

FROM CIRCULAR ECONOMY TO BLUE ECONOMY

Iustin-Emanuel, Alexandru¹
Alexandru, Taşnadi²

Abstract:

Addressing the subject of this essay is based on the background ideas generated by a new branch of science – Biomimicry. According to European Commissioner for the Environment, „Nature is the perfect model of **circular economy**”. Therefore, by imitating nature, we are witnessing a process of cycle redesign: production-consumption-recycling. The authors present some reflections on the European Commission’s decision to adopt after July 1, 2014 new measures concerning the development of more circular economies. Starting from the principles of **Ecolonomy**, which is based on the whole living paradigm, this paper argues for the development within each economy of entrepreneurial policies related to the **Blue economy**. In its turn, **Blue economy** is based on scientific analyses that identify the best solutions in a business. Thus, formation of **social capital** will lead to healthier and cheaper products, which will stimulate entrepreneurship. **Blue economy** is another way of thinking economic practice and is a new model of **business design**. It is a healthy, sustainable business, designed for people. In fact, it is the core of the whole living paradigm through which, towards 2020, circular economy will grow more and more.

Keywords: biomimicry, circular economy, innovation, blue economy, entrepreneurship

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Motto: „Nature does not accept any joke; it is always just, always severe, it is always right and errors and mistakes are always the blame of human. It despises the man incapable of appreciating it and it reveals its secrets only to capable, pure and just man”.

Wolfgang von Goethe

After the launch at Brussels (december 2012) of the report „Bankrupting nature”, there has been an enhancement of the public debate regarding the reconsideration of the way of using resources in a time in which major risks threaten welfare and prosperity. The solution would be reconsidering from the ground of the financial, fiscal and economic model, in view of the planet consolidation. The foreseen solution would be the disconnecting of wealth and welfare from the consume of resources. The objective of new models adoption is constituted by efficient capitalization of resources by establishing big taxes when using new raw materials. Hence, reorienting research policy towards innovation as it proposes, for example, biomimicry or blue economy.

Public debate organized around various events are keeping with the campaign „Year 2052: the world after 40 years” by which are stimulated ideas of changing Planet Earth in a **sustainable** manner.

1. The need of a new way of thinking

Many of you remind of the tellings of Einstein: we cannot solve important problems which we confront with at the same level of thinking that we found ourselves in the moment that we created those problems. This idea needs not be excessively developed. In all respects of civilization, the basic trend of contemporary society disregards Einstein’s warning. It tries to solve problems generated by the conceptions of industrial civilization with the same selfish judgement that characterizes these conceptions. The aspiration that

¹ PhD. candidate, Bucharest Academy of Economic Studies , iustin_alex89@yahoo.com

² Univ. prof. PhD., Bucharest Academy of Economic Studies, relationistul@yahoo.com

animates the scientific world is that of triggering a debate at society scale about how could it be possible to pass to a **new economic paradigm**.

At the 42nd edition of the Economic Forum of Davos (January 2014) the resulting conclusion following the debates was that nowadays, capitalism in its actual form has no longer its place and does not fit to the present world.

The great problem is that between the agreement related to the necessity of triggering a change and practical actions, remains an enormous gap.

The choice in front we stand now is between **collapse** (keeping the thinking and models of development) or **rescue** (shifting the thinking paradigm). It is also the call of the World Forum of Davos – 2014 led under the theme „The great change. The forming of new models”. The present essay highlights such models.

2. The virtues of a circular economy

„The best way to keep nature unaltered is to love it”.

Constantin Popescu

Dominated by consumerism¹, the nowadays economy is to a good extent of **linear type**. The **production-use-throw** type of processes tend to already lead to „bankrupting nature” (Wijkman, Rockstrom, 2013). Numerous reports to the Club of Rome draw human community’s attention to the inherent risk of resources exhaustion (see, for example, Randers, 2012). Numerous products are made of raw materials extracted from non-renewable resources.

Estimates based on some studies upon globalism show that annually in Europe are produced approximately 3-4 billion of tons of **garbage (waste)**.

The theme of this year annual conference about **the european environmental policy**, named Green Week was „**Circular economy, resources efficiency and waste**”. The term **circular economy** refers to the necessity of reintroducing the used products in the circular flux. Here we refer to **natural elements** (biological nutrients that should reenter into the biosphere) and to material and **technical products** that have to be transformed, used and usable on the long term. Moreover, this term also regards **the management of waste** by which it profits the most efficient from the resources that are attracted into the circuit.

The life of a product (as we know it from marketing courses) goes from **the production process**, to usage (consumption) and afterwards to throwing (the product is brought to the state of waste). This concept, associated with a market economy that sustains consumerism leads to a great production, intense consumer of natural resources in which the product has a limited life. This happens because a consumption that generates a bigger and bigger quantity of **waste** and **pollution** is encouraged.

This state leads to a paradigm shift in the concern of the production circuit, it leads to a **change of mentality**. The first step was made in the ‘70s (of the past century) by Walter R. Stahel who introduces the notion of **industrial sustainability**. Basic ideas of the concept introduced by Stahel have in view an opening towards **the processes from nature** (see biomimicry at point no. 4): the circuit of nutrients resulting from soil fertilization with compost, recycling and reusing of materials, the extention on the way we use various objects, usage of sources of green energy, adoption of a systemic thinking which on its principles can be built a new economy.

¹ Social-economic order and ideology that encourages the acquisition of goods and services in quantities that grow bigger and bigger.

A productive circuit based on recycling and which integrates – logically and coherently – in natural circuits generates various **benefits**:

- a) creation of new working places present in all stages of the process;
- b) contributes to increase of competitiveness;
- c) reduces significantly the volume of the consumed resources;
- d) contributes to the increase of the life time of products;
- e) contributes to the decrease of waste production, helping to limit its volume.

The circular economy concept is inspired by nature where „nothing is lost, everything is transformed” (law of material conservation). Having in mind the strong effects of human activity upon nature, **the circular economy model** that is adopted by the E.U. countries follows the slogan mentioned at **biomimicry**: „The best solution to safeguard nature is to imitate it”.

3. A chance for the future: blue economy

„The true pleasure resides in the discovery, not in knowledge”.

Isaac Asimov

Blue economy appeared as an **alternative** to the unfulfillment generated by the ongoing support given to the „**red economy**” – great resource squanderer and consumer, on which the consumerist model relies – and to the partially successful attempts of the „**green economy**” – that for the present costs much, is not competitive and has a subunitary return to advanced investments (Output/Input < 1). Blue economy „sprang” in the mind of its architect – Gunter Pauli (Pauli, 2010) - from the real presence of some inevitable circumstances: bankrupt governments, lack of cash, difficulties in finding substitutes for resources, the wish of consumers to purchase goods at low prices etc.

Blue economy is based on scientific analyses by which there are identified the best solutions (S^*) discovered through innovation processes (S_1, S_2, \dots, S_n):

$$S^* = \text{opt}\{S_1, S_2, \dots, S_n\} \quad (1)$$

Assimilated in **the social capital**, optimum solutions contribute to the projection of those technologies that produce the **best and cheapest** products, **the most healthy** and those that **stimulate entrepreneurship**.

This stimulation of entrepreneurship oriented towards **blue economy** type of solutions constitutes in its turn an alternative to the policies of big corporations, based on greed and domination. Owning a great economic power, they do not want the change. For them, **the profit** is the Gospel and **money** is God. Those who sell electricity, water, food, medicines etc. do not want to change the way they produce them. They develop businesses for **profit**, not for people (see also Branson, 2012). As a matter of fact, „corporations rule the world”, said former president of Israel, Shimon Peres, at the World Economic Forum at Davos. „Governments will wake without occupations because the economy is global and they are national”, he said.

We mentioned that **blue economy** stimulates entrepreneurship. The guideline of this economy feeds itself from the philosophy of Mahatma Gandhi: „Be yourself the change that you want to be made in the world”. Therefore, the change towards good begins with me! The **blue economy** model is a model of action. This model proposed by the professor Pauli offers directions and solution to entrepreneurs on which it can be built **the national capital**. Such a capital sustains the creation of new jobs, the welfare of human, of communities and the country, the health of human beings and of the environment.

As we know, in Chinese, the notion of **crisis** has a double meaning: **danger** and **opportunity**. The blue economy model is oriented towards **opportunities**. And every

opportunity offers another way of approaching problems that search for their solutions. **The blue economy model (BEM)** generates options for economic development, ways by which economy responds to **the needs of people**.

There are scientists, researchers but also theologians that say: „**It is good that the crisis came now and not later**”. In this context, we cannot continue in the way we lived until now. **A report to the Club of Rome** draws our attention about the limits of the planet. It is a good piece of news! We need to understand which is **the true reality**. Promotion of BEM is firstly addressed to the youth comprised in the **innovative movement** of the country, of the world. It is a model that stimulates **innovation**. There is a wise telling that we should reflect to: „If you do the same things that you have always done, you will receive the same things that you have always received”. Teaching the youth to embrace the BEM, toward 2030, Romania can reach the holding of a new **national capital**.

Blue economy starts in its construction from „**the doctrine of nations endowment with production factors**”, for instance from the existing resources, from each country potential. For the time being, Romania builds on what others have: for example, agricultural potential or the tourism one. We can become competitive. But what do we do? We import about 70% of the agri-food products. With our agricultural potential, with the fertile land that we have, we can become **competitive**. We need to change what can be changed. This is what **blue economy** asks us; global solutions to global problems (unemployment, pollution, environment degradation, bankruptcies etc.).

National capital construction implies the recovery of **national identity**. The BEM supplies ideas, experiences, opportunities. Romanian innovators and entrepreneurs are called to identify what is best for **the national capital**. An entrepreneur lives in the spirit of „act now”. In his step it is necessary to read all the **opportunities** and then to select what is best for the community, for the nation, for export.

In his book, professor Pauli suggests that youth do not follow MBA programmes because after they will work for corporations, big financial institutions etc. **They would look to the past**. The **future** is important. What can it be done? What can it be changed? The response is given by the courage of the entrepreneur, his imagination and initiative.

The rhetoric question that the BEM addresses to us is: „where are our entrepreneurs?” (see Fig. 1)

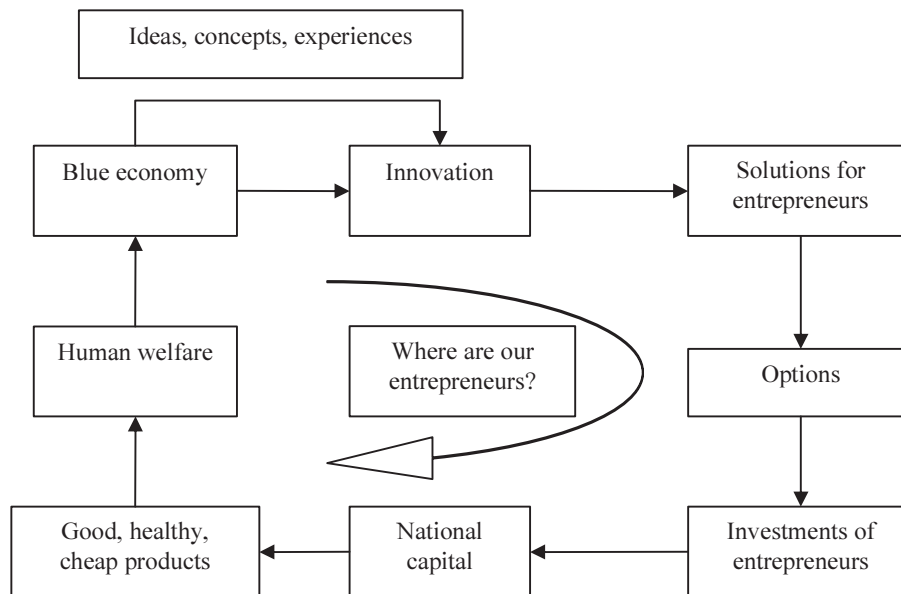


Fig. 1 The BEM mechanism

In agreement with the goals of the Strategy **Europe 2020** (for a growth that is intelligent, sustainable and favourable toward inclusion), the European Commission adopted new initiatives regarding the grant of a stable place to the **blue economy** on the priority list of the member states, regions, enterprises and civil society.

E.U. member states and European Commission promoted policies support already the blue economy, identifying five specific fields having great increase potential:

- a) maritime tourism, tourism in coastal areas and cruise tourism;
- b) blue energy;
- c) marine mineral resources;
- d) aquaculture;
- e) blue biotechnology.

The Commission considers that it is necessary to remove the obstacles from the way of growth and there have to be implemented intelligent solutions in order to stimulate new sectors.

The **growing and emerging sectors**, for instance energy resulting from renewable sources of the oceans and blue biotechnology can have a great role in respect to new jobs creation, cleaner energy production and supplementary supplying of goods and services.

Recently, in may 2014, the European Commission published a communique regarding the compulsory measures in order to have a sustainable economic growth in the field of **blue economy**.

In order to reach the goals of sustainable usage of oceanic resources, of favouring the blue economy growth and of creation of new working places in Europe, the Commission assembled an action plan regarding innovation in the field of seas and oceans. **Blue economic growth** is situated amongst the areas of interest of the programme Horizon 2020, a research and innovation programme.

Sustainable busnissess that function on the principles of the **blue economy** render possible the coverage of basic, fundamental needs of everybody, however, without exploiting the natural resources and yet without giving up a certain standard of living and modern services. The blue economy uses the resources in a „cascade system”, the waste resulting from the consumption of a product becoming the raw material for obtaining of **cash flow**. Such a system leads to the creation of new jobs, increase of national capital and of revenues, without exploiting or damaging the environment but rather preserving it. This type of economy offers the possibility of **sustainable development**.

Romanians, as a nation, have in their genes the seed of saving and of limiting waste. Our grandparents, farmers in their majority, used/reused all that was produced in the household, of course, at microeconomic level. **The blue economy** wants to be a new design of business conceived at macro-level and applied at micro-level.

4. Let us learn from Biomimicry

„Do not ask yourself if it is according to the nature what the Creator of nature does”

St. John Chrysostom

Nature has always represented an inspiration source for poets, artists, inventors or architects. Let us remember of egyptian architects that inspired themselves from the leaves of lotus plants or from the structure of palm trees in order to design and build the columns of buildings. All art lovers remind of famous arhitect Antoni Gaudi who worked after the principle „Originality means returning to origins”. This is how the famous Sagrada Familia appeared. When you enter the temple you feel like you are in a forest. Gaudi’s creed was

that nature is the perfect work of God. We realize this reading the Genesis from the Holy Scripture. His entire work inspired from the Divine Creation.

We owe the concept of **biomimicry** to **Janine Benyus** who published in 1997 the work „Biomimicry: Innovation inspired by Nature”. The main idea of the book resides in the recommendation that people inspire themselves from the genius of nature in order to innovate biotechnologies or processes that imitate nature. The etymology of the term **biomimicry** comes from the juxtaposition of two greek words: **bios** – meaning „life” and **mimesis** having the signification „to imitate”.

The option for biomimicry is based on the fact that nature already **solved** numerous problems which production systems confront with. Adopted solutions are extracted from the evolution of nature throughout billions of years.

Products resulting from such productive systems, designed on the principles of biomimicry, are less energy intensive and damage lesser to the environment. Terms like natural, bio, biotechnology, bio-economy, bio-agriculture (see Rudolf Steiner), eco-economy, eco-theology etc. designate „the return to nature”. What is natural is healthy, especially in the field of food and medication. Any classic production system that supplied products to the market was based on numerous **chemical substances**. The resulted economic goods were evaluated only from the perspective of cost and performance. Their effects upon health (especially those of carcinogen nature) or upon environment (particularly non-biodegradable substances) were ignored.

According to studies, from over 30,000 chemical substances that are used in production systems, less than 5% are monitored in terms of their effects upon health and environment. Television reportages show that for the moment, original „bio” products are three times more expensive than „poisonous” foodstuff. The state of fact is alarming: still more than 75% of these substances have never been evaluated in terms of effects.

Communication, PR, advertising became strong tools for influencing public opinion. Through them it sensitizes, it realizes the importance of adopting a new thinking, a new mentality, a new philosophy regarding the human-nature relation. For instance, the biomimetic design becomes more and more important in the public conscience, especially in countries preoccupied by ecology. Thereby, the advertising used by The National Company of Railway Exploitation from Spain (RENFE) activate by the advertising slogan: **The best solution to protect nature is to imitate it**”. Promoting the principles of biomimicry, this company managed to obtain a **more efficient** use of electricity. We have in mind the aerodynamic shape (similar to eagles) of high speed trains. There can be given numerous examples of technologies based on the ingenious solutions of nature.

As these solutions inspired by copying of nature become more and more beneficial, scientists will ask themselves more often: „what solution would nature offer?”. The lessons of the evolving process of nature offers us hope for a sustainable future, when the consume-throw model will be abandoned because billions of people will be called to live with their technologies in harmony with Mother Nature.

Researchers support that a **project of biomimicry** has success only if it has the potential to create a useful tool for people. It is not sufficient to study with attention structures from nature (for example the wings of a fly or the ribs of plants and the production process of chlorophyll). It is important that by studying nature to see if we can technologically asimilate these structures in order to give them authentic utility in real world. Of course, this is the most difficult stage in the useful concretization of the **natural, biomimetic design**.

With all registered successes, biomimicry has not yet reached maturity. The main reason is that from an engineering point of view, nature is a fabulous complex, without limits and impossible to control. Evolution does not „design” structures in order to achieve

a final objective such as an engineer would do. For now, people have not managed to reproduce that easy such complicated nanopuzzles. However, molecule by molecule, nature assembles these structures after the receipt for complexity that is inscribed in the DNA of those structures.

In any case, for the moment, the price people pay for complexity at a micro-cosmic scale is huge compared to the price paid by nature. For now, researchers scrutinize all the more profound the secrets of nature at a micro and nanometric scale.

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