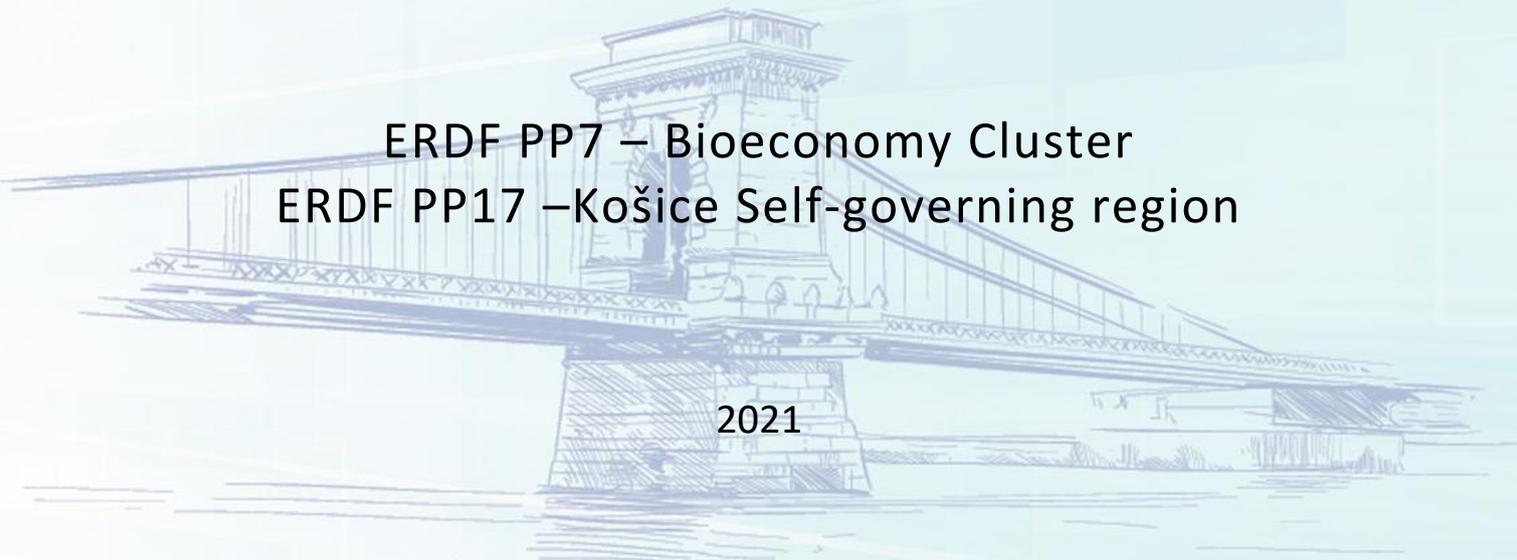


# **D T.2.1.1 Missing Links for Regional Circular Bioeconomies SLOVAKIA**



ERDF PP7 – Bioeconomy Cluster  
ERDF PP17 – Košice Self-governing region

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## 1. Introduction

Results of the first output from the GoDanuBio project (“Analysis of Circular Bioeconomy Framework Conditions (WP T1)”) provide an overview of current strategies and governance structures in the Danube macro-region and offer a hint on the existing gaps of circular bioeconomy, in terms of concentration (critical mass of relevant actors), capacity (skills), conditions (rules, legislation procedures) and culture (social acceptance and impact of circular-bioeconomy approaches). The outputs from WP T1 should serve as a basis for the identification of actors that are currently neglected in the bioeconomisation of the respective regions.

## 2. Methodology

The aim of this report is to create an overview of actors that are neglected in the circular bioeconomy so far but are needed to co-create sustainable development models. To also serve as inspiration source, good practice examples (projects/initiatives/business models) that already exist in individual regions of GoDanuBio or outside the consortium area were collected.

The methodology encompassed the following steps:

### Step 1. Analysis of the regional reports T.1.2.1 Development of regional stakeholder reports

Each region has identified the existing actors involved in the bioeconomisation process. They have been divided into 4 categories:

- Industry (chambers of commerce, clusters, cluster organisations, enterprises, professional associations)
- Academia & Research (universities, research institutes, competence centers)
- Public (state agencies, local government, regional/central government, regional development agencies)
- Society (NGOs, informal civil organisations)

**These represent the maximal typology of actors to be considered in the elaboration of the Integration Plan for prospective actors for developing a sustainable and holistic circular economy (T2.1).**

Some categories of actors are currently involved in the bioeconomisation process in all regions (e.g., universities), others are not and hence the regional gaps occur.

The current situation and the pre-identified gaps are shown in a google drive shared document (Annex 1)

### Step 2. Identification of good practice examples

When adding a missing actor in the list, the partners have relied on the shared experience from other partners that have identified that specific missing actor.

The following table shows the shared experience for Slovakia.

Type of stakeholder	Pre identified actors	Examples/Type of cooperation
<b>Industry</b>		
Chamber of commerce	Agriculture and Food Chamber	-Monitoring Committee for Rural Development Programme 2014-2020 (MC RDP 2014-2020).
Clusters	Plastics, hemp, bioeconomy	-BIOEAST; -RIS3-Domain (Healthy Food and Environment); -CE Roadmap (Circular Economy Roadmap); -Projects: Made in Danube; POWER4BIO; -National platform AgroBioFood; -DTC Network.
Cluster organisations	Union of Slovak Clusters	-Made in Danube project; -DanuBioValNet project.

Enterprises		-projects.
Professional associations	Association of the Photovoltaic Industry, Renewable Energy Sources; Wood processors,	-Monitoring Committee for Rural Development Programme 2014-2020 (MC RDP 2014-2020); -RIS3 on regional level, -participation in EDP for the update of RIS3
<b>Academia &amp; Research</b>		
Universities	Agriculture, Technology, Technical, General, Veterinary and Pharmacy; Pavol Jozef Šafarik in Košice	-Projects: Made in Danube; POWER4BIO; -RIS3-Domain "Healthy Food and Environment"; -National platform AgroBioFood; -DTC Network.
Research institutes	National Agricultural and Food Center, National Forestry Center, institutes of the Slovak Academy of Sciences or Research Institute of Paper and Pulp	-Government Council for the 2030 Agenda for Sustainable Development (GC Agenda 2030); -RIS3 KSK (Regional Research and Innovation Strategy of Košice Region); -RIS3-Domain "Healthy Food and Environment"; -BIOEAST;BIOEASTsUP projects; -National platform AgroBioFood
Competence centres		
<b>Public</b>		
State Agencies		
Local Government		
Regional/Central Government	Ministry for Agriculture, Environment, Economy, Kosice Self Governing Region	-BIOEAST Initiative; -RIS3-Domain "Healthy Food and Environment"; -Monitoring Committee for Rural Development Programme 2014-2020 (MC RDP 2014-2020); -GC Agenda 2030 (Government Council for the 2030 Agenda for Sustainable Development); -CE Roadmap (Circular Economy Roadmap).
Regional Development Agencies		
<b>Society</b>		
NGOs	Young farmers; production and use of biofuels; Institute for Circular Economy ,Centre for Sustainable Alternatives;	-Monitoring Committee for Rural Development Programme 2014-2020 (MC RDP 2014-2020)
Informal civil organizations		

### Step 3 Identification of the potential stakeholders

In Slovakia the pre-identified gaps are: competence centres, state agencies, local government, regional development agencies, informal civil organisations as shown in Annex 1 (google drive shared document). The potential stakeholders are fill in Annex 2 (google drive shared document).

#### Step 4 Identification of good practices

The identified good practices are listed in Chapter 4 and will be further described in a dedicated template which will be integrated into the Best Practice Brochure (D.T2.1.2).

### 3. Missing Actors

Stakeholder group	<b>Academia &amp; Research</b>
Stakeholder subgroup	Competence centres
Position in the network	The important source of information for the whole network of stakeholders is available knowledge and expertise in individual key sectors of bioeconomy. The competence centres, such as <i>AgroBioTech center</i> (established within Slovak University of Agriculture in Nitra) or <i>Technology Innovation Park in Košice</i> contribute to the development of innovations and entrepreneurial competitiveness, as well as the coordination of R&D resources in the area of key competences.
Importance for GoDanuBio	Through the GoDanuBio project, the networking of relevant stakeholders with other international actors that is connected with the exchange of ideas, experience and information may subsequently lead to the development of business activities in rural areas, creation of new value chains within the circular bioeconomy and strengthening cross-sectoral links with relevant sectors for the bioeconomy.

Stakeholder group	<b>Public</b>
Stakeholder subgroup	State Agencies
Position in the network	State agencies have been identified as relevant stakeholders for the network, since they educate and raise awareness about important issues and current trends, connect relevant actors and strengthen their relationships. <i>Slovak Innovation and Energy Agency</i> raises awareness about energy efficiency, renewable energy sources and innovations in all fields of economy and also provides expert consulting in those areas.
Importance for GoDanuBio	The capacity building and implementation of systematic multi-level participative governance cooperation have potential to bring actors in a targeted way together for the enhancement of the socio-economic status of the regions, contribution to environmental, climate and resource protection as well as for fostering the development of rural areas.

Stakeholder group	<b>Public</b>
Stakeholder subgroup	Local Government
Position in the network	In Slovakia, there are <i>8 Self-governing regions</i> . It is important to develop regions in effective and sustainable way, and thus to focus on integrated approach to the development planning, creation and further strengthening of relationships between urban and rural areas (including

	functional relations in the territory) and application of mechanisms for effective governance.
Importance for GoDanuBio	The capacity building and implementation of systematic multi-level participative governance cooperation have potential to bring actors in a targeted way together for the enhancement of the socio-economic status of the regions, contribution to environmental, climate and resource protection as well as for fostering the development of rural areas.

Stakeholder group	<b>Public</b>
Stakeholder subgroup	Regional development agencies
Position in the network	Regional development agencies, such as the <i>Rural Development Agencies</i> or the <i>Association of Towns and Communities of Slovakia</i> , have an important role in the development on individual regions in effective and sustainable way, since they identify the needs of regions, collect and provide information on regional level, promote common needs of their members, enhance the cooperation or transfer good practice examples.
Importance for GoDanuBio	The capacity building and implementation of systematic multi-level participative governance cooperation have potential to bring actors in a targeted way together for the enhancement of the socio-economic status of the regions, contribution to environmental, climate and resource protection as well as for fostering the development of rural areas.

Stakeholder group	<b>Society</b>
Stakeholder subgroup	Informal civil organizations
Position in the network	Informal civil organizations have been identified as relevant stakeholders for the network, since they raise awareness about important issues and current trends, connect relevant actors and strengthen their relationships. For instance, <i>SUSTO – Sustainability Tools</i> helps organizations understand current social and environmental challenges and new trends, and manage their impact on the climate and society.
Importance for GoDanuBio	Through the society, various dissemination activities related to GoDanuBio project may be conducted, and thus the awareness about the circular bioeconomy/rural development/demographic changes and other relevant issues may be raised.

## 4. Good Practice Examples

### 4.1 Ecology Zone – Agrokruh

New concept of a small 100% organic vegetable farm is built on innovative circular technologies (including cyber solutions) and processes of entire soil management (minimum tillage) including precision irrigation. The holistic concept provides guidelines how to build your own “Ecology Zone” including farm technology, innovative crop rotation system, soil management, consumer community development including social and environmental aspects of such farming. In addition, innovative Pater-Noster type greenhouse technology and eco-housing is available.

### 4.2 Community supported agriculture – DreamFarm

This best practice involves regenerative production of vegetables with community support sale. Fresh seasonal fast-growing vegetables (3 yields of different sorts of vegetables on one parcel per year) are produced. The diversity of vegetables is large: many original and special varieties (no hybrids) of leaf vegetables, lettuce (selection of leaves of different varieties), radish, cabbage, broccoli, tomatoes, onion, and many others. All products that are fresh with minimum processing are sold directly to consumers – home delivery of boxes of fresh seasonal vegetables once a week (CSA – Community Support Agriculture, “subscription” of healthy food in the amount of 100 EUR per month) as well as direct sale to restaurants and sale of boxes based on order.

### 4.3 Innovative eco-chemistry - Pewas

Pewas is specialized in ecological, innovative, and efficient chemistry. It focuses on the use of special absorbing polymers in new ways for clients in several sectors of industry, agriculture and transportation. Pewas has developed solutions ranging from an innovative use of special polymers to remove harmful by-products of petroleum accidents and natural disasters (floods and fires) to the application of these polymers in agriculture to absorb water in the soil, proving to be an efficient tool for farmers in extremely dry regions.

### 4.4 Slovak startup sobi.eco

The Slovak Civic Association was established for the purpose of promoting ecological and social topics. The idea of the use of waste and ethical production was born in charitable collections of clothing, which is often no longer wearable, or there is a surplus of it. This unnecessary clothing ends up in warehouses that pollute the environment. The team from start-up sobi.eco came up with an idea of how to change this fact. They started to produce organic products from 100% recycled textile waste. With their idea, they decided to support socially and medically disadvantaged people and therefore placed production in sheltered workshops, social enterprises or workshops that provide work in areas with high unemployment. Among the offered assortment we can find a laptop case, a case for glasses, or a shoulder bag, but also a number of other practical products. It is no wonder that this civil association managed to win many awards in a short time. More information about their eco products is available at their official website: <https://sobi.eco/>.

### 4.5 Water council plan of Landscape Recovery Program of Košice Region

The plans of the water councils of Košice Region within the Landscape Recovery Program of Košice Region 2021-2030 of individual regions open these topics. They aim is to connect the links not only between water, energy and food, but also the weather, climate change and biodiversity. It is necessary to look for comprehensive solutions for the WEF (water, energy, food) approach, as climate change itself affects water supply, soil fertility, extreme heat, as well as the growth of natural disasters.

In terms of the practical implementation of the plan, we divided the Košice Self-Governing Region into 6 separate territories, in which water councils were established, which work on plans in their territories:

- Abov (Košice and Košice – surrounding)
- Gemer (Rožňava)
- Spiš (Spišská Nová Ves and Gelnica)
- Zemplín I. – Trebišov
- Zemplín II. – Poondavie (West-side of Michalovce )
- Zemplín III. – Michalovce, Sobrance (Part of Michalovce and Sobrance as whole)

#### **4.6 Project Adaptation to Climate Change and Water Retention Measures**

The municipality of Kladzany in Prešov Region in Slovakia implemented the project Adaptation to Climate Change and Water Retention Measures, as part of which it started to retain rainwater from municipal buildings. The aim of this project is to preserve water in case of summer heat to cool the microclimate of the area, reduce the risk of floods and last but not least to improve the environment in the village centre by revitalizing and aestheticizing public space by planting water-loving plants and installing wooden elements of small architecture. In addition to ecology, this project also has an economic advantage - a reduction in fees for the amount of unnecessarily drained and subsequently unnecessarily treated rainwater in the wastewater treatment plant. The municipality was awarded for this project.

#### **4.7 Plastic paths from Viakorp**

The Zvolen company Viakorp gave Slovakia the opportunity to be an innovative and exemplary country in the field of transport construction. Viakorp produces special asphalt from recycled PET bottles, sachets and boxes. You can drive along the "plastic road" in the district of Lučenec, where the first of such road is located. Roads with a plastic admixture are cheaper, more ecological, of better quality and, according to the words of Viakorp's manager Ján Bohovič, also a necessary solution. 'The properties of asphalt roads with a plastic admixture are significantly better. This is due to the fact that the plastic we obtain from waste is a better quality petroleum product than standard asphalt (bitumen), which is used for the production of asphalt mixtures. The surface resists deformations better and at the same time the driving properties are the same as with a normal surface', explained Bohovič. The service life of such surface is extended by 3-4 years. About 10-20% of standard asphalt is replaced by plastic waste products. With plastic roads, a considerable amount of money can also be saved on maintenance.

#### **4.8 Trash is Gold!**

The Recycler organization created the #trashisgold campaign, which aims to spread the view of waste as a valuable material for various types of products. Although in the long run, the Recycler wants to support the ideas of Zero Waste, at present, Poprad activists want to focus mainly on projects related to waste treatment and distribute original products made by small and large producers. Through the e-shop, they offer, for example, a variety of utility and decorative items or clothing. In addition, the Recycler is dedicated to creating products from waste materials to order and create a "Recyclopedia" - a waste encyclopedia with a detailed analysis of various products and ideas for recycling and upcycling. They also built own Creative Recycling Center in Poprad.

#### **4.9 Circular cup**

Disposable plastics form a significant part of waste, which ends up in landfills and in the wild - both cases are an environmental problem today. The aim of the CIRCULAR CUP project is to create a "closed loop" system of cups that are reusable and biodegradable. The 'NUATAN CUP' is made of Nonoil material, which is the result of a long-term cooperation between the Faculty of Chemical and Food Technology STU in Bratislava and the commercial company PANARA s.r.o. Nonoil (Non-oil). It is a bioplastic that is unique since it is made of renewable materials and 100% biodegradable. The cups are capable of biodegradation by composting within two months without residual microplastics. Its uniqueness lies in the possibility of reuse and its resistance to high temperatures - up to 100 degrees Celsius. Therefore, the cups are also suitable for hot drinks and washing in dishwashers.

#### **4.10 Tesco's first machine for returning PET bottles and cans in Slovakia**

The Tesco retail chain has launched a pilot project of a collection machine in the hypermarket in Senec, which will enable the collection of used PET bottles and cans. Tesco believes that hundreds of PET bottles and cans will be collected every single day. The aim of this pilot project of the vending machine is to prepare the public and at the same time facilitate their transition to the system of compulsory collection of beverage packaging from January 2022. From January 1, the customer pays 15 cents for packaging when buying a drink and will receive this amount back after its return.