



On the Bioeconomic potential of the Black Sea

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The paper is a plea for the need to engage in more intensive researches on the Black Sea region bioeconomy so that they should keep pace with the researches taking place in other European seas. Bioeconomy offers Europe a unique opportunity to address complex inter-connected challenges, while achieving economic growth.

Bioeconomy refers to the set of economic activities relating to the invention, development, production and use of biological products and processes. According to the European Commission, bioeconomy can be found in societal challenge category entitled “Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the Bioeconomy” (http://ec.europa.eu/research/bioeconomy/h2020/index_en.htm); a transition is needed towards an optimal and renewable use of biological resources and towards sustainable primary production and processing systems.

The author makes a brief overview of the European preoccupations concerning scientific research into bioeconomy and, equally, presents Romanian thinking in the field, launched several decades ago, but never applied and developed in practice.

In 1933 Dr. Gr. Antipa, former outstanding student of Ernst Haeckel at Jena, expounded his conception of general biology and the biological structure of the Black Sea introducing the concepts of "biosociology" and "bioeconomy", drawing conclusions on the natural mechanism of fish production in this sea and specifying the determining factors in functioning. Antipa notes the lack of uniformity of the living conditions in the Black Sea and draws conclusions based on indices and faunal aspects found in different areas and at different depths:

1. The Black Sea, to an even greater extent than the Baltic Sea, with which it has some similarity both of them having a continuous surface and homogeneous appearance, is divided into more zones or biotypes, bounded horizontally and vertically – i.e. depending on areas and depths - each with distinct and well-defined physical and biological characteristics of environment.
2. Each of these biotopes hosts a special "association of organisms", whose composition differs in the number and type of species and individuals associated, and which constitutes a series of as many biocoenoses, different from each other.

Antipa arrived at the belief that "organism sociability" is a basic property of all living things - it is therefore a general fact which cannot be denied - and "biosociology" is the basis of the principles of construction and functioning of this living mechanism.

The "biosociological structure" of a certain water, being itself determined by the bionomic conditions of external factors, past and present, varies from one water body to another, depending on the variations that influence the physical structure. That applies to ponds, lakes and river systems and also to seas and oceans.

Biosociological structure is the one that requires, in turn, "biotechnology" (in the special case of fish "ichthyotechnology"), that is it dictates the procedures and detailed way of how the system functions, naturally transforming raw material (nutritive salts in water) into the final product (plankton, various lower animals, fish). At the same time, bio-sociological structure also secures "bioeconomy", i.e. the general natural organization, from an economic point of view, of production, distribution, circulation and consumption of water within each category and their classification in the general economy of nature.

The Black Sea region must consolidate and enhance its position as an important region for research and cooperative initiatives addressing the multiple dimensions of sustainable fishery, aquaculture and use of aquatic resources.

The fundamental mission of the Black Sea marine researches should be to enhance regional benefit by:

- promoting research collaboration and networks focused on sustainable fishery, aquaculture and use of marine biological resources;
- providing reliable, relevant, and current research contributions to the Black Sea biodiversity policies;
- being a significant stakeholder in interdisciplinary Black Sea region initiatives to address key challenges facing the marine biological resources sector; and
- strengthening the position of the Black Sea region within marine research in both European and international contexts.

Strategies to achieve the targets for the Black Sea region bioeconomy in the near future:

1. Strengthen research of the Black Sea and South European Seas common interest for sustainable management of the marine environment, particularly for the economic valuation of biodiversity.
2. Provide research-based policy advice to promote a sustainable future for the ecosystems of the Black Sea region.
3. Disseminate research results and develop communication activities that will increase interactions between researchers, industrialists, and politicians.