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SWOT ANALYSIS OF BIOBASED ECONOMY DEVELOPMENT

One of the greatest global challenges of the 21st century in times of climate change will be to sustain a growing world population both with sufficient foodstuffs and with renewable commodities – as industrial raw materials and for energy production.

The world population is expected to grow to over 9.5 billion people by 2050. Combined with changes in consumer preferences, the consequence is that global food security is certain to become a critical future challenge. Alongside, the world's available arable land is steadily decreasing as a result of soil degradation and expansion of residential areas, and climate change will exacerbate this surface loss. The aforementioned challenges illustrate that, with decreasing arable land, greater quantities of biomass will have to be produced in an internationally competitive and sustainable manner. Under this premise, it will be important to find efficient and holistic (systemic) solutions.

A promising approach for this structural change from a petroleum-based to a biobased economy, which has the potential to enable economic prosperity with ecological and social compatibility, is to strengthen the knowledge-based bioeconomy (in the following, the terms “bioeconomy”, “knowledge-based bioeconomy” and “biobased economy” will be treated as synonyms) through the strategic promotion of research and innovation. This includes the agricultural economy, as well as all manufacturing sectors and associated service areas that develop, produce, process, handle, or utilise any form of biological resources, such as plants, animals, and microorganisms [7].

Bioeconomy is a progressive branch of social science that seeks to integrate the disciplines of economics and biology for the sole purpose of creating theories that do a better job explaining economic events using a biological basis and vice versa [9].

The classical economic belief that the biological system is not a capital stock and that the biological resources are either infinite or are at best substitutable has done great damage to our thinking in relation to the planetary system and also in relation to our lifestyle as far as our methods of production and consumption are concerned. Furthermore, it must be appreciated that humanity is an integral part of the biospheric system and its development and evolution must proceed in unison with that of the biological system; that is they have to coevolve [2].

Bioeconomy is another example of economic theory branching out of classical boundaries and attempting to better explain the complex economies of today. It studies the dynamics of living resources using economic models. Bioeconomy is an attempt to apply the methods of environmental economics and ecological economics to empirical biology. Bioeconomy is the science determining the socioeconomics activity threshold for which a biological system can be effectively and efficiently used without destroying the conditions for its regeneration and therefore its sustainability [1].

The Bioeconomic is today referred as a concept that can be synthesized such as “the application of knowledge in life sciences in new, sustainable, environmentally friendly, and competitive products” [3], or as “the aggregate set of economic operations in a society that uses the latent value incumbent in biological products and processes to capture new growth and welfare benefits for citizens and nations” [4], or “encompassing all those sectors and their related services which produce, process or use biological resources” [5, 6].

For the best understanding of the question raised in these theses, SWOT - the analysis which gives the chance more precisely to understand strengths and weaknesses, threats and possibilities of development of the new economic policy based on knowledge, that is bioeconomy is given below.

This analysis is presented in Table 1.

Table 1

Relevant factors identified in each SWOT category

	Internal	External
Positive	Strengths Energy security Job creation and rural development Improved trade activities Establishment of new industries Reduce GHG emissions	Opportunities Renewable energy requirement Policy encouragement and technology development
Negative	Weakness Food security Economic viability Environmental impact uncertainty Equity concerns	Threats Rise in fuel and food price Natural hazards and Crisis on financial market

Source: [8].

Summing up the results it is possible to tell that exist significant opportunities and challenges with biobased economy. If done correctly, such developments can provide important environmental, economic, and social benefits. The challenge is to have desired outcomes well defined and then develop structures and policies to make those outcomes a reality.

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