

THE NEED FOR IMPLEMENTATION AND BENEFITS OF THE BLUE ECONOMY IN THE EUROPEAN UNION AND IN THE WORLD

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Abstract: Human development needs viable models. The multi-material-intensive, energy-intensive and polluting industrial models of the past must be accepted as outdated and urgently replaced. The current state of affairs, in which humankind has depleted the Planet of viable resources, long surpassing its capacity for self-regeneration and burdening it with waste, is profoundly harmful and requires the urgent identification of sustainable solutions, thereby improving productive practice. The vision, commitment and strategy of building the blue economy must be accepted as the only way for the future progress and existence of human civilization. The blue economy must be seen as an integrating vision that postulates the generation of society-wide patterns from the natural cycle. As a result, only cascading, non-polluting production models should be promoted in the future, with the by-products released from the production process being absorbed into nature, thus preserving the possibilities of the natural environment. Undeniably, the European Union is at the forefront of the competition to generate robust bio-economic strategies for the future. It must be recognized that an intense European effort is needed to promote and implement bio-economic action plans in a broad format, requiring constructive contacts with all countries around the world. Future blue development strategies must be borderless.

Keywords: blue economy, sustainability, sustainable development, sustainability, natural resources, competitive market, ecosystem flows, bioeconomy strategy, standards, ecosystems, company management.

DOI 10.56082/annalsarscimilit.2025.4.84

I. INTRODUCTION

Multiple phrases have followed one another in an attempt to explain the need for the development of society in harmony with the possibilities of nature and to raise awareness of the limits of such growth. Thus, the idea of a sustainable society, founded on the balance between economic progress and environmental protection, was promoted. Later, the concept of sustainable development was formalized in the 1987 Brundtland Report, followed by complementary formulations such as the sustainable economy and “green” or “grey” growth. Sustainable development was seen as the model according to which economic growth was possible in the future only within the available natural resources, without exceeding the already existing possibilities.

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Interruptions or slowdowns need to be eliminated in order to give natural resources the opportunity to self-regenerate for cyclical, reasonable and rational use in tomorrow's society. The term *sustainability* must be accepted as pointing out at a broad vision and working model within a system of systems, the concept of *waste* being eliminated, the involvement of essential energy and resources being possible only according to the model existing in nature.¹ *Sustainable growth*, a concept that embodies a broad vision, supported the idea of finding the possibilities (limits) to which nature allows increased consumption of resources, in order to ensure chances for natural recovery and to provide consumption possibilities for the generations that will follow the current one in the future. After all, negative conclusions on the spectrum of development must be counterbalanced by concrete positive measures taken by mankind to ensure its own survival.²

1. The need for a balanced development

It is unanimously accepted that when it comes to standards of living and civilization, *the better* can quickly become the enemy of the good. The consumption of resources has increased alarmingly, out of mankind's fierce competition for benefits. The demands of consumption have to be added to the demands arising from skyrocketing population growth, the desire to optimize the comfort of a small section of society, and an ever-increasing range of subjective and irrational motives. In reality, mankind has entered into a spiral of baseless competition with a destructive purpose, which is heading towards an imminent disaster of today's civilization. Society is overwhelmed by destructive polluting emissions and marked by the impossibility of conceiving future development within reasonable parameters.

The rush for energy was the initial requirement for development and the cause of disaster, as a result of the Club of Rome's description of the limits of human development. The Limits to Growth report illustrated humanity's position in a vicious circle, fueled by population growth, chaotic industrial development, environmental degradation and the collapse of traditional ethical standards³

In the US in 2009, \$50 billion was spent on the transportation of household waste alone and \$1 trillion on the transportation of waste from the entire economic system. In economic life and in the field of consumption, there is an abundance of cases in which only part of the natural resources are used, and most of the element provided by the natural environment is wasted. In the

¹ Gunter, Pauli, „Economia albastră, 10 ani, 100 inovații, 100 milioane joburi”, Paidea Publishing House, Bucharest, 2010, pp. 1-341.

² Bogdan, Vasile, „Dezvoltarea durabilă a României”, Bucharest, Carol I National Defense University Publishing House, 2014, pp. 142-168.

³ Worldwatch Institute, State of the World 2008: Toward a Sustainable Global Economy, Washington, DC, The Worldwatch Institute, 2008, pp.12-26

case of coffee, for example, only the coffee bean is used (less than 5%) of the whole plant, which remains as unused waste, for sugar cane only the sugar content of the cane stalk is used (only 17%) and in paper production only the cellulose is consumed (less than 30%), the majority of the tree body being considered as waste and incinerated. The examples go on and on.⁴ So, in the 11th hour of mankind, with the limits of human development clearly exceeded, a situation also fueled by a warming climate, the Blue Economy has been generated by convergent scientific efforts, supported by visionary ideas, taken strictly from nature. The theory is an innovative concept, based on multiple practical applications, capable of radically altering the energy paradigm that is detrimental to human civilization and destabilizing for the world economy. There are two lines of action: (1) humankind's consumption must occur strictly at the rate that the natural balance allows, and (2) degradation, noxiousness and pollution must be eliminated in the transformation and consumption processes.

At the end of 2008, the world economy went into recession, driven by bankers and government decision-makers' desire to increase profits, amassing multiple fixed assets and huge debts, halting economic growth and producing the red (debt) economy. More than 50 million jobs were lost in developing countries, with youth unemployment at 50%. Tensions over development opportunities have been generated by the scarcity of needed resources and the presence of waste that mankind can no longer hide. As a first model, the green economy has intervened by asking companies to increase investment, consumers to pay more to maintain living standards, both while keeping environmental conditions in relative balance. In the second way, petroleum-derived polymers were tried to be substituted with elements of natural origin (amino acids, starch, sugar, cellulose, etc.), a procedure inspired by natural sources. Both models failed. The time was ripe to take a realistic look at the state of the art and the possibilities for the future.

Under these conditions, the blue economy has been outlined as a pressing need to change the world, synthesizing economic systems inspired by the current natural cycle, providing a viable model on restructuring the world's economies and building a society that operates on different production and consumption bases. It makes the whole cycle of production, consumption, post-consumption and regeneration sustainable.⁵

In the case under analysis, Gunter Pauli estimates that out of some 3,000 cases inspired by nature, only 340 technologies were kept in focus. In the end, only 100 innovations were left to focus on. The list of 100 innovations prioritizes the ability of ecosystems to continuously grow towards highly efficient levels. In practical terms, the proposals are a novel type of blue economy pillar of resilience. As the commitments of millions of international

⁴ Gunter Pauli, *op.cit.*, p. 6.

⁵ Gunter Pauli, *op.cit.*, p. 9.

actors are subordinated to the hegemonic desires of a few leaders, the chances of progress in the blue economy are slim.⁶

2. Competitive market perspectives

Most companies today operate on the basis of scholastic management, promoted by rigidity and mercantilist thinking.

The management principles in view at the level of industry standards are quite harsh, which make it difficult to compete from the blue economy.

The main effort, marked by strategic competence requires all economic initiatives to go through complex profitability analysis, to contain strategies, effort plans, success parameters validated in productive practice. Changes can only be accepted in an innovative form, but even then there must be a guarantee of benefits. Nobody wants to take major risks, only small margins of uncertainty about the benefits are allowed, but with certain guarantees of positive outcomes of the final process⁷.

The stability of the supply chain is a consequence of the already existing complex state of the competitive market, tightly controlled circuits at each corporation. The new blue technologies would force to reshape the supply chain, impose synchronized work from all structures, re-establish new geopolitical contacts and work in complex teams.

Outsourcing facilitates the subcontracting of production to third companies to ensure that the company's own efforts are focused only on the direction of maximum interest and significant profit.

The major impact of cash flows on the production process makes it necessary to select products with the fastest movement (absorption) on the competitive market, even with a modest profit, as opposed to unsaleable products, produced in stock, which are stagnant and block the warehouses⁸.

Elimination involves producing large quantities of the same product at very low cost as the main product, which ensures a steady flow of money and discourages switching⁹.

From the arguments listed, industrial systems are highly resistant to changes of substance, having global standards, which reduce costs. Unifying variants lead to failures (soil depletion, disease infestations, zonal pollution, etc.).

As ecosystems are networks of networks in the natural reality, management principles need to be instituted within each network. Nutrients and energy are found in an endless cascade, the laws of physics apply without exception. Blue economy ecosystems target what exists locally, using locally

⁶ Gunter Pauli, *op.cit.* pp. 31-35

⁷ Gunter Pauli, *op.cit.*, pp. 59-61.

⁸ Bogdan, Vasile, „Dezvoltarea durabilă a României”, Bucharest, Carol I National Defense University Publishing House, 2014, pp. 153-165.

⁹ Gunter Pauli, *op.cit.*, pp. 61-69.

available resources. In natural ecosystems there are no toxins or surplus elements, a perfect, self-regulating balance is ensured. Industrial economy standards are meaningless. Typical of the blue economy is the phenomenon of abundance - energy, food, jobs and income. In addition, because biodiversity is based on a wide but very different range, each local project exploits a niche sector that is not like any other. If in industrial forms man adopts nature to his own principles and interests, in the blue economy man adapts to nature.

3. Innovations inspired by nature

They constitute excellent models to be notified, analyzed in detail and implemented in future economic practice. We proceed to some impact signals.

3.1. Inducing typical ecosystem flows

Only a few of the most illustrative and important are illustrative.

The potential opportunities for tropical forest regeneration are the provision of permanent flows of water, food, carbon dioxide uptake and oxygen supply, the production and export of goods, the establishment and maintenance of local security and an accepted standard of living. In particular, it will be implemented in multiple areas according to local conditions.¹⁰ In particular geographic areas, efforts will have the necessary specificity.¹¹

Sustainable agriculture and cascading food processing requires that food, biofuels and nutrients are primarily produced and processed locally. This is found in the use of quality soil, naturally accepted technologies, clean water and non-GM varieties or breeds. Finally, the natural energy support for humans (human food) is directed (sent for export) to adjacent social agglomerations¹². Clearly, the transformation of the countryside to its original purpose of producing food is the sine qua non of human existence in the world of the future. The current unbeneficial state of affairs, in which food is being imported into the countryside from the city, more precisely from the global food system, a system laden with a plethora of unbeneficial contents, must be eliminated immediately.¹³

¹⁰ Gunter Pauli, *op.cit.*, p. 281.

¹¹ Bogdan Vasile, *Dezvoltarea durabilă a României*, Bucharest, Carol I National Defense University Publishing House, 2014, pp. 191-243.

¹² Gunter Pauli, *op.cit.*

¹³ Bogdan Vasile, *Dezvoltarea durabilă a României*, Bucharest, Carol I National Defense University Publishing House, 2014, pp. 114-118.



Figure 1: Generic view of the blue economy¹⁴

We briefly mention other future optimization streams. Turning coffee pulp into protein to support mushroom production, biofuels, export crops and local food.¹⁵ Likewise, converting CO₂ into nutrients and biofuels by collecting carbon dioxide, producing food, medicine, biofuel, bioplastic etc.¹⁶

Building materials for fast, inexpensive construction of housing typical for the area can be provided by recycling paper and wood fibers of different types into renewable building material, building emergency shelters, etc. Consideration is given to the environmentally friendly treatment of wastewater, possible through the use of mushrooms, as well as the production of biogas and fertilizers. The use of non-recyclable glass as a building material supports multi-purpose, infrastructure and agricultural products. The most pressing blue growth area for the future is the huge area of unknown potential in aquatic space (seas and oceans). Read more in figure 1.

In the same logic, specific streams can be triggered, such as food-grade flame retardant substrates, forest-like clean air circuits, UV protection, plastics made from food waste starch, wood to food, prairie biofuel, bamboo housing, topsoil silk or cascade brewing systems.¹⁷

3.2 Inducing totally novel flows

The typology can be particularly extensive here as well. For reasons of space, only a few representative flows will be exemplified:

- realization of electronics, medical devices, games and toys, shoes or clothes without the use of batteries, using principles from warm-blooded animals;

¹⁴ Review on the 2012 European Bioeconomy Strategy, p.1.

¹⁵ Gunter Pauli, *op.cit.*, p.182

¹⁶ Worldwatch Institute, State of the World, Washington, DC, The Worldwatch Institute, 2009, pp. 28-44.

¹⁷ Gunter Pauli, *op.cit.*, pp. 281-282.

- through bacteria, processing and obtaining rare metals in highly energy-efficient conditions, processing tailings and realizing efficient mining;
- utilization of gravity induced vorticity to replace aggressive chemicals in separation processes for the production of drinking water, irrigation, blending systems or as a substitute for bactericides;
- using plant biology to produce vaccines, medicines and food preservation;
- use of the displacement principles of sand cores for the release of lubricants and bearings in mechanical friction processes in machinery, machines, household applications and mechanical devices;
- the use of termite construction principles for the production of air-conditioning without appliances, real estate development, construction of socio-cultural facilities, generation of new industrial parks;
- production of food, beverages, medicines, cosmetics, all without aluminum packaging, following the model of the desert burrowing frog;
- using the termite's biological capabilities to produce chemical-free paper, consumer goods and insulation materials;
- making solvent-free solutions with multiple applications in chemistry using red algae;
- the use of the mosquito model to produce needles for pain-free injections, diabetic care, extended immunization and veterinary applications.¹⁸

The multitude of examples provided by nature, which must constitute innovative flows for man, is infinite. There is a fundamental condition for the situation under analysis - man to become aware of the indisputable benefits of each perfect model and to use them rapidly, extensively and irreversibly for the evolution of his own civilization.

4. Blue economy concerns on the EU agenda

The European Union is unquestionably at the top of the league table when it comes to research and implementation of biological models. Therefore, the European organization is indisputably placed in the blue economic practice on the axis of taking up and developing natural models. Particular efforts are being made to shift from polluting industrial technologies to clean technologies inspired by nature.¹⁹

That journey, which must span several generations, is long, costly and must be one-way - taking over and reworking natural processes into the bio-economic technologies of the future. Switching the development paradigm is possible only in countries with high technological level and surplus money flows. But, most importantly, is the firm political decision to switch to future development only following natural patterns. Details in figure 2.

¹⁸ Gunter Pauli, *op.cit.*, pp. 281-284.

¹⁹ Bogdan, Vasile, *Dezvoltarea durabilă a României*, Bucharest, Carol I National Defense University Publishing House, 2014, pp. 140-168.

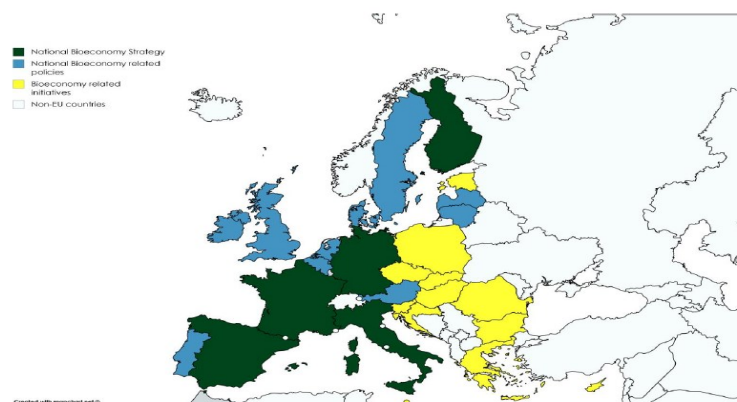


Figure 2: Adoption of bio-economic development strategies in EU countries²⁰

European countries have different attitudes towards the needs of the blue economy.

France has developed (2017) its own bio-economy strategy, prioritizing the production of bioenergy, the establishment of the circular economy, the establishment of clusters and the realization of organic solvents. Spain has formalized its bioeconomic strategy (2015), aimed at supporting the production and support of the use of biological resources. Targeted sectors are provided by human food, agriculture, forest areas, all of which are conditioned by the available water resource. Bioindustrial production and bioenergy from biomass are also included. Italy has adopted the Bioeconomy Strategy (2016), the Italian vision includes primary production (agriculture, forest area, fish farming, food) as well as chemical biotechnologies and bioenergy industries. Finland adopted relatively early (2014) its own bioeconomy strategy, focused on the promotion of renewable resource base in forestry, soil, cropland, marine space and fresh water. Germany, in an even European first, officially launched its national bioeconomy and research strategy (2011) aimed at multiple research and development in the spectrum of food security, healthy nutrition, bio-industrial processes and bioenergy.²¹

Although Romania has launched laudable initiatives and supported multiple workshops, scientific events and sectoral documents, it has not been able to adopt a fully-fledged national bio-economic strategy. Attempts to generate a strategy have been unsuccessful, with limited promotion of sectoral reports (visions on carbon reduction, agri-food innovations, etc.) and projects on bio-economic development in Romania for the 2016-2030 timeframe, towards

²⁰ Review on the 2012 European Bioeconomy Strategy, p.17

²¹ European Commission, *Review on the 2012 European Bioeconomy Strategy*, Directorate - General for Research and Innovation, Publication Office of The European Union (Luxembourg), Bruxelles, 2017, pp. 80-82.

achieving the bio-economic development priorities. The main reasons for the unfavorable state of affairs are provided by the lack of political will, insufficient financial resources and resources for bio-economic research, the development of efforts contrary to the goals of the blue economy and the production of negative effects of particular impact. Future developments in the Romanian area may be marked by systemic dysfunctions, alteration of the natural environment, impoverishment and excessive deterioration of food security.

5. Notable concerns outside the European Union

We reiterate the truth that the successes in the blue economy spectrum belong first and foremost to economically developed countries, possessors of massive funding and beneficiaries of innovative technologies, located on the world's meridians.

Japan developed early on (2010) its own plan to promote the use of biomass, a document with bio-economic strategy implications, aimed at producing industrial uses, with biomass as a priority. The USA has promoted the National Bioeconomy Blueprint (2012), with efforts focused on life science (biomedicine) and major areas in agriculture. Malaysia launched Bioeconomy Transformation Program (2013) promoted holistic developments in bioeconomy and biotechnology deployment. South Africa possesses the vision of improving innovative capacity through education, research and engineering efforts intervened along bio-economic value chains. Norway has focused the effort of its own bioeconomy strategy (2016) through an integrated bioeconomy vision, ensuring a circular economy and efficient natural resources. Even earlier, the Nordic Council of Ministers (2014) developed the vision paper on future opportunities in the area of interest, integrating the united effort of multiple states in the area (Denmark, Iceland, Finland, Norway, Sweden, Faroe Islands, and Greenland).

Other countries with significant bio-economic policy developments in specific sectors, such as the UK, Austria, the Netherlands, Lithuania, Portugal, Belgium, the Netherlands, Austria, Portugal etc.²²

Conclusions

After billions of years of species evolution, only the human species wants to control the multiple dynamic balance of nature. The endeavor is thought by man as enforceable only by imposing physical measures, without self-corrective effort. In the industrial age the shackles of fire, fossil fuels and nuclear energy were generated. The unjustified consumption of energy and terrible waste led to the shift of the state of the natural environment into the danger zone, with mankind standing at a vital crossroads regarding its desired

²² European Commission, *Review on the 2012 European Bioeconomy Strategy*, Directorate - General for Research and Innovation, Publication Office of The European Union (Luxembourg), Bruxelles, 2017, pp. 81-83.

future existence. Mankind's need to survive requires man to live in harmony with the earth and plant and animal species. The opposite and undesirable attitude, that of maintaining the constructive-destructive behavior of the human species, will inexorably lead to man's self-extinction from the life of the Planet and to the end of Humanity.

A major paradigm shift is needed immediately. At present, the MBA (Master of Business Administration) degree provides its holders with extensive opportunities for selection as managers or leaders in industrial business. The justification stems from the fact that they have the ability to analyze the competitive market, transactions and interactions, and are able to reduce costs, maximize cash flow, increase the company's market share and optimize the supply chain.

For the Blue Economy, MBA degree holders are incapable of ensuring the harmonious functioning of a business in the spirit of natural ecosystems. For the survival of the planet, the managers of the future must recognize and strictly respect the laws of nature, apply only the actional patterns of the natural environment, making room for nature's mastery of adaptation. Ecosystems will be imitated to create a sustainable economy, respecting nature's efficiency to provide inexhaustible resources for the future. Cascade production models will be networked, promoting multiple cash flows.



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