

Supply chain management according to the concept of short supply chain¹

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ABSTRACT

In the last two decades, the topic of sustainability has moved from the fringes of supply chain management research to the mainstream and is now an area of significant research activity, and in particular the short food supply chains (SFSCs). The growing interest in SFSCs reflects the consumer demand for quality and traceability, given the alarming health crises in food markets. The SFSCs' have potential to increase farm value added (margin distribution), promote sustainable farming systems, diversify production and contribute to local economic development. There are many different forms of SFSC, but they share a common characteristic of reduced numbers of intermediaries between the farmer or food producer, and the consumer. From a customers' point of view, SFSCs transfer more complete information about the origin of the food and, for producers, SFSCs retain a higher share of added value. In this paper, we highlight the importance of SFSC for sustainable economic development and present the current situation in EU. The SFSCs have potential to increase farm value added (profit allocation), promote sustainable farming systems, diversify production and contribute to local economic development.

Keywords: short food supply chain, supply chain management, sustainable development

Introduction

Agribusiness and food supply chains are transforming from the commodity system into a coordinated food system (Jarzębowski 2013). This leads to competition between various supply chains and networks, and not only to competition between individual companies (Lambert and Cooper, 2000, Christopher, 1998). However, these trends of change require research to adapt old or develop new models of food business and food markets. Representatives of science recognized the importance of the supply chain management process in the agri-food sector primarily due to the instability of products and the need to improve product flow tracking (Hobbs and Young, 2000).

Consumers continuously increase their demand on food safety and its functionality, product diversity, packaging quality, and the quality of services and products (van der Vorst, 2000). The issue of environmental protection and the economy of sustainable development is also now more important. Sustainable

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development is a resource and society dependent (World Commission on Environment and Development, 1987). In the literature dealing with the issues of sustainable development, more and more attention is paid to the relationship between supply chains and sustainable development of the economy. For example, Kashmanian, Keenan and Wells (2010) found that leading companies are systematically increasing their activities in the field of environmental protection.

An increasing number of consumers are looking for alternative sources of food produced near their place of residence (Cicia et al., 2010, Nie and Zepeda, 2015). The dissemination of new forms of food distribution organization in recent years, called short supply chains, can be linked to the increasingly important role played by credibility-based goods in shaping consumer preferences. Indeed, the growing popularity of short supply chains should be attributed to the distribution model, which allows consumers to support local agriculture while adding fresh products to their diet (Uribe et al., 2012).

Definition of SFSC

Short supply food chains have been central to a wide range of research on the recent emergence of alternative forms of agriculture and food supply in countries of the global North and West (Goodman, 2003). They have often been linked with the so-called quality turn in food as they are associated, among others, to more traditional, locally embedded and sustainable farming practices (Ilbery and Maye, 2005; Goodman, 2003).

SFCs can also be seen as a means to restructure food chains in order to support sustainable and healthy farming methods, generate resilient farm-based livelihoods (in rural, peri-urban and urban areas) and re-localize control of food economies (EIP-AGRI, 2015).

Various definitions of SFSC are presented in the literature (Table 1). As a consequence, the definition of SFSC is not always clear, neither at national or European level. The “Short Supply Chain” is often used as an umbrella concept (Marsden et al, 2000), assuming context dependent economic, socio-cultural, policy, organisational characteristics, and having different impacts on local economies.

Table 1. Examples of SFSC’s definitions

Author	Criteria	Definition
The European rural development regulation (1305/2013)	Number of intermediaries, physical distance, social relations	A short supply chain means a supply chain involving a limited number of economic operators, committed to co-operation, local economic development, and close geographical and social relations between producers, processors and consumers.
French Ministry of Agriculture, Food and Forestry	Number of intermediaries	Commercialisation of agricultural products through direct selling or indirect selling when only one intermediary is involved.
Ilbery and Maye, 2005	Social relations, knowledge exchange	It is a common specific characteristic of SFSCs that they are highly value-laden and meaningful for their participants. The direct relationship between the producer and the consumer involves construction of knowledge, value and meaning about the product and its provenance, production and consumption, the producer and the consumer themselves, rather than solely an exchange of a product.
European Network for Rural Development (Peters, 2012)	Number of intermediaries and physical distance	The definition of local food networks and short supply chains is not only focused on the distance between production and sale of the product, but also the number of links in the food supply chain, with the goal being to reduce these as much as possible – the shortest option being direct sales from the producer. In other words, short supply chain means reducing the number of intermediaries who are necessary to deliver the final product to the consumer.
Parker, 2005	Number of intermediaries and physical distance	Very small number (or even the absence of) intermediaries between producers and consumers, and/or by the short geographical distance between the two (they ideally fulfill both conditions).
Slow Food	Governance,	A short food supply chain is created when producers and final

	locality, number of intermediaries, physical distance	consumers realize they share the same goals, which can be achieved by creating new opportunities that strengthen local food networks. It is an alternative strategy enabling producers to regain an active role in the food system, as it focuses on local production - decentralized regional food systems that minimize the number of steps involved and the distance traveled by food (food miles).
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Source: Own work.

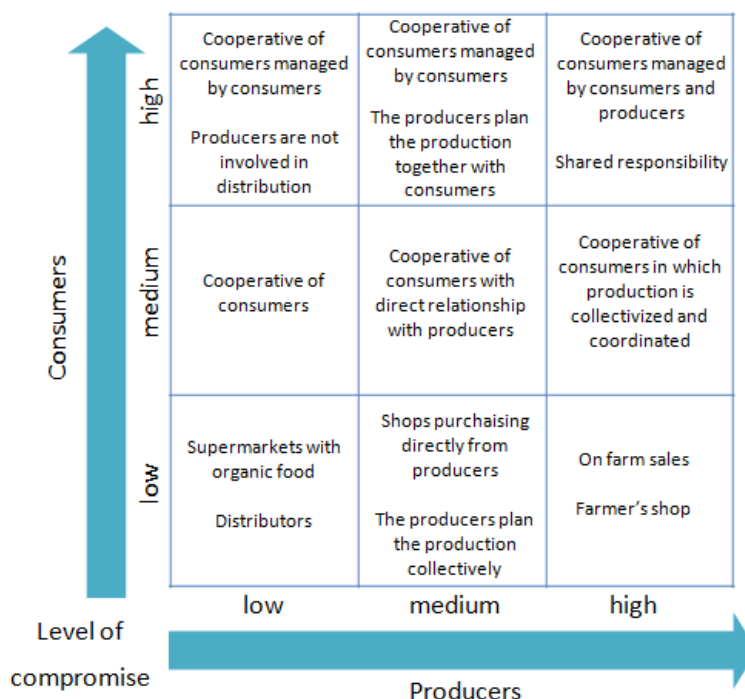
On the base of the criteria outlined above, a great variety of SFSCs can be identified and various classifications or typologies developed. Such classifications are useful for a more systematic exploration of SFSCs and development and implementation of necessary support measures (Galli and Brunori, 2013).

The EC IMPACT project (Marsden et al, 2000; Renting et al, 2003) proposed three main types of short food chains on the basis of the number of intermediaries, physical distance and organisational arrangements:

1. Face-to-face SFSCs - a consumer purchases a product directly from the producer/processor on a face-to-face basis (e.g. on-farm sales, farm shops, farmers' markets).
2. Proximate SFSCs - extend reach beyond direct interaction and are essentially delivering products which are produced and retailed within the within the specific region (or place) of production. Consumers are made aware of the 'local' nature of the product at retail level (e.g. community supported agriculture, consumers' cooperatives).
3. Spatially extended SFSCs - value and meaning laden information about the place of production and producers is transferred to consumers who are outside the region of production itself and who may have no personal experience of that region (e.g. restaurants, certification labels, public food procurement to catering services for institutions).

According to the report elaborated by EHNE, a farmer's union of the Basque Country, Spain (Mundubat, 2012) SFSC can be classified on the basis of the level of compromise (low, medium and high) that may be adopted either by consumers or producers into nine categories (Figure 1).

Figure 1. SFSC classification based on level of compromise between producers and consumers



Source: Own work based on Mundubat 2012.

The CROC project (Chaffotte & Chiffolleau, 2007) found it useful to distinguish between individual and collective, direct and indirect (with one intermediary) SFSCs. Whereas, the European Network for Rural Development in their report on SFSCs have identified three types of SFSCs on the basis of their individual or collective organisation and initiators (consumers and producers):

- Direct sales by individuals,
- Collective direct sales,
- Partnerships of producers and consumers (Peters, 2012).

Shortening the supply chain may have some beneficial effects on the environment, economy and society. However, it should be noted that the way in which the supply chain is shortened is important. Not necessarily all short chains will bring the expected benefits. For example, if production and distribution systems in the supply chain are not geared to sustainable development, the short supply chain will not bring the expected economic, social and environmental benefits.

There are many benefits to be gained from engaging in collaborative activities while creating short supply chains (EIP-AGRI, 2015):

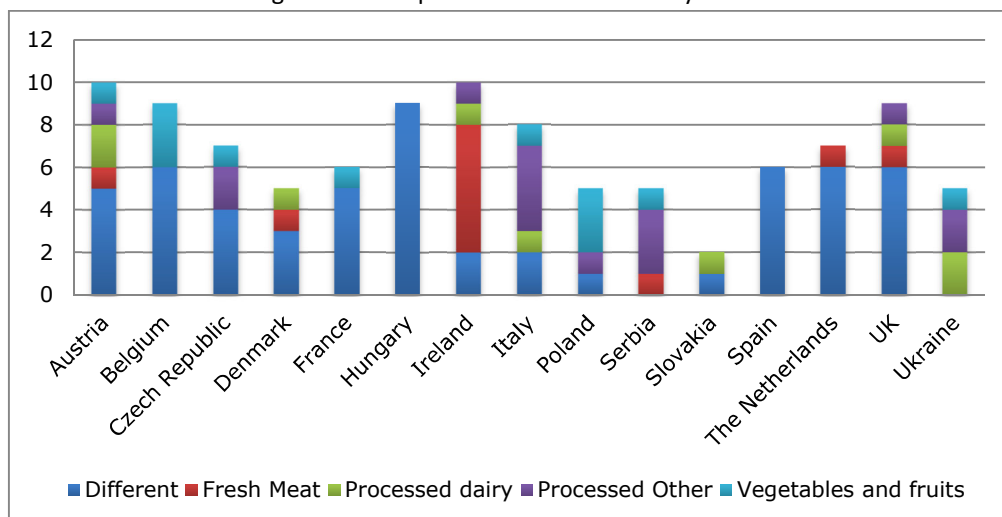
- Higher margins / lower overheads: the often high costs charged by distributors can be split fairly between producers and consumers, allowing producers to receive a dignified income for their work, and for consumers to pay less and know exactly what they are paying for.
- Improved product range: the product range can be diversified and/or increased so that more producers can be involved and more jobs can be created through retaining the added value in each territory.
- Resource sharing: equipment, tools, processing facilities, transport and logistics can be shared in order to improve efficiency and share costs. Knowledge and skills can also be shared.
- Local food chain infrastructure: retaining or reinstating local processing facilities such as abattoirs or farmers' shop.
- Increased negotiating power: more weight in contract negotiations, ensuring fair terms and conditions, gaining access to public and larger scale markets.
- Reduced competition: between many small un-coordinated SFCs in a region.
- Mutual support: collaboration can combat isolation felt by small-scale producers.

It is worth mentioning that cooperation within SFSCs can help to integrate new participants in the chain with the agri-food sector. In addition, the maintenance or restoration of local processing plants, such as slaughterhouses or agricultural stores, becomes more real.

Short supply chains in Europe

Currently in Europe as well as around the world there are many examples and types of short food supply chains. Usually these are small enterprises with limited local impact. However, these small initiatives indicate that these enterprises are able to provide solutions to improve the profitability and stability of agricultural producers. Therefore, there is a great need to identify, synthesize, exchange and present good practices in the short food supply chains management. These arguments were the basis for identifying examples of such chains in Europe. For this purpose good practices regarding short chains in 15 European Union countries were analyzed. As part of the study, over 100 examples of initiatives were described and classified in specific sectors (Figure 2).

Figure 2. Good practices of SFSC in EU by sector

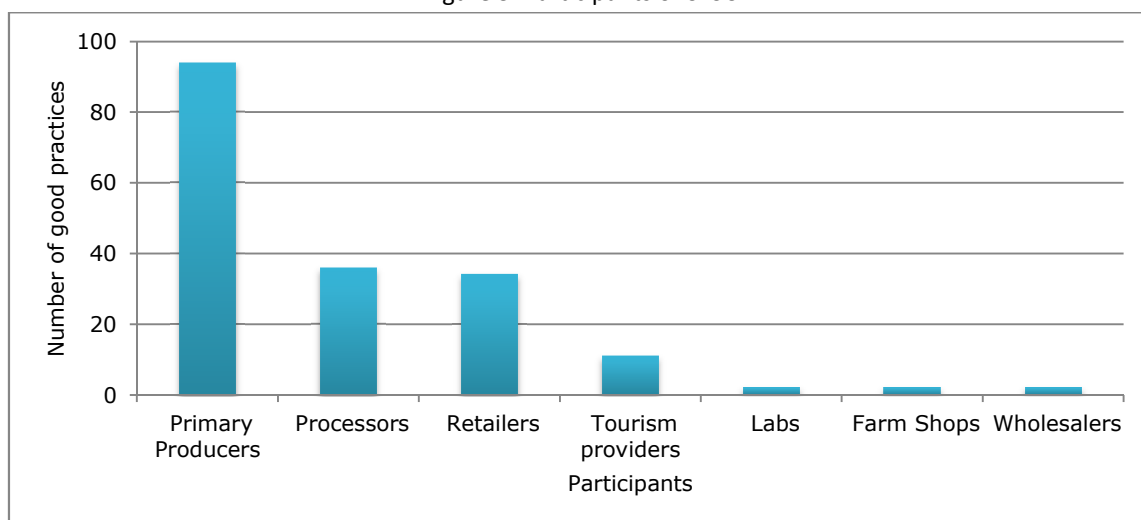


Source: Own work based on results of project SKIN, Horizon 2020.

The majority of good practices for short chains have been identified in Austria, Ireland, the United Kingdom and Hungary. In the analyzed examples, there is a tendency to include more than one agri-food sector within a single enterprise. These practices include, for example, distribution solutions for agri-food products, such as on-line sales with home delivery or collection at designated places, or inviting consumers to farms to make a purchase. In Poland, the most practices related to the fruit and vegetable sector have been identified, while in Ireland - with the meat sector.

The concept of short supply chains concerns many of its participants who can benefit from shortening the path to the consumer (Figure 3). Almost all identified good practices include a link of producers. In the case of one third of the analyzed examples, there are processors of agri-food products and retailers. Labs, agricultural stores and wholesalers play a marginal role in the case of short chains.

Figure 3. Participants of SFSC



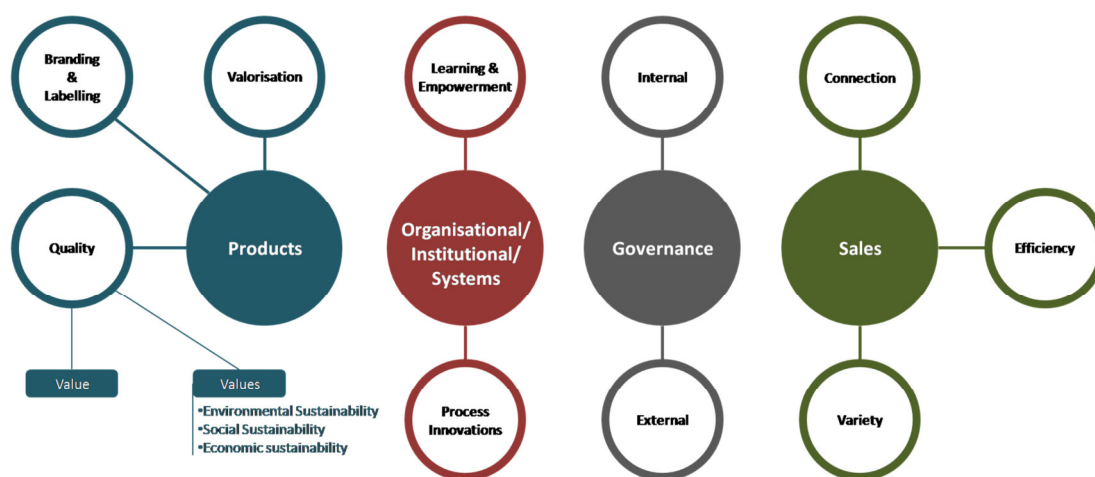
Source: Own work based on results of project SKIN, Horizon 2020.

Within the framework of the project, topics that emerged in the researched good practices (Figure 4) were classified into 4 main groups (products, organizational / institutional / systems, governance and sales). The first group concerns topics connected with product and was divided into following areas:

- Branding & Labelling: Innovative way of communicating to consumers product characteristics/ product range;

- Valorisation: novel approach to product development, e.g. a co-design, multi actor design; a novel product or product range;
- Value: superior, gourmet taste; nutritional value; healthiness; freshness;
- Values:
 - Social Sustainability: Trust, sense of community; connection between producers and consumers; community education; consumer empowerment; recognition of producers;
 - Economic Sustainability: profitability; synergies with other sectors; generating local employment; training and coaching initiatives;
 - Environmental Sustainability: Food waste; GHG emissions; energy use and carbon footprint; food miles.

Figure 4. Hot topics in the analyzed SFSCs



Source: Own work based on results of project SKIN, Horizon 2020.

The three remaining topic groups are described below.

Organisational / Institutional / Systems:

- Learning & Empowerment: Cross-learning between actors; networking along the supply chain and in the region;
- Process Innovations: Logistics and distribution; achievement of efficiencies through collaboration.

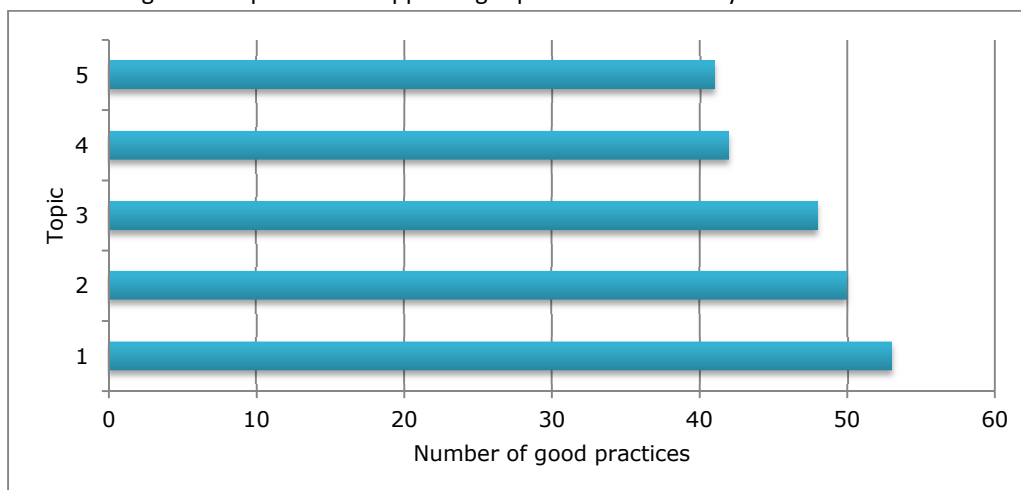
Governance:

- Internal: Contractual agreements between producers, chain partners; Decision-making structures;
- External: Enabling government policies and regulatory frameworks; tenders for public procurement with social and environmental criteria.

Sales:

- Efficiency: Proximity; reliable distribution; effective ordering systems;
- Variety: Collaborative hubs bringing together supplies from many small producers;
- Connection: Events as “meet the farmer”; social media; reconnection and relationship.

Figure 5. Top 5 of most appearing topics across the analyzed EU countries



Source: Own work based on results of project SKIN, Horizon 2020.

The five most common topics within the analyzed good practices (Figure 5) were as follows:

1. Governance: internal (decision-making process in the supply chain);
2. Organisational / Institutional / Systems : Process innovations (logistics and distribution);
3. Sales: efficiency (reliable distribution);
4. Governance: Internal (contractual agreements between producers, chain partners);
5. Values: Social Sustainability (connection between producers and consumers).

In almost 50% of the analyzed examples of SFSCs the actors involved in the chain focused on reliable distribution. It is worth mentioning here, that factors to success in the area of distribution are recognizing that logistics and distribution are a separate service within the food chain and have to be costed and paid for accordingly, as well as combining deliveries with inviting customers to farms in order to increase awareness and trust (EIP-AGRI, 2015).

Conclusions

Short Food Supply Chains (SFSCs) have established in parallel to conventional food chains, playing a key role in the emerging food networks that are continuously arising as an alternative to the globalized agri-food model. Due to the benefits of SFSCs, an increase in the number of initiatives supporting the development of such activities in the agri-food sector is noticeable. These models have become an alternative to the globalized structure of the agri-food sector, enabling "bringing together" the two extreme links of the supply chain and satisfying the needs of both the consumption and production side, while affecting the well-established concept of sustainable development. Although short supply chain practices are becoming increasingly common across Europe, their impact on economic sustainability seems limited by lack of experience and knowledge, which hinders the dissemination of this distribution model and the dissemination of innovation.

The exchange of information and knowledge as well as cooperation between actors involved in the agri-food network are therefore the main factors supporting the competitiveness and sustainable development of SFSCs. It is necessary for small farms and agricultural producers to cooperate within integrated short chains in order to produce a sufficient number of products and to create a common approach regarding the attributes and quality of products.

References

- Cicia, G., Cembalo L., Del Giudice, T. (2010). Consumer preferences and customer satisfaction analysis: A new method proposal. *Journal of Food Products Marketing* 17 (1). Taylor & Francis, pp. 79–90.
- Chaffotte, L., Chiffolleau, Y. (2007) Vente directe et circuits courts : évaluations, définitions et typologie, Les cahiers de l'observatoire CROC, n 1.
- Christopher, M. (1998). *Logistics and supply chain management: strategies for reducing cost and improving service*. London: Financial Times Pitman Publishing.
- EIP-AGRI Report 2015 - ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_fg_innovative_food_supply_chain_management_final_report_2015_en.pdf
- Galli, F., Brunori, G. (2013). Short Food Supply Chains as drivers of sustainable development. Evidence Document. Document developed in the framework of the FP7 project FOODLINKS (GA No. 265287).
- Goodman, D. (2003). The quality 'turn' and alternative food practices: reflections and agenda. *Journal of Rural Studies* 19 (1), pp. 1–7.
- Hobb, J.E., Young L.M. (2000). Closer vertical co-ordination in agri-food supply chains: a conceptual framework and some preliminary evidence. *Supply Chain Management: An International Journal*, 5 (3), pp. 131-143.
- Ilbery, B., Maye, D. (2005). Alternative (shorter) food supply chains and specialist livestock products in the Scottish–English borders, *Environment and Planning A*, 37, pp. 823–844.
- Jarzębowski, S. (2013). *Integracja łańcucha dostaw jako element kształtowania efektywności sektora przetwórstwa rolno-spożywczego*. Warszawa: Szkoła Główna Gospodarstwa Wiejskiego w Warszawie.
- Kashmania, R., Keenan, C., Wells, R. (2010). Corporate environmental leadership: Drivers, characteristics, and examples. *Environmental Quality Management* 19 (4), pp. 1-20.
- Marsden T.K., Banks J., Bristow G. (2000). Food supply chain approaches: exploring their role in rural development. *Sociologia Ruralis* 40, pp. 424-438.
- Mundubat (2012). Circuitos Cortos de comercialización en Euskal Herria. pp. 64.
- Nie, C., Zepeda, L. (2011). Lifestyle segmentation of US food shoppers to examine organic and local food consumption. *Appetite* 57 (1). Elsevier, pp. 28–37.
- Parker, G, (2005). Sustainable Food? Teikei, co-operatives and food citizenship in Japan and in the UK. Working Paper in Real Estate and, Planning. 11/05.
- Peters, R. (2012). Local Food and Short Supply Chains, *EU Rural Review* N°12.
- Lambert, D.M., Cooper, M.C. (2000). Issues in supply chain management. *Industrial marketing management*, 29 (1), pp. 65-83.
- Renting, H., Marsden, T.K., Banks J. (2003). Understanding alternative food networks: exploring the role of short food supply chains in rural development. *Environment and Planning*, 35(3), pp. 393-411.
- Slow Food - http://www.earthmarkets.net/pagine/eng/pagina.lasso?-id_pg=2
- Uribe, A., Winham, D., Wharton, C. (2012). Community supported agriculture membership in Arizona. An exploratory study of food and sustainability behaviours. *Appetite* 59 (2). Elsevier, pp. 431–36.
- van der Vorst, J. (2000). Effective food supply chains; generating, modelling and evaluating supply chain scenarios. Wageningen: Wageningen Univ.
- World Commission on Environment and Development (1987). *Our Common Future*.