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### **STRENGTHENING THE SUSTAINABILITY OF THE LOCAL FOOD SYSTEM BY CHOOSING ECO-LOCALIZATION SCENARIO**

**Vilma ATKOČIŪNIENĖ**, Department of Business and Rural Development Management, Faculty of Bioeconomy Development, Vytautas Magnus University, K. Donelaičio g. 58, LT-44248 Kaunas, Lithuania, [vilma.atkociuniene@vdu.lt](mailto:vilma.atkociuniene@vdu.lt)

EU institutions and the public are increasingly debating giving priority to regional and local food systems, short supply chains which create opportunities for a healthier lifestyle and the strengthening of the local economy. The aim of this research is to highlight the possibilities of strengthening the sustainability of the local food system by choosing the eco-localization scenario. The research methods: analysis of scientific literature, documents, good practice examples, systematization, parallel method, etc. The eco-localization scenario requires a long-term vision and a "sustainable solutions" approach, the geographical area relies on its producers and consumers, is oriented towards the local consumer, but the openness of the economy is not abandoned. The driving forces that can help to strengthen the sustainability of local food system by choosing the eco-localization scenario were identified: network of local food system objects; short food supply chains strategies: business to consumer (B2C), business to business (B2B) business to government (B2G); cooperation and stakeholders of local food system activities; local food system stakeholders and relationships; conditions for strategic breakthrough in local food system development.

*Keywords: eco-localization, short food supply chain, local food system.*

#### **INTRODUCTION**

The Global Agreement "Transforming our world: the Agenda for Sustainable Development: 2030", approved in 2015, set out the conditions and obligations for practitioners and researchers to develop a system of indicators and measure the impact of development and the goals achieved (Lee et al., 2016). The vision of "changing our world for the better", the 17 Sustainable Development Goals (SDGs) can be achieved through the values 5 Ps- "people, planet, prosperity, peace and partnership" (Schneider et al., 2019). Second Sustainable Development Goal (SDG) Zero Hunger challenges the world to link food production and consumption to local conditions and enable everyone to enjoy healthy food that is grown, produced and marketed sustainably and contributes to other sustainable development goals (Veldhuizen et al., 2020).

The study uses the term eco-localization to emphasize both economic and ecological localization. The use of the term eco-localization is encouraged by the fact that the terms localization and globalization are already commonly associated with economic issues. Given the place of environmental issues in localization theory, the term eco-localization often seems more acceptable than its predecessor, economic localization. The author assumes that eco-localization covers both economic and environmental aspects of economic life. According to Kniūkšta & Čaplikas (2011), eco-localization shifts the local economy from a global division of labor to an economy that minimizes greenhouse gas emissions and fossil fuel consumption. This is achieved by producing all the required amount of consumer goods as locally as possible.

Food systems resilience is a prerequisite for sustainable development, and the institutional dimension, development concept is a decision-integrating dimensions. Eco-localization helps to reorient the food system towards the local food system, but the creation and implementation of social innovation, involving and ensuring the involvement of stakeholders, is crucial to achieving the goals. Maintaining the balance of ecological and economic systems requires a strategy, special investments, the volume of which increases in proportion to the development of the economy (Atkočiūnienė et al., 2017).

In the development of agriculture and related activities, the sector should become not only a major source of food raw materials, but also one of the main sources of bio-raw materials. The development of these economic activities can be driven by needs, the growing role of the green consumer and other factors, as well as by various policy initiatives, most of which stem from the Green Deal, the active involvement of international organizations and various international agreements. However, the level of economic development and the quality of the environment, the progress of the agri-food sector and the health of the population are still insufficiently linked. The scientific problem is defined by the question - how an eco-localization scenario can enhance the sustainability of a local food system.

The aim of the study is to highlight the possibilities of strengthening the sustainability of the local food system by choosing the echolocation scenario.

The following methods were used in the research: analysis of good practice examples, scientific literature and strategic documents, systematization, comparison, synthesis and other methods. A study of the local food system in the wider environment was conducted. The model of the local food system using the eco-localization scenario was developed focusing on the totality of environmental factors in the Lithuanian agricultural and food sector (holistic approach). The study was conducted to gain new knowledge about who could be involved in the development of the local food system, what marketing tools should be used, what key and supporting activities should be developed. The beginning and end of the study period are not strictly defined due to the different functional expression of the study object (local food system) at certain stages of its life cycle.

## RESEARCH RESULTS

The development of local food systems can make a significant contribution to Sustainable Development Goal 2. One of the key challenges in achieving the goal of sustainable development is filling the gap between food production and consumption. There is a lack of synergies between the goals defined and agreed at the global level and the goals of farmers, farming and food production practices at the local level. Synergies and gaps can limit and impede progress towards Sustainable Development Goal 2. The isolation of food producers and consumers at various levels of the food system (local, national, international) has been described by researchers as „missing middle“ (Veldhuizen et al., 2020). The successful transformation of global goals into national strategies can be achieved through an agricultural policy that interacts closely and strongly with food and nutrition policy. The successful transformation of agricultural policy objectives at local level depends on a wide range of stakeholders, including farmers and food consumers (Fig. 1).

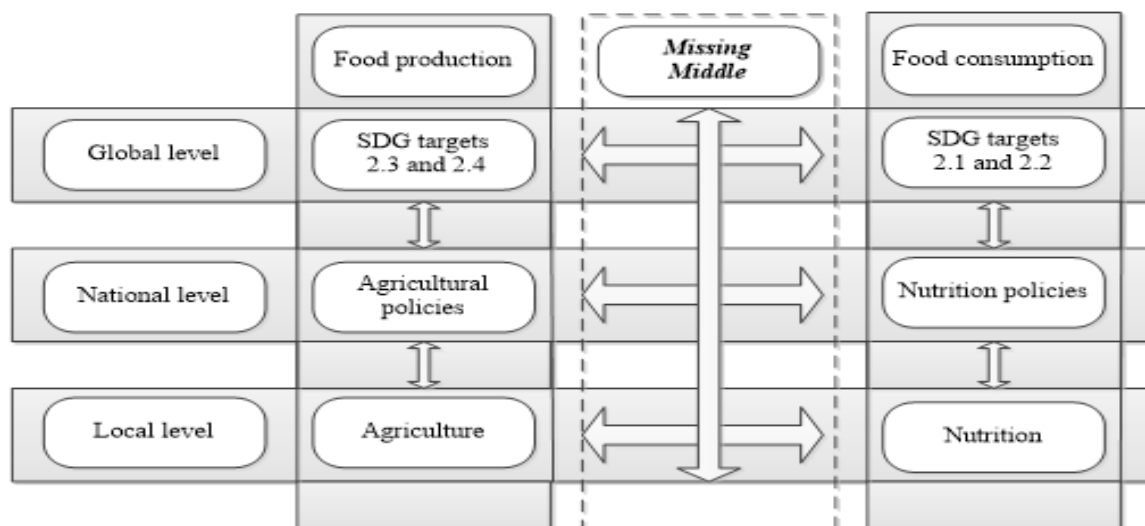


Figure 1. Representation of the Missing middle in Sustainable Development Goal 2  
Source: Veldhuizen et al. (2020)

Unfortunately, food producers and food consumers often do not know each other. Some, especially small and medium-sized farmers, do not participate in the consumer market, and agricultural strategies are rarely linked to food and nutrition strategies at national and local level. Both vertically and horizontally, the "missing middle" in the goals of sustainable development limits or breaks the links between food producers and consumers, rural and urban development actors, creates gaps, reduces forces (overall impact) on environmental, economic and social issues.

Understanding the role of locality, which includes agriculture, food systems, and eco-localization, is crucial in global food systems. The main forms of expression of eco-localization in the agricultural and food sector are local farming, short food supply chains, alternative use of agricultural products. The theory of eco-localization focuses on the use of local resources, the positive externalities of the local economy, and the negative long-term externalities of trade (Kniūkšta & Čaplikas, 2011).

The production based more on local resources and the consumption of local products help to conserve land resources, save energy, water and paper consumption, and reduce transport costs (Smith, 2008). The benefits of local farming and direct sales also transfer into the possibility of reducing food waste, which is linked to the reduction of additional carbon dioxide, methane and ammonia from the decomposition of products (Amant et al., 2019).

The need for storage is reduced by combining local and seasonal product characteristics, and ecologically sound production methods would help reduce pesticides, soil and water pollution, soil degradation, increase biodiversity and so on (Kremen, 2020). According to Kniūkšta & Čaplikas (2011), eco-localization is the pursuit of a better balance between production that meets local needs and foreign trade. By localizing economies, goods are transported over shorter distances and therefore the burden on the environment is reduced. In addition to reducing the burden on the environment, the process of eco-localization creates the resilience of a country's (or region's) economy to negative externalities.

Short food supply chains in the countries of the European Union have been popularized and encouraged for several years. For the time being, however, farmers rarely choose the short food supply chain strategy in Lithuania, and food miles are large. The share of food produced, processed and consumed in the same geographical area is very small. The development of short food supply chains can have positive effects:

- can reduce food miles and the negative impact of the global food system on humans and the environment;
- can help optimize soil agrochemical parameters, reduce soil biodegradation processes, increase soil biological activity;
- can encourage the sale of biologically valuable food products in remote areas, which would reduce food transport costs, carbon and energy costs and waste;
- can lead to the expansion of the assortment of biologically valuable, local products;
- can encourage the alternative, environmentally friendly farming methods, as most of the products sold directly come from farmers and family farms using the principles of extensive, organic and biodynamic production.
- can create new employment opportunities for new local communities.

Economically developed, poorly cooperative short food supply chains can be strongly affected by the manifestations of the global economy, as a large part of the world's society consumes the same, mass-consuming foods. Infrastructure required - local food systems, the organization of which is a more public matter, depending on public-private partnerships, stakeholder knowledge and expertise, and a favorable legal and political environment. The local food system can be defined as a complex of interrelated processes and activities that help to link agricultural production and food production, processing, distribution, consumption and waste management, thus improving the quality of life of the local community, living environment, strengthening integration between local economies, social and cultural environment.

Local food system is the social infrastructure of short food supply chains, which includes a set of objects, activities and their processes, rules and strategies to ensure the sustainable use of agricultural and food resources in the production and marketing of local products, bio-waste management, building links, responsibility, health and well-being between producers and consumers in a given area.

Local food system can build livelihoods and community resilience. It is a two-way process. The sustainability of the local food systems can be achieved

- by maintaining the balance of ecological and economic systems,
- by implementing a food and nutrition strategy,
- by making special investments, which volume increases in proportion to the development of social infrastructure in short food supply chains.

A gap or missing middle between primary agriculture and nutrition can fill the local food systems.

A local food system based on short food supply chains (Fig.2) can make a significant contribution to sustainable development goals. Stakeholder communication, vertical and horizontal cooperation, consumer involvement and participation in co-creation processes play an important role in ensuring the security of both nature and man, as well as the viability of the area's development. The significant role that ecologically-focused information systems, commonly known as Green Information System, play in promoting sustainability (Gholami et al., 2018). With the development of local food systems, even agriculture that focuses solely on food production will move closer to eco-localization.

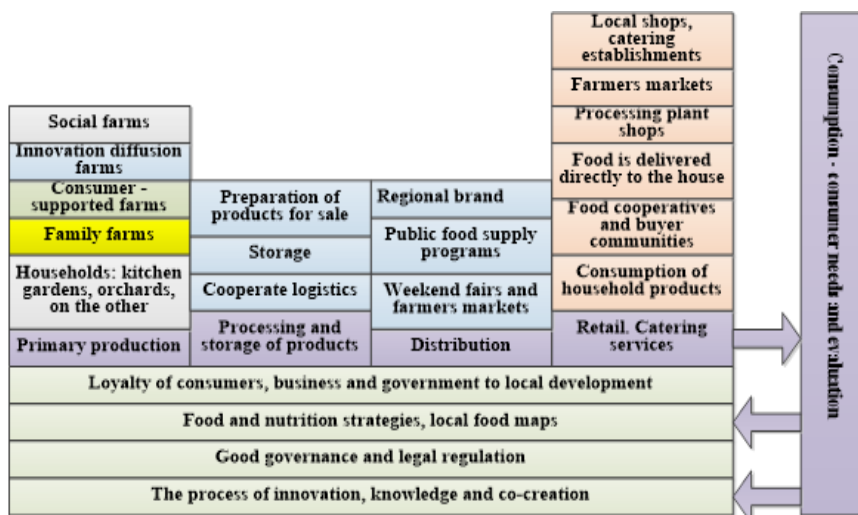


Figure 2. Scheme of the local food system based on short food supply chains

In the eco-localization scenario, stakeholders use national and smaller-scale food production and marketing initiatives to build local food systems and thus reduce dependence on the global food market. The eco-localization scenario also often emphasizes the greater independence of local economies from global markets and their resilience to external shocks. Under the eco-localization scenario, consuming goods and services that are normally exported closer to

where they are produced, meeting local needs, saves significant amounts of non-renewable resources and avoids an increase in resource-related greenhouse gas emissions (Kniuksta & Caplikas, 2011). Eco-localization strengthens people's connection with their living environment, a more closed circulation of materials and energy and waste management as a resource become possible. Actors in the local food chain should seek to mainstream sustainability interests by actively forming alliances with other organizations that have a complementary approach to sustainable food and farming (Scalvedi & Saba, 2018). There are various opportunities for value creation in the local food system. In the co-creation process, where food producers and consumers, suppliers and partners interact, a variety of ideas and the ability to combine ideas and even resources into new products or services emerge.

Explaining what constitutes environmentally friendly behavior is difficult because the behavior of both farmers and consumers of their products and other stakeholders is difficult to understand and explain using a single theory or model. Both internal factors, such as environmental knowledge and awareness, environmental issues, and external factors, such as institutional, social, economic, and cultural factors, can play an important role in defining environmentally friendly behaviour's (Gholami et al., 2018). Co-creation includes not only the producer-consumer dyad, but also the cooperation of the producer-supplier, the producer-community-consumer. It is based on the triple helix method (Hagy et al., 2017). Local food system creators and organizers learn dialogue with customers as it deepens and expands competencies, it is a learning method consists of four components: knowledge, innovation, value and the complex of activities required to create them (Kazakevičiūtė et al., 2012).

After the study of the need and condition of local food systems organization in pilot municipalities (Pakruojis, Jurbarkas, Molėtai and Radviliškis) (2018), the main problem of local food system organization was identified - there is no initiator to organize local food system. The study showed that LFS could be organized by the district municipal administration, local food producers, local communities.

The driving forces that can help to strengthen the sustainability of local food system by choosing the eco-localization scenario were identified:

- Network of local food system objects;
- Short food supply chains strategies: business to consumer (B2C), business to business (B2B) business to government (B2G);
- Cooperation and stakeholders of local food system activities;
- Local food system stakeholders and relationships;
- Conditions for strategic breakthrough in local food system development.

## CONCLUSIONS AND DISCUSSION

Eco-localization helps to reorient the food system towards the local food system, the local economy from a global division of labor to an economy that minimizes greenhouse gas emissions, with the aim of producing all the required quantities of consumer goods as locally as possible

At the local level, there is a lack of a missing middle between agriculture and nutrition, production, processing and consumption of agricultural products. Strengthening the coherence of the local food system can localize sustainable development, as most development and environmental issues are addressed at the regional and local levels.

The eco-localization scenario will help stakeholders to understand that economic decisions must not be based solely on profit maximization and economic efficiency, while abandoning others - the social, environmental motive.

In terms of eco-localization, the geographical area relies on its producers and consumers, is oriented towards the local consumer, but the openness of the economy is not abandoned.

The resilience of food producers and consumers communities would be enhanced if they regained control over their own food, giving priority to locally grown food. Various national and regional programs, regional food and nutrition strategies would make it possible to bring together local farmers who develop short food supply chains, public and private sector organizations, to achieve a single, common goal: regional sustainability.

The local food system is an ecosystem for the development of short food supply chains. The ecological localization scenario helps stakeholders to formulate a long-term vision and make sustainable decisions.

The driving forces that can help to strengthen the sustainability of local food system by choosing the eco-localization scenario were identified: network of local food system objects; short food supply chains strategies: B2C, B2B, B2G; cooperation and stakeholders of local food system activities; local food system stakeholders and relationships; conditions for strategic breakthrough in local food system development.

The co-creation process ensures the transformation of sustainable development goals into a lower level of governance, helps to fill gaps and create the resources needed for local food systems and regional development. It is also needed to develop a collective understanding of local food, to form interactions between farmers, entrepreneurs, artisans and consumers. The "missing middle" between Sustainable development goal 2 at local level can be eliminated or reduced when stakeholders develop and organize local food systems using an eco-localization scenario.

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