

D T.2.1.1 Missing Links for Regional Circular Bioeconomies

Hungary

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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 Hungary.

Type of stakeholder	Pre identified actors	Examples/Type of cooperation
Industry		
Chamber of commerce	National Chamber of Agriculture	-Project POWER4BIO; -Rural Development Program 2014-2020 (VP); -Common Agricultural Policy (KAP); -RIS3; -Young Farmer Program.
Clusters	Bioeconomy, plastics and packaging, hemp, agro-food, ArchenErg (green energy)	-Project Danube S3 Cluster; -Circular Economy Strategy (KGStrat); -Rural Development Program 2014-2020 (VP); -Project: BIOEAST;

		-RIS3 (Healthy local Food and agricultural innovation);
Cluster organisations		
Enterprises	Private firms, private producers	- Hungarian Circular Economy Platform; - EIT Climate-KIC.
Professional associations	Quality Compost; Business Council for Sustainable Development; Associations of Environmental Enterprises; Pannon Business Network; Pannon Pro Innovations Ltd.; Responsible Food Producers Associations;	-Rural Development Program 2014-2020 (VP); -RIS3 (Healthy local Food and agricultural innovation); -Circular Economy Strategy and Roadmap.
Academia & Research		
Universities	Agriculture and Life Sciences	-Rural Development Program 2014-2020 (VIP); -Common Agricultural Policy (KAP); -RIS3 (Healthy local Food and agricultural innovation).
Research institutes	Ecological agriculture, agricultural economics, applied sciences (BZN); innovation and technology (ÖMKI)	-Rural Development Program 2014-2020 (VIP); -Common Agricultural Policy (KAP); -RIS3 (Healthy local Food and agricultural innovation); -Hungarian Circular Economy Platform; -exchange of expertise; -projects; -workshops and further collaborations.
Competence centres	-	-
Public		
State Agencies	Foundation for SMEs; Hungarian Export Promotion Agency; Hungarian Associations for Innovation	-projects/cooperation; -events/workshops; -further collaboration; -S3 of Hungary; -Circular Economy Strategy and Roadmap.
Local Government		
Regional/Central Government	Ministry of Agriculture, Innovation and Technology National Food Chain Safety Office	-Project: POWER4BIO; -Circular Economy Strategy (KGStrat); -RIS3 (Healthy local Food and agricultural innovation); -BIOEAST initiative -strategy planning; -implementation of action plans; -funding; -Circular Economy Strategy and Roadmap.
Regional Development Agencies		

Society		
NGOs	Agricultural and rural youth; young farmers; local producers, Heroes of Responsible Dining	-Young Farmer Program; -Rural Development Program 2014-2020; -Common Agricultural Policy; -RIS3 (Healthy local Food and agricultural innovation).
Informal civil organizations		

Step 3 Identification of the potential stakeholders

In Hungary the pre-identified gaps are: cluster organisations, competence centres, 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	Industry
Stakeholder subgroup	Cluster organisations - IKOSZ (National Association of Innovative Clusters)
Position in the network	<p>IKOSZ is an independent non-profit organization that brings together Hungarian cluster initiatives based on the concentration of knowledge, experience and expertise in order to strengthen competitiveness in Hungary. The organization, which was established as a result of the cooperation of 9 Hungarian clusters in 2012. Now it has 20 cluster members aiming at the coordinated and sustainable development of clusters, the coordination of cluster policy, and the bringing together of entities and individuals.</p> <p>Benefits of the IKOSZ</p> <ul style="list-style-type: none"> strengthening the role of clusters in innovation processes and development strategies within the Hungary boosting dynamic development in key sectors and emerging technology-based clusters → including Bioeconomy related clusters providing institutional support for cluster organizations and initiatives to improve their performance and increase their – as well as their members’ – competitiveness helping to raise efficiency and quality in cluster management promoting effective, proven solutions on an international scale and thus helping businesses, members of the clusters to expand their business into the international market. increasing the efficiency and quality of clusters in Hungary giving support for Hungarian cluster organizations in their national and international projects development
Importance for GoDanuBio	Identifying good practices; Dissemination of GoDanuBio results; Capitalize the results of GoDanuBio project in other projects;

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Stakeholder group	Industry
Stakeholder subgroup	Private firms, private producers
Position in the network	<p>Circular Economy Platform has 101 members and IFKA has close relationship with the platform. Members' role in the network is crucial to identify the real obstacles and challenges to the transition to a circular bioeconomy. They determine locally the demand for workforce, so they are keys to the repopulation processes of the countryside.</p> <p>BCSDH (one of the founders): Intends to actively promote the transposition and application of the three pillars of sustainable development: economic efficiency, ecological balance and quality of life in economic practice, thereby increasing the competitiveness with new and innovative solutions. To contribute to the sustainable development of the Hungarian economy and society.</p> <p>Biofilter Zrt.: As an environmental company serving the bioenergy sector, it works every day to ensure that organic waste is 100% recyclable and recyclable through proper collection and processing.</p> <p>Nova-Papír Zrt.: Key player in the Hungarian paper industry market, which started its operation almost 100 years ago. The company, which is 100% Hungarian-owned, was the first in Hungary to launch its circular paper management model as a leader in environmental protection and sustainable organizational operations.</p>
Importance for GoDanuBio	Identifying good practices; Dissemination of GoDanuBio results; Capitalize the results of GoDanuBio project in other projects; Possible participants of the upcoming workshops

Stakeholder group	Academia & Research
Stakeholder subgroup	Competence centers - Science innovation parks
Position in the network	In Hungary – to overcome challenges related to innovation, territorial innovation platforms were created in Hungary and science innovation parks (so far 9) - on a thematic basis - have been founded in 2020 offering a professional platform linked to universities functioning as a scene of basic infrastructural and local R & D & I capacities and cooperation with SMEs.

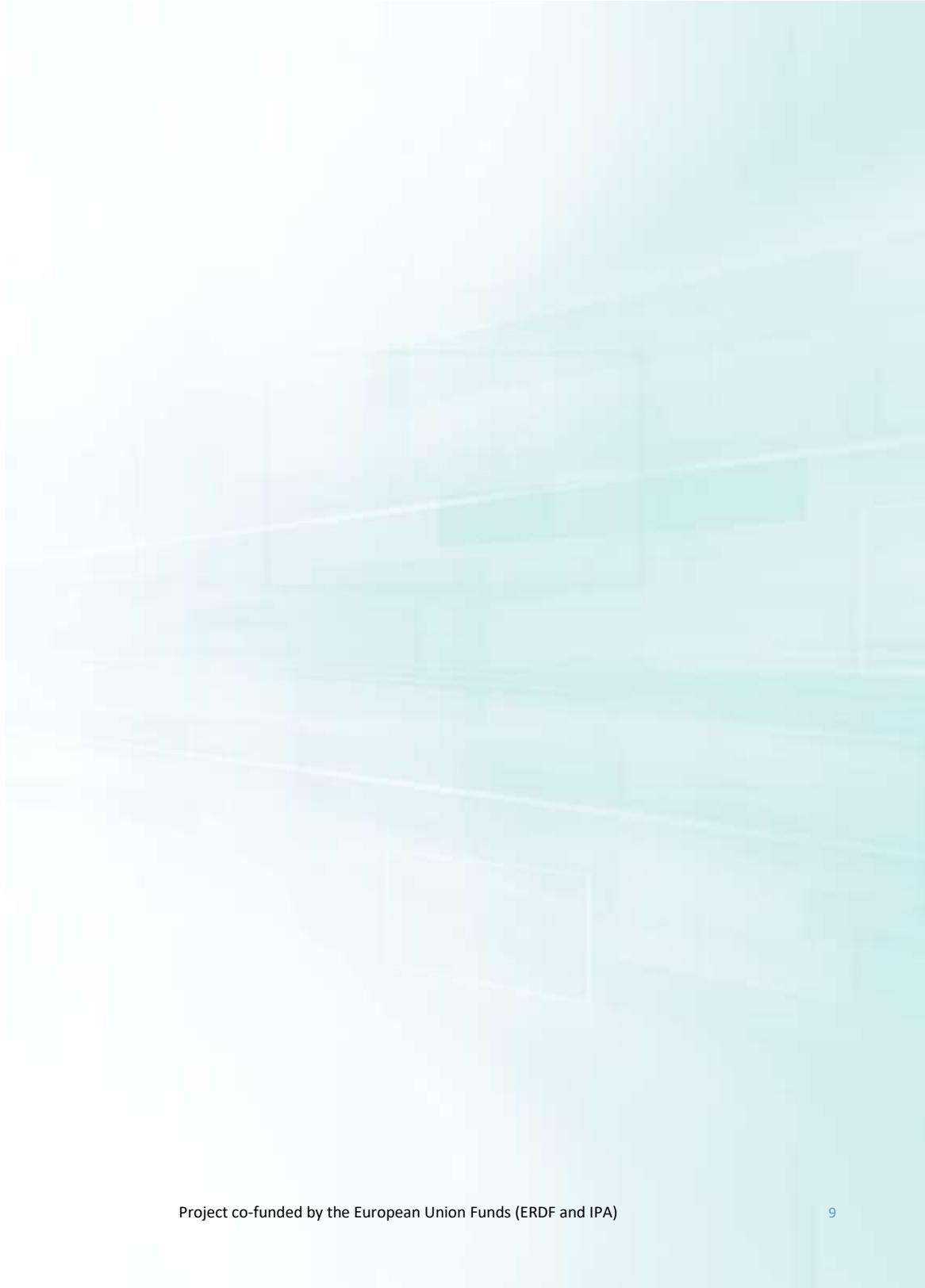


Source: István Szabó PhD; vice president of National Research, Development and Innovation Office; 2021

Importance for GoDanuBio	Identifying good practices; Dissemination of GoDanuBio results; Capitalize the results of GoDanuBio project in other projects; Bioeconomy hub - innovative pilot projects in the field of circular bioeconomy;
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Stakeholder group	Public
Stakeholder subgroup	Regional/central governments: Hungarian National Association of Local Authorities (TÖOSZ); National Federation of County Governments (MÖOSZ)
Position in the network	In Hungary there are more than 3150 settlements (1/3 of them are small villages with less than 500 inhabitants). All of them governed by local municipalities which could voluntarily join bigger nationwide associations for better coordination, proper representation of interests. TÖOSZ represents each joined settlements, whilst MÖOSZ deals with county governments. They are the largest, strongest advocacy organizations in the country with significant international connections, modern infrastructure, recognized experts and a highly qualified apparatus.
Importance for GoDanuBio	Identifying good practices – fostering Bioeconomy related cooperation; Rural-urban cooperation and development; innovative pilot projects in the field of circular bioeconomy; Dissemination of GoDanuBio results;

Stakeholder group	Society
Stakeholder subgroup	Informal civil organizations
Position in the network	Not relevant in Hungary.
Importance for GoDanuBio	-



4. Good Practice Examples

4.1. Sugar Factory as a great example of circular Bioeconomy solution

The largest sugar factory of the country is the Kaposvári Cukorgyár Zrt. Its complete energy demand is covered through biogas and even more synergies could be identified.

During the so called campaign period of production, from September till January, an extremely large amount of heat and energy are needed for the processing of sugar beet, which used to be provided with natural gas. Due to the drastic increase in the price of fossil fuels and due to the decline in the agricultural and livestock utilization of the residues, by-products, of beet processing, new alternative solutions had to be identified to provide the necessary energy demand.

As a result of the intensive and effective research and development activities of local professionals, the solution was found: the production of biogas from the beet residues through a fermentation process. Three fermenters were constructed for this purpose. The production of biogas started in October 2007. The amount of biogas produced is used for the production of heat and electricity at the power plant in the Sugar Factory of Kaposvár, thus generating nearly 9 million cubic meters of natural gas per year.

The biogas plant generates bioenergy from a renewable energy source, through the breakdown of the fibre material of the beet plant. This bioenergy production and utilization does not effect negatively the environment. The beet plant through its physiological processes captures carbon dioxide from the air and out of this captured CO₂ it builds up carbohydrates, fibres and cellulose in itself. During the fermentation process through several steps these carbohydrates are turned into biogas.

Great synergies could be made with this circular innovation. During the campaign period, the fermentation liquid is sent to a sewage treatment plant increasing the efficiency of the water cleaning process. While outside the campaign period – February – August – the plant accepts other bio residues produced by the nearby farmers and the generated fermentation liquid is used in agricultural areas as a great bio fertiliser – decreasing the need for chemicals.

The biogas covers the factory's energy supply and fuels the bus fleet of the city – even the city's swimming pool is heated with it. In addition to that, thanks to the most recent innovation, the biogas produced outside the campaign period is cleaned with a membrane gas cleaner to produce natural gas and it is fed back- firstly in Hungary - into the natural gas grid.

This Hungarian plant is an ideal example showing how to close the loop.

4.2 Green National Champions Program

The aim of the Green National Champions Program program is to financially support the developments of those Hungarian SMEs with high growth potential operating in an environmental-conscious way and producing products related to the green industry.

The Green National Champions program sets its strategic goals according to a three-point goal system:

Economic and industrial development goals:

- Targeted and comprehensive development of the domestic green industry

- Facilitating the production of currently imported products by Hungarian companies (import substitution)
- Strengthening the development capacity, innovation and digital performance of SMEs

Social goals:

- Creation of a Green manufacturer and service catalog
- Making sustainable and environmentally friendly products competitive
- Promoting clean technologies and industrial ecology

Environmental goals:

- Reducing emissions, increasing energy efficiency and recycling & reuse of (industrial) waste and by-products
- Achieve the goals set out in the Climate and Nature Protection Action Plan

Developments need to focus on technology change and/or modernization and capacity building. Only companies with a so called pre-qualification certificate issued by IFKA - proving that they could really contribute to the development of the Hungarian green economy - can apply for the dedicated financial source of the given calls.

The first phase was handled during the second half of 2020. Manufacturing SMEs were able to apply for 4 topics:

- producing an energy efficiency product, e.g. solar panel system, boiler system (including biomass boilers), heat pumps and heat recovery systems, building boundary structure as a door and window structure, lighting system, shading and shading structure
- producing a product related to water efficiency, e.g. water saving tools and technologies, water retention and/or recycling equipment.
- producing a product related to electro-mobility;
- producing a product from a secondary raw material.

The second phase focused on the SMEs which are affected by the SUP directive or those manufacturing substitute products instead of single-use plastic.

The third phase is in progress and contains all topics (mix of 1st and 2nd phase).

Summary of the phases and the budget of the given calls:



The program is popular among the SMEs, there is a demand for it, so building on the experiences, the development of a complex, multi-level larger program has also begun. The program is a good practice on how to translate theoretical, strategic goals into practical implementation.

The secondary raw material usage was the most popular among the topics which demonstrates that there is a great need to strengthen industrial symbiosis relationships. Among participants there are also some SMEs processing bio-based waste to produce secondary raw material or valuable products from it. It fosters the spread of circular bioeconomy business models.

4.3 Circular Economy platform

On 29 November, 2018 the [Circular Economy Platform](#) was officially established in Hungary as an initiative of the Business Council for Sustainable Development in Hungary (BCSDH), the Embassy of the Kingdom of the Netherlands, and the Ministry of Innovation and Technology. By 2021 October it has 93 members.

Members meet more times a year through workshops and a yearly organized summit to demonstrate good practices and discussing how to urge the circular transition in Hungary. Amongst the members bioeconomy related could also be found creating a great platform to promote the development of that segment, as well.

4.4 Circularity check as a service provided for companies

The Circular Regions project - *CircularRegions 'Cross-border capacity building for developing circular regions' implemented under the Interreg Slovak Republic – Hungary program from December 2020.until March 2022 with the support of the European Union through the European Regional Development Fund* - aims to establish collaboration among organizations in Hungary and Slovakia in order to enhance the transition to a more circular economy in the cross-border regions.

The project will increase expert capacities in the circular economy by developing a train the trainers program for experts and upskilling future trainers. In addition, the project will develop a service available for SMEs in selected sectors - tourism, **food** and packaging, construction as well as plastics industry.

The service developed within the framework of the project contains the following elements:

- Overview of the benefits (for example, financial, resource- and energy-efficiency) that SMEs can gain from circular business models.
- Sector-specific best practices spanning the circularity of design, manufacturing, procurement, delivery, service, product use, and sustainability.
- Circularity analysis specialised for the given company – using the Circularity Check online tool - to examine the circularity performance of companies and evaluate their results.
- Determining strategic direction how to develop further

The training materials have been developed, the experts have been chosen. The next step is to choose the pilot companies on whom the service could be tested.