Sustainability along all value chains

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Chapter 3.6: Sustainability along all value chains: exploring value chain interactions in sustainable food systems.

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Abstract

The value chain, as an analytical tool, has been used for more than 50 years as a way to better understand how agri-food products move and gain value from the farm gate to the dinner table. Over the past 20 years, increasing attention has been paid to questions of sustainability within value chains and even more recently there has been a push to try to better understand how the way through which food is provisioned can deliver diets that are also sustainable. In this chapter, we explore the recent advances in value chain theories and we illustrate how taking a horizontal network, systemic and territorialised approach to food provisioning systems contribute to this literature. We argue that by looking both within and across value chains, we can better identify innovations in actor arrangements that are bringing new values (particularly sustainability) into food systems. By refocusing our analytical lens away from specific commodities and towards new forms of organization – such as short supply chains, circular economies, gastronomy and geographical indications – we can better capture how value(s) chains might contribute to promoting sustainable consumption and production in territorialised food systems.

Introduction

First developed in the 1980s, the concept of 'sustainable diets' was solidified in 2010 by the Food and Agriculture Organization of the United Nations (FAO) and Bioversity International as "those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources" (Burlingame and Dernini, 2012). The achievement of a sustainable diet is a logical outcome of ensuring sustainable production and consumption patterns, which have recently been included in the Sustainable Development Goals (SDG 12) that should be achieved around the world by 2030. Global trends tell us that as countries go through a nutrition transition, the amounts of foods rich in fibre, as well as pulses, fruits and (some) vegetables that are consumed tend to decrease while demand for protein and processed food that often contains elevated levels of sugar, salt and fat tends to increase (FAO, 2017a, 2013). While these types of nutrients are essential for a healthy diet, the imbalanced demand for some food products over others can have distorting effects on the distribution and production networks that sustain both local and global food systems.

For these reasons, we focus in this chapter upon the supply chains and food provisioning systems that are fundamental to ensuring that consumption and production patterns can become sustainable and deliver sustainable diets. We use the concept of value(s) chains to explore the variety of ways through which food systems might reorganize production and consumption patterns in order to achieve sustainable diets.

Value(s) Chains and Sustainability

There are generally three schools of thought that have contributed to the emergence of the value chain as a structuring concept for implementing sustainability. The first developed in

the 1960s by Louis Malassis (1973) and was based within the field of industrial organization. The *filière* approach, as it was referred to, mapped and calculated the socio-economic characteristics of the agro-enterprises and the monetary value of product flows from production to consumption (Raikes et al., 2000). The second was based on Immanuel Wallerstein's (1975) World System's Theory, which used the colonial political economies of sourcing from the periphery to supply the centre to analyse the tropical commodity systems (Friedland, 2001, Hopkins and Wallerstein, 1986) that persisted following the end of colonialism and became a dominant feature of globalization. Here the focus was on understanding sociological questions of power and exploitation in these systems. Finally, the term value chain was coined by Theodore Porter (1985), as a management tool that could help firms to identify their competitive advantage within an industry structure. This approach was quickly taken up in corporate social responsibility programs and over the years has been repackaged as 'creating shared value' among supply chain actors (Porter and Kramer, 2011). These schools of thought provided a mix of theory and practical tools that have since been further developed and tuned to focus on specific elements, such as upgrading, governance and production networks (Gereffi and Korzeniewicz, 1994, Henderson et al., 2002).

Questions of sustainability within and across value chains have entered this literature also in two ways. First, the concept of sustainable or green value chains is often used to refer to those value chains where environmental and social indicators are taken into consideration in determining the sustainability of the supply chain (Carter and Rogers, 2008). These chains can range in coverage from those that focus purely on closed-loop supply chains that reduce their environmental footprint by recycling the used products back through the chain (Srivastava, 2007) and thus creating circular economies (Andersen, 2007), to an idea of sustainable sourcing that focuses on the purchasing of certified raw materials (SAI, 2013). Certified raw materials traditionally rely upon systems of third-party certification where private standards

enable value chain actors to make claims as to the value(s) of the products (Loconto, 2010). Indeed, this approach to sustainable sourcing has become dominant in global value chains for tropical commodities (Loconto and von Hagen, 2016, OECD and FAO, 2016).

Second, sustainability is considered systemically. Inspired by Kaplinsky and Morris (2002), FAO defines a Sustainable Food Value Chain as "the full range of farms and firms and their successive coordinated value-adding activities that produce particular raw agricultural materials and transform them into particular food products that are sold to final consumers and disposed of after use, in a manner that is profitable throughout, has broad-based benefits for society, and does not permanently deplete natural resources." (FAO, 2014). This vision implies that the chain is not only a logistical structure as some of the more instrumentalist approaches propose, but rather a chain of relationships where different actors along the chain are adding value as the product moves from one actor to the next within a food system. This approach provides a roadmap from which to trace the actors who, through different nodes of negotiation, are involved in creating value(s) throughout the chain (Gereffi and Korzeniewicz, 1994, Ponte and Gibbon, 2005, Ouma, 2015).

Recent advances in the study of value chains work from this notion of multiple values and networks of relations in order to reconceptualise what is being exchanged, how it is being valued and the effects of changing the relationships between actors that can influence both of these elements (Loconto, 2017 (forthcoming)). One focus of this work has been to re-embed the value chain within the food system concept (Ericksen et al., 2010) and more specifically within approaches to understanding alternative agri-food networks and local food systems (Goodman et al., 2012, CIRAD-SAR, 1996). In the localised food system approaches, focus has shifted from trying to identify actors' positions in linear value chains towards understanding their positionality within territorially anchored, horizontal networks (Bowen and Mutersbaugh, 2014). The preferred approach within this school has been the study and

promotion of geographical indications (GIs), which have been shown to deliver positive economic impacts on rural development, such as increasing production, employment, food system resilience and socio-cultural sustainability (FAO, forthcoming-b, Barham and Sylvander, 2011, Tregear et al., 2007). GIs primarily differentiate and add value to products that are characteristic of a local area and protect producers' from undue private appropriation of the territorial name (Vandecandelaere, 2016). More specifically, collective action is at the heart of GI processes whereby producers and the local community are able to organize themselves around a local identity and heritage. Producers themselves write the GI product specification, allowing the rules to be adapted to local conditions (natural and human resources) and are not imposed by downstream segments of the value chain as it is often the case with voluntary standards and certifications. Producer organizations that develop GIs have also demonstrated an important dynamism that supports environmental conservation at the landscape level of their territory ("terroir") and promotes local culture and gastronomy (Ollagnon and Touzard, 2007).

More recently, the concept of *circuit court* (Chiffoleau, 2012) or short food supply chains has emerged to try to capture how proximity (geographic or shared values) is often a common denominator in creating a strong nexus between consumers and producers that contributes to the sustainability of the food system (Aubry and Kebir, 2013, Renting et al., 2003). Proximity is seen as a starting point for the collective construction of a new vision and identity around food production and consumption for urban communities (Parker, 2005). Proximity has also been shown to have positive effects on reinforcing site-specific cultural identity and the ability of local actors to be actively engaged in new forms of food citizenship (Renting et al., 2012), such as community supported agriculture (Hinrichs, 2000) or consumer-driven food initiatives (Fonte, 2013). The construction of geographical or social/institutional proximity in food systems implies building conscious relationships between producers, consumers and

other intermediary actors who are increasingly fundamental in ensuring that sustainable production and consumption activities can meet (FAO, 2016, *Forthcoming-a*). These approaches move out of a linear focus on one product or commodity towards 'baskets of goods' that offer diverse food options for closely linked consumers.

We draw upon these recent theories of value chains as networks of interactions to explore the relationships among actors who are working together across value chains, so that we can better understand how sustainable food systems might encourage sustainable diets.

Sustainability within and across value chains

Ensuring sustainability in value chain interactions that occur within agri-food systems are both a desirable outcome and a complex condition of action that requires constructive participation of all system actors. It is thus more of a pathway than a stable state of achievement (Casabianca, 2017). If we are to truly understand how value chains can encourage sustainable consumption and production patterns, we need to better understand what is already being done in a variety of contexts and learn from those forms of collaboration and organization that work to deliver the sustainable outcomes that policy-makers and food system actors seek. In this section, we use empirical examples from the authors' work to illustrate how actors in Africa and Latin America are defining what is sustainable and how they are implementing sustainability in their consumption-production networks. We suspect that these types of interactions within and across value chains are key to ensuring the sustainability of food systems.

Peri-urban agricultural heritage systems of Mexico City – valuing tradition in short supply chains

The Chinampa system, an emblematic and resilient pre-Columbian system located in peri-urban Mexico City is being threatened by rampant urbanization pressure generating

competition for labour, land and water resources. The Chinampa system is made up of an articulated set of floating tiny artificial islands surrounded by canals or ditches and rows of *ahuetojes* (*Salix bonpladiana*), which is a species of willow that performs several functions including living fences that provide windbreaks, hosting living species and preventing soil erosion (Gobierno de la Ciudad de México, 2016). The Chinampa system is active only in 19% of the total area (7300 ha) but provides a great diversity of horticultural, staple crops and ornamental products to the metropolis. It is estimated that nearly 12,000 families are directly involved in agriculture activities in the Chinampa and this generates nearly 35% of their income. The permanence of the system synchronizes specific ways of organization, life style, traditional forms of community and technical skills conforming a type of *Chinampa stewardship* (Gobierno de la Ciudad de México, 2016).

Despite being once an outstanding intensive and efficient food system able to feed more than a million inhabitants in pre-Hispanic times, the Chinampa system is now battling to preserve its agricultural and environmental services and functions. The most evident threat is water salinization due to the reduction in available water, which is a consequence of changes in water concessions for use in the metropolis. Moreover, the predominance of Mexico City's wholesale market (one of the biggest in the world) that sells undifferentiated products is affecting the profitability of farmers who produce using the Chinampa system. A recent opportunity for valuing the Chinampa system is its recognition as a Global Indigenous Agricultural Heritage Systems (GIAHS) by FAO-UNESCO (FAO, 2017a). With this recognition, a number of local NGOs have begun to create short supply chains so that the products produced in this GIAHS can be sold in tradition *tianguis*, or open-air bazaars, in Mexico City. This strategy of directly linking an indigenous production system with an indigenous market outlet offers the possibility to preserve the socio-cultural, heritage and agricultural values of a sustainable food system that have been eroded over the years.

Since 2016, FAO has been collaborating with SEDEREC (Secretary of Rural Development and Equity for Communities) to strengthen the linkages between these two systems so to help local actors develop autonomous and sustainable systems. The FAO-SEDEREC strategy is built on two food system elements: (i) a farmer`s market that is established in a central site of the city, where producers can get fair prices and consumers can acquire fresh products with traceability of origin and cultural identity. Valued features of this market are transparency & information, cleanness, diversity and regularity of products. In this chain, the market coordinator´s role is significant. It should manage I&C technologies, build and manage market governance by communicating with both sides, and, provide technical assistance to producer and processors to assure product quality. (ii) Support producers- market alliances with emphasis on participatory diagnosis, added-value and identification of main constraint and solution. Support to strengthening collective action, entrepreneurial skills and provision of basic infrastructure –stalls or gathering centres -are deemed essential in the overall strategy (FAO, 2017b). By combining an approach that focuses on sustainable production within a cultural and agroecologically important territory, farmers' markets that encourage direct exchanges between producers and consumers, and support services for intermediaries, this approach has been able to create reinforcing interdependencies among the actors. The need for a variety of products to source the markets and the reliance upon diverse ecosystem services to produce those products means that value chain specialization is not an option. Instead, building upon local knowledge to manage these flows is what will ensure the sustainability of this food system.

Gastronomy in Costa Rica – creating value chains that link chefs and producers

Since the early 1990s, Costa Rica has been at the forefront of movement towards efficient and environmentally responsible production systems in both the regulation and collaboration

with the private sector and through specific public-sector policies, programs and projects (Azofeifa, 2015). Costa Rica has adopted a two-pronged approach to sustainable production and consumption in its agri-food systems. On the production side, Costa Rica has been moving towards efficient and environmentally responsible production systems that include good agricultural practices,organic production, low carbon agri-food systems, organic residues for energy and source of fertility, among others, to improve efficiency in farm system. The results of these efforts are very clear as Costa Rica is consistently included within the top countries for sustainably certified farms and forests (Potts et al., 2014, Lernoud et al., 2017).

However, on the side of sustainable consumption, the efforts to influence consumption behaviour to promote sustainable diets through consumer awareness and information have been very weak. Bringing producers and consumers closer together in networks of proximity has been far greater challenging than originally imagined. In Costa Rica, the dominance of unhealthy diets based on unsustainably produced food and highly processed products are a major reason for poor health, loss of biological and cultural diversity and environmental degradation in the country. A strong gastronomy sector that can create the interconnections between healthy and sustainable consumption habits and sustainable production systems has been lacking.

In 2012, a multi-stakeholder initiative launched a National Plan for Healthy and Sustainable Gastronomy in order to reverse this trend in Costa Rica. The goal is to initiate a new, healthy and sustainable national cuisine that can act as a driver for agricultural development and strengthen production opportunities for diversified family farming systems. The hope is that by doing so, this initiative can influence national action and the global debate around sustainable diets.

In the context of the efforts to close sustainable food production and consumption loops is where the National Plan for Healthy and Sustainable Gastronomy comes in. Specifically, a national platform made up of public and private actors administers this plan by facilitating the exchange of ideas, talent and interests in the implementation of partner activities. The plan strengthens the role of consumers and consumer behaviour that can promote sustainable diets. Among other relevant aspects, the plan has set up a series of activities that will turn consumer demand for seasonal products into the driving force for organic and sustainable production that can increase agrobiodiversity, reduce food losses and waste, and develop local markets and value chains.

This approach strengthens production opportunities for family farming by encouraging direct collaboration between chefs and producers. Activities such as promoting the consumption of local fruits and vegetables and enhancing the local cuisine by incorporating more edible plants and diversified food into gourmet meals can inspire broader incorporation of these local products into consumers' diets. By focusing on local and indigenous varieties of food found in Costa Rica, the gastronomic approach uses consumer interest to generate solutions to the problem of decreasing food biodiversity. The creation of direct provisioning networks between urban restaurants and family farming communities diversifies local economies and strengthens their local resilience to sustainability shocks. Finally, the focus on high profile chefs and the emerging food culture influences consumers' eating habits and how encourages sustainable diets.

While the Plan has triggered important progress in this sector, a lack of information and awareness about health and environmental impacts of food has been identified as a major obstacle for achieving greater impact. Therefore, efforts are being taken to increase the publicity of stakeholders who are engaging in these networks by organizing cooking events where consumers can meet the chefs and the producers. The focus on developing both

geographic and values proximity in networks through these types of exchanges can begin to build long term relationships that can outlast any food fad that is often associated with the idea of sustainable gastronomy. This collective approach enables actors to share practical advice about how they can improve their diets, reduce food losses and waste and build preferences for sustainably produced products. In the end, it is via these new short supply chains and collaborations that trust is built between actors and that consumer lifestyle changes occur.

Songhai Center in Benin – turning a value chain into a circular economy

Established as a youth training centre in 1985, the Songhai Centre incorporates three key sectors of the economy into a single organizational form. It is organised in such a way as to create synergy and complementarity between sustainable production methods based on an integrated production system that includes vegetable, pulse, cereals and fruit crop production, livestock raising, aquaculture and biogas production. It includes an industrial cluster model, where artisanal and modern food processing takes place (e.g., fruit juice, snacks, popcorn, baked goods, bread, fresh cuts and cured meats, soap, plastics recycling, plastic buckets). The centre also organises the production and sale of sustainable inputs (seeds, manure, compost and effective micro-organisms (EM)), provides agro-tourism and internet services, and is involved in developing appropriate technologies for sustainable production.

The Beninese network is currently made up of the main demonstration site in Porto Novo and five satellite centres in regional urban centres that source, when necessary, from surrounding rural farms. No link functions without a relationship to one or more of the other links and the satellites are governed through a centralised, hierarchical, chain of command that permits horizontal linkages between network members. There is a central procurement and marketing service that organizes the procurement of raw materials for processing and the

sales of processed products from the Porto Novo hub. However, each satellite is also responsible for local sales of their fresh produce and artisanal processed goods. In 2014, 54% of the value of finished products was sold within the network and 46% constituted product sales with a value of 4,185,694,831 FCFA (US$ 7,040,540), of which the off-farm sales of finished products accounted for 1,533,743,462 FCFA (US$ 2,579,830) (Loconto and Vicovaro, 2015).

Within the Songhai model, the actors in the network have had an active role in defining what Organic means in the country through their use of consumer-facing labels, Songhai has taken over running some of the Ministry of Agriculture's youth training activities and Songhai has successfully created an organizational model that is being replicated in other countries. In fact, the greatest revenue in 2014 came from the corporate fees they received from the Nigerian operations. This mobilisation has occurred through the establishment of a multi-actor innovation platform that focuses the attention of the actors in the network on sustainable agriculture technologies. Innovation intermediaries are highly influential in this system as the interactions between producers and consumers take place in the regional satellite centres (Agossou et al., 2016).

The Songhai model of production is maintained by consumer demand for the qualities of its products. These qualities are communicated by word of mouth, with posters and direct communications by the employees at the sales points, through direct experience with the agricultural techniques either by attending the centre's training program or through a visit of the demonstration site, by consuming the food in the on-farm restaurants or by reading the on-packet labels. The consumer facing labels of Songhai products make claims about the product 'qualities' including: organic, healthy, medicinal properties of certain crops, and nutritional properties. According to research conducted in 2015 (FAO, *Forthcoming-a*), all types of actors believe that the local food system is rather sustainable, with producers being the most

optimistic about the economic sustainability of the system. This suggests that a horizontal network model, with both central and distributed production, processing and sales, that is managed by a core intermediary, has been able to effectively maintain the communication of sustainable values from production to consumption.

Geographical indications that support sustainable production and consumption

Coffee is a major cash crop for Guinea and a source of income for thousands of small-scale farmers. Guinean coffee is not well-established on the international coffee market, because of low quality, and is mainly exported to African countries (Senegal, Morocco and Algeria) (UNCTAD 2015). Nevertheless, the Ziama-Macenta coffee has gained a good reputation in the market, because of the high quality orientation of its major producer, the Woko cooperative, and because of the influence of its *terroir* on the organoleptic characteristics of the coffee. Technical assistance and public support through the African intellectual Property Organization (OAPI) and French Development Agency project "PAMPIG (Projet de mise en place des Indications Géographiques dans les Etats membres de l'OAPI) supported the registration of the GI "Ziama-Macenta coffee" for green beans, which has contributed to the economic, social and environmental sustainability of the local food system.

The GI area is found in the forest perimeter of the Ziama Mountains, which represents a refuge for several rare, vulnerable and threatened species, and a habitat for endemic species of the large upper Guinean forest block. The environmental factors (microclimate with importance of rain and low temperature, dense forests and secondary forests, located between 500 and 1000m altitude, and geological substrate on mountain slopes) strongly contribute to the territorial link of the GI . This coffee comes from traditional and hybrid varieties of Robusta coffee, with its tangy and slightly bitter flavour that is close to Arabica.

“Café Ziama-Macenta” for the green coffee has been registered in 2013 by the Ministry of Industry in Guinea and by the OAPI in June 2014. The GI specification includes specific human practices linked to the agroforestry system of shade grown coffee (including organic fertilization and no use of chemical pesticides) that protectthe environment around the Ziama Mountains.

The creation of the GI has also structured the value chain and strengthened cooperation among the actors within the local region. The Woko cooperative has been strengthened and a second cooperative called Diani has been established. The two cooperatives were working with 38 formalized producer groups in 2014 (compared to 17 before the GI registration), with an additional 1,116 producers engaged in the GI strategy. Three groups of collectors and sellers have also been formalized to promote the sale of the GI products. All of these actors collaborated to establish the inter-branch association ADECAM, which manages the GI. Its objective is to facilitate coordination and not competition among producers, to increase the reputation of the GI on the coffee market, and to sensitize the local population about the importance of forest conservation. Economically the GI’s impact is important. The 2013/2014 campaign showed a price increase ranging from 8% to 58% (6 producers sampled) compared to the non-GI coffee (GRET, 2015). The first exported container (18 tons) in 2013 benefited from a premium of 13% compared to the Guinean coffee market price and 22% for the second container in 2015 (UNCTAD, 2015).

The internal control system implemented by ADECAM, played a key role in increasing and guaranteeing the coffee quality, offering it a place on the international market. The project and public recognition of the GI has enhanced collaborations and synergies with regards to export procedures, public funding (research and national projects) and development of a local coffee market for the GI. This local market has created job opportunities locally,

with investment in local infrastructure and eco-tourism development, allowing the promotion of other local products and handicrafts.

The importance of the quality linked to origin defined in the specification, the focus on local organization, the awareness raising among the citizens of the area through general assemblies and the market development have all worked together to contribute to local sustainable development.

Conclusions

Small-scale producers and family farms, by the very nature of the foods (often fresh) they produce (often with traditional or sustainable practices) can be crucial allies in the efforts to make sustainable foods more available. As we explored in this chapter, the focus on a sustainable diet is often not at the forefront of value chain interventions – particularly if there is a focus on global value chains. Each empirical example explained how sustainability is defined in the context with some more focused on production (like in Mexico and Guinea) and others on consumption (in Costa Rica and Benin). However, some of the commonalities that we see are found by looking across value chains, rather than along them. As we illustrated in the beginning of the chapter, the literature has been focused mostly on value chains for tropical commodities and very little work has been completed on products that are needed for sustainable (and diversified) diets. For example, to be more sustainable could mean increasing the economic viability of local production while preserving traditional methods that are environmental friendly. Alternatively, the focus may be on stimulating consumer interest in traditional or healthy food by offering direct contact with producers who are able to explain the importance of their sustainable practices. In all cases, there is a need to better strengthen the organizational arrangements that bring sustainable production and

consumption practices together in specific territories as these arrangements provide the catalysts for action.

A distinctive feature of value chains that contribute to sustainable food systems, as illustrated in this chapter, is the social construction of an enriched range of attributes generally used to define food quality that goes beyond conventional attributes to include broader values such as tradition, identity, culture and/or local production (Renting et al., 2012, Goodman et al., 2012, FAO, *Forthcoming-a*). Evidence shows that when a group of diverse actors operating in a specific territory generates new rules of interaction based on reciprocity, autonomy and an appreciation of different types of knowledge, they are able to build stable, inclusive and long-lasting market relationships both within the territory and outside of it (FAO, 2016). Some of the core activities that are part of these networks are based on the direct contact with consumers, either through farm visits, farmers markets, direct sales or local supermarkets. Thus, where classic theories of value chains view the interactions through the lens of power struggles or transaction costs, these more recent approaches are beginning to recognize the interactions that can enhance better practices, overcome lock-in effects, and contribute to more sustainable food systems. More research on how these networks are organized and expand is needed in order to better be able to understand how diets can be made sustainable alongside the production and trade of food.

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