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Short Food Supply Chains as a Policy Tool for Smart and Sustainable Rural Development in the European Union

Krótkie łańcuchy dostaw żywności jako narzędzie polityki inteligentnego i zrównoważonego rozwoju obszarów wiejskich w Unii Europejskiej

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Abstract: The article addressed issues related to the concept of rural development in the EU, namely smart villages. It is necessary to consider what instruments will contribute to the creation of smart villages in EU countries. The tool that was analysed in this paper is Short Food Supply Chains (SFSCs). The aim of this paper is to identify the common points between the features of SFSCs and the main components of smart villages. The author posited research hypothesis that SFSCs contribute to the development of smart villages in the EU. The main objective and research hypothesis required the use of qualitative research methods (critical literature analysis and comparative analysis). The first part of the article presents the definition of SFSCs in literature. Next, the author indicates the main features of SFSCs. The third part includes a short description of the history of implementing and supporting SFSCs by EU under rural development policy. Then, the concept of smart villages is presented. The author identified the areas that constitute the components of smart villages (smart economy, smart society, smart environment, smart agriculture, smart governance and smart accessibility). Next, the comparative method was used to identify common areas between smart villages and SFSCs concepts. The analysis shows that promoting and implementing SFSCs will lead to creating smart villages in the EU.

Keywords: smart villages, smart environment, rural policy, smart accessibility, sustainable rural development

Streszczenie: W artykule poruszono kwestie związane z koncepcją rozwoju obszarów wiejskich w UE, a mianowicie jakie instrumenty przyczynią się do powstania inteligentnych wiosek w krajach UE. Narzędziem analizowanym w tym artykule są krótkie łańcuchy dostaw żywności (SFSC). Celem niniejszego artykułu jest wskazanie punktów wspólnych cech SFSC i głównych komponentów inteligentnych wiosek. Autor postawił hipotezę badawczą, że krótkie łańcuchy dostaw żywności przyczyniają się do rozwoju inteligentnych wiosek w UE. Główny cel i hipoteza badawcza wymagały zastosowania jakościowych metod badawczych (krytycznej analizy literatury i analizy porównawczej). Pierwsza część artykułu przedstawia sposób definiowania terminu SFSC w literaturze. Następnie, autor wymienia główne cechy SFSC. Trzecia część zawiera krótki opis historii wdrażania i wspierania SFSC przez UE w ramach polityki rozwoju obszarów wiejskich. Następnie, przedstawiono koncepcję inteligentnych wiosek. Autor zidentyfikował obszary, które stanowią komponenty inteligentnych wiosek (inteligentna gospodarka, inteligentne społeczeństwo, inteligentne środowisko, inteligentne rolnictwo, inteligentne zarządzanie i inteligentna dostępność). W kolejnym kroku zastosowano metodę porównawczą, aby zidentyfikować obszary wspólne między koncepcjami inteligentnych wiosek i SFSC. Analiza pokazuje, że promowanie i wdrażanie SFSC doprowadzi do tworzenia inteligentnych wiosek w UE.

Słowa kluczowe: inteligentne wioski, inteligentne środowisko, polityka wiejska, inteligentna dostępność, zrównoważony rozwój obszarów wiejskich

Introduction

The globalization processes in the 21st century, called by some researchers hyper-globalization, have led to the unification of dietary trends on a global scale. According to the Maslow's Hierarchy of Needs food next to water, breathing, sleep, clothing and shelter belong to the physiological needs (basic needs). Without satisfying them, humans do not feel safe. Today, one of the bases of human security, namely, food, is transported over long distances before being consumed. In the United States, processed food travels over 1,300 miles, and fresh produce travels over 1,500 miles, before it reaches the final consumer (Hill 2024). This causes economic, social and environmental consequences (increasing importance of intermediaries, concentration of suppliers and operators on the market, limiting the number of small producers, high transport costs and ecological costs: high carbon footprint or biodiversity loss). These are the challenges facing rural development policy in the European Union (EU). The foregoing approaches to rural development have not taken into account all these new challenges. In the second decade of the 21st century, the EU began to promote a new approach to rural development, i.e., smart villages. It is necessary to consider what instruments will contribute to the creation of smart villages in EU countries. At the same time, the EU promotes SFSCs as an element of rural development policy. Therefore, in this article, the author will analyse this tool in the context of smart rural development. The aim of this paper is to identify the common points between the features of SFSCs and the main components of smart villages. If the concept of smart villages is a basic approach to rural development policy in the EU, it is crucial to find an answer to the following question: Should the EU still support the development of SFSCs or not? The research hypothesis posits that SFSCs contribute to the development of smart villages in the European Union. The author aims to address

the following research questions: What are the main features of SFSCs? What features of the SFSCs are emphasized by EU institutions? What are the main components of smart villages? What features of SFSCs implement the assumptions of the smart villages concept?

The above-mentioned objectives and research hypothesis required the use of qualitative research methods. The critical literature analysis method was used to identify the main features of SFSCs. Then, the research tool to conduct comparative analysis was developed, namely, a questionnaire. This tool allowed to identify common areas between the concept of smart villages and SFSCs.

1. Short Food Supply Chains

There are several terms related to Short Food Supply Chains in literature: Alternative Agro-Food Networks (AAFNs), local food system, Alternative Food Networks (AFN), Short Food Chains (SFC). Researchers point out that SFSCs are an alternative agri-food system to the industrial food supply (Renting, Marsden and Banks 2003, 394). Karner (2010, 9) believes that they are an element of Alternative Agro-Food Networks (AAFNs) which are defined as alternative networks that differ from conventional ones in many respects. She indicates the main differences: agricultural and organizational structures, supply chains, policy support and the specific importance of the quality of offered products, the production of which takes into account not only economic issues, but also the ethical, social and environmental ones. SFSCs take various forms of cooperation and distribution (Parker 2005) and are characterized by the absence or a small number of inter+++mediaries (Kawęcka, Gębarski 2015, 1). The distance between the producer and the final consumer is short. As a result, it is easy to identify all entities that create such a chain (Szymańska, Lukaszova 2019, 91).

At the European Union level, the legal definition of SFSCs is included in Regulation

(EU) No 1305/2013 (Article 2, letter m), according to which “short supply chain: means a supply chain involving a limited number of economic operators, committed to cooperation, local economic development, and close geographical and social relations between producers, processors and consumers”. In Regulation (EU) No 807/2014 (Article 11), the European Commission states that in the case of support for the creation and development of short supply chains, there may be only one intermediary between the producer and the consumer. Marsden, Banks and Bristow (2000, 425-426) argue that short supply chains have “the capacity to re-socialize or re-spatialize food”. The consumer evaluates food based on his/her own experience, knowledge and observations. Food products are linked to a specific location or farm which gives them a high-quality attribute. It is not the number of transshipments or kilometres that determines what we define as SFSCs, but the relationship between the seller and the buyer. Vittersø et al. (2019, 2) emphasize the need for re-connection of production and consumption. This will strengthen the relationship between the producer and consumer and build a transparent distribution system based on fair and honest practices.

2. Main Features of SFSCs

The issue of positive features and opportunities of SFSCs that arise for the producer, consumer, environment and the broader economy, and society is broadly discussed in scientific literature. Table 1. presents an overview of assumptions pertaining to this topic formulated by the EU entities and well-known and cited authors in this field¹.

There are features that are pointed out by several authors. Sometimes, they called them differently, but the meaning is identical. In the group of economic features,

researchers most often mention building direct relations between consumers and producers, having a positive impact on local economy, offering better quality products, ensuring better prices for consumers, and higher incomes for producers. The common socio-cultural features include creating new workplaces, enhancing local tradition and recipes, increasing the level of participation and trust. Among environmental features researchers underline reducing waste production, pollution, greenhouse gas emissions and resource consumption.

3. EU Support for Short Supply Chains

The issue of SFSCs began to be discussed in the European Union at the end of the first decade of the 21st century. It appeared in the context of regulations implementing three initiatives aimed at promoting food quality systems, i.e. Protected Designation of Origin (PDO), Protected Geographical Indication (PGI), Traditional Speciality Guaranteed (TSG) (Council Regulation 510/2006) and common rules for organic farming (Council Regulation 834/2007). The European Parliament (EP) has published a number of resolutions on this issue. In the first one (European Parliament 2010a), Members of the European Parliament emphasised the importance of small and medium-sized farms whose production meets local needs. Moreover, the EP announced its support for initiatives promoting agricultural markets managed directly by producers. These markets offer high-quality, seasonal products, promote products associated with a specific place, and encourage consumers to make choices dictated by the quality of products whose price reflects the real costs of production. The EP called on the European Commission (EC) to develop proposals for solutions supporting the position of producers throughout the supply chain by promoting short chains and agricultural markets that will enable direct contact between farmers and consumers (European Parliament 2010b). In 2012, the EP once again called on the EC

¹ Marsden, Banks, Bristow 2000 (1 323 citations on ResearchGate), Renting, Marsden, Banks 2003 (2 121 citations on ResearchGate).

Tabel 1. Features of SFSCs – literature review

Author	Features of SFSCs
European Network for Rural Development 2012	<ul style="list-style-type: none"> Contributing to the development of rural areas; Differentiation of the rural economy; Making rural area more resistant and adaptive to change; Increasing income for local producers; Increasing cooperation between entities; Building trust between producers, manufacturers and consumers; Increasing the level of innovation; Lower transport carbon footprint; More climate-friendly production; Less energy-consuming; Promotion of seasonal products, preservation of traditional varieties and increasing biodiversity; Promotion of traditional knowledge – preservation of heritage;
European Parliament 2016	<ul style="list-style-type: none"> Direct sell; Higher income for farmers; More resources for investment and modernization of agricultural holdings; Fresh and seasonal products; Possibility of product tracking; Affordable price for the consumer; Better communication between consumer and producer; Better cooperation between local businesses; Positive impact on local economy; Creating workplaces; Element of local identification; Positive impact on tourism; Less resource consumption (water and energy); Reducing the use of fertilizer and pesticides;
Marsden, Banks, Bristow 2000	<ul style="list-style-type: none"> Much less complex than conventional supply chains; Creating networks within a region/local community, not only at a national level; The value of goods is calculated not only on the basis of the price of production, but also its connection to local tradition and identity; Positive impact on farmers' incomes; Direct producer-consumer relations;
Renting, Marsden, Banks 2003	<ul style="list-style-type: none"> The potential to reduce the influence of corporate industrial supply chains that limit the profits of primary producers; Creating new linkages between agriculture and society, producers and consumers; Direct contact between farmers and consumers; Products which quality comes from a given region; Linking a product to a given region; Transparent supply chain; Ability to obtain information directly from the producer; Increased consumer trust; Promotion of sustainable, environmentally friendly production methods; Building networks throughout the supply chain;

Author	Features of SFSCs
Szymańska, Lukaszova 2019	Direct communication and understanding between producer and consumer; Opportunity to learn about the history of the product; Opportunity to learn about the product's manufacturing methods and its specific features and values; Emergence of consumer loyalty; Ability to trace the product from producer to consumer; Higher profit for the farmer, elimination of intermediary costs and margins imposed by them; Lower price for the consumer; Environmental protection; Better quality of products; Reducing transportation costs; Reducing greenhouse gas emissions; Slower wear of local roads;
Kawecka, Gębarski 2015	Higher profit for the producer who can use it for investments; Limiting the role of the intermediary; Building own brand as a manufacturer; Direct contact with the consumer which allows to gain knowledge about their needs and preferences; High quality products; Health and nutritional value of products; Certainty about the origin of the product; Availability of niche products; Support for local producers and local economy; Maintaining social ties;
Parker 2005	A new dimension of citizenship – consumer-citizenship; Higher consumer consciousness of the impact of human activity on the environment; Building relationships and networks in rural areas; A closer relationship between consumer and producer; Possibility to provide personal opinion about the product (including criticism); High-quality, sustainably produced, organic products; Building dialogue and mutual trust – shaping social capital; Participation in the creation of food democracy;
Whatmore, Stassart, Henk 2003	Element of "economy of qualities"; A manifestation of contestation of the American style of production and consumption;
Karner 2010	Social: Guaranteeing equal access to food, Creating solidarity between citizens, Avoiding the influence of big corporations; Increasing responsive local governance; Involvement of many entities in decision-making process; Cultural: Promotion of fresh, vital, healthy food; Preserving and supporting local traditions; Creating networks between producers and consumers; Positive impact on the health and nutrition of the population; Economic: Building consumer-producer relationships while taking into account ethical aspects; Increasing autonomy towards the agri-industrial system; Higher profit for the producer; Fair price for the consumer; Negotiating the conditions of competition among producers; Environmental: Positive impact on the climate; Limiting the use of agrochemicals;

Author	Features of SFSCs
Vittersø et al. 2019	Part of the local community, also in a historical dimension; Development of relationships between participants, often based on trust; High level of cooperation between producers; Direct communication; Increased knowledge of products and production methods; Support for local producers; The money spent stays in the local community; Increased income for producers and their security and independence; The price of the product reflects the real costs of production; Reduction of greenhouse gas emissions; Reducing resource consumption; Availability of organic products; Animal production carried out in accordance with the animal welfare concept; Reducing food waste; Reducing resource consumption for packaging;

Source: own elaboration.

to propose solutions that would strengthen the position of farmers in the supply chain in order to ensure their proper income (European Parliament 2012).

Ensuring the transparency of food supply chains and strengthening the role of producers in the entire process began to play a greater role in the EU’s rural development policy in the 2014-2020 financial perspective. In Regulation (EU) No 1305/2013 which defines the framework of this policy for the next seven years (and, as it turned out in practice, until 2023), for the first time at the EU level a legal definition of SFSCs was included.

For the period 2014-2020, EU decision-makers identified six priorities for rural areas. These were:

1. Fostering knowledge transfer and innovation in agriculture, forestry, and rural areas;
2. Enhancing farm viability and competitiveness of all types of agriculture in all regions and promoting innovative farm technologies and sustainable management of forests;
3. Promoting food chain organisation, including processing and marketing of agricultural products, animal welfare and risk management in agriculture;
4. Restoring, preserving and enhancing ecosystems related to agriculture and forestry;

5. Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sector;
6. Promoting social inclusion, poverty reduction and economic development in rural area (Regulation 1305/2013, art. 5).

Priority 3 related to SFSCs, namely promoting food chain organisation. This was related to “improving competitiveness of primary producers by better integrating them into the agri-food chain through quality schemes, adding value to agricultural products, promotion in local markets and short supply circuits, producer groups and organisations and inter-branch organisations” (Focus Area 3A) and supporting farm risk prevention and management (Focus Area 3B).

The indicated priorities were to be implemented through 20 rural development measures, adapted to the realities and needs of individual countries and regions. Farmers could get support for creation, development, research, innovation projects related to SFSCs under several measures (Regulation 1305/2013): Knowledge transfer and information actions (Art. 14), Advisory services, farm management and farm relief services (Art. 15), Quality schemes for agricultural products and foodstuffs (Art. 16), Investments in physical assets

(Art. 17), Farm and business development (Art. 19), Basic services and village reveal in rural areas (Art. 20), Setting up of producer groups and organisations, Animal welfare (Art. 33) Cooperation (Art. 35) including the LEADER approach (Art. 42-44).

The Member States also had the possibility to include sub-programmes in their rural development programmes that address specific needs. They could be related to young farmers, small farms, mountain areas, women in rural areas, climate change mitigation and adaptation as well as biodiversity and short supply chains (Regulation 1305/2013, art. 7).

In 2015, the EC established the Agricultural European Innovation Partnership (EIP-AGRI) Focus Group on Short Food Supply Chains. The task for the group of experts was to prepare a report on the possibilities and prospects of development of SFSCs in the EU. Researchers identified and compared models of their functioning in the Member States, potential benefits in the economic, social and environmental areas (EIP-AGRI Focus Group 2015). The final report published in 2015 listed six main benefits associated with the development of short supply chains. There are: “improved product range available to consumers, resource sharing amongst producers and processors, maintaining local food chain infrastructure (such as abattoirs), increased negotiating power for groups of producers, reduced competition between small producers, and mutual support to combat isolation and stress” (EIP-AGRI Focus Group 2015, 3).

In 2019, the EC published a strategy for Member States for 2050 called the European Green Deal. It is the basis for creating European policies, including agricultural policy and rural development policy. Agriculture is expected to contribute to the reduction of greenhouse gases, and all participants in the supply chain should actively work to build a sustainable agricultural system. The EC announced that the farmer’s position in the value-added system should be strengthened. In addition, actions should

be taken to reduce food waste and the costs of transport, distribution, storage, and packaging (European Commission 2019, 14-15). Detailed solutions were to be included in the “From Farm to Fork” Strategy. According to its provisions, the new EU food system is to be more sustainable and based on environmentally friendly practices. The EC has noted that, as a result of the Covid-19 pandemic, EU citizens are calling for the creation of short supply chains (European Commission 2020, 3). The document states that the EU will promote and reward farmers who have implemented sustainable practices on their farms and support those who want to implement them. The strategy does not contain any provisions stating that the EU will support short supply chains. This refers to food chains that are supposed to have a neutral or positive impact on the environment, contribute to the restoration of ecosystems and limit the long-distance transport of food products (European Commission 2020, 6, 16).

The Common Agricultural Policy (CAP) in the period 2023-2027 will implement nine specific objectives. In the context of SFSCs it should be noted that the EU wants to improve the farmers’ position in the value chain and to support viable farm income and resilience of the agricultural sector across the Union. An important aspect is adaptation to climate change and activities related to reducing greenhouse gas emissions as well as efficient management of natural resources such as water, soil and air, and also reducing chemical dependency. SFSCs can contribute to achieving the objectives of halting and reversing biodiversity loss and to attract and sustain young farmers and new farmers and facilitate sustainable business development in rural areas. Improving the producer’s position in the supply chain will have a positive impact on local development in rural areas, due to higher employment rates and income of residents. The EU still wants to promote high-quality, safe, and sustainably produced food (Regulation 2021/2115, art. 6). When analysing the CAP

objectives for 2027, it should be noted that EU decision-makers declare broad support and promotion of the SFSCs instrument. Each country spends various financial amounts for this support and the importance of this instrument in rural development programmes varies.

4. Smart and Sustainable Rural Development

The concept of sustainable rural development includes stable economic and social development while maintaining ecological balance (Wilkin 2011; Wlazły 2018; Woś, Zegar 2002). Therefore, it is a development based on responsible use of natural resources so that future generations could benefit from them as we do today. Smart development is based on knowledge, innovation, information and communication technologies (European Commission 2010, 13). Smart rural development is characterized by a multisectoral, participatory and territorial approach to development. It postulates support and development of all sectors of the economy, based on technological achievements and use of the latest knowledge. Planned interventions take into account local specificity and the special values, and resources available to a given community (Panciszko 2022, 32–33). Rural areas perform a number of different functions (similarly to multifunctional rural development), i.e. food production, social, environmental, cultural, service, residual, aesthetic and recreational ones (Michalewska-Pawlak 2015, 32–33).

Both sustainable and intelligent development are the basis for building smart villages. At the EU level, smart villages are defined as “communities in rural areas that use innovative solutions to improve their resilience, building on local strengths and opportunities”. They use available digital technologies to improve the situation in the social, economic and environmental areas. They are characterized by high rates of citizen participation in the process of developing and implementing development strategies.

Smart villages consist of six components: smart economy, smart society, smart environment, smart agriculture, smart governance and smart accessibility (Panciszko 2021, 44).

Smart economy ensures economic development in rural areas. One of the most important aspects of this is an increase in the income of residents, including those working in the agricultural and forestry sectors, ensuring a high standard of living and income adequate to the effort put in. The second aspect is an introduction of circular economy principles contributing to the reduction of resource consumption and minimization of waste (Panciszko-Szweda 2023, 101–102). Kalenyuk et al. point to the importance of the growth process, intellectual activity and its results (called intellectualisation), innovation, digitalisation (in all spheres of life, not only economic) and ecologisation (meaning the implementation of environmental values and principles in all processes of management and life). Globalization processes, which create connections spanning the entire world and limiting independence, are also important for building a smart economy (2024, 26–27).

Smart society protects and cultivates local culture and traditions. Residents of the local community engage in activities for the common good. It is a society characterized by low rates of social exclusion and marginalization (Panciszko-Szweda 2023, 101). A smart society means also an information society. Citizens have a high level of knowledge and skills in the use of information and communication technologies (Tomczyk 2010). They are able to use the latest knowledge and apply it in practice, which makes their awareness grow in many areas.

Smart environment is manifested by a clean environment and sustainable use of its resources, protection of water, air, soil, biodiversity, and reduction of the carbon footprint (Muhamad et al. 2022, 274). Production methods should be environmentally friendly. It is also postulated to use modern

technologies that contribute to the highest possible level of nature protection.

Smart agriculture assumes the use of modern technologies in the agricultural production process, based on Big Data, Internet of Things, mapping, GPS, sensors, precise dosing of fertilizers and water consumption (Pattharaporn et. al, 2023).

Smart governance also implies implementing e-administration, e-management and e-participation tools. It involves all interested parties in the decision-making process and creating development strategies (Panciszko 2021, 46). Smart governance manifests itself in co-governance, which means cooperation and co-responsibility between public administration and citizens (Pinkas 2021, 138-140).

Smart accessibility is about creating conditions for technical infrastructure in rural areas, public services (transport, medical care, education etc.) (Panciszko-Szweda 2023, 101). In the context of food, the importance of physical and economic access to food products and access to safe food should also be emphasized.

5. Contribution of SFSCs to the Construction of Smart Villages in the EU

In this part of the article, the author compares the main features of the smart villages concept and the features of SFSCs (Table 2). A research tool was prepared to carry out the comparison, namely, a questionnaire. In the first stage, the features of the components of smart villages concept have been identified. Then, in the second stage, based on the list of SFSC features listed in Table 1, they were compared with the features of the smart villages concept.

The analysis shows that promoting and implementing SFSCs on a large scale will lead to creating smart villages in the EU. SFSCs will allow to build a smart society, smart environment, smart economy, smart accessibility, smart governance and smart agriculture. It is important to emphasize that each component will have a greater or

lesser impact on this process. At the same time, it will depend on many factors such as: the structure of farms, the size of the country or the wealth of society.

SFSCs implement the assumptions of the smart villages concept as part of the smart economy component (in the area of: economic growth, increasing competitiveness of local businesses, creating good workplaces/maintaining existing workplaces) smart society (in the area of: increasing citizen awareness, high level of health protection, protecting local tradition, access to infrastructure), smart environment (in the area of: protection of natural resources, climate, biodiversity, and ecosystems, reduction of energy use, pollution, waste). SFSCs also contribute to the implementation of smart governance by enabling networking, increasing the level of participation and improving resilience to crises, and smart agriculture in the area of sustainable production. Implementation of food security allows to create the component of smart accessibility.

Conclusion

The article addressed the issues related to the concept of rural development in the EU, namely smart villages. This is a new approach within the EU policy. It assumes the development of the village based on its own resources and the use of opportunities that appear in the environment using modern technological tools and innovations that allow to solve social problems, improve the quality of life and provide services. One of the tools that could potentially contribute to the construction of smart villages are SFSCs.

The literature review allowed to identify the most important features of SFSCs. Then these features were compared with the assumptions of the components of smart villages. The comparative analysis showed that the widespread use and broader support for the construction or reconstruction of SFSCs can support implementation of the concept of smart villages.

Table 2. Features of smart villages and features of SFSCs – comparative analysis

Component	Features of smart villages	Features of SFSCs
Smart society	Increasing citizen awareness	Increasing consumer awareness in the field of production methods, additional taste and health benefits of local products; Greater consumer awareness of the impact of human activity on the environment;
	High level of health protection	Locally produced food is tailored to the nutritional needs of residents; It is characterized by a higher content of essential nutrients and lower content of contaminants; Health and nutritional value of products;
	Protecting local tradition	Promotion of local heritage; Promotion of folk knowledge; Learning the history of the product; Learning the methods of manufacturing the product and its specific features and values;
	Access to infrastructure	Slower deterioration of local roads;
Smart economy	Economic growth	Economic growth through purchasing from local producers; Food expenditures stay in the community in the form of profits and taxes;
	Increasing competitiveness of local businesses	Increasing competitiveness of local food producers; Limiting oligopolies and monopolies in the food market; Real prices of products; Transparent supply chain; Lower prices for consumers; Limiting the importance of intermediaries;
	Creating good workplaces/ maintaining existing workplaces	Creating jobs on small farms; Maintaining existing jobs on small farms; Increasing income for local producers; Diversifying rural economy;
Smart environment	Protection of natural resources	Using natural resources without generating losses during transportation, distribution and sale;
	Protection of climate	Reduction of greenhouse gas emissions due to reduced transport;
	Protection of ecosystems	Protecting ecosystems from overexploitation;
	Energy use reduction	Reduction of energy consumption for transporting, storing and selling products;
	Reduction of pollution	Limited use of fertilizers and plant protection products such as herbicides;
	Protection of biodiversity	Cultivation of local plant varieties, often threatened with extinction. Breeding local breeds of farm animals, often threatened with extinction;
Smart agriculture	Food production in sustainable way	Greater opportunities for food security; Implementation of sustainable food system; Promotion of sustainable production methods;
Smart governance	Networking	Establishing contacts between consumers and producers, producers and producers, producers and producer cooperatives; Creating networks at local and regional levels; Building trust between the participants in food supply chain; Direct contact between producer and consumer;
	Increasing the level of participation	Increasing consumer participation and importance in the food system; A new dimension of citizenship – consumer-citizenship; Participation in the creation of food democracy;
	Improving resilience to crises	Making rural area more resistant and adaptive to change (food crises, economic, environmental);

Component	Features of smart villages	Features of SFSCs
Smart accessibility	Implementation of food security	Increasing independence of states and local communities in the area of ensuring healthy and safe food; Increasing food self-sufficiency; Increasing availability of niche products; Guaranteeing equal access to food;

Source: own elaboration.

The research results provided confirm the hypothesis that SFSCs contribute to the development of smart villages in the European Union. This result has a consequence. The EU should still promote this mechanism, because of social, environmental and economic benefits that SFSCs can bring. This requires financial, legal and promotional support from EU institutions and Member States. SFSCs are one of the possible elements that can help to create smart villages but not the only one.

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References

Council Regulation 510/2006 – Council Regulation (EC) No 510/2006 of 20 March 2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs.

Council Regulation 834/2007 – Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91.

EIP-AGRI Focus Group. 2015. *Innovative Short Food Supply Chain management*. Final report. 30 November 2015.

European Commission 2010 – Communication from the Commission: Europe 2020: A strategy for smart, sustainable and inclusive growth. COM (2010) 2020 final. Brussels, March 03, 2010.

European Commission 2019 – Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions,

European Green Deal. COM 2019, 640 final. Brussels, December 11, 2019.

European Commission 2020 – Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system. COM (2020) 381 final. Brussels, May 20, 2020.

European Network for Rural Development. 2012. *Local Food and Short Food Supply Chains*.

European Network for Rural Development. 2019. *Smart Villages. Pilot Project*, Brussels, <https://digitevent-images.s3.amazonaws.com/5c0e6198801d2065233ff996-registration-filetexteditor-1551115459927-smart-villages-briefing-note.pdf>. Accessed 20 October, 2024.

European Parliament. 2010a. *Resolution of 25 March 2010 on Agricultural product quality policy: what strategy to follow? (2009/2105(INI))*.

European Parliament. 2010b. *Resolution of 7 September 2010 on fair revenues for farmers: A better functioning food supply chain in Europe (2009/2237(INI))*.

European Parliament. 2012. *Resolution of 19 January 2012 on the imbalances in the food supply chain (RSP2011/2904)*.

European Parliament. 2016. *Short food supply chains and local food systems in the EU*, Briefing.

Hill, Holly. 2024. “Food Miles: Background and Marketing, the National Center for Appropriate Technology.” *ATTRA Sustainable Agriculture*, October 29, 2024. <https://attra.ncat.org/publication/food-miles-background-and-marketing/>.

Kalenyuk, Iryna, et al. 2024. *Smart economy: essence, evolution and development*. Riga: ISMA University of Applied Sciences.

Karner, Sandra. 2010. *Local Food Systems in Europe. Case studies from five countries and what they imply for policy and practice*. Graz: Publisher IFZ.

- Kawecka, Agnieszka, Marcin Gębarowski. 2015. "Krótkie łańcuchy dostaw żywności – korzyści dla konsumentów i producentów żywności [Short food supply chains – benefits for consumers and food producers]." *Journal Agribusiness and Rural Development* 3(37): 1–7. <https://doi.org/10.17306/JARD.2015.47>.
- Mardsen, Terry, Jo Banks, and Gillian Bristow. 2000. "Food Supply Chain Approaches: Exploring their Role in Rural Development." *Sociologia Ruralis* 40(4): 391–547. <https://doi.org/10.1111/1467-9523.00158>.
- Michalewska-Pawlak, Małgorzata. 2015. *Zarządzanie rozwojem obszarów wiejskich w Polsce w warunkach integracji europejskiej [Managing the development of rural areas in Poland in the context of European integration]*. Warszawa–Wrocław: Oficyna Wydawnicza ASPRA.
- Panciszko-Szweda, Barbara. 2023. "The significance of the European Green Deal for implementing the concept of smart villages in the European Union." *Świat Idei i Polityki* 22(2): 98–110. <https://doi.org/10.34767/SIIP.2023.02.06>.
- Panciszko, Barbara. 2021. "The reasons of the implementation of the concept of smart villages in the European Union." *Przegląd Politologiczny* 4(21): 37–48. <https://doi.org/10.14746/pp.2021.26.4.2>.
- Panciszko, Barbara. 2022. "Evolution of directions of public intervention in rural areas – from agricultural development to smart development of rural areas – theoretical approach." *The Copernicus Journal of Political Studies* 1-2: 23–36. <https://doi.org/10.12775/CJPS.2022.002>.
- Parker, Gavin. 2005. *Sustainable food? Teikei, co-operatives and food citizenship in Japan and the UK*. Working Papers in Real Estate & Planning 11/05, Centre of Planning Studies, Department of Real Estate and Planning. The University of Reading, UK.
- Pinkas, Aleksandra. 2021. "Smart governance warunkiem osiągnięcia neutralności klimatycznej." In *Ewolucja elektronicznej administracji publicznej*, edited by Renata Kusiak-Winter, 135–148. Wrocław: Wydział Prawa, Administracji i Ekonomii Uniwersytetu Wrocławskiego. <https://doi.org/10.34616/23.21.016>.
- Regulation 1305/2013 – Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005.
- Regulation 2021/2115 – Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulations (EU) No 1305/2013 and (EU) No 1307/2013.
- Renting, Hank, Terry Marsden, and Jo Banks. 2003. "Understanding alternative food networks: exploring the role of short food supply chains in rural development." *Environment and Planning A* 35: 393–411. <https://doi.org/10.1068/a3510>.
- Salleh, Muhamad Syazreen Md., Mohd Fahmy-Abdullah, Suliadi Firdaus Sufahani, Mohammad Kamarulzaman Bin Ali. 2022. "Smart cities with smart environment." In *Proceedings of the Third International Conference on Trends in Computational and Cognitive Engineering*, edited by Muhamad, Syazreen, Md, Salleh, et al., 273–283. Singapore: Springer. https://doi.org/10.1007/978-981-16-7597-3_22.
- Szymańska, Jadwiga Elżbieta, Xenie Lukoszowa. 2019. "Krótkie łańcuchy dostaw produktów żywnościowych [Short Food Supply Chains]." *Ekonomika i Organizacja Logistyki* 4(1): 91–101. <https://doi.org/10.22630/EIOL.2019.4.1.8>.
- Thongnim, Pattharaporn, Vasin Yuvanatemiya, and Phaitoon Srinil. 2023. "Smart Agriculture: Transforming Agriculture with Technology." In *Methods and Applications for Modeling and Simulation of Complex Systems* https://doi.org/10.1007/978-981-99-7240-1_29.
- Tomczyk, Jacek. 2010. "Społeczeństwo informacji i wiedzy [Information and knowledge society]." *Praktyka i Teoria Informacji Naukowej i Technicznej* 18(2): 20–30.
- Vittersø, Gunnar. 2019. "Short Food Supply Chains and Their Contributions to Sustainability: Participants' Views and Perceptions from 12 European Cases." *Sustainability* 11: 4800. <https://doi.org/10.3390/su11174800>.

- Whatmore, Sarah, Pierre Stassart, and Henk Renting. 2003. "What's Alternative about Alternative Food Networks?" *Environment and Planning A* 35(3): 389-391. <https://doi.org/10.1068/a3621>.
- Wilkin, Jerzy. 2011. "Wielofunkcyjność wsi i rolnictwa a zrównoważony rozwój [Multifunctionality of the countryside and agriculture and sustainable development]." *Wieś i Rolnictwo* 4 (153): 27-39. <https://doi.org/10.53098/wir.2011.4.153/04>.
- Wlazły, Agnieszka. 2018. "Zrównoważony rozwój obszarów wiejskich w aspekcie teorii wielofunkcyjności [Sustainable development of rural areas in the aspect of multifunctionality theory]." *Progress in Economic Sciences* 5: 66-93. <https://doi.org/10.14595/PES/05/005>.
- Woś, Andrzej, Józef S. Zegar. 2002. *Rolnictwo społeczne zrównoważone [Sustainable social farming]*. Warszawa: IRWiR PAN.