GREEN TRANSFORMATION! A POLICY TOOL FOR REGIONAL SMART SPECIALIZATION

POLICY BRIEF ON GT FOR RIS3 STRATEGIES

PARTNER: LITHUANIAN INNOVATION CENTRE

INTERVENTION AREA: THE TRANSITION OF FOOD AND BEVERAGE SECTOR IN KLAIPEDA REGION TOWARDS CIRCULAR ECONOMY

COUNTRY/REGION: LITHUANIA

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Summary

This policy brief is concerning the transition of food and beverages sector in Klaipeda region towards circular economy. Based on inclusive analyses with regional representatives the main challenges and opportunities transitioning towards more sustainable economic model were identified, including both socio-economic and environmental concerns. As a way to move forwards, several concrete actions are presented. They include necessary instruments to strengthen innovation and knowledge agenda in the region together with strong emphasis on different types of internationalization and regional cooperation incentives keeping the transition towards circular economy as a main goal.

1. Introduction

Klaipeda region is the third economically most important territory in Lithuania with 300 thousand inhabitants and 4,3 billion EUR reaching annual GDP.[1] In 2021, Klaipeda region stakeholders approved further development direction of blue growth that ultimately was converted into the *first regional specialization strategy in the country*.

The structure of Klaipeda region smart specialization strategy (KRSS)[1]

Vision	Horizontal priorities	Smart Specialization directions
Western Lithuania (Klaipeda region) is a leader in sustainable maritime economy in the Baltic Sea region, rich in experience for visitors and generous in well-being.	• Open region • Educating region • Welfare region	• Marine Economics • *Bio-economics* • Sustainable coastal and marine tourism • *Advanced industrial economics* • Creative and service economics

Sustainable environment both on land and sea is the main focus and the primary direction of KRSS for which a diverse group of actions is being foreseen. Therefore, with regards to the KRSS and the analysis of Klaipeda region, including identified regional strengths, resources and capacity to achieve a breakthrough by applying innovative practices, **Lithuanian Innovation Centre has been investigating the prospects of circular economy development in food and beverage industry in Klaipeda region[2] – the intervention area concerning this policy brief.**

Circular economy is still an emerging concept among regional stakeholders in Klaipeda, as the solid backing from EU and national institutions cannot overcome the uncoordinated and sporadic nature of local initiatives. The awareness level of circularity and possible means for regional cooperation are moderate and overall motivation for green transformation is lacking clarity. Nevertheless, the KRSS contains quite a few progressive ideas that could be the base for green transformation in which bio-economics and advanced industrial economics are used for the development of sustainable food and beverage value chains.

Klaipeda region aims to focus on sustainable environment as their primary direction thus circular transition of the food and beverage could help to achieve this goal by development of new business process management models focused on the creation of added value in production, by integration of biorefinery technologies, by prioritizing sustainable biomass for food production and implementing cooperation models with producers of sustainable packaging, waste management companies and energy suppliers. All of these activities are reflected in the Klaipeda region Smart specialization areas: bio-economics, innovative organic agriculture, advanced industrial economics.

[1] https://klaipedaregion.lt/apie-regiona/
[2] Hereinafter the intervention area is also addressed by the „green transformation“ concept.

In Klaipeda region as well as in the whole Lithuania the corporate landscape is dominated by small and medium-sized enterprises (SMEs): out of 119 companies in the food and beverage industry more than 75 percent have fewer than ten employees, 99.9 percent of the companies are SMEs according to the EU definition. In this perspective the collaboration among different kind of organizations is very important in order to achieve a technological advancement and innovations, as only few companies have their own resources and competencies that allow them to constantly create or implement new materials, processes or business models.

2. The policy context

The food and beverages sector maintains high importance in both EU and national political agendas, especially when it comes to green transformation. The establishment of sustainable value chains has become a crucial goal to achieve, while the demand from the growing population is putting more pressure on natural systems. As food value chains involve different sectors (agriculture, food processing, packing, and transportation) a coherent policy mix must be achieved with balanced economic, social, and environmental outcomes.

On the EU level, the main facilitators of green transition are European Commission, European Council together with the European Parliament. Their common vision is based on the Paris Climate agreement and the Green Deal that pursues a 55% reduction of CO2/GHG by 2050. There are also other several major documents that cover the intervention area and with a great concern seek to establish greener and more competitive economy, including food and beverage industry. They are EU CE Action plan, EU Industrial strategy, EU Strategy from Farm to Fork, and EU's biodiversity strategy for 2030 (agricultural approach).

EU policy document	Short description and relation to the intervention area
EU Green Deal	The main strategic document sets out policy initiatives to help the EU meet its targets by becoming climate neutral region by 2050. The idea of green transition is the foundation of the document together with other corresponding notions, such as circular economy, digitalization, sustainable growth and others. For the intervention area, this is the main document that builds up the foundation for other strategies present below.
New EU Circular Economy Action Plan	Tightly oriented towards the development of circular economy, the new strategy underlines food, water, and nutrients as one of the key-values for the EU. With specific actions, the most attention will be put on food waste reduction, sustainability of renewable bio-based materials, sustainability of food distribution and consumption, water reuse in agriculture, wastewater treatment, and other.
A Farm to Fork Strategy	Farm to Fork strategy is one of the key actions under the Green Deal and Circular Economy Action Plan. This strategy contributes to 2050 the goal of climate neutrality and therefore aims to replace the current EU food

	system with a sustainable model. The strategy recalls that food security and safety are priorities and that the main objectives are to provide sufficient affordable and nutritious food according to the planet's capabilities, halve the use of pesticides and fertilizers and the sale of antimicrobials, increase the share of land used for organic farming, promoting more sustainable food consumption and a healthy diet, reduce food loss and waste, combating fraud in the food supply chain, and increase animal welfare. Farm to Fork strategy sets out several initiatives and legislative proposals on organic farming, labelling of sustainable foods, and reducing and waste.
European Industrial strategy	The strategy aims to ensure both digital and green growth of the EU within its industrial sector. With regards to the intervention area, food processing is one of the main activities that creates added value of the products, therefore, the industry occupies a crucial part of food value chain. Moreover, this strategy heavily relies on the creation of climate neutral economy, including the expansion of circular economy. A few of key actions of the European Industrial strategy include digitalization initiatives, the creation of sustainable product policy framework, the development of circular economy, ensuring sustainable financing model, and other.
EU Biodiversity strategy 2030	Another important strategy that lies under the Green Deal and seeks to ensure long-term improvement of nature protection and ecosystems. The strategy aims to increase the resilience of European society to future threats following the COVID-19 pandemic including the effects of climate change, forest fires, food shortages, and disease outbreaks. The relevance of this strategy for the intervention area is associated with farming practices and sustainable use of land and water resources in order to ensure the production of healthy food.

On a national level Lithuanian food industry together with the whole food chain is tied with European level trends and UN Global Development Goals. Therefore, the national policy landscape is rapidly shifting towards the promotion of green transformation as well. While the European Union political agenda is being the main guidance, over a few past years there have been substantial achievements with regards to nation policy landscape in Lithuania, for example, the priority of transition towards circular economy is indicated in the most important strategic documents of the country.

The green transition of Lithuanian industries is in the responsibility of two main institutions – the Ministry of the Environment (AM) and the Ministry of the Economy and Innovation (EIM). They both set the agenda for green transformation in terms of regulations and corresponding support measures. For example, the Ministry of the Environment is actively working on waste legislation that concerns food waste as well. Currently, the Ministry is reviewing existing regulations in order to prevent food waste and improve its management both in municipal and production waste streams. Ministry of the Economy and Innovation, on the other hand, is implementing the project – Roadmap for Lithuania's industrial transition to a Circular Economy – in which the food and beverage industry is one of a few demonstration sectors for change. However, circular economy and green transition for industry cover a few institutions what creates some grey areas of responsibilities and leadership. Quite narrow

understanding of those topics might hinder larger scale improvements in the economy, as it was indicated by one of the experts.

Lithuanian policy document	Short description and relation to the intervention area
National Progress Plan 2021-2030	The aim of the National Progress Plan 2021-2030 is to identify the main changes in the country over the next decade that will ensure progress in the social, economic, environmental, and security fields, and to mobilize sources of funding to implement these changes. The intervention area is explicitly expressed in two directions: the creation of sustainable food systems and the development of circular economy. Food sector is targeted with the aim to promote local food systems and increase the added value of the agricultural, food and fisheries production. While the promotion of the transition to a circular economy is proclaimed with the increase in resource productivity, the reduction of the negative impact from economic development on the environment, as well as the utilization of emerging opportunities to develop new areas of the green economy and the increase in economic competitiveness.
Lithuanian Smart Specialization Strategy	While the Lithuanian Smart Specialization Strategy (RIS 3) is being updated, an evident link between the intervention area and state's support for research and innovation can be grasped. Two priorities from RIS 3 for 2015-2020 that had a close connection to the intervention area were agro-innovation and food technology together with new production processes, materials and technologies.

On a regional level, the decisions and strategies are also based on the European Union level trends and main strategic documents. Recently, the Development council of the Klaipeda region released a regional development plan for 2021-2030 - the main regional strategic document that indicates main challenges and opportunities related to sustainability and the environment. This strategy includes an action plan to promote the development of bioeconomy in Klaipeda region. The goals of the bioeconomy development set out in the strategy are related to the goals indicated in the European Union's bioeconomy strategy and are based on the European Green Deal reached by the European Union. The action plan identifies 3 goals that are directly related to the further development of circular economy in Klaipėda region:

1. Applying Methods of circular economy. The action plan emphasizes the importance of applying the methods of the circular economy while developing a bioeconomy in the region. In accordance to this strategy the circular economy can be developed in a variety of ways. For the use of bio-waste, a closed-loop system can be implemented in SMEs, industrial symbiosis solutions can be applied with the participation of several companies, or production based on the purchase of bio-waste can be developed. From the perspective of municipalities, industrial symbiosis is very relevant. Industrial symbiosis enables the balances of one company to be transformed into resources of another company, thus supplying energy and producing other value-added products. Importantly, the industrial symbiosis model focuses on the use of biological waste in a local industrial cluster. In order to build efficient

industrial symbiosis, municipalities need to invest in centres of excellence that analyse opportunities and encourage companies to work together.

2. Clusterization in food and agro industry. In order to have a successful model of industrial symbiosis and to promote cross-sectoral collaboration, the creation of clusters related to food, beverage and agro sectors should be facilitated in the Klaipeda region. Together with the food industry, the farmers participating in the cluster could look for ways to "extend" the value chain of their production. The practice of similar clusters in other European could also be examined to find solutions to improve various aspects of the food system (more sustainable product logistics, environmentally friendly packaging, etc.). In addition, Solutions for short food supply chains that boost the local economy and contribute to environmental sustainability (requiring less transport, avoiding food waste, etc.) could also be developed and implemented. It is noticeable that the joint action of the cluster members helps to accelerate the processes of development of new products, services and technologies and their introduction to the market, as well as creates innovations in the cluster by developing business and science and intersectoral cooperation.

3. Initiation of new R&D projects. Support of research, development and entrepreneurship in the area of circular economy especially in the sector of industrial economy. In order to develop and deploy new sustainable products and technologies, it is necessary to create incentives for R&D and innovation activities in areas related to the circular economy and to promote business-science cooperation.

3. Instruments and initiatives targeting the GT

Green transformation is being promoted in a variety of ways both in the EU and in different countries, from which inspiration can be transferred to the intervention area. A few relevant examples are described below.

Initiative	Relation to intervention area
Horizon 2020 project SEAFOODTOMORROW It aims to utilize agro and seafood by-products to develop sustainable feeds for aquaculture enabling the production of tailor-made products fortified with specific essential nutrients for consumers, assess the feasibility of salt replacers in seafood, validate digestible, attractive, functional, and nutritionally adapted seafood for senior people and youths, validate strategies to prevent/remove contaminants from seafood, and optimize sensors and biosensors for the assessment of safety, among others. https://cordis.europa.eu/project/id/773400	The use of food by-products to create more added value is one of the principles that make the circular economy possible. The seafood production targeted by this project is also relevant for the Klaipeda region, which should strengthen its knowledge in this area.
Horizon 2020 project NoAW: No Agro-Waste	Zero waste production should be a strong priority for the intervention area that requires knowledge and feasibility studies.

The goal of NoAW project is to generate innovative efficient approaches to convert growing agricultural waste issues into eco-efficient bio-based products opportunities with direct benefits for both environment, economy and EU consumer. To achieve this goal, the NoAW concept relies on developing holistic life cycle thinking able to support environmentally responsible R&D innovations on agro-waste conversion at different TRLs, in the light of regional and seasonal specificities, not forgetting risks emerging from circular management of agro-wastes (e.g. contaminants accumulation). https://cordis.europa.eu/project/id/688338	
Bio and circular Finland programme The program supports the development of competitive bio and circular economy solutions and ecosystems that offer solutions to global environmental challenges and hold potential for significant global markets. Our aim is to increase the exports of bio and circular economy solutions in order for Finnish solutions to be adopted in international markets. https://www.businessfinland.fi/en/for-finnish-customers/services/programs/bio-and-circular-finland	

Other relevant examples for the intervention area include LIFE funding programme and European Regional Development Fund opportunities.

4. Challenges and opportunities focusing the GT

Currently one of the biggest societal challenges is to provide enough food and healthy food to a growing global population while considering the loss of soil fertility and climate change. The new circular economy business models implemented into the food and beverage industry could offer an opportunity to make an important contribution to mastering these challenges and simultaneously to advance the transition from an economy mainly using fossil-based raw materials to an economy based on renewable resources and efficient in terms of raw materials.

4.1. The emergence and growth of new activities with potential in innovation focusing on GT

In order to evaluate the potential of the emergence and growth of new innovative green transition activities in the intervention area, a few circumstances must be considered. First, the demand for food

is gradually rising. The expected market growth, therefore, creates favourable conditions for the establishment of new companies and start-ups. While regional and national consumption demonstrates lower growth rates than the ones in the global arena, quite sophisticated integration towards international value chains results in the expansion of local production. Secondly, the intervention area features as a relatively diverse market that is composed of 99,9 % of SMEs. The food and beverages sector in Klaipeda region has only a few medium-sized companies that manufacture country-wide known production and can make a moderate influence on the supply chain. Meanwhile, the competition in the market is based on many diverse factors, including branding, production novelty, price, and other. On the other hand, because of the specificity of the food and beverages sector (growing global demand for food while natural resources are depleting), the incumbent companies have a solid position in the markets, and it would be extremely difficult for a new food company, invention or a start-up to initiate larger-scale reforms in the region. It is more possible that technologically advanced niche start-ups will supplement the industry instead of reshaping it. Finally, considering both regional and national policy agendas the green transition is explicitly favoured by raised importance and foreseen financial and non-financial support for relevant development actions. However, local initiatives are still fragmented and do not include a coherent sustainable development strategy.

Therefore, the emergence and growth of new activities with potential in innovation focusing on green transition are most likely dependent on external factors, i.e., the takeover of new technologies and product innovations from foreign investment companies or trends in the EU markets. While the food and beverages sector has a long-term growth perspective, new companies can take the advantage of a diverse market and begin producing sustainable foods that can be traded both on national and international markets. In the latter case, the EU's regulations and customer preferences from Western and Northen regions could be both a challenge to overcome with current linear and unsustainable food production practices or, on the other hand, an opportunity to be in alignment with the newest trends.

As as clear oportunity for the intervention area, an example of Klaipeda Free Economic Zone (FEZ) could be taken into account. Current Klaipeda FEZ strategy maintains sustainability priority as a competitive uniqueness among other FEZ in Lithuania. Consequently, attracted FDI must contain corresponding sustainability aims, innovations and practices that eventually have larger impact on the whole FEZ ecosystem.

On the other hand, different challenges for the emergence and growth of new activities with potential in innovation focusing on GT exist in the intervention area. One is those challenges is the lack of circular economy-related competences and knowledge that surpass general understanding of the topic which is gained through scientific literature or most known practices. In order to implement circular strategies, a comprehensive understanding must be obtained and shared among different stakeholders. However, currently, the level of CE perception in the region (including companies, public institutions and even to some extent – science and education institutions) is insignificant, and therefore, these gaps in knowledge could heavily hinder the transition towards more sustainable economic growth of the region, and especially with the potential in innovation focusing on GT.

Another challenge is the disparities among innovative companies and regular SMEs that form most region's enterprises. As it was indicated by regional representatives, current setup of financial support measures provided by the Ministry of the Economy and Innovation is oriented towards already experienced innovators and there is a little probability that the first-time innovating companies will get the support. Therefore, SMEs are locked into a situation where they do not have either proper experience or knowledge to use those instruments for their development, and especially for a sustainable matter. This concern is especially important when considering Lithuania's modest position in the innovation field – companies that are lagging behind can face a critical challenge for their competitiveness in the nearby future.

4.2. Entrepreneurial discovery bringing environmental and social benefits into existing innovation activities

Presently, the entrepreneurial discovery processes (EDP) are taking only first steps in Klaipeda region. One of the examples of EDP could include the creation of regional specialization strategy, however further investigation on the success of this process cannot be described, as the implementation of the strategy is just in the beginning stage. However, the need of stronger EDP process that could explore and reveal new opportunities in technologies and markets where tangible and potentially in-demand innovations can be widely applied is necessary. This is strongly related to the internationalisation opportunities that could benefit local companies moving towards circular economy model.

Moreover, the EDP process in especially important in order to strengthen circular economy-related competences and knowledge what was indicated as a shortcoming within the region. As food and beverage value chains are composed from different economic sectors the diffusion and exploration of knowledge together with the experiences from different value chain parts are crucial in order to develop circular strategies. The environmental and social benefits should be achieved with continuous dialogue among the stakeholders with the emphasis on societal and environmental challenges, based on DPSIR analysis.

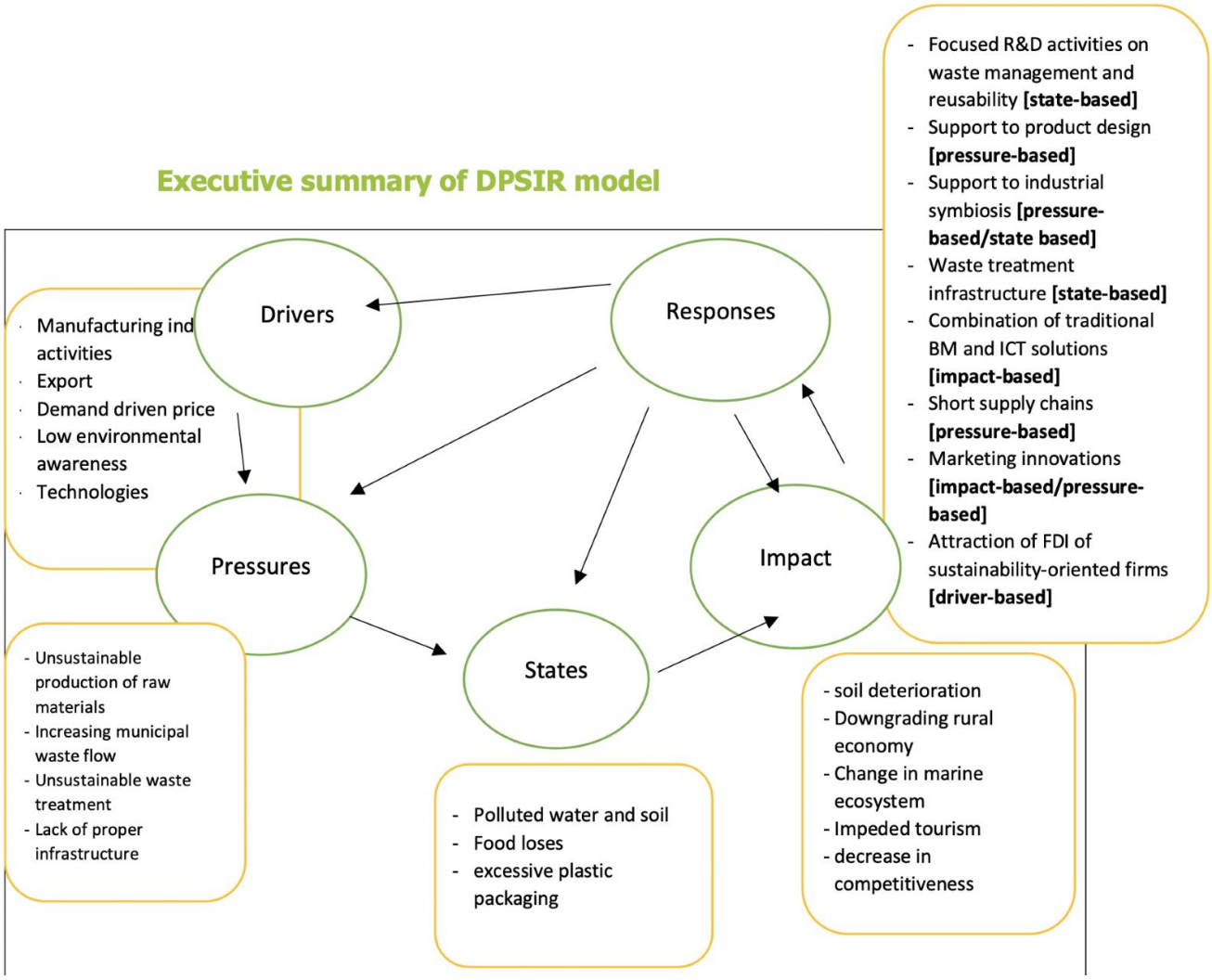
4.3. Critical networks of stakeholders with the potential to develop RIS3 strategies based on the GT

For the intervention area the cooperation between different companies is very important in order to achieve technological advancement and innovations, because only a few companies have their own resources and competencies to constantly create and implement new materials, processes or business models. In this regard, the stakeholders that are involved in clusters, associations or other network structures are significant for the intervention area. On the other hand, science and education institutions must also actively be incorporated in the critical network of stakeholders where they could contribute to the implementation of regional strategy with regards to the green transition. The overall situation of science-business cooperation in Lithuania, including the activities in food and beverages industries, is still inadequate, especially taking into account the fact that the country (including Klaipeda region) has all the necessary infrastructure to create innovations, but the main issue is the

lack of links between different stakeholders. Moreover, networks of stakeholders are critical when it comes to circular economy strategies as no individual company can create a closed material cycle. The cooperation must cover a few suppliers, waste treatment and recycling companies. In this regard, these networks are important both for the circular economy and sustainable food value chain development together with the needs of business, science and society. Moreover, it is also important to stress the role of necessary facilitators that could ensure continuous and effective activity and cooperation among the ecosystem that covers the intervention area. This idea can evident the conversion toward new RIS strategies.

5. Next steps in policy innovations concerning the GT, RIS3, and RIS4+ strategies

The summary of proposed actions concerning the intervention area is presented in the picture below.



5.1. Driving forces-based next steps

- Sustainable foreign direct investment: there must be a clear vision and the environmental/sustainability priority that should be incorporated into the strategies of foreign direct investment attraction, as the presence of FDI companies influence new work culture, technologies, and innovations in the local business.

5.2. Pressure-based next steps

- Facilitation of technological innovations: measures should be applied that allow to understand the cause of food waste in the manufacturing process, e.g., a result of excessive production to avoid shortage, loss due to troubles of manufacturing machines, loss of raw materials that passed their use by date etc.
- Packaging innovation (material composition and design) should be seen as a response to the increasing packaging waste. Therefore, an emphasis should also be put on R&D&I activities that could introduce circular designed-based food packaging alternatives.
- The promotion of short and local (regional, national) supply chains.
- Facilitation of non-technological innovations: Local and national institutions should introduce policy interventions aimed at stimulating organizational innovations, business model innovations or social innovations.
- Special attention should be paid to the support instruments of product design that can lead to reductions in solid waste and in raw material and energy usage throughout the product life cycle.

5.3. State-based next steps

- Resources should be directed toward feasibility studies to assess the possibility and methods to reuse different types of food parts in the production of high-value products that have high demand in the market.
- More attention should be paid to encourage public-private and B2B cooperation to implement Farm to Fork strategy and industrial symbiosis projects.

5.4. Impact-based next steps

- Facilitation of non-technological innovations: local and national institutions should introduce policy interventions aimed at stimulating organizational innovations, business model innovations or social innovations.

In addition, a few actions and policy interventions should be introduced taking into consideration the peculiarities of regional ecosystem and its relation to the transition towards circular economy.

Support for technological renewal. As was identified in the DPSIR analysis, current food and beverages value chain is based on a linear model and there are only a few cases when circular economy practices take place. Quite common concern among the region is the obsolete technologies that hinder the

implementation of any CE strategies which require the transformation of production and distribution models. With internal resources, these transformations are too expensive and the interest in renewal becomes neglected. CE enabling technologies (ex. digital solutions for material tracking, automated production lines, recycling facilities, etc.) require sufficient financial resources that most SMEs the region do not have. Therefore, financial support measures for technological renewal with the aim of reducing the environmental impact of production should be in place. Ideally, these measures should have as high co-financing rate as the support for innovations (around 75-85%), as most SMEs lack of financial contribution from internal resources.

Targeted research promotion. The implementation of circular economy principles can be both knowledge and capital intensive and the payoff time is obscure. From a business perspective, the latter factor is extremely important, as the investments in clean production and CE practices should include not only environmental, but also economic gains. Regional representatives agree that more attention should be oriented towards feasibility studies that can identify circular economy application possibilities in a particular sector or a company with the focus on the economic output. The support for it could come in a form of R&D&I projects between science and business.

The strengthening of CE competences and knowledge. As clearly was indicated among the green transformation challenges, the lack of CE-related competences and knowledge drastically hinder the development and the implementation of sustainable strategies. Focus group discussion revealed that the issue is universal among all sectors (science, business and public) and should be addressed accordingly. As a solution, “train the trainee” approach could be applied in order to diffuse CE innovations and adjust the existing knowledge gaps. The strengthening of CE competences and knowledge could bring diverse impact on green transformation: in public sector – increase in green and circular public procurement, in science – increase in scientific research and feasibility studies, in business – increase in green investments and circularity projects.

Incentives on internationalization. Both the presence of local companies in foreign markets and foreign capital companies in the region bring tangible benefits for the transition towards circular economy in terms of increased CE significance. More broadly, practical examples and peculiarities of successful integration towards international markets and the presence of FDI in the Klaipeda region are presented in the gap analysis. Focus group participants highlighted that the integration towards CE-advanced value chains do have an impact on the company’s sustainability policy, as the need to invest in clean technologies is determined by cooperation with the client. Therefore, the support for finding clients and target markets would become handy for SMEs that would be willing to implement necessary actions for the transition towards circular economy. On the other hand, the importance of FDI attraction is clearly indicated in the regional specialization strategy and additional sustainability criteria in these activities could positively impact the progress of the green transformation.

Demand stimulation. Among all other actions that are necessary for the intervention area, there is a need to refer to the issues of demand for sustainable and in accordance with circular economy principles produced production. Due to current expensive technologies and value chain inefficiencies, this type of production is more expensive and the demand for it is insignificant in comparison to conventional alternatives. Even though international trends indicate the growth in demand for sustainable production, it is difficult for regional SMEs to grasp this emerging potential due to the lack of local pressure from the consumers. Therefore, regional and national policies should include appropriate measures to reduce this gap and stimulate local demand for sustainable production. A few

examples could include promotional campaigns, tax reductions (for services), green public procurement and others.

6. GT and RIS3 prospects: from the GT-driven regions to the European RIS3 and RIS4+ strategies

The main intervention area findings suggest that physical distance of food and beverages' value chains will be relevant during the upcoming advancement of GT – whenever it will be emphasized in the light of reducing carbon footprint from transportation, empowering local producers and ecologic farming or fostering sustainable technological and non-technological innovation diffusion in the form of FDI. Even though the local dimension is essential to achieve greater levels of sustainability (such as short and transparent supply chains), the role of BSR region is also being seen as a prominent way to mainstream green agenda, especially when it comes to market-driven strategies.

Lithuanian food and beverages sector is almost in half dependent on foreign markets with export share reaching 45% (same trend for Klaipeda region) what makes regional presence and cooperation even more relevant for it. With the forthcoming Carbon Border Adjustment Mechanism in the EU, long-term transformation in the sector should take place in alignment with sustainability-prone regions inside the Union, and in this case, Baltic Sea Region can be seen as a strategically convenient location for further GT development. Further investigation in the relations among BSR countries in food and beverages sector has led to an important observation – Nordic countries (Sweden, Norway, Denmark and Finland) set major GT/sustainability trends for Lithuanian producers that are operating in those markets, and to some extent those values (or trends) gradually shift to local context. Therefore, the role of BSR region in Green Transformation has a solid foundation based on the GT value perception and necessary technological and non-technological innovations for sustainability that are backed by diffusion from the Nordic countries.

The usage of renewable and sustainable bio-resources together with the avoidance of raw materials and energy-intensive processes that are linked to the transportation are a few examples of the major GT and circular economy areas that could be tackled in the Baltic Sea Region. As circularity of bio-products is based on biological restoration rather than technical production and usage cycles, yet favourable climate and weather conditions should also be taken advantage of in order to stipulate sustainability in food and beverages chains. On the other hand, current technologies and innovations that are in place allow to think that BSR region could be further developed into green technology domain as well. However, both of these scenarios will not be possible without more robust dialogue and cooperation among both public and private sectors with BSR countries.

These proposals and concerns should be addressed on the EU level with strong emphasis on the role of regional cooperation and its ability to implement sustainable bottom-up driven initiatives. Currently, green transformation is being seen as a strong political agenda from the European Union institutions, however, when it comes to the implementation level, more support for the empowerment (both financial and skilful) of local and regional communities should be put in place.

[1] https://klaipedaregion.lt/wp-content/uploads/2021/06/KR-SS-2030_final.pdf