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PERSPECTIVES FOR BIOECONOMY STRATEGY IN ROMANIA

ABSTRACT

The Bioeconomy Strategy was established at European Union (EU) level in 2012. It was amended in 2018 by the European Commission (EC), which launched the new Bioeconomy Strategy for a Sustainable Europe, perspectives for 2030. The EU countries must adopt their national strategies according to the EU Agenda. The paper presents the stage of the construction of the strategy in Romania, what has been achieved so far, and what are the next steps. For this work, documents and data from different European institutions were used. The results are based on text analysis of these documents, and on the presentation of the main findings of the Horizon 2020 project “Advancing Sustainable Circular Bioeconomy in Central and Eastern European countries” (BIOEASTsUP). Through this study and its main conclusions, we provide an overview on the perspectives of the Bioeconomy Strategy in Romania, on the national characteristics, opportunities and challenges, and on the chances to implement it in due time, in accordance with the EU Agenda.

Key words: Bioeconomy, EU Strategic Agenda, BIOEASTsUP Project, Romania.

JEL Classification: Q57.

1. INTRODUCTION

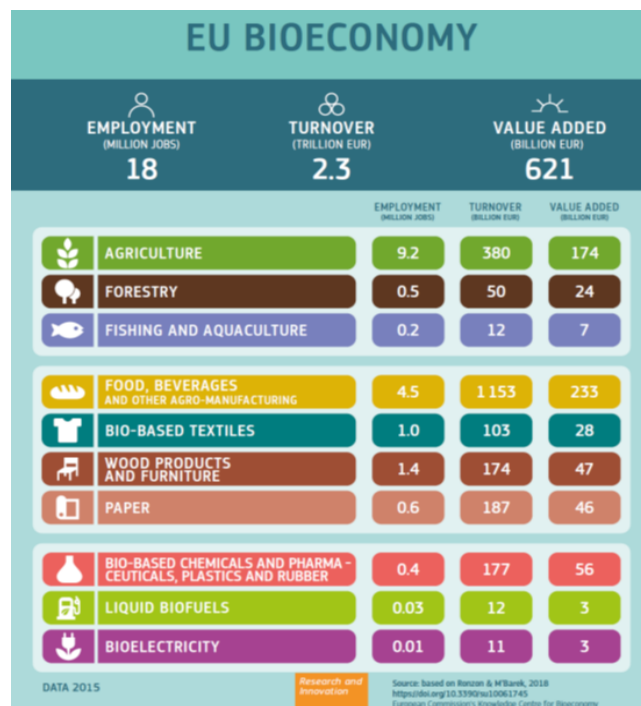
In recent years, the economic strategies and policies, especially agri-food and energy, have made or are trying to make the transition to the concept of bioeconomy. The European institutions and not only consider that agriculture, a strategic sector, has a huge potential to promote a sustainable bioeconomy in the Member States, especially in the field of rural development (contributing to the diversification of activities and providing decent living, working and economic conditions), and also in terms of the agri-food system (which is considered to be the largest segment of the bioeconomy – representing about 71% of value added, followed by the segment of bioproducts and bioenergy).

At the same time, at European level, the forestry sector occupies an important place both in terms of the existing forest resources fund, and especially in terms of their capitalization in a sustainable way. Given that the use of forest resources is an intervention in the natural balance of the environment, the integrated approach to managing the use of forest resources will be more efficient, aiming not only to exploit forest resources, but also to a more intensive forest regeneration and protection. Thus, the complex use of forest resources requires a rational, economically justified use of

the benefits of using all possible utilities. Moreover, the concerns at EU level have recently been to address the forest sector from a bioeconomic perspective, i.e., activities that may involve the use of biotechnology and biomass in the production of goods, services or energy. Such an approach is increasingly being analysed based on the ecological and socio-economic functions of forests. Thus, from an ecological point of view, forests contribute to soil protection, participate in the water circuit in nature and balance the climate, protecting biodiversity, as a habitat for many species.

In the bioeconomy sector, bioenergy also occupies an important place. Currently (2020–2021), only 6.7% of total energy consumption in Europe comes from renewable sources. Conceptually, bioenergy refers to all types of energy from biomass, including biofuels. Biomass refers to the living or recently dead biological mass from crops, trees, algae, agricultural and forestry residues or sewage waste. Yet the European Commission has bigger targets, aiming to encourage and develop the bioenergy production and use. The plan was that, by the year 2020, 20% of all energy produced in Europe would come from renewable sources (wind, sun, waves, etc., as well as bioenergy). This target has not been reached yet.

Summing up, the different research done in the last years gave us much evidence that bioeconomy is a strong sector at EU level, which is proved, for example, by the data available for 2015 from the EC (Figure 1).



Source: European Commission, 2018, A new bioeconomy—Strategy for a sustainable Europe.

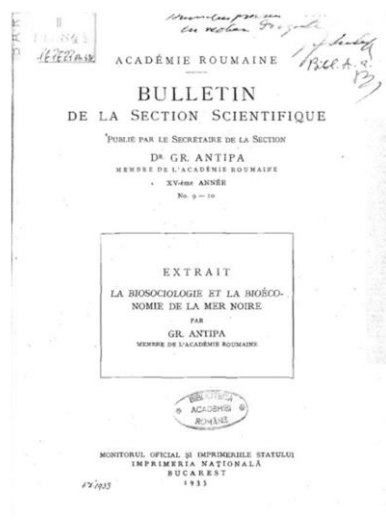
Figure 1. Bioeconomy in EU.

All these arguments show the importance of the bioeconomy, its development potential and the extent of the efforts that will be made to achieve the set objectives.

2. STATE OF KNOWLEDGE

The concept of bioeconomy is relatively new, but the term “bio-economics” has its roots in the 1960s. We can consider that the 1960s is the date of birth for the present concept. In the 1960s, Zeman mentioned that bio-economics “designate an economic order that appropriately acknowledges the biological bases of almost all economic activities” (Birner, 2018). Later on, since the early ’70s, Nicolae Georgescu-Roegen used the term to sum up the most important conclusions he had come to in a lifetime of research. His main concern as regards the bio-economics concept was that “unlimited growth would not be compatible with the basic laws of nature” (Birner, 2018).

Before Roegen, the term Bioeconomics was used by another Romanian scientist, in a paper published by the Romanian Academy. He is Grigore Antipa. One of his works published in the “Bulletin of the scientific section” of the Romanian Academy in the year 1933 was “La biosociologie et la bioéconomie de la Mer Noire” (Figure 2).



Source: Romanian Academy Library.

Figure 2. Grigore Antipa’s publication, 1933.

There is no unique general accepted definition for bioeconomy. For instance, the European Commission states “bioeconomy comprises those parts of the

economy that use renewable biological resources from land and sea – such as crops, forest, fish, animals, and micro-organisms – to produce food, materials and energy” (<https://youmatter.world/en/definition/bioeconomy-definition/>).

The BIOEAST Initiative, on its web page, states that “the bioeconomy encompasses the production of renewable biological resources and their conversion into food, feed, bio-based products and bioenergy independently of the processing technologies. It thus includes agriculture, forestry, fisheries, food and pulp and paper production, as well as parts of chemical, bio-technological and energy industries” (<https://bioeast.eu/bioeconomy/>).

The US official document (White House, 2012) related to bioeconomy says that “a bioeconomy is one based on the use of research and innovation in the biological sciences to create economic activity and public benefit. The U.S. bioeconomy is all around us: new drugs and diagnostics for improved human health, higher-yielding food crops, emerging biofuels to reduce dependence on oil, and biobased chemical intermediates, to name just a few”. In a simple way, we can say that “Bioeconomy can be seen as a knowledge-based production and use of natural/biological resources, together with biological processes and laws, that allow providing economy goods and services in an environmentally-friendly way.” (<https://youmatter.world/en/definition/bioeconomy-definition/>) And the examples of definitions can continue. Anyway, it is obvious that bioeconomy plays a bigger and bigger role in our life. In a personal way, we define bioeconomy as: A complex system composed of Earth resources and their anthropic and natural transformation processes, which belong to biology and contribute to the economic, social and cultural development of people in a sustainable way, based on knowledge, forethought and empathy (Voicilaş, D.M., 2021).

However, the term bioeconomy in the present sense began to be promoted after 2000 by Christian Patermann, former Director of Program “Biotechnology, Agriculture and Nutrition” in the Directorate-General for Research, Science and Education of the European Commission (EC). Through his initiatives, debates and conferences on the subject, Patermann has succeeded in convincing policy makers of the importance of the bioeconomy for the times and the inclusion of the concept in EU position papers, policies and strategies.

3. MATERIAL AND METHOD

The objectives that we considered in the elaboration of this paper refer to the presentation of the concept of bioeconomy in general, the presentation of the strategic bioeconomy agenda of the EU, the creation and implementation of national bioeconomy strategies in some Central and Eastern European countries, Romania in particular. The main features and differentiations in the evolution of the creation of national bioeconomy strategies will be analysed, the advantages resulting from their implementation for the states that already have a bioeconomy strategy will be highlighted, together with the implementation opportunities and main challenges.

In order to reach the objectives, we used the available data from European institutions with attributions in this field and from national sources, from official documents approved or under debate in the bioeconomy field. A text analysis of these documents was performed, a comparative analysis of the implementation stages and predictions was made regarding the prospects for their approval and implementation. Some of the results of this study are based on analyses conducted under the Horizon 2020 project “Advancing Sustainable Circular Bioeconomy in Central and Eastern European Countries” (BIOEASTsUP), funded by the EC for the period 2019-2022 (<https://bioeast.eu/bioeastsup/>) and information from BIOEAST Initiative (<https://bioeast.eu>).

4. RESULTS AND DISCUSSIONS

4.1. BIOECONOMY STRATEGY IN THE EU

The European Commission adopted the Strategy “Innovating for Sustainable Growth: A Bioeconomy for Europe” in 2012. The goal of the document is to emphasize the importance of the bioeconomy for Europe in addressing major societal and economic challenges and to create a more favourable environment for its realisation (EC, 2012). The Bioeconomy Strategy and the Bioeconomy Action Plan are focusing on three key aspects:

- developing new technologies and processes for the bioeconomy;
- developing markets and competitiveness in bioeconomy sectors;
- pushing policymakers and stakeholders to work more closely together.

In 2018, EC launched the new Bioeconomy Strategy for a Sustainable Europe. It is an update of the old strategy, based on the objectives from the political program of former President Juncker and First Vice-President Timmermans of the EC. The document is called “A sustainable bioeconomy for Europe: strengthening the connection between economy, society and the environment-Updated Bioeconomy Strategy”. The purpose of this update to the 2012 Bioeconomy Strategy was to address these challenges through a set of 14 concrete actions. These actions reflect the conclusions of the 2017 review of the Strategy from 2012. The 2018 update of the Bioeconomy Strategy aims to accelerate the deployment of a sustainable European bioeconomy to maximise its contribution towards the 2030 Agenda and its Sustainable Development Goals (SDGs), as well as the Paris Agreement (https://ec.europa.eu/knowledge4policy/publication/updated-bioeconomy-strategy-2018_en).

In EU, there are nine countries (except UK) which have dedicated bioeconomy strategy at national level (November 2019): Austria, Finland, France, Germany, Ireland, Italy, Latvia, The Netherlands, Spain (https://ec.europa.eu/knowledge4policy/visualisation/bioeconomy-different-countries_en). Other six countries have dedicated Bioeconomy Strategy at national level under development: Croatia, Czech Rep.,

Lithuania, Poland, Portugal, Slovakia. The rest of the EU member states have other policy initiatives dedicated to the bioeconomy or related strategies at national level, including Romania. Among Western and Central European countries, there are other two that have national bioeconomy strategy: Norway and U.K. Also, Switzerland has dedicated Bioeconomy Strategy at national level under development. As we see, from 27 EU member states only 15 have already, or are going to have in short time, dedicated bioeconomy strategies, that show how difficult and slow the process is. Based on these simple statistics, we can conclude that the CEE countries are behind the Western countries in this process.

For comparisons, we give the example of Latvia, Poland and Hungary, countries which are in different stages of creation and implementation of Bioeconomy Strategy and could be examples for Romania. Why we choose to give examples only from countries from CEE? Because these countries have different background and evolution than Western countries, which are similar with Romanian evolution, from some points of view.

Latvia. The national institutions involved in the bioeconomy are (https://ec.europa.eu/knowledge4policy/bioeconomy/country/latvia_en):

- Lead ministry: Ministry of Agriculture of the Republic of Latvia, Ministry of Economics of the Republic of Latvia, Ministry of Education and Science of the Republic of Latvia;
- Other ministry: Ministry of Environmental Protection and Regional Development;
- Other institutions: State Education Agency, Latvian Biomass Association, Latvian Wood Construction Cluster, Forest and Wood Products Research and Development Institute (MeKA); Institute of Agriculture Resources and Economics; Institute of Food Safety, Animal Health and Environment “BIOR”; Institute of Horticulture; Latvia University of Life Sciences and Technologies; Latvia Plant Protection Research Centre; Latvia State Forest Research Institute “Silava”; Latvia State Institute of Wood Chemistry, etc.

In general, the institutions involved in bioeconomy are, besides the ministries, universities, research centres, innovation networks, innovation clusters, associations, agencies, different stakeholders like: large industry, SMEs, technological platforms, NGOs/other networks.

In Latvia, the national bioeconomy definition is (https://ec.europa.eu/knowledge4policy/bioeconomy/country/latvia_en): “Bioeconomy covers those parts of economy where renewable bio-resources (plants, animals, microorganisms etc.) are used in the production of food, feed, industrial products and energy in a sustainable and well-considered way”.

Latvia is the first CEE country that has a dedicated National Bioeconomy Strategy, which was adopted in 2017. The objectives of the Latvian Bioeconomy Strategy 2030 are to be implemented within three main fields (https://ec.europa.eu/knowledge4policy/bioeconomy/country/latvia_en):

- Promotion and preservation of employment in bioeconomy sectors to up to 128 thous. employees;
- Increasing the value added of bioeconomy products to at least EUR 3.8 billion in 2030;
- Increasing the value of bioeconomy production exports to at least EUR 9 billion in 2030.

Sectors included in the Strategy are: Agriculture, Aquaculture, Bio-based chemicals and materials, Bio-based textiles, Bioenergy (incl. transport biofuels, bioelectricity and H&C), Biotechnology, Ecosystem services, Fisheries, Food, Forestry, Organic waste, Pulp & paper, Wood, wood products & furniture.

Poland. The national institutions involved in bioeconomy are (https://ec.europa.eu/knowledge4policy/bioeconomy/country/poland_en):

- Lead ministry: Ministry of Entrepreneurship and Technology, Ministry of Agriculture and Rural Development, Ministry of Science and Higher Education, Ministry of Investment and Economic Development;
- Other ministries: Ministry of Maritime and Inland Waterway Transport, Ministry of Energy, Ministry of Environment;
- Other institutions: Innovation Network (Green Chemistry Cluster “West-Pomeranian Bioeconomy Cluster”), Research institutes, Innovation cluster (AgroBioCluster, Klaster Life Science Kraków, Polish Bioeconomy Technological Platform);
- Other stakeholders: large industries and SMEs (Selena Labs, Lotos Group, Unilever Poland, Azoty Group, Ciech).

Poland does not have a national definition related to bioeconomy.

Other national bioeconomy-related strategies: National Smart Specialisation Strategy (2014); BIOSTRATEG Strategic and Research program “Environment, Agriculture and Forestry (2013); Strategy for Sustainable Development of Rural Areas, Agriculture and Fisheries 2014–2020 (national sectoral strategy – in updating process) (2014); Plan for Rural Areas (bioeconomy as one of the priority projects named Agriculture for Ecology) (2014); Draft of National Energy and Climate Plan for the years 2021–2030 (2019).

Hungary. The national institutions involved in the bioeconomy are (https://ec.europa.eu/knowledge4policy/bioeconomy/country/hungary_en):

- Lead ministry: Ministry of Agriculture;
- Other institutions: Universities, Research centers, Public-Private Partnerships (PPP) (Hungarian Chamber of Agriculture), Innovation Network (Eötvös Loránd Research Network (predecessor Hungarian Academy of Sciences), Governmental institution (National Research, Development and Innovation Office);
- Other stakeholders: Large industries and SMEs (Pannonia Bio Zrt, Pilze-Nagy Ltd., Grapoila, Gere Winery, Organica Water), University/ Research institution (Debrecen University, Hungarian Academy of Sciences). According to https://ec.europa.eu/knowledge4policy/bioeconomy/country/hungary_en, there is no national definition for bioeconomy in Hungary.

Other national bioeconomy-related strategies: Medium and long-term food industry development strategy 2014–2020 (2015), National Renewable Energy Action Plan (2010–2030) (2010), National Energy Strategy 2030 (2012), National Rural Development Strategy 2012–2020 (2012), National Waste Management Plan (2014–2020) (2014), Smart Specialization Strategy (2014), National Research and Development and Innovation Strategy 2020 (2014), National Environmental Technology Innovation Strategy 2011–2020 (2012), National Development 2030 – National Development and Territorial Development Concept (2014), National Climate Change Strategy 2 (2018), Food Industry Program of Hungary 2016–2050 (2016), Draft National Energy and Climate Plan of Hungary (2018).

After this presentation, we can summarize that, generally, the Ministry of Agriculture is a common ministry that leads the Bioeconomy Strategy construction for all countries, which shows the importance of agriculture for bioeconomy strategy and the role that agriculture will play in the future in the new national strategies and policies. From country to country, there are also other ministries that contribute to the creation of the strategy, but the Ministry of Agriculture remains the common and the leading ministry. Besides ministries, other institutions (public or private), universities, research centers, SMEs, large industries, NGOs or other forms of associations can participate and be involved in the creation of the strategy. There is no restriction and the group of stakeholders involved in bioeconomy is permanent updated. At the same time, besides national strategies, the initiative to develop the macro-regions and inter-connect the national strategies is welcome and can help the sustainable development of the CEE countries.

4.2. BIOECONOMY IN ROMANIA

In CEE, only Latvia has a Bioeconomy Strategy. Other five countries (Croatia, Czech Republic, Lithuania, Poland and Slovakia) have strategies under development and the rest have other related bioeconomy policies and strategies. In order to promote the creation of bioeconomy strategies in the CEE countries, in 2014 the BIOEAST Initiative was launched at the proposal of the Visegrad countries. These countries were joined by other EU member states in the CEE: Bulgaria, Croatia, Estonia, Latvia, Lithuania, Romania, Slovenia. BIOEAST Initiative, “offers a shared strategic research and innovation framework for working towards sustainable bioeconomy in the Central and Eastern European countries” (<https://bioeast.eu/home/>). Through the BIOEAST Initiative, CEE countries set the vision for 2030 to develop knowledge and cooperation based circular bioeconomy, which helps to enhance their inclusive growth and to create new value-added jobs especially in rural areas, maintaining or even strengthening environmental sustainability.

The BIOEAST Initiative’s mission is to assist CEE countries to operationalise their vision for 2030 drawing on their potential and offering opportunities for (<https://bioeast.eu/home/>):

- A sustainable increase of biomass production, to become competitive and leading, high quality food and feed producers worldwide;
- A circular (“zero waste”) processing of available biomass, to become key players in the development of new bio-based value chains;
- Viable rural areas: to develop an innovative, inclusive, climate-ready and inclusive growth model.

The next map presents the countries involved in this initiative (Figure 3).



Source: <https://bioeast.eu/home/>.

Figure 3. Map of BIOEAST Initiative.

BIOEAST is a political initiative. BIOEAST “provides a common political commitment and a common strategic framework for research and innovation to work towards sustainable bioeconomies in CEE countries” (<https://bioeast.eu/home/>). Only ministerial bodies can become members. CEE countries are firmly committed to keeping the BIOEAST initiative on their political agenda. Four political statements were signed by the agriculture ministers of the Visegrad Group countries (Czech Republic-CZ, Hungary-HU, Poland-PL, Slovakia-SK), the Baltic states (Estonia-EE, Lithuania-LT, Latvia-LV) and the south-eastern European countries (Bulgaria-BG, Croatia-HR, Romania-RO and Slovenia-SI) on support of the initiative: 26 November 2016 Warsaw-Poland, 27 September 2017 Visegrad-Hungary, 13 June 2018 Babylon-Hungary, 9 May 2019 Stara Lesna-Slovakia / 28 May 2019 Brussels-Belgium.

The key activities of the BIOEAST Initiative are (www.bioeast.eu):

- Elaboration of joint intergovernmental declarations at ministerial level;
- Joint research and innovation agenda;
- Position papers and strategic policy advice.

To do this, it is necessary to mobilize research organizations, administration, industry, NGOs and the general public. Together, at the same roundtable, the proposed objectives can be more easily achieved. Thus, we can define BIOEAST national HUBs as networks that bring together national stakeholders and support their engagement.

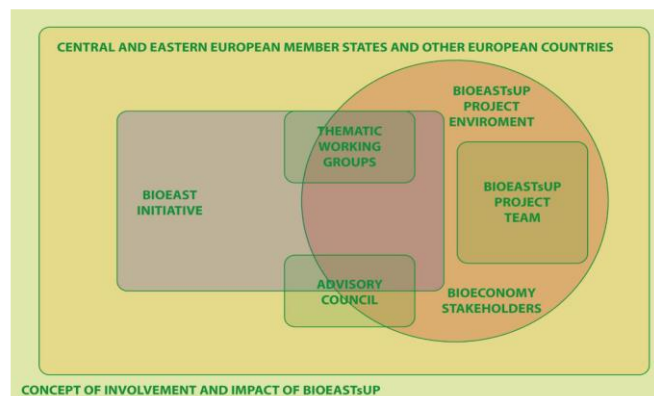
The main working body of the BIOEAST Initiative is the BIOEAST Council composed of the Secretary General and the National Contact Points. Within the partnership, 5 BIOEAST thematic working groups (TWGs) have been set up at the macro-regional level to support the work of the BIOEAST Governing Board in specific strategic areas: agroecology, bioenergy, food systems, forestry, freshwater. The “Bio-based materials” subgroup was created within TWG Bioenergy and is coordinated by RO, together with HU.

The results of the work of the Initiative must be:

- Creation of the national strategies for bioeconomy;
- Creation of the Strategic Research and Innovation Agenda (SRIA);
- EU projects at macro-regional level.

Based on this collaboration, the BIOEAST Initiative proposed and applied for the Project BIOEASTsUP (H2020 Project “Advancing Sustainable Circular Bioeconomy in Central and Eastern European countries”) which aims at supporting CEE countries in their bioeconomy development, for the period 2019–2022 (<https://bioeast.eu/bioeastsup/>). We can consider it the first main result of the Initiative.

The BIOEASTsUP Project was conceived in a parallel framework with the BIOEAST Initiative. The links between the BIOEAST Initiative and the BIOEASTsUP Project are shown in Figure 4.



Source: BIOEASTsUp Project.

Figure 4. Links between BIOEAST and BIOEASTsUP.

The consortium has 21 partners from all CEE countries who have built the BIOEAST Initiative. The Institute of Agricultural Economics of the Romanian Academy is included among them. 11 BIOEAST countries plus Finland (FI) and Germany (DE) participate in this consortium. In addition to the consortium partners, other entities also support the project: ministries (26 in total), central and local government entities, various

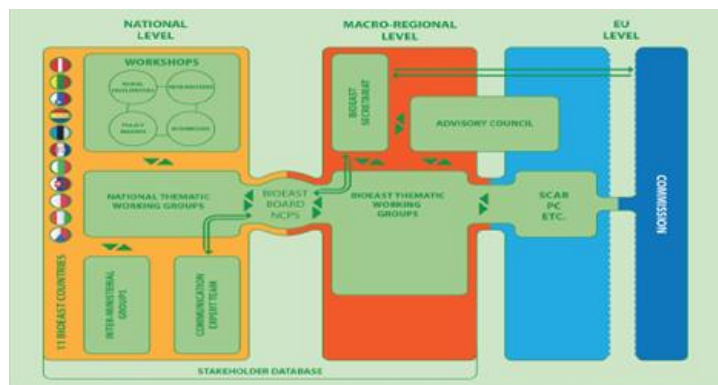
stakeholders such as associations, innovation centres, industrial chambers, universities, research centres and NGOs. The project aims to involve all these actors in the construction of bioeconomy and to maximize the impact. In order to achieve the EU's circularity and sustainability goal under the auspices of bioeconomy, BIOEASTsUP is developing an open and inclusive community-led platform. It is a platform that aims to reach a wider range of communities in the Member States.

Promoting such networks with downstream and upstream links with traditional value chains multiplies the impact compared to conventional value chains. The scope is based on the implementation of the BIOEAST Vision Document and Action Plan, by bringing together a multi-stakeholder consortium from all BIOEAST countries, macro-regional cooperation of national public administration institutes, ministries, academia and stakeholder representatives, including two partners from advanced bioeconomy countries (DE, FI).

The specific objectives of the project are: “Triggering strategic thinking at government level and developing peer-to-peer international development of national circular bioeconomy strategies in BIOEAST countries; Emphasize the role of the multi-stakeholder approach in developing new value chains to promote bioeconomics; Develop a strengthened BIOEAST SRIA in a multi-stakeholder approach; Establish and maintain a macro-regional framework in support of the BIOEAST initiative and SRIA development and sustainability; Facilitate evidence-based policy making; Increase the visibility of the bioeconomy within the fivefold helix in the BIOEAST region” (<https://bioeast.eu/bioeastsup/>).

Project activities consist of operational, policy development and support activities (Figure 5):

- Operational activities: integration and efficiency between the BIOEASTsUP Project and the BIOEAST Initiative;
- Policy activities: building the strategic framework for the elaboration of the national bioeconomy strategy and the macro-regional SRIA;
- Support activities: to support the structure of the BIOEAST Initiative.



Source: BIOEASTsUp Project

Figure 5. BIOEASTsUp activities at national, macro-regional and EU level

BIOEASTsUP activities aim at institutional improvement, capacity building and supporting the evidence-based policy-making process. The project activities are closely linked to the existing institutional framework of the BIOEAST Initiative and its stakeholders and will be strictly driven by the needs expressed by them. This will yield results that meet the requirements and expectations of stakeholders, create engagement and therefore promote long-term sustainability, exploitation and incorporation into BIOEAST activities beyond the duration of this project.

Because BIOEASTsUP has a bottom-up approach, we hope that among many other benefits, Romania will be able to benefit from available EU funds more easily, and it will also faster develop the National Strategy for Bioeconomy and the Action Plan. We shall next present some elements regarding the evolution and the current development stage in the construction of the National Bioeconomy Strategy, a comparison between 2019 and 2021.

At the level of 2019, the national institutions involved in bioeconomy were the following (https://ec.europa.eu/knowledge4policy/bioeconomy/country/romania_en):

- Leading Ministries: Ministry of Economy, Ministry of Waters and Forests, Ministry of Agriculture and Rural Development (MADR);
- Other ministries: Ministry of Health, Ministry of Energy, Ministry of Research and Development;
- Other institutions:
- *Innovation clusters* such as: ROSENC cluster (Renewable Energy) (2017, Country Report for Romania-DanuBioValNet project – Transnational Danube Interreg Program), IND-AGRO-POL cluster (competitiveness pole) – one of the approached sector is the bioeconomy (2017, Country report for Romania– DanuBioValNet project – Transnational Interreg Danube Program), Green Energy cluster (renewable energies) (2017, Country report for Romania –DanuBioValNet project – Transnational Interreg Danube Program), BIOGAS INNO cluster (renewable energies) (2017, Country Report for Romania – DanuBioValNet Project – Transnational Interreg Danube Program), Agro Transylvania Cluster (food and feed) (2017, Country Report for Romania – DanuBioValNet Project – Transnational Interreg Danube Program), AgrooFood Regional Cluster (Food and Feed) (2017, Country Report for Romania) – DanuBioValNet Project–Transnational Interreg Danube Program), PROWOOD cluster (primary biomass sector) (2017, Country Report for Romania–project DanuBioValNet-Interr ex. Transnational Danube Program);
- *Associations* such as: “Bioeconomics” Commission of the Advisory Body for Research-Development and Innovation (belongs to the Ministry of Research and Innovation).

In 2019, Romania did not have a bioeconomy strategy, but it was (and still is) part of the category of countries with “Other national strategies related to bioeconomy”. Among these we mention:

- Romania’s RDI Strategy for 2014–2020;
- Development strategy for the agri-food sector in the medium and long term 2020–2030 (2015);
- Romania’s Strategy for Competitiveness 2014–2020
- Smart specialization areas financed from structural funds within the Competitiveness Operational Program 2014–2020;
- Draft Integrated National Plan for Energy and Climate Change 2021–2030.

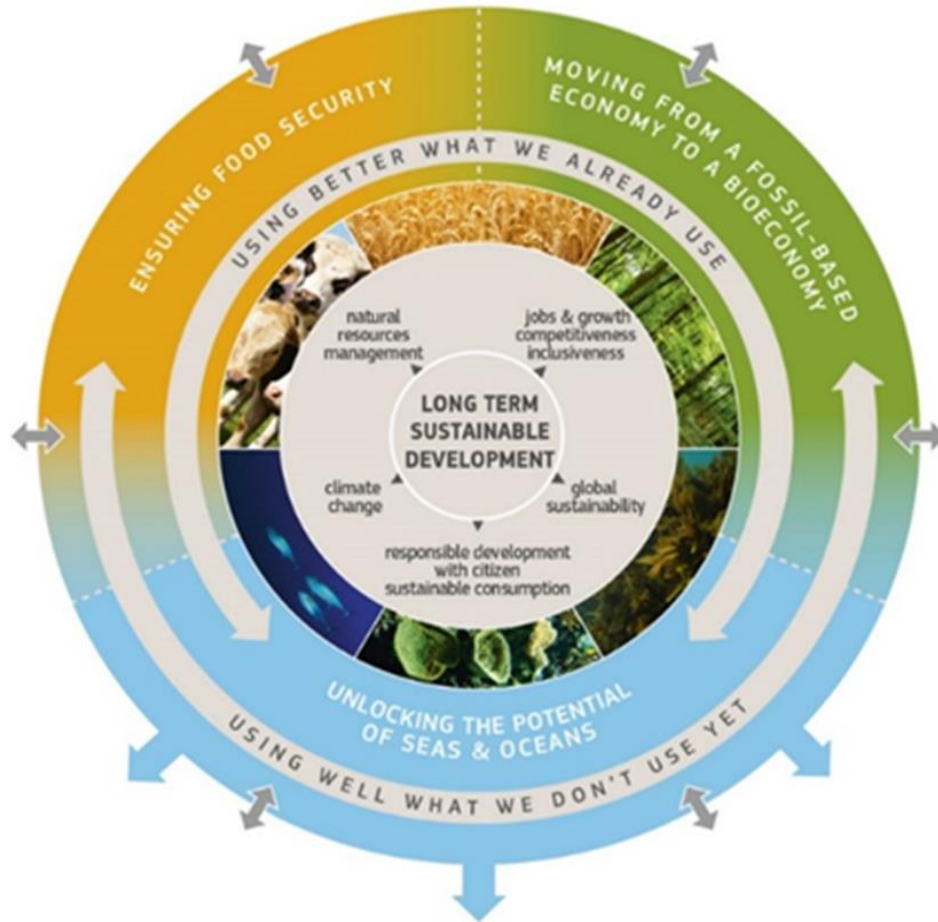
In 2021, the Ministry of Agriculture and Rural Development is the central public administrative authority responsible for implementing the government program and strategy, with a role in developing and implementing the national sectoral strategy in the following areas: agriculture and food industry, rural development, land reclamation and related fields, such as: specialized scientific research, conservation and sustainable management of soils and plant and animal genetic resources, as well as bioeconomy.

One of the government’s objectives is to support agricultural research, agricultural information and advisory services in agriculture. In the field of bioeconomy, MADR long-term and medium-term strategy for research, development and innovation (RDI) has the following main objectives: assessing the long-term and medium-term feasibility of the national bio-economic potential to produce non-food bio-resources under the impact of global climate change; eco-innovative approaches to the development of new agricultural technologies. MADR also provides grants for sectoral research projects, which bring together consortia of research and development units, universities and professional organizations.

For the years 2022–2023, it is desired to achieve the following objectives:

- National Bioeconomy Strategy;
- SRIA for bioeconomy;
- Activation and use of the Electronic Stakeholder Platform in the field, both at national and macro-regional level;
- Development of research projects and attracting EU funds;
- Cooperation with other EU projects in the field of bioeconomy, in order to achieve an efficient experience exchange and interconnection of information at the level of EU and CEE countries, such as: Be-Rural, BioVoice, AgroBioHeat etc.

By achieving these objectives, Romania will approach the New Concept of Bioeconomy of the EU-Horizon 2030, as it is graphically represented in Figure 6.



Source: EC, 2018.

Figure 6. The new EU-Horizon 2030 bioeconomy concept.

5. CONCLUSIONS

Through this research we provide an overview of the bioeconomy at EU level and the premises from which Romania starts in the realization of the national bioeconomy strategy. The examples of three CEE countries that are in different stages of creating their bioeconomy strategies were also chosen. In this way, it was shown how different the countries in this region are. At the same time, there are common aspects in terms of bioeconomy. In conclusion, the Ministry of Agriculture is a common ministry that leads the development of the bioeconomy strategy. This shows how important agriculture is in bioeconomy. Besides agriculture, food industry has an important place, if we consider indicators like

employment, turnover or value added, to give only a few examples as regards the size of bioeconomy at national and EU level, as it was shown in this article.

The opportunities to implement the bioeconomy strategy are multiple and beneficial, both in terms of future economic activities and in terms of daily life, for us and for our descendants. By BIOEAST Initiative and BIOEASTsUP Project, Romania will be able to benefit more easily from available EU funds, and will also faster develop the National Bioeconomy Strategy and the Action Plan. There are still many challenges facing Romania. These include: blocking research and innovation; difficulties in bio-based value chains; blocking government; indifference to society; financial barriers. At the same time, there are threats that may hinder the plans. The main threats that we have identified are the involvement and political will, as well as the seriousness of participants in the process. They can be strong barriers to strategy development.

In addition to these challenges and threats, there are positive preconditions for the fast development of National Bioeconomy Strategy and Action Plans. First, there is interest from the actors involved, other than politicians, in building them. Then, the present financial programming period (2021–2027) will, in a way, force EU Member States to develop their strategies faster. Romania has a chance to burn the stages and make up for lost time. We have identified that the national institutions involved in these activities exist, are willing to participate and have human potential. In this way, the gaps between other EU countries and Romania will be narrowed and the benefits will emerge.

6. ACKNOWLEDGEMENTS

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