

NEW ECONOMIC RETHINKING RELATED WITH SUSTAINABILITY TRANSFORMATIONS NOWADAYS

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Abstract

Nowadays the supposed world transformations also include economical paradigms in our Sustainable Development Agenda. In the context of periods of economic collapse within the society due to various factors, this phenomenon has been exacerbated by problems arising due to climate change, leading to a difficult situation regarding both economic development and the application of good sustainable development practices. An opportunity for economic unlocking and, at the same time, for maintaining the imposed environmental regulations was identified in the development of a paradigm regarding the "creative economy", considering that it can play a key role in decongesting the problems that have appeared in both interdependent areas.

During the development of this study, we considered the suggestion of some facilities to encourage the research-development-innovation activity within the Government Institutes, universities and profile big companies, as they also benefit from the advantage of being able to self-finance their activity and, therefore, they need an assurance and an incentive, so that the efforts are justified and the investments made produce income in the future, resulting in valuable concepts that can be applied. As a facilitator of the development of this paradigm that can go from the conceptual to the practical one with measures that can be taken at the level of the governmental policies, by thinking of fiscal facilities for investments in the creative fields, such as: the exemption from the payment of the tax on the profit (re) invested in creative activities for any type of public or private institution; exemption from paying corporate income tax for creative and/or newly established businesses for a certain period of time. Thus, the role of research in the economic field could be reoriented creating a link between the basic principles and rethought in order to get reconciliation between economy and environment. During the study, a report with case studies is presented aiming to find another approach that will support economic progress not in the detriment but in favor of the environment.

Keywords: sustainability, economy, development, research, environment, innovation, investment

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Introduction

The environment is an economic factor of the greatest importance, traditionally considered by economic analysts as a factor of production, along with capital and labor. Human society, at the end of the millennium, can be characterized as a world of diversity and contrasts.

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Of course, from the point of view of environmental protection, environmental dysfunctions or crises are important. Often the economic and social activities of people, as well as the components of the environment can be disturbed by the tragic effects of some natural phenomena (calamities) or anthropogenic actions out of control that can produce destructive and brutal disorders of a system [2].

The World Health Organization defines a disaster as any event that causes damage, ecological destruction, life losses, and deterioration of health and health services, on a scale strong enough to warrant an extraordinary response or intervention outside the affected community.

Another aspect that humanity is facing is the fact that it has become increasingly dependent on the artificial environment, both through biological and social mutations that emphasize the importance of the environment in ensuring efficient transfers of resources to the artificial environment. The environmental economy therefore aims to assess the capacity of the natural system to participate in transfers to the artificial system both in stationary mode (short-term) and in dynamic mode (long-term) [1].

Thus, with the development of human activity the geographical and generational borders acquire new contours. The problem that arises concerns how actors, for example states, need to become aware of possible risks, given that most, if not all of these global environmental dilemmas can have different effects on different countries: while some countries could be completely inundated by rising global ocean levels, predicted by some climate change patterns, and arid countries may witness complete desertification of their agricultural lands, others may experience increased agricultural production in climates more warm than the traditionally extreme regions which offer the possibility of longer periods for plant growth.

In addition, countries that unilaterally take measures to reduce environmental hazards may face the risk of self-generating the vulnerability of their economies to compete with countries that do not take such measures.

Environmental responsibility from an economic perspective

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In addition, countries that unilaterally take measures to reduce environmental hazards may face the risk of self-generating the vulnerability of their economies to compete with countries that do not take such measures [6].

Environmental responsibility from an economic perspective

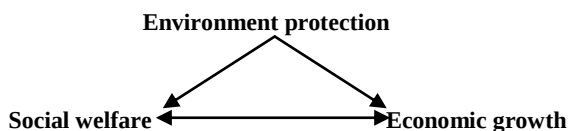
The essence of the sustainable development of the human society is given by the management, current and future, of its natural, energy, material, human and information resources, in relation to the objectives of economic growth and ensuring a better quality of life and environment.

The concept was initially linked to the environmental issues and the crisis of natural resources, especially those related to energy 30 years ago. The term itself is very young and was imposed in the summer of 1992, after the Conference on Environment and Development, organized by the United Nations in Rio de Janeiro, Brazil.

Most human beings aspire to achieve economic development to secure rising living standards and to protect and improve the environment, both for themselves and for future generations. The reconciliation of these two aspirations represents the core of the concept of sustainable development and it is synthesized through the dualism of ecosystem-eco-efficiency.

The tools that the state uses to achieve the sustainable development policy are: economics (taxes, fiscal facilities, negotiable pollution permits), legal (regulations, norms, laws), technical (stimulating research and development to promote clean technologies, for energy saving). As economic instruments, the following can be mentioned: $\neg$ fiscal instruments; $\neg$ market instruments; $\neg$ financial instruments; $\neg$ taxation systems.

Sustainable development involves achieving three objectives, namely: economic growth, social welfare and environmental protection. (**Fig. 1**) For the development of a sector of activity and of the society as a whole, all these goals must be achieved.

Fig 1-Principles of sustainable development

Both environmental protection and economic activity affect the quality of life. Often, economic investment and environmental protection go hand in hand, they converge. Economic development is achieved not only to meet basic material needs, but also to provide resources to improve the quality of life in areas such as health, education and good environment.

Many forms of economic development appeal to the environment, in the sense that they use natural, energy, material and information resources (resources that are often limited) and generate polluting products and environmental damage. But at the same time, there are many ways in which certain types of economic activity can protect or improve the environment.

These include measures to make more efficient use of natural resources, energy, materials, information, minimize damage to the environment (polluting technologies, technologies with low material and energy consumption, waste recovery technologies, biotechnologies, etc.) environmentally friendly agricultural practices, better use of land and constructions, improved transport efficiency, etc.

One of the major challenges of sustainable development is to find ways to encourage **environmentally friendly economic activities** and to discourage activities that cause environmental damage (air, water and soil pollution).

Because the environment and its resources are shared between various users, collective action is needed to broaden their protection and savings.

Decisions on economic development must be made taking into account the costs of potential pollution and damage to the environment, as well as the assessment of the sources that are consumed and, by conversion, the value of any improvements to the environment. However, it is often difficult to determine what the environmental costs are, how much resources can be used without affecting their regeneration, and what benefits exist or will be provided as a result of some human action.

Thus, through domestic efforts and international cooperation, governments must set and protect environmental boundaries and stimulate corporate creativity in order to create a sustainable and modern society.

The environment is treated as a free good, available to all participants in activities of all kinds (not just economic). A key objective of sustainable development policies is to prevent this situation by ensuring that all costs and benefits are shared fairly.

The objective considered in establishing the major economic decisions in the public and private sectors, within a management regarding the natural and energetic resources, the economic activities are carried out on two strategic and integrated directions of sustainable development, on all levels (local, regional, national and global).

Mainly:

- rational use of natural resources through eco-technologies of economic processing (reduction and recycling of waste), respectively reduction of consumption;
- using unconventional energy sources. Currently, the emphasis is on the rational use of natural and energy resources, thus becoming an imperative of the present.

Along with these, material and information resources complete the set of sustainable development resources.

Environmental indicators

The interest shown for a sustainable development, as an alternative to the obvious process of environmental deterioration, requires more and more countries to re-examine the possibilities of assessing and monitoring the state of natural ecosystems, to detect the causes and trends of changing their functionality. However, environmental indicators are considered as a necessary tool in designing the strategy for sustainable development. In principle, it is not possible to speak of a system of universally valid indicators, which must correspond to the conceptual framework and to the specific purposes, promoted in time and space.

Beyond the differences in nuance or content, according to studies developed under the auspices of the OECD, such a system of indicators must contribute to: - assessing the state of the environment in accordance with the intensity of changes in its quality, with objectives defined by national policy and international agreements.

The relevance of environmental indicators is of great importance for the observance of the “public’s right to know” about the trends in the evolution of water and air quality, of other aspects of the environment that have implications on the health and well-being of the population; - integration of environmental interests in sectorial policies.

This is done by extending the system of sector indicators that show the progress made in environmental protection, as well as by the links between economic policy and trends in key sectors (agriculture, energy, transport, etc.), on the one hand and the environment on the other; - integration of environmental interests in more general economic policies, through environmental assessments, especially at the macro level.

Environmental indicators can be grouped into two main categories (**Table 1.**): - environmental quality indicators; - source (emission) indicators.

Table 1. Environmental quality indicators

Environmental characteristics	Indicators
1. The physical environment	- dispersion capacity
1.1. Inert environment	- the load with contaminated substances
-atmosphere	- unwanted odors
- air quality	- climatic welfare indices
- climatic comfort	- favorable climatic indices for tourism

The biunivocal character of the environment-economy relationship

Any economic process evolves between two poles - production and consumption - in the relationship of interdependence and of recognizing the active role of each of them. Production involves input of raw materials, materials, etc. and a system of technologies that transforms with a certain efficiency these inputs into consumer goods, within specific, strictly necessary channels, but also of some adjacent channels. The "environment - economy" relationship has two components [8].

- the shape of raw materials, production space, energy, biodiversity which is a "valve" for the environment. This "valve" is defined in relation to the potential availability of a required stock, which means that the environment provides support for economic inputs within certain limits.
- environmental stocks, involved in maintaining the ecological balance, whose structure can change with qualitative changes in technology.

The "economy - environment" relationship also has two components:

- a material "message" to the environment, represented by emissions, waste, physical degradation, etc. result from the production and consumption activity, whose size depends on the performances of the two poles;
- the set of effects induced by the material "message" of the economy to the environment, dependent on its successive phases: if the "message" is addressed to fragile areas, the effects are greater, and if it is addressed to areas with stable functionalities, the effects are smaller.

Of course, the intensity of the effects also depends on the level of the "message". When it exceeds the recycling capacity of the environment (the recycling function is not a specific function of the environment, but an adaptation, which involves additional energy consumption, exerting pressures on the energy flow of an ecosystem), the phenomenon of real pollution occurs, which affects the specific functions of the environment.

At a general level of analysis, in the field of economics two disciplinary approaches have been developed in recent years to address environmental challenges: ecological economics and environmental economics. Although different, they are complementary.

Green economics uses a wide variety of methodologies (including neoclassical), depending on the objective of the research, while **environmental economics** is based exclusively on the paradigm of neoclassical economics, which emphasizes maximizing human well-being and using economic incentives to determine changing destructive human behavior. Moreover, we can add here the "**evolutionary economy**." Evolutionary principles are applied to study economics in an attempt to provide an alternative analytical framework in relation to the neoclassical principles of economic analysis, which gained importance in the twentieth century; thus, economists in all schools of thought have tried to think of the economic system as a product of an evolutionary process [7]. Although none of these three relatively new disciplines seems to provide a generally accepted system of thinking to address environmental issues, they can provide

an indication of how we should look at these complex challenges. Although they have common features, the ecological economy is closer to the evolutionary economy than the conventional and more limited environmental economy, as shown by the schematic comparison between them, presented below (**Table 2**) [9].

Table 2 *The main differences between evolutionary economics, ecological economics and environmental economics*

Evolutionary economics	Ecological economics	Environmental economics
➤ Evolutionary capabilities ➤ Diversity of agent, technique and product ➤ Innovation-recombination / mutation ➤ Adaptation / Evolutionary stability ➤ Limits of adaptation ➤ Dependence on previous elections ➤ Various time periods ➤ Population / distribution indicators ➤ Limited rationality and selection ➤ Functional morality ➤ Adaptable individuals and systems	➤ Optimal level ➤ Biodiversity ➤ Different opinions on innovation ➤ Equity (intra / inter-generational) ➤ Resilience ➤ Growth limits ➤ Ecological irreversibility - Long and medium periods of time ➤ Physical and biological indicators ➤ Behavior without clairvoyance ➤ Environmental ethics ➤ Causal processes	➤ Optimal allocation ➤ Representative agents ➤ Optimal research and development ➤ Efficiency, cost-effectiveness ➤ Macro sustainable growth ➤ Increasing limits ➤ Economic irreversibility - Short and medium periods ➤ Monetary indicators ➤ Rational behavior ➤ Utilitarianism ➤ Balance, static / comparative dynamics

Source: Adapted by Jeroen C. J. M. van den Bergh, "Evolutionary thinking in environmental economics", *Journal of Evolutionary Economics*, Springer, vol. 17(5), October 2007, pp. 521-549.

Both environmental and ecological economics are concerned with the relationship between ecosystem and resource management, trying to identify the causes and characteristics of environmental problems and their solutions. However, environmental economics focus its analysis on the neoclassical principles of rational choice in the context of resource scarcity, while the ecological economy combines elements of economics, ecology, geography, political science, thermodynamics, ethics and many other natural or social sciences. From an economic point of view, the environment is an economic asset.

On the one hand, this special resource provides the economy with the raw materials - which are transformed, through production activity, into goods and services - and the energy - which fuels the transformation process. After their transformation through production and consumption activities, these raw materials and energy are returned to the environment as waste, in a continuous cycle. On the other hand, this resource provides basic services directly to consumers, for example air, water, food, shelter, etc [13].

In response to the requirements of adapting the economy to the new requirements, the **Creative Economy developed**.

The modern economy cannot be based only on routine elements; the focus is mainly on imagination, innovation and creativity [6]. The economy of the future will certainly be creative and innovative. Moreover, from a historical point of view, this stage represents a new economic cycle, preceded by those of the agrarian economy, the industrial economy and the economy based on the provision of services.

The world economy is entering a new stage of much more dynamic and creative development. It went from an economy based exclusively on: agriculture, to the industrial economy, then to the economy based on services and not long ago to the one based on knowledge. The economy of the new decade will also be a creative economy.

In the last ten years, the turnover of creative production and services has more than doubled and reached 624 billion US dollars. In addition to the economic benefits, the creative economy creates intangible values and ensures sustainable development centered on the human being.

The term "creative economy" is defined as all persons and enterprises that produce artistic and innovative cultural products and services. This system also includes those spaces where creators can freely present their works, receive comments on them and exchange ideas.

The main feature of the creative economy is that people use their imagination to increase the value of an idea. John Howkins invented the concept of the creative economy in 2001 to describe economic systems in which value depends on originality and creativity, and not on traditional resources such as land, labor and capital. Unlike the creative sectors, which are limited to certain specific sectors, the term "creative economy" describes the creativity of the economy as a whole [14].

More specifically, new ideas, not money or technology are the source of success today and, more importantly - the source of personal satisfaction. A creative economy breathes new life into production, services, trade and entertainment and with positive effects on the environment. It changes the environment in which people want to live, work and study, but also the environment in which people think, invent and create [15].

The creative economy is a rapidly growing sector of the world economy. This sector is dynamic in generating revenue, creating jobs and developing export activity, as it is less dependent on material resources. Pierre Luigi Sacco - economist also emphasizes that the creative economy best reflects local characteristics and preserves identity in an era of globalization. In his opinion, Île-de-France in Paris, Inner London and Milan are the places where the creative economy develops most actively.

A country cannot develop routinely, but because of creative ideas. The economy of the new decade will be a creative economy.

In the context of current changes and the knowledge-based economy, a new method of measuring the competitiveness of a country or a city appears, starting from the "3 T" of economic growth: TECHNOLOGY, TALENT and TOLERANCE (Richard Florida - "The Rise of Creative Class"). Or, talent and tolerance are not bought with money, they are educated. Education belongs not only to one government or another or to any public/private partnership (all this helps enormously, when they are thought together and carried to the end), but, especially, to each of us [16].

The creative industries, through the wide range of fields they cover - from traditional arts to design and video games - are the ace up their sleeves that offer great economic potential to seemingly desolate economic regions. We aim to capitalize on and reintegrate new regions into the value-producing economic circuit. The ability to innovate, in combination with the training effects generated in other areas of activity, places creative industries as vital to the long-term health and competitiveness of the entire economy.

The creative industries are among the most dynamic sectors in Europe. They accounted for 3.3% of EU GDP in 2010. It was predicted that the creative industries would be the new economic engine in the next 10-20 years in the world. Romania cannot be passive to these changes that appear at international level [17]. As such, the premise of the research is the need to use a model for measuring the creative economy that can ensure the comparability, at least in Europe, of the results obtained. Regardless of how the creative industries are defined, there is no controversy that all of them form what is broadly referred to as the "creative economy". Similar to the creative industries, there is no unanimously accepted definition of the creative economy. It is a subjective concept, still in full process of modeling and contextualization. Although the definitions of "creative economy" differ, it tends to be unanimously accepted that its central element is the creative industries. Our approach to creative industries has sought to expand the acceptance of the concept of "creativity" to allow the inclusion in the category of creative industries not only of those activities that have a strong artistic component, but also of any other economic activities that contribute when creating products with a significant content in intangible assets, embodied, in principle, in intellectual property rights. Examples of industries with great creative potential: Advertising, Software, Web, IT Solutions Architecture, Design, Printing, Publishing, Translation and Interpretation, Art and culture, Sports and entertainment, Crafts, Media but all industries can develop this creative side so as to reduce the polluting impact on the environment [19].

One of the main global trends of the creative industries is to get closer and closer to the general trade dynamics of any other economic sector. Thus, as can already be seen on a world scale, the specialization of some states in the import of creative products and others in their export is visible, but there are also states with high incomes from natural resources that are reluctant to develop a creative economy [18].

By adopting and developing the creative economy, the impact on the environment will be reduced by:

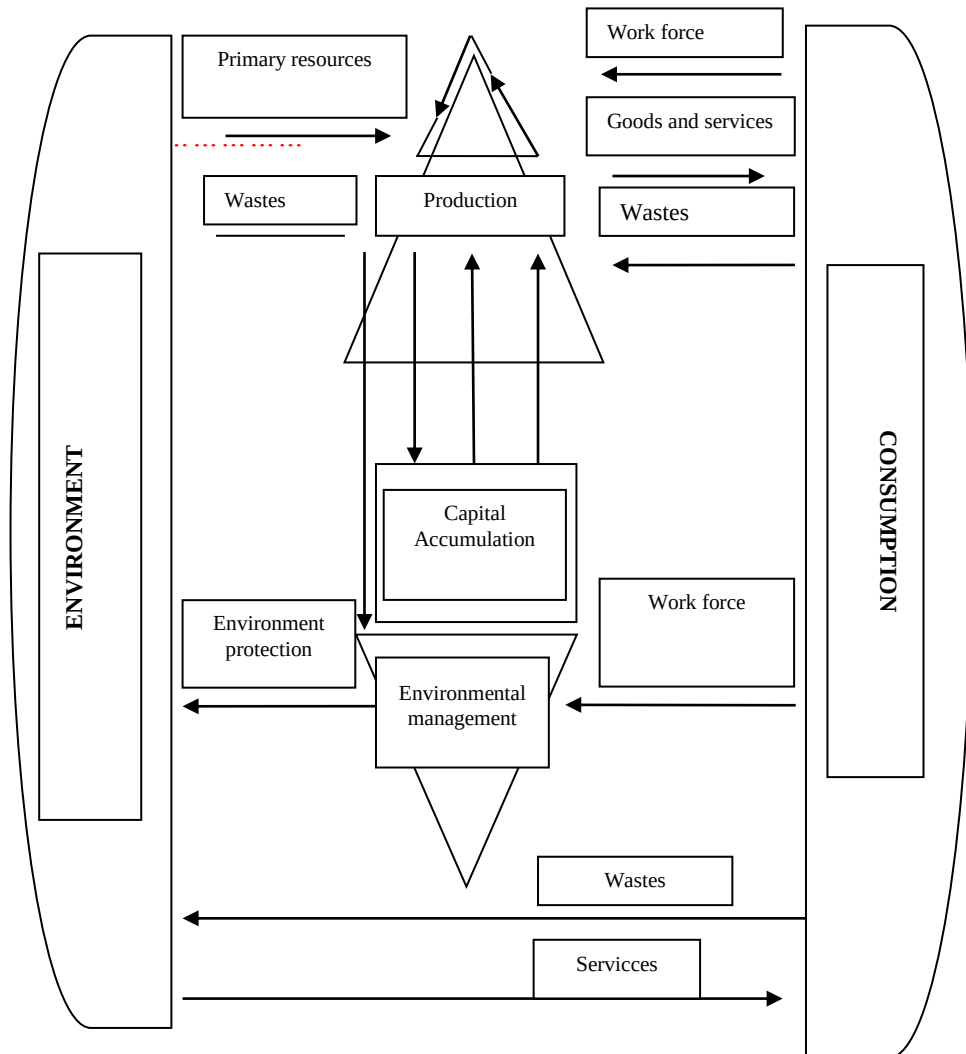
- **efficient use of resources;** we will actually have to get more out of less and thus reduce the amount of resources we extract and use.
- **efficiency of the flow of new materials in the production processes;** the research of new materials and less polluting technologies will have to be developed.
- **reduction of material losses and waste generated during production and consumption.**

Transforming our economy is possible, but to do so requires measures and commitments that span decades. Europe has made significant progress in increasing resource efficiency, but much remains to be done [12], [13].

Fully implementing such policies would provide many benefits. Fewer resources would be used for production, and this would contribute to the protection and conservation of the environment. At the same time, the economy would benefit from fundamental innovations and greater competitiveness for private companies.

From an unconventional point of view, this will integrate the economic study of environmental degradation phenomena (only partially reflected in the market system), in order to correctly assess the negative activities / benefits to the environment. A model of material flows can be used in order to highlight the importance of the economic approach to the environment in terms of integrating the creative concept [11].

Fig.2 Material flow



Source: Adapted by Karl-Göran Mäler: *Environmental Economics* Univ.Press, London, 1974).

In such a model it is tried to follow the circular flow of the matter [10], starting with its condition of primary resource taken from the environment and until its discharge in it, in the form of residue passing through the production and consumption phases. According to the model of Karl - Göran Möler (**Fig. 2**), five basic sectors can be considered: - production; - capital accumulation; - consumption; - environmental management; - environment. The model therefore includes an “Environmental Management” sector, for the operation of which labor and other resources from the “Production” sector are consumed; these consumptions are materialized through the actions of environmental protection.

The primary resources extracted from the environment are used directly by the productive sector, and the necessary labor input is represented in turn. The “Capital accumulation” sector refers to the capital stock in the economy, which offers productive (creative) services, usable as a factor of production. The “Consumption” sector is identified with the consumption of goods and services, coming directly from the “Production” sector.

Conclusion

Through this article, the author have tried to highlight the definitions of certain terms related to economy / environment, to present certain specific indicators and to present solutions by approaching certain realistic models.

In such an approach, anyone would be overwhelmed by the multitude of information, the diversity of opinions, the variety of approaches or the range of solutions at the time of initiating the study. It is, of course, true that this diversity includes a wide range of issues and different ways of examining various issues. Each of these approaches mediates the understanding of only part of the problem. Moreover, as already mentioned, environmental challenges range from pollution, climate change, to biodiversity loss, and although these issues are interrelated, they are usually addressed separately. The objectives of all entities should be similar and focused on eliminating negative impacts on the environment. However, generally speaking, a general conclusion is that goals are different to the extent that societies seek economic growth, economic entities pursue profit, and individuals strive for personal well-being.

Although these different objectives can be integrated into the broader concept of "general well-being", ultimately their reckless productive and consumption activities will lead to the consumption of natural resources and, as a result, the transformation of nature. Most authors in fields related to environmental protection draw attention to the rapid depletion of the stock of natural shrubs with industrialization and, predominantly, in the post-industrial phase of the evolution of human society.

Exploitation of resources beyond a certain limit can cause a major imbalance of the ecosystem, with consequences that cannot be quantified. Although technological advancement has led to a continuous adaptation of humanity, including the creation of new resources that are not naturally found in nature, the unprecedented increase in the world's population may put more pressure on the ecosystem, with unknown effects yet. Returning to the main issue, it can be said that there is no single or simple way to

understand and assess the impact of human behavior and economic activities on the environment, and no sure way to develop a strategy to reduce this impact.

Therefore, clarity is crucial to discern in this confusion created by the diversity of theories, disciplines, opinions, strategies, problems or solutions. And more studies from an evolutionary perspective are likely to be needed to understand how mankind has faced, over the course of its history, insufficient resources and growing needs in order to identify a future course of action.

According to the model of Karl - Göran Möler applied in case of a possible quantification of the adoption and development of the creative economy as a means of rethinking the economy so that the effects on the environment are diminished; it was found that the net material flow is equal to the net capital accumulation. Seemingly simple, this conclusion is significant insofar as it clearly shows that the share of primary resources that do not accumulate in the capital stock is permanently returned to the environment.

Another conclusion is that, given the net accumulation of capital, given that there are no incentives to reduce the volume of polluting discharges into the environment, natural sampling will be done in an excessive manner.

Therefore, if the quality of the environment is “disregarded” politically, the economy will suffer not only as a result of environmental degradation but also due to the abusive exploitation (overexploitation) of natural resources; in other words, if the discharge of residues into the environment is not kept under control, this will lead to an increasing increase in withdrawals from the stock of natural capital and it will not be possible to maintain the net accumulation of capital.

The described approach confirms the need to regularize the exchanges between natural and economic processes. In this sense, the Environmental Economy aims to ensure the substantiation of decisions on productive and social capital in accordance with the characteristics of natural capital, including based on ecological, economic and social accounting both in the short and long term.

Even if the goal of Environmental Economics also includes broader objectives, such as improving the quality of life, one of the main objectives remains the efficient management of natural resources, increasingly subject to appropriation and increasingly rare. Moreover, Karl-Göran Moler's model suggests a reconceptualization of the economic mechanism in order to identify means, tools for allocating resources between alternative uses.

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