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1. Abstract

Tackling demographic change is a major societal challenge that needs to be addressed by joint efforts by a diverse range of societal groups. The development of new forms of rural-urban cooperation for regional development leads to new business models that diversifies the local economy. In this way new fields of employment can be developed, thus actively addressing demographic change, that are fostered by economic and technological advances but need to be placed in a coherent policy framework. To develop place and need based solutions for regions that respect existing excellent competencies, capacities and development potentials, a multi-level participative governance needs to co-create viable strategies that are embraced by society.

The main objective of this deliverable is to understand the current processes and specificities of the circular bioeconomy in the rural areas. To specify, the report describes the contemporary processes and the state of the circular bioeconomy in Slovakia, defines key determinants of the governance system in relation to the circular bioeconomy and also analyzes the network of stakeholders in order to identify the potential capacities for participatory governance in the country.

2. Definitions

2.1. Circular Bioeconomy

In Slovakia, the concept of bioeconomy and the concept of circular economy have so far been understood rather individually. Nevertheless, the need for synergies between two concepts arises from several strategic documents of the Slovak Republic. For instance, the RIS3 domain “Healthy Food and Environment” defines the need to stimulate sustainable agricultural development based on the synergy of excellent science and practice related to the principles of green economy with the development of circular economy and bioeconomy, both at the regional and local level (MPRV SR, 2017)¹. Furthermore, the main vision of the Envirostrategy 2030 is to achieve better quality of environment and sustainable circular economy, based on consistent protection of environmental components and using the least possible non-renewable natural resources (MŽP SR, 2019)². From the statements above, there are clear synergies between the circular economy and the bioeconomy at national level.

One of the examples how the circular economy/bioeconomy contributes to rural development in Slovakia is the installment of biogas plants in rural areas. Biogas plants produce renewable energy

¹ MPRV SR (Ministry of Agriculture and Rural Development of the Slovak Republic). 2017. Produktové línie pre doménu zdravé potraviny a životné prostredie. Súhrnná správa. (Product lines for the Domain Healthy Food and Environment. Summary Report.) https://www.opvai.sk/media/98931/zdrave-potraviny_a_zivotne-prostredie.pdf

² MŽP SR (Ministry of Environment). 2019. Zelenšie Slovensko. Stratégia environmentálnej politiky Slovenskej republiky do roku 2030. (Greener Slovakia. Strategy of the Environmental Policy of the Slovak Republic until 2030.) https://www.minzp.sk/files/iep/03_vlastny_material_envirostrategia2030_def.pdf

sources and fertilizers, while also providing various business opportunities and thus diversifying the local economy.

2.2. Contemporary Processes

Demographic change

The development of socio-demographic characteristics is projected into population structures. Changes in the age structure, which is the basic characteristic of each population, clearly point to an intensely ageing Slovak population. According to the Institute of financial policy, Slovakia is one of the fastest ageing countries among the OECD countries and one of the most important demographic trends in upcoming decades will be the gradual ageing of 'strong population years' 1970-1989 and their subsequent retirement (IFP MF SR, 2020)³. Another important trend is the increase in educational level of the population, which applies both to men and women (although more significant changes in educational level may be observed among women).

With the focus on rural areas, adverse development of the socio-demographic structure of rural population was observed. In respect to migration trends, more than half of population lives in urban areas. The unemployed and other disadvantaged groups prevail in rural areas, whereby their low purchasing power also affects the (low) number of entrepreneurs. Therefore, the highest migration trends may be seen in regions with high level of unemployment that are located mainly in Eastern part of the country. However, improving the quality of life and attractiveness of rural areas through the restoration and modernization of technical and social infrastructure may result in increased numbers of both population and entrepreneurs in given areas.

Rural development

In 2008, the National Strategy for Regional Development of the Slovak Republic was defined as a basic document for the support of regional development at national level. Based on the strategy, individual cities and villages in Slovakia elaborate mid-term strategic planning document 'The Economic and Social Development Program'. The document is focused on social, economic and environmental development of the region – the development of education, services and infrastructure, the support of entrepreneurship and the improvement of quality of environment - all leading to the improvement of the quality of life.

In addition, each self-governing region elaborates its Rural Development Strategy. The main objectives of the strategy are as follows: the smart and sustainable rural development, the ability to adapt to new conditions and challenges, and the improvement of the quality of life in rural areas. Furthermore, the

³ IFP MF SR (Institute of financial policy, Ministry of Finance of the Slovak Republic). 2020. Slovenský trh práce počas prichádzajúcich demografických zmien. (Slovak labour market in the upcoming demographic changes) [dujava_pecsyova-trh_prace_demo_zmeny.pdf](#)

self-governing regions also develop so-called Regional Innovation Strategies, the main aim of which is “to set up basis for regional institutional structures for innovation support, based on collaborative networks between existing institutions and organizations and to implement strategic innovation framework that will enable existing enterprises to introduce more innovations at all levels and subsequently create positive environment for new entrepreneurs” stated Rostášová and Čorejová (2007, p. 894)⁴.

In recent years, the investments (both national and EU public funding) have flown to rural areas, mainly in relation to the development of infrastructure, diversification of rural economy beyond agriculture, resource efficiency (for instance processing of waste) or social inclusion projects. Given factors has contributed to the improvement of the quality of life and economic well-being of people from rural areas.

Rural-urban cooperation

The territory of the Slovak Republic is divided into 8 regions. According to the urban-rural typology statistics of Eurostat (2021), the regions can be classified as follows⁵:

Bratislava region	Urban region
Trnava region	Rural region
Trenčín region	Intermediate region
Nitra region	Rural region
Žilina region	Intermediate region
Banská Bystrica region	Rural region
Prešov region	Rural region
Košice region	Intermediate region

The conditions for effective and sustainable development of regions are 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. The combination of resources and local skills and knowledge is the basis for the identification of common solutions and the achievement of acceptable and sustainable results in respective regions.

In the Slovak Republic, the power of regions and municipalities is decentralized by national government (OECD, 2020)⁶. There is a two-tier system of subnational government – at regional level (higher

⁴ Rostášová, M. and Čorejová, T. 2007. Regionálna inovačná stratégia – cesta k rozvoju regiónu (prípadové štúdiá z regiónu Žilina). (Regional innovation strategy – the way to the development of the region (case study from Žilina region)). p. 894. [Rostasova Corejova \(tuke.sk\)](http://Rostasova_Corejova(tuke.sk))

⁵ Eurostat. 2021. Rural development: Methodology. [Methodology - Rural development - Eurostat \(europa.eu\)](http://Methodology - Rural development - Eurostat (europa.eu))

territorial units) and at municipal level (municipalities). The responsibilities at regional level include regional roads and public transport, education, health, territorial planning, regional economic development and culture, whereby the responsibilities at municipal level include local roads and public transport, education, social welfare, tourism, local planning and development as well as environmental protection (OECD, 2016)⁷.

3. Key Determinants of the Regional/Country Governance System

a) Political conditions

Name of policy or strategy: Research and Innovation Strategy for Smart Specialisation of the Slovak Republic	
Relation to demographic change	N/A
Relation to rural development	The support of innovations and innovative solutions mentioned in specific priority areas defined within the strategy increase the potential to support also local economy and improve the quality of life in rural areas.
Relation to circular bioeconomy	The issue of bioeconomy is part of the domain “Healthy Food and Environment”. The long-term vision of the domain is to stimulate the sustainable development of agriculture based on the synergies of excellent science and practice in respect to the principles of green economy with the development of circular economy and bioeconomy at both regional and national level.
Implementation	The Action Plan for the Implementation of the RIS3 describes the set of complex, systematic and procedural changes and measures focused on the meeting of the thematic objective ‘Strengthening research, technological development and innovation’. The Implementation plan for the RIS3 is focused on “the actions and processes needed to fulfill missing criteria, the implementation of relevant investment priorities financed in the programming period 2014-2020 and the measures that the country undertook to implement under OP R&I” (OP R&I, 2017) ⁸ .

⁶ OECD.2020. Regulatory Policy in the Slovak Republic: Towards Future-Proof Regulation. <https://doi.org/10.1787/ce95a880-en>

⁷ OECD. 2016. Slovak Republic: Unitary Country. <profile-Slovak-Republic.pdf> (oecd.org)

⁸ OP R&I. 2017. Implementation Plan: Research and Innovation Strategy for Smart Specialisation of the Slovak Republic. implementation-plan_eng_final_ec.pdf (opvai.sk)

Territorial level	National level
Interactions between levels	RIS3 is a key document focused on sustainable economic growth and increasing employment in Slovakia through the targeted support for research and innovation and achieving critical mass in individual strategic priorities, while taking into consideration the regional specifics.
Relation to S3	Slovakia is in the process of updating its RIS3 - identified domains are being refined into priority areas for specialization. For each priority area, transformational roadmaps are defined as collections of concrete actions, based on related innovation capacities needed to reach the transformational goal.

Name of policy or strategy: Greener Slovakia - Strategy of the Environmental Policy of the Slovak Republic until 2030 (The Envirostrategy 2030)	
Relation to demographic change	N/A
Relation to rural development	N/A
Relation to circular bioeconomy	The Envirostrategy 2030 is divided into three main parts, whereby in the section 'Green economy', the goals related to the circular economy, waste management and energetics are defined. Given section of the strategy defines following targets towards the principles of circular economy: to increase the municipal waste recycling rate to 60% by 2030, to reduce the land-filling rate to less than 25% by 2035, and to use green public procurement at least in 70% of total value of public procurement ⁹ .
Implementation	The implementation of the strategy through the legislative changes and the creation of sectoral action plans contributes to the implementation of measures identified by the strategy.
Territorial level	National level
Interactions between levels	The Envirostrategy 2030 is a national strategy, implementation of which requires complex processes, cooperation and combination of knowledge, expertise and also competences of different actors – ministries, regional and municipal self-governments, civil associations and business

⁹ MŽP SR (Ministry of Environment). 2019. Zelenšie Slovensko. Stratégia environmentálnej politiky Slovenskej republiky do roku 2030. (Greener Slovakia. Strategy of the Environmental Policy of the Slovak Republic until 2030.)

https://www.minzp.sk/files/iep/03_vlastny_material_envirostrategia2030_def.pdf

	entities. Therefore, the interactions between levels is essential for the successful implementation of the strategy.
Relation to S3	Although the Envirostrategy is not directly related to the S3, within the Domain “Healthy Food and Environment of S3, some complementarities and similarities to the strategy may be seen.

Name of policy or strategy: Strategy of Economic Policy of the Slovak Republic until 2030	
Relation to demographic change	In the area of social-economic aspect through the improvement of the quality of life of inhabitants in Slovakia, increasing the employment, improvement of business environment, improvement of social-economic determinants of health and also through the improvement of environmental determinants of health.
Relation to rural development	In the area of environmental aspect through the increase of energy efficiency within industrial production, increase the use of renewable energy sources and also through the use of innovative approaches in the agricultural sector.
Relation to circular bioeconomy	The positive impact may be foreseen also through the better exploitation of the principles of circular economy. Within the measures proposed by the strategy is the measure to adopt the document for the implementation of circular economy in Slovakia with the aim of developing green economy or the measure to ensure the sustainable and effective waste disposal.
Implementation	The Action Plan related to the implementation of measures resulting from the Strategy of Economic Policy of the Slovak Republic until 2030 is currently being elaborated.
Territorial level	National level
Interactions between levels	Strategy of Economic Policy of the Slovak Republic until 2030 is a national strategy, implementation of which requires complex processes, cooperation and combination of competences of different ministries, regional and municipal self-governments and other relevant actors. The expected outcomes of the strategy are also based on the right combination of economic practice, innovation and R&D activities.
Relation to S3	Although the strategy is not directly related to the S3, some synergies between both strategies may be seen.

Furthermore, Košice self-governing region (KSR) is currently in the process of preparation of new regional Research and Innovation Strategy. KSR would like to develop an effective framework for support of innovation and innovative environment, and started the discussion about the creation of cluster organization for the support of regional research and innovation. Since the RIS3 is valid until 2023, within new regional strategy, KSR plans to create both a strategic document and an implementation body (cluster organization) responsible for the implementation of approved strategy. One of the goals of the strategy is the creation of Technological Innovation Park (TIP) in Košice.

Name of policy or strategy: Research and Innovation Strategy of Košice Self-governing Region*	
Relation to demographic change	N/A
Relation to rural development	The support of innovations and innovative solutions mentioned in specific priority areas defined within the strategy increase the potential to support also local economy and improve the quality of life in rural areas.
Relation to circular bioeconomy	The issue of bioeconomy is part of the TIP. TIP Košice is defined as a center of scientific and technological excellence in Košice in the fields of biomedicine, biotechnology, information technologies and advanced materials.
Implementation	The main mission of TIP Košice is the establishment of a high-quality European center of capitalizable research and applications with an efficient and supporting environment for business activities in the high-tech industry. The strategic focus of the TIP Košice project includes three knowledge areas and their assigned product lines: Knowledge Area 1: Pharmacy and Medical Sciences, Knowledge area 2: Materials Engineering and Nanotechnology, Knowledge Area 3: Chemical Sciences and Technologies.
Territorial level	Regional level
Interactions between levels	The focus of the TIP Košice project on biomedical research, new materials, information technologies and environment is in very good agreement with the research programs and initiatives of the European Research Area (ERA) embodied in the Horizon 2020/Horizon Europe programs. The project is closely linked to all three pillars of ERA - Excellent Science, Industry Leadership and Societal Challenges.
Relation to S3	The focus of the TIP Košice project is in accordance with the strategic documents of the Government of the Slovak Republic - RIS3 in the area of the long-term strategic program for biomedical and materials

	research, nanotechnology, information technologies and environment.
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*under the preparation

b) Legal conditions

Although there is no national bioeconomy strategy in Slovakia, there are various regulations, rules and legislation regarding the protection of environment and boosting the bioeconomy development. The environmental laws are related to the pollution prevention, nature and land protection, reduction of greenhouse gas emissions from fuels and also effective waste management. The laws were adopted in order to ensure sustainable development and environmental protection, to shift the economy to become more green and resource-efficient and also to emphasize the use of renewable energy sources.

c) Socio-economic conditions

Slovakia is a small and very open economy and it has been among the most rapidly growing economies in the EU in recent years. At the end of 2019, the GDP indicator reached € 92.3 billion, which represents a 3.6% increase compared to 2018. Small and medium size enterprises (SMEs) have a significant role in the Slovak economy, since they form 99% of all business entities in the country and employ approximately 75% of working population.

Slovakia is a country of massive exports. High rate of export performance and openness of Slovak economy is the result of its participation in global value chains. The largest share of exports goes through the chains, in which Slovakia is participating with Germany. Participation in value chains with countries outside the Eurozone (the Czech Republic, Poland, Hungary and the United Kingdom) as well as with non-European countries (China, USA, Korea) is also significant.

In addition to industrial sectors, Slovakia has historically long tradition in agriculture. One of the biggest advantages of Slovakia is that 1/3 of the soil is fertile black soil. Nowadays, agriculture is still an important sector of the national economy, but its role is changing. In the past, this sector accounted for a substantial part of Slovakia's GDP and employment. With current economic developments, the share of agriculture in production and employment is decreasing, but social importance of this sector remains high. Agriculture is a key sector of rural development and it is one of few job providers in rural areas.

In terms of domestic production, the largest share of Slovak GDP is constituted by services sector, industry and agriculture – therefore, these sectors have important role in the process of economy transition (from fossil to circular).

Due to the COVID-19 pandemic, a significant decrease of world trade and disruption of global value chains might be observed, negatively affecting mainly the export-oriented manufacturing sector. According to the Institute of Labour Economics (2020), the overall economic impact of COVID-19 pandemics in the country during the first half of year 2020 was severe and country's GDP decreased by 3,9%. In relation to the unemployment rate, the rate increased from 6,21% in March 2020 to 7,43% in September 2020¹⁰.

¹⁰ Institute of Labour Economics. 2020. IZA COVID-19 Crisis Response Monitoring: Slovakia.
[iza_crisismonitor_countryreport_sk_202011.pdf](#)

With the focus on the circular economy sector, the share of people working in the sector is relatively low (1,78% in 2018), but in comparison to previous years, it is more or less stable. In addition, the gross investment in tangible goods in the sector (recalculated on GDP) was very low and represented only 0,25% in 2018.¹¹

d) Technological conditions

In Slovakia, the key driver is the primary biomass sector, mainly due to its long tradition and rich natural resources in the region. However, the application of the principles of circularity and the creation of added value related to the biomass production is very low. In addition, technological solutions in the area of bioeconomy require intensive application of innovations, whereby overall, in the degree of innovation, Slovakia ranks only among moderate innovators. Nevertheless, the research infrastructure is in good state, as there are many Centers of Excellence and considerable amount of research institutions, such as Agrobiotech, Slovak Academy of Sciences, Water Research Institute or Food Research Institute. In relation to the interaction between science and industry, the dialogue among stakeholders is ensured through various types of platforms (National Platform AgroBioFood Nitra, Platform for Bioeconomy, Rural Platform, Rural Parliament in Slovakia), associations (Association of Young Farmers, Association of Agricultural Cooperatives and Business Entities in Slovakia), clusters (Bioeconomy Cluster, Hemp Cluster), chambers (Slovak Agriculture and Food Chamber, Food Chamber of Slovakia, Agrarian Chamber of Slovakia), expert working groups of the Ministry of Agriculture, etc. The main aim is to strengthen the collaboration among all stakeholders in the bioeconomy/circular economy sector and in the value chain, to represent their interests, to involve them in the decision-making process at national level, and also to improve the overall conditions in the sector.

e) Environmental conditions

Slovakia is characterized as a country with a low degree of maturity of the bioeconomy (Ronzon and M'Barek, 2018)¹². The country lags behind in the efficient use of biomass, including the biomass from waste as a raw material containing valuable substances for further processing. In Slovakia, a large amount of waste is generated, the use and recycling of which is very low. Similarly, the knowledge and skills of workforce necessary for the work in bioeconomy sector is not very well developed. However, there are clear regulations in place to protect the environment.

The natural as well as the economic potential of Slovakia has a significant impact on land use. Almost half of the total land area is agricultural land (49%) (Vilček, J., 2011)¹³. The agricultural sector is characterized by large agricultural cooperatives, whereby Slovakia ranks among the countries with the largest average size of farms. The importance of agriculture in relation to the country's economy is irreplaceable. New and

¹¹ Eurostat. 2021. Private investments, jobs and gross value added related to circular economy sectors. [Statistics | Eurostat \(europa.eu\)](https://ec.europa.eu/eurostat)

¹² Ronzon, T., M'Barek, R. 2018. Socioeconomic Indicators to Monitor the EU's Bioeconomy in Transition. EC, JRC, Directorate for Sustainable Resources, Economics of Agriculture Unit

¹³ Vilček, J. 2011. „Potenciály a parametre kvality poľnohospodárskych pôd Slovenska“. *Geografický časopis* 63 (2): 133-154. (Potentials and quality parameters of agricultural soils in Slovakia. *Geographical journal* 63 (2): 133-154.) <https://www.sav.sk/journals/uploads/03101342Vil%C4%8Dek.pdf>

alternative methods in agriculture are coming with new opportunities for increasing the added value not only for farmers and the agricultural sector, but also for the country's economy and sustainable development (Hutmannová, E., Kiseľáková, D., 2010)¹⁴. One of the methods is the system of ecological farming or the system of smart and innovative precision farming.

The forestry sector is directly affected by climate change, competitive conditions, increasing demand and complexity of productions processes. Despite given factors, a huge opportunity is the increasing use of biomass resources in comparison to the use of fossil resources, whose role is decreasing. Therefore, the forestry sector is important part of the bioeconomy and represents perspective direction based on the biotechnologies (Kovalčík, M., 2018)¹⁵.

Although the legislation of Common Agricultural Policy (CAP) is still not adopted at the EU level, the CAP strategic plans will offer an innovative tool to implement the solutions from research to practice through the establishment of operational group projects within the EIP for Agricultural Productivity and Sustainability.

In 2020, Bioeconomy Cluster elaborated the document 'The contribution of Slovak bioeconomy to Strategic Plan of CAP 2021-2027' based on the contract with the Ministry of Agriculture and Rural Development of the Slovak Republic. According to given study, in the context of CAP in Slovakia, the bioeconomy represents a concept that will enable the implementation of process of agricultural turnover. Slovak agriculture that is mostly based on primary plant and animal production and biomass production has to be directed towards production and processing sector (based on knowledge and efficient use of resources), thus to realize turnover to the sector with high added value of products/services. Furthermore, the objectives of bioeconomy in Slovakia for Strategic Plan of CAP 2021-2027 are also designed to contribute to the fulfillment of sustainable development goals.

¹⁴ Hutmannová, E., Kiseľáková, D. 2010. Možnosti rozvoja udržateľného poľnohospodárstva v regiónoch Slovenska. Analýza základných ekonomických faktorov a ich využitie pri reštrukturalizácii poľnohospodárstva a zabezpečení trvalo udržateľného rozvoja Slovenska. (Development possibilities of sustainable agriculture in the regions of Slovakia. The analysis of basic economic factors and their exploitation in the restructuring of agriculture and in the ensuring the sustainable development of Slovakia.)

¹⁵ Kovalčík, M. (2018). Význam lesnícko-drevárskeho sektora na Slovensku. Ekonomické výsledky v roku 2017. Ekonomiky a politiky lesného hospodárstva Slovenskej republiky. (The importance of the forestry and wood sector in Slovakia. Economic results in 2017. Economics and politics of forestry sector of the Slovak Republic.)

4. Stakeholder Inventory

Stakeholder group	Public
Stakeholder subgroup	Government
Position in the network	At the policy level, the most relevant actors for the network of stakeholders in the circular bioeconomy in Slovakia are following ministries: the Ministry of Agriculture and Rural Development, the Ministry of Environment, the Ministry of Economy and the Ministry of Investments, Regional Development and Informatization. Although the bioeconomy is included in the domain Healthy Food and Environment (within Research and Innovation Strategy for Smart Specialisation of the Slovak Republic), there is no comprehensive bioeconomy strategy developed at national level. Relevant policy makers from above mentioned ministries may provide relevant information during the future elaboration of national bioeconomy strategy.
Importance for GoDanuBio	One of the tools how to further improve the policy dialogue that may lead to the development of business activities in rural areas, creation of new value chains within the circular bioeconomy, strengthening cross-sectoral links with relevant sectors for the bioeconomy and also to the elaboration of national Strategy for the development of bioeconomy in Slovakia, is also the GoDanuBio project. 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	Industry
Stakeholder subgroup	Industrial chambers and associations
Position in the network	The network consists of specific associations and organizations that have practical knowledge from individual sectors related to the bioeconomy. The organizations are often involved in international projects devoted to the issue of bioeconomy and circular economy. Given entities bring together

	companies that operate in different sectors of bioeconomy, raise awareness of their importance, and support the employment growth. Among the most relevant associations are Slovak Agriculture and Food Chamber, Slovak Association of the Photovoltaic Industry and RES (Renewable Energy Sources), Association of Wood Processors, and BIC Bratislava.
Importance for GoDanuBio	Industrial chambers and associations group together relevant actors, and thus are important source of stakeholders for the project activities.

Stakeholder group	Industry
Stakeholder subgroup	Cluster initiatives
Position in the network	The network consists of specific cluster organizations that have practical knowledge from individual sectors related to the bioeconomy. The organizations are often involved in international projects devoted to the issue of bioeconomy and circular economy. Similarly to industrial chambers and associations, the entities bring together companies that operate in different sectors of bioeconomy, support the production of bio-based products, raise awareness of their importance or perform other important tasks in connection with the development of bioeconomy. Among the most relevant cluster organizations within the network are Bioeconomy Cluster, Slovak Plastics Cluster and HEMP Cluster.
Importance for GoDanuBio	Cluster initiatives group together relevant actors, and thus are important source of stakeholders for the project activities.

Stakeholder group	Academy
Stakeholder subgroup	Educational institutions
Position in the network	The important source of information for the whole network of stakeholders is the available scientific knowledge and expertise of academic workers in individual key sectors of bioeconomy. The educational institutions, such as the Slovak University of Agriculture in Nitra, Slovak University of Technology in Bratislava, Technical University in Zvolen, Technical University in Košice University of Pavol Jozef Šafarik in Košice or the University of

	Veterinary and Pharmacy in Košice provide education in relevant areas and also perform various research and innovation tasks in relation to the bioeconomy or circular economy.
Importance for GoDanuBio	There are several experts at research centres and universities, but it is essential to strengthen the dialogue among the whole network, among stakeholders relevant for the area of bioeconomy. One of the tools, how to support the communication at various levels is also the GoDanuBio project. Furthermore, the networking of stakeholders involved in the network 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	Academy
Stakeholder subgroup	Research institutions
Position in the network	The important source of information for the whole network of stakeholders is the available scientific knowledge and expertise of scientific researchers in individual key sectors of bioeconomy. The research institutions, such as the National Agricultural and Food Center, National Forestry Center, institutes of the Slovak Academy of Sciences or Research Institute of Paper and Pulp perform various research and innovation tasks in relation to the bioeconomy or circular economy and also contribute to the increase of added value within individual sectors.
Importance for GoDanuBio	There are high-quality experts at research centres and it is essential to maintain/strengthen the dialogue among various stakeholders relevant for the area of bioeconomy. Through the GoDanuBio project, the networking of stakeholders involved in the network 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.
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Stakeholder group	Society
Stakeholder subgroup	NGOs and civil associations
Position in the network	The network of stakeholders in the circular bioeconomy in Slovakia involves a wide range of actors, including also the non-governmental organizations and civil associations. Given entities bring together companies that operate in different sectors of bioeconomy, support the production of bio-based products, raise awareness of their importance or perform other important tasks in connection with the development of bioeconomy. The most relevant stakeholders identified within this group is the Association for the production and use of biofuels, the Association of Slovak Young Farmers, the Institute for Circular Economy and CEPTA – Centre for Sustainable Alternatives. Furthermore, a lot of local initiatives focused on the reduction of food waste, biodiversity protection, transition to a green economy, etc. have been established recently, whereby it is very important to connect given actors, maintain and even strengthen their relationships, and thus further build the network.
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.

Annex I

In provided Excel file