

BIOECONOMY CONCEPT PAPER

EXECUTIVE SUMMARY



CROATIA

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EXECUTIVE SUMMARY OF THE STRATEGIC CONCEPT PAPER FOR BIOECONOMY: CROATIA

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Endorsement: The BIOEAST Initiative aims to build knowledge-based agriculture, forestry and aquaculture in the bioeconomy. For this reason, the BIOEASTsUP Horizon 2020 EU project was launched under the auspice of the macro-regional governmental initiative to support eleven countries in building up their own bioeconomy strategies and action plans.



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Executive summary

1.1. Context and objectives

In 2022, an unprecedented series of events - geopolitical, environmental and concomitant economic ramifications - resulted in complex challenges for BIOEAST regions on top of the COVID-19 pandemic. The main goal of this document, the so-called concept paper, is to set the framework for a national bioeconomy strategy and action plan development, aiming to generate a deeper discussion on the necessity of paradigm shift in the economic thinking regarding the valorisation of biomass as a renewable natural resource. The past decade's climate change related challenges show that without a careful planning the circular and sustainable valorisation of the available bioresources, the country's viable future will be threatened. Inter-sectorial approaches are inevitable and both visionary thinking and strategic planning is required to strengthen the systemic thinking concerning production and processing of bioresources.

The BIOEAST Initiative aims to build knowledge-based agriculture, forestry and aquaculture in the bioeconomy. The strategic thinking concerning bioresources in Central and Eastern Europe should become national and macro-regional priority since it is one of the most important regionally available resources affecting food, energy and industrial security. The bioeconomy could bring climate neutral solutions and become the organic part of the sustainable economic model. That is why under the auspice of the macro-regional governmental initiative was launched a Horizon 2020 EU project (BIOEASTsUP) supporting eleven countries to build up their own bioeconomy strategies and action plans.

The transition towards sustainable agriculture, forestry and fisheries in the bioeconomy does require specific conditions. The premises of the transition should be enabled by principles and political willingness. The European Foresight Exercise developed by the Standing Committee of Agricultural Research (SCAR report 2015) set forth the five principles of the sustainable bioeconomy: food first, sustainable yields, cascading approaches, circularity and diversity should be strived for. The transition cannot be governed by markets and technology, but strong strategic orientation and constant monitoring is necessary.

Significant energy and market disturbances witnessed during this period accelerated existing efforts on the national level in shaping future pathways for securing energy supply, decarbonization and meeting climate-neutral objectives. The process of setting up the strategic framework for the bioeconomy is already happening in Croatia. It will follow the findings, interpretations and conclusions delivered in background documents with the proactive participation of identified and relevant stakeholders from the public, research and industry sector. The definition of bioeconomy recognized and used in Croatian legislation is transposed from European Bioeconomy Strategy 2018. Even though Croatia will, in the near future, have a strategic framework dedicated only to bioeconomy, few legislative and strategic acts have recognized bioeconomy as one of the goals thus, Croatia is already tapping into bioeconomy activities. They more or less cover objectives from the EU bioeconomy strategy: Creating jobs and maintaining competitiveness in bioeconomy sectors, Reducing dependence on non-renewable resources, Mitigating and adapting climate change, Ensuring food security and Managing natural resources sustainably.

1.2. The concept of a systemic approach to bioeconomy

The share of the bioeconomy in the total economy is relatively large due to the important role of agriculture (biomass production from crops) and the food industry in Croatia, followed by forestry and fishing and related industries (the production of primary woody biomass and grassland systems). Undeniably, these activities should take the lead position for the uptake of bioeconomy in the coming period.

According to the JRC (EC 2020), the bioeconomy of Croatia generated in 2019 about 12 billion € in turnover, 4 billion € of value added and employed 205,8k. Croatia's bioeconomy is based on the "field-to-fork" value chain: the production and processing of biomass in food products, beverages, and tobacco. The highest concentration of employment is in the agriculture sector, followed by the sector of manufacturing food products, beverages and tobacco, with the highest annual turnover. The manufacturing of wood and wood products is in third place by the number of employment but in second by the achieved annual turnover. The share of value-added belonging to agriculture in the whole food chain in Croatia is slightly declining at about 30% compared to the EU (25%). One of the main characteristics of agriculture in Croatia is low labour productivity compared to the EU level, and sectors that require lower labour productivity, such as paper production and the production of chemicals, pharmaceuticals, plastics and rubber from biomass, are underdeveloped.

1.3. Strengths and weaknesses of the bioeconomy in Croatia

A well-defined and sustainably managed bioeconomy can boost rural and coastal economies. The agricultural and food sectors contribute to the economy and income in rural areas in Croatia. These sectors have several competitive advantages that can be used to boost growth, innovation and development, including unrestricted access to the EU market, access to funding under the Common Agricultural Policy (CAP), diverse agri-environmental conditions, quality land and rich water resources, relatively low labour costs, good road infrastructure, as well as the growth of domestic tourism.

Organic waste management and renewable energy are gaining importance in Croatia and have the potential for the development of transformation pathways such as new, more efficient use of biomass streams and valorization of ecosystem services.

On the other hand, the wood processing industry is a traditional, well-developed, long-standing industry in Croatia. Nevertheless, significant amounts of biomass are exported, which represents a missed opportunity to increase the added value of the bioeconomy. Due to the comparative advantage of a favourable raw material base and the existing processing capacity of the industry into products with higher added value, there is great potential for developing a modern bioeconomy value chains in Croatia.

According to EUROSTAT data from 2020, Croatia had almost half as much expenditure on research and development, expressed as a share of gross domestic product, compared to the European Union average (1.3% in Croatia, 2.3% EU average) and despite the constant growth of gross domestic expenditures for research and development in Croatia in the last ten years. At this moment, a low level of investment is present in research and innovation from the business sector, especially SMEs, that could enhance cooperation between the scientific community and industry to create industry-driven value chains. One of the main challenges stressed in the R&D sector is the fragmentation of financial instruments for these investment projects due to the cross-sectoral approach. Croatian innovation priorities related to bioeconomy are

scattered across different research fields, functioning as a single innovation cell with modest synergies and cross-sectoral cooperation.

1.4. How to develop bioeconomy sectors to ensure sustainable development - which sectors require intervention and which are the growth drivers?

The main transformation pathways for the existing bioeconomy players would be in the primary sector (AFOLU) and fishery and aquaculture, food and beverage industry, farm to fork, wood processing industry and bioenergy sector.

Knowledge flows and digitization of information will be critical for the modernization of agricultural production and post-harvest operations to realize a sustainable transformation of the agri-food sector. Within the bioeconomy context, there is an opportunity to generate more integrated and circular value chains that can help meet product diversification and bring new economic opportunities.

The public sector (national, regional and local administration, and scientific and research institutions) should take a proactive role in directing and monitoring the development of the bioeconomy by linking stakeholders at all levels, unifying available capacities and potential sources of financing, and identifying obstacles for the uptake and growth of the bioeconomy resulting from the mismatch of the legal framework.

Mainstreaming the bioeconomy into existing operational programs is paramount to address many of the energy and material flow challenges faced today. Identification and facilitation of selected bioeconomy value chains for the optimal use of biomass in development of bio-based solutions could offer alternative pathways to modernize and make agriculture, aquaculture and fishery more competitive.

1.5. Synthesis of actions and conclusive comments

Strategic directions to develop over-arching national bioeconomy appropriate strategic actions can be supported in three areas with regard to:

- **Market intervention:**
 - (1) avoidance of waste management costs and/or environmental damages;
 - (2) setting up of funding programmes targeting bioeconomy;
 - (3) the establishment of mechanisms that enable feasible synergies and combination of different sources of funding;
 - (4) internal coordination among programmes.
- **Research, innovation and education:** research agenda as a functional part of the macro-region Strategic Research and Innovation Agenda (SRIA) with the most important elements for bioeconomy:
 - (1) establishment of scientific network with researchers and industry stakeholders to increase the capacity in fields related to bioeconomy,
 - (2) development of pilot scale plants as a biobased innovation and production of biobased products, (3) empowerment of linkages between industrial needs and research activities

- **Governance and policy actions:**

- (1) set up a bioeconomy supportive and inclusive policy framework;
- (2) enforce the relationship between the main sub-sectors of bioeconomy and niche sectors in frame of bioeconomy strategy or action plan;
- (3) evaluate and monitor policy adoption by appropriate indicators;
- (4) stability of the policies and policies duration supporting bioeconomy initiatives.

