

## Short urban food chains in developing countries: signs of the past or of the future?★

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**Abstract** – The paper investigates the role and future of short food chains supplying cities in developing countries. It is based on a conceptual framework on proximity (mostly used in developed countries and tested here in developing contexts), surveys in Vietnam on the organisation of vegetable chains supplying urban markets, as well as surveys in Africa and secondary empirical data. In line with the predictions of spatial economics, short food chains are dominant in the supply of perishable produce, *e.g.* leafy vegetables in Vietnam, as in a number of cities of Africa and Asia. There are instances where farmers and consumers are active in taking advantage of regular interactions, especially to promote food quality and safety, in a context of growing concerns on the part of consumers for their health. The paper concludes with some features of short food chains in Asia and Africa.

**Keywords:** short chains / cities / proximity / food supply / vegetables

**Résumé** – **Les circuits courts dans les pays en développement sont-ils des signes du passé ou du futur ?** Cet article interroge le rôle et le futur des circuits courts alimentaires dans l'approvisionnement des villes du Sud, en s'appuyant sur les concepts de l'économie spatiale et de la proximité qui ont été essentiellement appliqués dans les pays développés. Les données étudiées proviennent principalement d'enquêtes sur l'approvisionnement en légumes des villes du Vietnam, complétées par des données primaires et secondaires concernant l'Afrique, l'Asie et l'Amérique latine. Les résultats montrent que les circuits courts au sens géographique sont dominants dans l'approvisionnement des légumes les plus périssables, les légumes feuilles. La part des zones proches (moins de cinquante kilomètres) dans l'alimentation diminue quand les villes grandissent, et que les infrastructures de transport vers les zones rurales se développent. Mais la proximité géographique peut être activée par la proximité relationnelle. Des circuits courts mobilisant des producteurs de zones urbaines et périurbaines sont en plein développement en Asie, comme l'illustre le cas du Vietnam. Ceci peut être mis en relation avec la demande croissante des consommateurs pour des produits de qualité sanitaire mieux garantie. Les exemples de marchés paysans en Inde et au Laos pour des produits biologiques, ainsi que d'achats directs par des consommateurs et acheteurs institutionnels de produits d'agriculture raisonnée au Sénégal, au Kenya, au Brésil et en Afrique du Sud sont aussi décrits. L'article conclut par quelques spécificités des circuits courts en Asie et en Afrique.

**Mots-clés :** circuits courts / filières / villes / proximité / légumes

★ Voir dans ce numéro les autres contributions au dossier « L'agriculture dans le système alimentaire urbain : continuités et innovations ».

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## Introduction

### Paper focus and outline

The paper investigates the characteristics, role and future of short food chains supplying cities in developing countries.<sup>1</sup> Many studies ascribe to short food chains excellent (although not always thoroughly measured) social, economic and food contributions (starting from the seminal [United Nations Development Program \(UNDP\), 1996](#); [De Zeeuw \*et al.\*, 2011](#); [FAO, 2012](#)). On the other hand, some researchers document the modernization of transportation, logistics and distribution which favour long chains and large-scale specialized production ([Ellis and Sumberg, 1998](#); [Reardon, 2015](#); [Vidal, 2011](#)). Hence there are questions about the importance and viability of agriculture located near the city as well as short food chains.

In this paper, we argue that short food chains in developing countries have specific comparative advantages and drawbacks relative to long chains and that there are indeed complementarities between the two. In line with the predictions of [Von Thünen \(1875\)](#), short food chains are especially robust in the case of perishable produce and difficulties in transportation, and they tend to give way to longer chains when transportation is improved and pressure on urban land increases. Yet, there are forces other than the value of the commodity relative to transportation cost that explains their longevity, especially the growing concerns over food safety, making consumers increasingly interested in getting their supply from well-identified production areas. Hence, short food chains are not remnants of a past characterized by poor transportation infrastructure and cities of low population density. They are, rather, in a growing number of cases, signs of innovative behaviour displayed by farmers, consumers and sometimes governmental and non-governmental organizations.

The paper is organized as follows. First, we summarize the insights on geographical and relational proximity and how they highlight the role and future of short food chains, even though these have mostly been applied to developed countries, and present the sources of data. The results are displayed in a subsequent section, followed by a discussion and conclusion.

<sup>1</sup>A preliminary version was presented in the 5<sup>th</sup> AESOP Conference on Sustainable Food Planning, Montpellier, 28-29 October 2013. A substantial part of the data originates from projects supervised by the author within the Malica consortium (Markets and Agricultural Linkages for Cities in Asia) based in Vietnam, in particular the Susper project (Sustainable Peri-Urban Agriculture in South-East Asia) funded by the French Ministry of Foreign Affairs between 2001 and 2005.

### The advantages of geographical proximity

The role of geographical proximity in the supply of perishable crops was modelled by Von Thünen in his analysis of agricultural land use according to location done in 1826 ([Von Thünen, 1875](#); [Huriot, 1994](#)). According to his model, land is allocated as a function of the use which brings the highest land rent, and can be sketched as concentric circles relative to the city centre. Land rent is defined as the share of the output by area after deduction of production and transport costs. The most profitable and intensive land use by unit area, and commodities with high value relative to transport costs, are found near the city centre. This is typically the case for perishable fruit and vegetables.

Von Thünen is recognized as the founder of location theories ([Fujita, 2010](#)) and the relevance of his predictions regarding land use around cities (in terms of nature of products and production methods) has been evidenced in a number of empirical applications, also recently ([Cherif, 2014](#); [Wästfelt and Zhang, 2016](#)). Yet the original model displays some limitations. In particular, it has been argued that in industrial societies, the share of transportation cost in the total cost decreases, and dominant factors in the locating and the intensity of production are soil quality, regional specialization and competition between agriculture and urban development. However, the model would have some validity in less developed regions ([Sinclair, 1967](#); [Huriot, 1994](#)).

### The advantages of relational proximity

The term relational proximity refers to the degree to which individuals interact and share values and knowledge ([Cross \*et al.\*, 2001](#); [Coenen \*et al.\*, 2004](#)). It is close to the notion of organized proximity as referred to by [Torre \(2000\)](#). Organized proximity is indeed characterized by belonging to the same space of relationships (defined as a logics of adherence), as well as the sharing of values of representations, *i.e.*, logics of similarity ([Gilly and Torre, 2000](#)).

While relational proximity has sometimes been presented as a substitute for geographical proximity ([Cairncross, 2001](#)), it is increasingly acknowledged that they reinforce each other ([Morgan, 2004](#)), as short distances favour regular contacts between farmers and traders, and between farmers and consumers. Nevertheless, as [Marsden \*et al.\* \(2000, p. 425\)](#) argue, “with a short food supply chain, it is not the number of times a product is handled or the distance over which it is ultimately transported which is necessarily critical, but the fact that the product reaches the consumer embedded with information”. The same authors describe short food supply chains which are spatially extended, in addition to the ones characterized by face-to-face interactions, and

the ones characterized by spatial proximity. Yet, relational proximity activates the potentials of geographical proximity and involves a lot of creativity on the part of producers and consumers, as well as new forms of distributors (Kebir and Torre, 2012). Relational proximity and consumer knowledge about the origin of food are at the core of the characterization of “short food supply chains” by Renting *et al.* (2003). Direct links between farmers and consumers are efficient in the development of trust and loyalty, as well as some sense of responsibility on the part of farmers as regards food safety. The shortening of chains enables asymmetries of information between producers and consumers relative to quality to be reduced (Prigent-Simonin and Hérault-Fournier, 2005). Food safety refers to credence attributes not directly observable by the user, which create the most uncertainty concerning quality (Nelson, 1970; Darby and Karni, 1973).

In France, it is noted that producers in short chains choose practices that are meaningful with regard to the environment, to which they can relate more easily and turn to greater advantage in their direct communication with the consumer. In Brittany, the proportion of organic farmers among producers selling to consumers was 30% compared to 15% for other modes of sales at the time of the survey (Redlingshöfer, 2008). A recent study based on the 2010 census of French farms involved in fruit and wine production uses an econometric model to demonstrate that farmers who adopt the organic farming label are more likely to sell their produce through short food supply chains (Aubert and Enjolras, 2016). In the USA, it was shown that consumers regularly buying directly from farmers are more sensitive to pesticide-free production (Bond *et al.*, 2006). But it is difficult to find evidence in other contexts on the link between the promotion of quality attributes and the choice of direct marketing.

Direct sales have also been described as a way to develop solidarity between farmers and consumers. Community-supported agriculture is illustrated in France by AMAPs<sup>2</sup> reviewed by Lamine (2008). “Alternative distribution food chains” have developed in opposition to the dominance of mass-scale and monopolistic distribution, which “disconnects production from consumption and relinks them through buying and selling” (Friedmann, 1994, p. 272), using global sourcing to “transcend the constraints of localities and seasonality” (Morgan *et al.*, 2006, p. 1).

### The combination of geographical and relational proximity

Food supply chains are characterized by varying degrees of the two forms of proximity previously

described, and which can be combined (Aubry and Kebir, 2013; Kebir and Torre, 2012; Moustier, 2012). A typology of food chains in developed countries was proposed by Aubry and Kebir (2013) (Tab. 1). For instance, box schemes engaged in by intermediaries are examples of supply chains which can be long in distance but short in organization as compared with AMAPs.

### The limits of proximity

Mostly by definition, there is a geographical limit to the efficiency of face-to-face interactions, even when it is supplemented by organized proximity, modern technologies of communication and temporary geographical proximity at crucial stages of the transaction or innovation processes (Torre and Rallet, 2005). Direct sales are commonly associated with niche markets, *i.e.*, for organic food (even though the share of latter is growing in many countries). Upscaling success stories of alternative food networks may involve some integration into the conventional distribution system and loss of control over marketing (Roep and Wiskerke, 2012). Hence, it may come at the expense of the interpersonal relationships and commitments which favour long-term efforts in terms of quality.

### Paper objective

In what follows, we will investigate the role of geographical and relational proximity in the urban food supply of Hanoi, with some additional insights from selected African, Asian and Latin American countries. We will test two hypotheses drawn from the literature review: (i) perishable products are supplied by nearby production areas in a context of transport deficiencies and (ii) geographical proximity can be activated and combined with relational proximity by farmers willing to promote quality or environmental attributes.

### Method

Existing (patchy) data on the contribution of urban and peri-urban horticulture to feeding urban dwellers through self-consumption show highly variable results depending on the city, district or type of producer (see for instance UAM, 2002). In this paper, we focus on the role of short urban food chains in market supply. The revelation of the specific role of close *versus* distant production areas (or foodsheds) in urban food supply implies original sources of data. Putting in parallel what is produced in a year in a region with what is consumed in the city with available statistics gives a useful indication of the potential contribution of short urban food chains to urban food supply (Mai Thi Phuong Anh *et al.*, 2004; Ali *et al.*, 2005). However, this method has some limitations,

<sup>2</sup> Associations pour le maintien d’une agriculture paysanne.

**Tab. 1.** A typology of food chains based on proximity.Source: [Aubry and Kebir, 2013](#).

		Geographical proximity	
		Low	High
Organized proximity	Low	Long loose supply chains, <i>e.g.</i> for international markets	Short supply chains with intermediaries, <i>e.g.</i> for supermarkets
	High	Internet supply chains, <i>e.g.</i> box schemes	Direct relationships between farmers and consumers, <i>e.g.</i> farmers' markets, AMAPs

including difficulties in taking into account perishable, seasonal produce; accessing data on informal markets; and the fact that it does not consider the destination of produce. In Hanoi, between 2002 and 2005, we appraised precisely the role of urban, peri-urban and rural areas<sup>3</sup> in vegetable provisioning by surveys in wholesale and retail markets, with questions on origin and quantities of produce traded ([Moustier et al., 2004](#)). This was conducted at different times of the year to take account of seasonal variations. The data collection was fraught with difficulties, as most fresh produce is sold either early in the morning or late in the evening or at night, and traders are reluctant to answer questions. The survey was updated in the summer of 2011 ([Sautier et al., 2011](#)).

In Africa, the existing data are patchy in terms of time and space coverage. Figures on the importance of urban and rural foodsheds in urban food markets using origin surveys have been gathered during case studies conducted in Central Africa between 1990 and 1995, mostly on vegetables ([Moustier, 2007](#)). The International Development Research Centre (IDRC) supported similar studies in Ghana *via* the International Water Management Institute (IWMI) [[Drechsel et al., 2004, 2007](#)]. More recently, between 2002 and 2005, similar surveys were conducted in Laos ([Kethongsa et al., 2004](#)) and Cambodia ([Sokhen et al., 2004](#)). Other studies providing data on the market share of urban, peri-urban and rural agriculture include [Mai Thi Phuong Anh et al. \(2004\)](#) for Hanoi, [Yi-Zhanh and Zhang \(2000\)](#) for Shanghai, [Aubry et al. \(2010\)](#) for cities in Madagascar, and various sources quoted in the [Urban Agriculture Magazine \(2002\)](#), special edition for the World Food Summit. Secondary data was also collected for other cities.

<sup>3</sup> In this paper, we define urban areas (or agriculture) as areas (or agriculture) located inside the administrative boundaries of the city. As regards peri-urban areas (or agriculture), we consider the areas (or agriculture) near the city for which there is an alternative between agricultural and non-agricultural uses of natural and human resources, which commonly corresponds to a distance of 30 to 50 kilometers far from the city boundaries ([Moustier, 2007](#)).

We also used consumer surveys and case studies of direct delivery schemes in Hanoi. Besides, we used secondary data on the organization of short food chains in Kenya, Senegal, South Africa and India.

## Results on urban vegetable supply in Vietnam

### Traditional short chains of perishable food based on geographical proximity

The market data on product origin confirm the importance of urban and peri-urban areas in the provision of perishable food commodities, including fresh perishable vegetables. Fresh vegetables supplied by urban and peri-urban agriculture are leafy vegetables such as morning glory, various varieties of cabbage, and lettuces. These vegetables are especially important for less wealthy consumers, as they are among the cheapest foodstuff, and an important source of micronutrients. They are highly perishable: after one day they are no longer fresh. In Hanoi in 2002, more than 70% of all leafy vegetables were sourced from a production radius of 30 km around the city, 95-100% of all lettuce came from less than 20 km away, while 73-100% of morning glory was harvested less than 10 km from the city ([Moustier et al., 2004](#)). Leafy vegetables are sold through short chains: farmers commonly transport their produce for night wholesale markets by motorbike and sell to retailers. In the case of tomatoes, in the hot season where they are not produced locally, wholesalers are supplied by other wholesalers located in Dalat (1,000 km away) or China.

Hence, geographical proximity is still important in the supply of perishable vegetables, the production of which plays a strong role in the livelihoods of the poor, be they farmers or consumers. This is due to the high perishability of these vegetables, in line with the findings of Von Thünen ([Hurriot, 1994](#)). The situation can change with the development of transportation and pressure on urban land, even though the role of close production

areas remains major for highly perishable vegetables. A comparison of areas supplying Hanoi between 2002 and 2011 (Sautier *et al.*, 2011) shows that metropolitan Hanoi (which has been extended) supplies 75% of water convolvulus (rather than 89% in 2002), and nearby rural provinces have increased their share of supply. Cucumber is no longer supplied by Hanoi province, but is sourced in nearby rural provinces.

### Short chains for quality vegetables (activated proximity)

#### Changes in consumer demand

The growing distrust of consumers in the safety of food is widely documented in both developed and transitional economies. In Asia, some authors consider that concern for food safety has emerged since food availability is no longer a concern and purchasing power has grown (Changchui, 2006; Esguerra *et al.*, 2006). Sources of food contamination have also increased. This is because of new industrial and domestic sources of pollution close to agricultural production areas, also because of the rise in the use of chemical inputs by farmers. A survey conducted in Vietnam in 2005 shows that 75% of the persons interviewed are extremely worried about food safety. For 57% of consumers, this is especially related to the presence of chemical residues in vegetables, fruit or meat (Luu *et al.*, 2005). Tests on 144 samples of vegetables indeed revealed that 12% exceeded the authorized limits for pesticide residues (Vietnam Ministry of Agriculture *et al.*, 2009). In Laos, among 126 urban respondents, most want to buy organic products (that cost as much as 20% more), the first reason being health concerns (Chittanavanh *et al.*, 2005). In India, 33 interviewed experts declared that the main reason for organic purchases was health concerns (Chakrabarti, 2010).

#### Short quality food chains: characteristics and development

Public and private stakeholders are responding variously to this new demand. The growth of supermarkets that communicate on food safety, and hence attract more consumers, has been documented by various authors (Maruyama and Trung, 2007; Figuié and Bricas, 2010; Wertheim-Heck *et al.*, 2015). It is paralleled with various public and private schemes for certification (including VietGAP or certification by the Plant Protection Department in Vietnam, organic certification in all countries at varying scales). The development of direct sales between farmers and consumers, in the form of short food chains, is another answer to consumer concerns for food safety and what farmers are doing in terms of quality.

When we studied the marketing strategies of farmer cooperatives involved in “safe vegetables” for Hanoi or Ho Chi Minh City (*i.e.*, chemical-limited vegetables with certification by the Plant Protection Department), we found that direct sales by farmers to consumers in shops are common, while this is not observed in the case of conventional vegetables. The traditional chain of vegetables involves two or three intermediaries between farmers and consumers: collectors, wholesalers and retailers (wholesalers are sometimes also collectors and/or retailers); the bulk of transactions take place in village fields and in night wholesale markets (Moustier *et al.*, 2004). The survey conducted in 2002 on 491 farmers in Hanoi province shows that 65% of them sell to collectors in the field, while 27% sell in wholesale markets to wholesalers or retailers. Direct sales to consumers are only observed for 8% of farmers, and they mostly take place in village markets (only 1% of farmers sell to urban consumers). Short chains (with zero or one intermediary) involve 27% of all farmers (To Thi Thu Ha, 2008).

When considering the outlets operated by “safe vegetable” groups and enterprises, the share of short chains is much larger than for vegetable farmers taken as a whole: in 2008, 54% of these units were selling to canteens; 33% to supermarket retailers; 12.5% to shop vendors; 8% to collectors and 8% to wholesalers. In the two latter cases, “safe vegetables” are not labelled differently from conventional vegetables and are sold at the same price, while at other outlets, the price difference is at least 50%. Food shops and short chains developed quickly between 2002 and 2007: in 2002, there were 22 points of sale for “safe vegetables”, including 20% managed by cooperatives. In 2007, there were 54 points of sale, 70% of which were managed by cooperatives. In 2009, the number of shops was 78, including 24 managed by cooperatives and 54 by retailers buying from cooperatives. The big fall in the number of shops operated by cooperatives results from the increase in the price of rent in a context of high pressure on land in Hanoi.

The development of short chains is also observed for organic vegetables, for which direct sales lend themselves to more sustainable arrangements than contract farming, as shown by the history of the development of the sector. The production of organic vegetables began in 1999 at the initiative of the NGO CIDSE.<sup>4</sup> In 2002, Hanoi Organics, a private company, was distributing organic vegetables *via* its own shop, as well as delivering directly to consumers and to schools. The company signed two-year contracts with six producer families in Tu Liem district (Hanoi province) and 32 farmers in Chuong My district (then Ha Tay province), specifying the production regulations and frequency of controls,

<sup>4</sup> *Coopération internationale pour le développement et la solidarité.*

while quantities and prices were renegotiated every three months (prices amounted to two to three times that of ordinary vegetables at producer and consumer levels). In 2005, the company stopped operating because of various management and logistics problems. Since 2008, the NGO “Action for the City” has supported a group of 70 organic vegetable growers (organized into eight sub-groups) in Soc Son district, to provide home deliveries in Hanoi. In 2012, 400 consumers had subscribed to this system called “the organic bag scheme”, with “rauthanhxuan” tagged on, drawn from the name of the producing village. They pay for packs of vegetables delivered weekly at stable prices (one USD per kilo for all types of vegetables all year round in 2011). This NGO has developed participatory certification of organic production, based on inspections by consumer groups and extension workers. In 2012, the marketing scheme was entirely managed by a social company (*i.e.*, a non-profit Vietnamese company operated by two young investors). At present, due to difficulties in organizing home deliveries, most organic vegetables are distributed through speciality shops managed by independent retailers contracting with organic farmer groups (Smith, 2016; Nguyen Thi Tan Loc, Fruit and Vegetable Research Institute, personal communication).

### Advantages of short chains for quality assurance

According to focus groups (Figuié *et al.*, 2004; Luu *et al.*, 2005), the most convincing guarantee of food safety for consumers is for them to purchase produce from traders they know. All the interviewed consumers buying from Dang Xa stalls were regular, and nine of them (20%) shopped there every day (Moustier and Nguyen, 2010). All mentioned food safety as the reason for going to these places. Other reasons include freshness (21%), acquaintance and trust (13%), reasonable price (21%). For 70% of the respondents, vegetable safety referred to the presence or absence of chemical residues. The purchasers felt reassured regarding vegetable safety because of information displayed at the shop, including the certificate, the place of production and information given by the sellers (26%), trust in the sellers, strengthened due to the fact that they are farmers (26%), and also because no health problems were experienced after consuming the purchased vegetables (44%). When asked if they had contacts with Dang Xa farmers outside of the retailing locations, all the respondents, except two, said they did not because the area was too far away or they were too busy to follow through on this.

### Conclusion on the Vietnam case

The geographical organization of the vegetables chains supplying Hanoi confirms the predictions of Von

Thünen with regard to the evidenced relationship between distance to the city and type of vegetables supplied in terms of perishability (the more perishable, the less distant) – even though it may be brought back into question by the development of transportation and pressure on urban land. Short chains in the form of farmer groups supplying directly consumers or food caterers are commonly observed for vegetables labelled with specific quality attributes (and embedded with information), in line with the predictions of research on relational proximity. Yet, these chains are fragile due to difficulties encountered by farmers in organizing in-city deliveries, and they are increasingly replaced by longer chains with independent specialized retailers. We will now draw on some other cases in Asia and Africa to assess whether the Vietnam case has some genericity.

## Insights from other countries

### The role of geographical proximity

The data from surveys in various cities of Africa and Asia confirm the importance of urban and peri-urban areas in the provision of perishable food commodities, including fresh perishable vegetables (Tab. 2). Fresh vegetables supplied by urban and peri-urban agriculture are leafy vegetables such as amaranth, morning glory, sorrel, bitter nightshade, cabbages, lettuces and spinach. These vegetables top the list of vegetables consumed in Africa and in Asia, along with onions and tomatoes. In African countries, freshness is an important criterion for consumers who often do not own a refrigerator. Leafy vegetables are mostly brought into town from distances of less than 30 km from city centre, be it in Africa or in Asia: the urban origin represents more than 70% of the data collected in all the cities investigated. In the case of less perishable vegetables, such as tomatoes and cabbage, which can stay fresh for a few days, supply varies from peri-urban to rural production and the peri-urban percentage of supply is highly variable depending on the city under study and season. Dry onion, which is even less perishable, originates only from rural areas or was imported in the investigated cities of Africa and Asia.

Short chains in terms of distance are generally also short in terms of number of intermediaries, the typical case being farmers selling directly to retailers, in wholesale markets or at the field (Moustier, 2007). However, difficulties in access to transport in some peri-urban areas may explain the existence of two intermediaries between farmers and consumers, as observed in Madagascar (Aubry *et al.*, 2010) or Cambodia (Sokhen *et al.*, 2004).

In summary, geographical proximity is still important in the supply of perishable food commodities in Africa

**Tab. 2.** Percentage given to urban production in urban supply in various cities of Africa and Asia.

For the cities in boldface, the data stem from the author's surveys using a known protocol on origin surveys described in the method data; for the other sources, the data is commonly drawn from estimates of production and consumption.

Sources: <sup>(1)</sup> Moustier, 1996; <sup>(2)</sup> David, 1992; <sup>(3)</sup> Dongmo, 1990; <sup>(4)</sup> David and Moustier, 1993; <sup>(5)</sup> Laurent, 1999; <sup>(6)</sup> Jacobi *et al.*, 2000; <sup>(7)</sup> Mbaye and Moustier, 2000; <sup>(8)</sup> Drechsel *et al.*, 2007; <sup>(9)</sup> Danso and Drechsel, 2003; Cofie *et al.*, 2003; <sup>(10)</sup> Aubry *et al.*, 2010; <sup>(11)</sup> Moustier *et al.*, 2004; Mai Thi Phuong Anh *et al.*, 2004; <sup>(12)</sup> Sokhen *et al.*, 2004; <sup>(13)</sup> Kethongsa *et al.*, 2004; <sup>(14)</sup> Yi-Zhanh and Zhang, 2000. See also *Urban Agriculture Magazine* (2002), special edition for the World Food Summit for other figures.

	Leafy vegetables	Tomato	Dry onion	All vegetables
<b>Brazzaville</b> (1990) <sup>(1)</sup>	80%	20%	0%	
<b>Bangui</b> (1992) <sup>(2)</sup>	80%	40%	0%	
Yaoundé (1990) <sup>(3)</sup>	80%	25%	0%	
<b>Bissau</b> (1993) <sup>(4)</sup>	90%	50%	0%	
<b>Nouakshott</b> (1999) <sup>(5)</sup>	90%	10%		
Dar es Salaam (2000) <sup>(6)</sup>				90%
Dakar (2000) <sup>(7)</sup>				60%
Kumasi (2007) <sup>(8)</sup>	Lettuce: 100%	45%		
Accra (2000) <sup>(9)</sup>				90%
Antananarivo (2005) <sup>(10)</sup>	Watercress: 100%	90%	0%	
<b>Hanoi</b> (2002–2003) <sup>(11)</sup>	70%	0 to 75% depending on season	0%	40%
<b>Phnom Penh</b> (2002–2003) <sup>(12)</sup>	100%	0 to 50% depending on season	0%	
<b>Vientiane</b> (2002) <sup>(13)</sup>	100%	20 to 100% depending on season	0%	
Shanghai (2000) <sup>(14)</sup>				60%

and Southeast Asia, especially for leafy vegetables, which play a major role in the livelihoods of the poor, be they farmers or consumers. This is due to the high perishability of these vegetables, in line with the findings of Von Thünen (Huriot, 1994).

### The role of activated proximity

Direct sales between farmers and consumers for organic products are observed in other countries. This is the case in Vientiane, Laos, for vegetables and rice sold at a weekly farmers' market supported by Helvetas (a Swiss NGO). It was opened in 2006 on a square next to the most important national landmark in Vientiane, That Luang. Around 40 sellers are present, including 20 organic farmers. The frequency of the market was once a month at the beginning, growing to twice a week in 2009, with ten tonnes of commodities sold (Pham, 2009). In 2013, the quantities sold were estimated at 250 tonnes, and a new market was opened (Chao Fa Ngum), with an exchange of two tonnes of commodities sold by 53 households. The commodities are certified by a government certification scheme.<sup>5</sup>

In India, about 20 farmers located around Aurangabad (a city of 900,000 inhabitants) sell their vegetables through a weekly urban organic bazaar (mostly for vegetables), and also an urban shop (mostly for grains and processed food products). Around 20 farmers at a time sell at the organic bazaars, while a total of 2324 farmers were registered in 2006–2007, a number that has increased since 2004. The bazaar and the shop were opened by the Institute for Integrated Rural Development (IIRD), a self-governing organization which established standards and community-based certification for organic production (Joshi and Hioki, 2012; Joshi *et al.*, 2012). IIRD promotes the organization of produce collection and distribution (including a truck service for farmers, getting farmers to indicate their willingness to sell and to specify the nature of their produce), with a commission. They also pay for the rental of the market place and shop. Registered consumers are informed about the nature of produce available in the market so that losses are minimized. Local certification is obtained (for free) by mutual farmer inspections and through "eco-volunteers" (people usually working near the vegetable farms). The bazaars are visited by around 150 consumers, more wealthy than the average city consumer. With retailing prices higher by 10%, farmers selling there have experienced rising incomes. The irregular nature of vegetable production is a major drawback in all direct sales by organic or integrated pest management (IMP)

<sup>5</sup> <http://jclao.com/new-organic-market-opens-at-chao-fa-ngum-park/>

farmers, as they are tempted to buy from other sources in addition to their own supplies, which then makes it more difficult to guarantee the safety of the produce (den Braber, 2006).

In Brazil, short food chains have been fostered by the “Fome Zero” programme (including the Food Purchase Programme), started in 2012. This programme supported getting supplies to unprivileged consumers through local family agriculture. This came about in three main ways: the programme of food acquisition through family agriculture, with a government organization in charge of supply from family farms for establishments like hospitals or churches; programme of food for schools, where schools buy products from farms in the communes, and pay a premium of 30% for organic produce; and the opening of farmer markets, *feira livres* (Rochette, 2012; Moruzzi-Marques and Moal, 2014). As farmers know the profile of the end-consumers, they are willing to minimise chemical inputs. In Santa Catarina State, they say that the programmes have improved their social network and image vis-à-vis consumers (Rochette, 2012). Around Sao Paulo, 50 farmers were supplying 9,000 financially disadvantaged persons in 2012. These producers’ incomes are higher by 36% than incomes of neighbouring farmers not participating in the Food Purchase Programme (Moruzzi-Marques and Moal, 2014).

In Africa, it is more difficult to identify initiatives by farmers or consumers for direct linkages. Health concerns are less documented and may be less prevalent because of low purchasing power and education. Yet, a survey of 356 consumers in Senegal showed that the first two factors influencing purchase decisions are: (i) trust in the vendor and (ii) safety of food. They complain about increased occurrence of illness, one possible source being the growing use of pesticides by farmers. Half of those interviewed worry about food safety (Badj, 2008).

In Kenya, in 2007, the Kenya Institute of Organic Farming (KIOF), set up in 1986 with the support of a German NGO, attempted to develop a direct marketing initiative (Freidberg and Goldstein, 2011). Some 30 growers and 50 customers (mostly expatriates) were involved in it. KIOF dealt with the logistics of collection and delivery. The scheme was closed six months after it started as it faced a number of difficulties, including unreliability of transportation, lack of diversity and poor quality of commodities, no sense of community among the consumers, lack of commitment by KIOF. The authors feel that those problems were heightened by the choice of rural rather than peri-urban farmers, which underscores the relationship between geographical and relational proximity.

In Senegal, the NGO ENDA PRONAT has developed chemical-free agriculture in peri-urban Dakar. It has set

up a system of internet booking and delivery to subscribers in a cultural centre in town. The suppliers are members of the Federation of Agri-pastors of Diender, located 50 km from Dakar (ENDA PRONAT, 2013).

In South Africa, a box scheme has been established by the NGO Abalimi to facilitate the marketing of vegetables produced by dwellers of Cape Town slums (Hoekstra and Small, 2010). Abalimi deals with the collection, packaging and distribution operations, mostly to primary schools (15-20 in total).

## Variant and invariant features

The review shows that, as in Vietnam, short food chains have developed in the last 15 years, from the initiative of farmers or supporting agencies to promote some specific attributes of food, in terms of quality or origin. The motivation to promote specific attributes of the process of production which address consumer concerns (reduction in chemical residues), and in this way, yield additional incomes for farmers, seems to be the primary driver of such schemes. Yet, these chains show much diversity in terms of the nature of marketing (farmer markets, farmer shops, direct delivery with orders, box schemes), the quality attribute brought to the fore (from chemical-limited to organic), the type of certification (none, community-based, government), commodities, the nature of support and trends of growth (Tab. 3). Even though they are all induced by some external organization, be it an NGO or governmental, they vary in the degree and length of dependence on this support.

Finally, even when there is expansion of the initiative, its share in the total food supply is very low (less than 5% of total supply), and direct marketing between farmers and consumers is very difficult to sustain because of logistics issues.

It should also be highlighted that in Africa, relational proximity between farmers and traders, and between traders in the chain of collectors-wholesalers-retailers, is observed in all types of food chains, short or long, in the form of regular relationships, often based on kinship or family links (Chaléard, 1996; Lyon, 2000; Galtier and Egg, 2003; Fafchamps, 2004; Moustier, 2012; Soullier, 2013). It may be combined with a competitive market structure, or with oligopolies, as is the case with cereals, the storage and wholesale of which is controlled by traders who are powerful in terms of investments, bargaining power and capacity to give credit to their suppliers. The less risky the supply of the product, the more the competition and coordination by prices, as shown in the comparison between dry cereals *versus* irrigated rice in Mali (Galtier and Egg, 2003). Chains



**Tab. 3.** Summary of case studies on short quality food chains in developing or emerging countries.

Source	Type of marketing	Support	Quality	Certification	Communication	Commodities	Trend
Senegal <a href="#">ENDA PRONAT (2013)</a>	Direct delivery (consumers)	Local NGO	Chemical-free	No	Website, consumer visits	Vegetables Cereals	Stable
Kenya <a href="#">Freidberg and Goldstein (2011)</a>	Box (consumers)	Mixed NGO	Organic	Community	Consumer visits	Vegetables Cereals	Drop
South Africa <a href="#">Hoekstra and Small (2010)</a>	Box (schools)	Mixed NGO	Chemical-limited	No	Newsletter, consumer visits	Vegetables	Stable
Vietnam Author	Farmer shops	Government in first years	Chemical-limited	Government	–	Vegetables	Increase (2002–2007) then decrease
Vietnam Author	Box (consumers)	International NGO, then local NGO, then none	Organic	Community	Website, consumer visits	Vegetables	Increase (2008–2012) then decrease
Laos Author	Farmer market	International NGO, then government	Organic	Government	–	Vegetables, processed products	Increase
India <a href="#">Joshi and Hioki (2012)</a>	Farmer market	Local NGO	Organic	Community	–	Vegetables	Increase
Brazil <a href="#">Moruzzi-Marques and Moal (2014); Rochette (2012)</a>	Farmer market Direct delivery (institutions)	Government	Chemical-limited	Community	–	Vegetables, cereals	Increase

**Tab. 4.** A typology of food chains in Africa and Asia based on proximity.  
Source: adapted from [Aubry and Kebir \(2013\)](#).

		Geographical proximity	
		Low	High
Relational proximity	Moderate	Long chains from rural areas for conventional products	Short chains for conventional perishable products (mediated through wet markets).
	High	[not very relevant, except for contractual arrangements between urban retailers and specialized rural farmer groups; emerging fair trade for domestic markets]	Direct relations between farmers and consumers for quality products

from peri-urban agriculture are characterized by fewer intermediaries and more frequent commitments (in terms of regularity of purchases) between farmers and buyers than longer chains. Geographical and relational proximity are not disconnected; the facility of face-to-face interactions favours relational proximity. These forms of chain organization and relational proximity are observed in Southeast Asia, although the degree of family and ethnic links is weaker than in Africa ([Moustier, 2012](#)).

New forms of direct sales or short chains between producers and consumers have emerged with the growing concerns over food safety. These are in the form of farmer markets or shops, or some form of consumer delivery by farmer groups. In these schemes, relational proximity is higher than in conventional chains, especially in delivery schemes: there is an exchange of information on the production process, and consumers may commit themselves to buy at stable prices and accept the contents of the bags delivered to them.

Rural food chains with high relational proximity between farmers and consumers or farmers and retailers are not frequently observed. There are contractual schemes linking supermarkets and rural farming groups specializing in some vegetables, but in this case, there is commonly an imbalance in terms of negotiating capacity in favour of the buyer ([Boselie et al., 2003](#)), so that contractual arrangements relates to vertical integration rather than to relational proximity. However, we can quote the interesting example of emerging fair trade in Vietnam for export as well as domestic (urban) markets, involving such produce as coffee, tea, cashew nuts and organic rice.<sup>6</sup> Here, transactions are governed by contracts guaranteeing stable prices and some form of organized temporal proximity with regular visits to the farms by the buyers.

The characterization of African and Asian food chains based on degree of geographical and relational

proximity is summarized in [Table 4](#). It is close to the typology of [Aubry and Kebir \(2013\)](#) for developed countries, but it indicates the moderate relational proximity characterizing food chains of conventional products (conventional in the sense that they are not embedded with information on origin or quality). It also shows the dominance of short chains (zero or one intermediary between farmer and consumer) for the perishable vegetables, in line with the predictions of Von Thünen. Finally, it highlights that relational proximity between farmers and consumers is observed in chains which are short in distance, and not in long chains, which may be put in relation with the low penetration of internet food trade.

## Conclusion

The paper gives an overview of the old and new characteristics of geographical and relational proximity in urban food supply in developing countries. It is mainly based on research in Vietnam, with some additional insights from other countries of Africa, Asia and Latin America. It is based on a conceptual framework combining two aspects of proximity. The first one, geographical proximity, links the origin of food to its perishability and to transportation difficulties, the more perishable food being produced close to cities. This framework is still relevant in Vietnam as in many countries of Africa and Asia. The second one, relational proximity, links the organization of food chains –, with few intermediaries between farmers and retailers, or farmers and consumers, and frequent interactions between them – to consumer demand for information on the origin and production processes of food, as well as to their concern for the development of local economies. Geographical proximity favours relational proximity. Varying degrees of geographical and relational proximity result in a typology of food chains, as developed by [Aubry and Kebir \(2013\)](#).

<sup>6</sup><http://www.mdivietnam.com/wordpress/>

In Vietnam, short chains have developed in the last fifteen years in response to increasing consumer concerns over food safety. They take the form of farmers supplying consumers at delivery points or shops, farmers delivering to shop retailers or food caterers. They are combined with the promotion of vegetables produced as “safe” or organic. These chains are embedded with information in the sense of Marsden *et al.* (2000). Yet direct farmer marketing is constrained by logistics issues. More generally, experiences of direct marketing in developing countries are dependent on the support of NGOs or development agencies and their share in the total food supply is of little significance.

We can sketch some differences in short chains as characterized in developed *versus* developing countries. First, in developing countries, because of transportation limitations, geographical proximity still has a strong rationale to be maintained for the supply of perishable produce, and this is enhanced by the growing direct and indirect costs of energy. Second, relational proximity is a characteristic of food chains, whatever their length, although it is higher in shorter chains. Third, the direct relationships between farmers and consumers, which are developing slowly, display lower levels of commitment on both sides than in developed countries and they are driven by consumer concerns over food safety, as well as government support to local family agriculture, rather than by consumer concerns over the environment or willingness to support local agriculture.

Some research perspectives are now indicated. The results discussed in this paper are based on patchy data which should be: (i) updated, especially the urban market surveys on food origin, and (ii) complemented by quantitative surveys, *e.g.* on how consumers, traders and consumers feel about the different forms of proximity. Moreover, most of the research results are about vegetables, and it is important to gather data on other commodities including staple foods, animal and processed products. The existing data indeed shows the high complementarity of urban, peri-urban and rural areas, as well as imports, in the total urban food supply. And there is still limited research on the performance of short *versus* long chains relative to environmental, social and economic objectives.

We would like to tentatively conclude that short food chains in developing countries are signs of the past if we consider that they have been protected by transportation deficiencies and that transportation improvement is a welcome sign of modernization. But they are a sign of the future if we consider that our survival is predicated on economising scarce energy resources, provided that economies of scale in logistics are improved in short chains. In the form of direct sales between farmers and consumers combined with quality labelling, they are also

a sign of the future (or of a brighter present) because they reflect the growing sense of responsibility of farmers and consumers about the consequences of their transactions on the health and well-being of citizens.

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