being pursued. The type of support that is needed is fairly common across all cases: there is a need for financial support. There is an interest in specific certification schemes for agroecological products as a means to differentiate these, access to agroecological technologies and training in these practices are still needed. Political support through the recognition of agroecology and its existing markets is important for scaling up – particularly in Bolivia, Colombia and Mozambique. Finally, there is a need for internal commitments by members to continue their participation in the initiative and local level collaboration between private and public actors is fundamental to changing the scale of these initiatives.

## *Conclusions*

We do find some evidence that the concept of an 'agroecological product' is emerging, but the term 'agroecology' is not an evident quality attribute sought in markets. This product is traded in short value chains at fair prices within initiatives that are mostly sustainable with respect to economic, environmental, cultural and social concerns. Consumers perceive the initiatives to be less sustainable economically than intermediaries and producers do, while intermediaries are the most optimistic about the environmental sustainability of the initiatives. These different perceptive reinforce the results of our analysis that point to a special role for intermediaries in agroecological food systems, that is, not always or exclusively as market intermediaries, but rather as providers of a range of services within food systems.

Gliessman (in FAO 2015) argues that level four of a transition to a sustainable food system is the re-establishment of a more direct connection between those who grow the food and those who consume it. We see evidence of this emerging in 12 different countries. Specifically, we have found evidence of an important role for consumers who are directly influencing the way products are marketed and a correspondingly increased responsibility being taken by producers to develop their own marketing strategies. The construction of local nested market networks illustrate that products are not the only goods being valued in these spaces, but cultural traditions, ideas, visions, and knowledge are also being exchanged. Community embeddedness is a core element of these markets, which is reinforced by the valuing of direct contact, interpersonal trust and the proximity of actors within the networks. These

exploratory results point to a need to take the lessons learned from this research and develop broader surveys that can collect systematic and comparable data across a variety of agro-ecological, socio-cultural, geo-political and economic food systems.

## Acknowledgements

This article uses some of the main findings presented in the book by FAO and INRA entitled *Constructing markets for agroecology: An analysis of diverse options for marketing products from agroecology*, written by A. Loconto, A. Jimenez and E. Vandecandelaere. FAO retains the copyright. We are grateful to the reviewers of *Ager* for their suggestions.

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