

THE INTERDEPENDENCE BETWEEN NEEDS OF RESOURCES, PRODUCTION STRUCTURES, AND SCIENTIFIC AND TECHNOLOGICAL INNOVATION PROCESS

Gabriel I. NĂSTASE¹,
Dragoș Ionuț G. NĂSTASE², Marius Costin V. MANEA³

Rezumat: *La intersecția a trei zone de mare interes economic, România constituie un punct de legătură vital între țările Europei de Est, Europa Centrală și Asia Centrală, prin coexistența în mod unic a unei serii de elemente favorabile. În acest caz, economia trebuie înțeleasă ca un mijloc de realizare a finalității social umane, a cărei creștere trebuie să fie de tip sociocentric și nu economocentric. De aici necesitatea de a aborda procesele creșterii economice de pe poziții mult mai generoase în sensul depășirii cadrului îngust al triunghiului creștere – resurse – mediu cu un perimetru mai larg al pătratului economic – tehnologie – social – ecologie.*

Abstract: *At the intersection of three areas of high economic interest, Romania is a vital connecting point between the countries of Eastern Europe, Central Europe and Central Asia through the unique coexistence of a number of elements favorable. In this case, the economy must be understood as a means of achieving a human social purpose, whose growth must be of sociocentric and not economocentric. Hence the need to approach growth processes economical on much larger positions in going beyond the narrow meaning of the growth triangle - resources - environment with a wider perimeter of square economy - technology - social - ecology.*

Keywords: Globalization, sustainable development, scientific and technological innovation, resources, environment

1. Introduction

Due to the changes that occurred after 1989 in social life - political and economic situation of Romania, with the foundations of the new market economy and the handling of economic reforms, there was an evident increase of interdependencies between development economic, technological, environmental protection and social.

In this case, the economy must be understood as a means of achieving a finality social human purpose, which must increase the kind sociocentric and not economocentric.

¹Conf. univ. Ph.D., Senior Researcher, Head of Department of Finance Department of Faculty Finance, Banking and Accounting, Christian University Dimitrie Cantemir, Bucharest, Corresponding Member of Academy of Scientists from Romania (AOSR).

²Eng, Senior Researcher, Autonomous Nuclear Activities Branch For Nuclear Research Pitesti.

³Eng. Junior Researcher, Faculty of Engineering and Management of Technological Systems, University "Politehnica" of Bucharest, marius_manea86@yahoo.com.

Hence the need to approach growth processes economical on much larger positions in going beyond the narrow meaning of the growth triangle - resources - environment with a wider perimeter of square economy - technology - social - ecology.

We are all included in a global economy dominated more than ever the interdependence and closer interaction between all its constituent countries and regions. No country can ignore this reality and cannot develop in isolation or without conditions to cooperate with other countries.

However, while the development contained in the final out of the question, fostering complementarities of countries or regions in neighboring countries can certainly lead to a significant economic development.

Romania enjoys a wide range of comparative advantages and preliminary conditions, such as to recommend a reliable partner for companies and countries around the world and as a new alternative for entry into Europe for international trade and foreign investment.

In a word should be understood that one must live in the midst of a structure such as "economic, ecological, technological and social policy. Therefore to understand the role the concept of sustainable socio-economic development in human existence must clarify the concepts of economic growth, economic development, progress and biosocialeconomy.

Economic growth - producing quantitative and qualitative changes of level economic potential in economic structure and qualitative indicators. For the most part, growth is achieved through investments in production potential gains by creating new jobs.

Economic development - enables the transformation of a beam wider social, political, technological, cultural, educational, organizational, institutional, plan the basic concepts and values, to encourage growth and lead to real progress.

2. The concept of sustainable economic and social development

Summarizing the concept of sustainable development and social economico aims to make the reader more or less circumspect to understand a number of interdependencies and correlations of sustainable development.

A global vision for sustainable development could relate to connections between the main indicators of socio-economic development: population growth, resources of raw materials, economic growth, consumer population, social protection, natural environment. Earth has been the swing of human civilization, but also a huge "boat" astral, wandering through the vast cosmic ocean, which has on board over 500 000 plant species and over one million animal species that lived in millions of years until the appearance of man on Earth, in an almost perfect balance.

The issue of sustainable development is a concept launched at the presentation of the report entitled "Our Common Future", in the work of the World Commission on Environment and Development in 1987 and has been defined as "development which ensures type present needs without compromising the ability of generations future in meet their own requirements".

The concept involves providing performance on three fronts:

1. Economic recovery that increasing resources and halting the loss of non-renewable resources.
2. Ecological: avoiding environmental degradation.
3. Socio - cultural: providing living conditions of human achievement.

Sustainable development is an alternative in terms of cooperation at the global, regional and local level and ensuring sustainable development is a responsibility of every individual. But government action alone is not sufficient to implement sustainable development. It can be said that economic reform under way cannot be conceived outside the economic and social development, but only with it.

Business people, interest groups, scientific community, education, media and organizations non-governmental should be involved with interdependent actions promoting sustainable development and strengthening of governmental actions.

Starting from the idea that the welfare of people is dependent on a strong scientific and technical activity, developed countries economically triggered a strong offensive in the field, offensive known as scientific-technical revolution. It argued as the main promoter of economic growth, which in turn has generated a scientific and technical revolution in the decades between 5 and 6 a number of economic theories and policies able to justify the extensive organizational, economic and financial.

In an extremely difficult time of the Cold War, took place on the world stage when profound changes in political, social and economic, the game was made to test the viability of development models and opportunities to these models. We appreciate that for achieving the objectives envisaged in the short, medium, long and very long, acting on several factors.

Sustainable development means improving and maintaining progressive welfare in conjunction with the requirements of rational use of natural resources and ecosystem conservation.

2.1. Economic balance and sustainable economic-social development

Economic equilibrium in terms of economic development - social development approach is a concept which should be the interdependence and correlation with various factors that contribute to achieve this balance:

- financial balance
- budget balance
- cash balance
- the trade balance and balance external payments;
- balance between economic development and technological development;
- balance between economic development and environmental protection;
- balance between technological development and environmental protection;
- balance between economic development and social protection.

In the same way is done through various links between the factors mentioned above but also the balance between global economic factors, which may be located at both micro and macro level.

Global economic balance is conceived as a result of partial equilibrium, so that the interdependence and correlation between different systems of economic equilibrium conditional on many factors determining the achievement of these balances.

2.2. Optimal economic and sustainable socio-economic development

Sustainable socio-economic development requires time to achieve an optimal one between its components. Achieve economic optimum of economic system involves achieving economic efficiency located in line with economic interests pursued. Economic optimum cannot be conceived outside of the interdependence of economic equilibrium and economic processes.

Negative aspects of economic development that abound in everyday life and are characterized by water pollution, soil and air, with serious consequences ensuing human health and welfare, have impressed the experts in the field of environment. So now the question is the humanity to achieve a balance between environmental planning and economic development. This complementary relationship generates concern of teams specialists economists, politicians, profound changes in thinking and decision. If until recently it was a fact that to characterize environmental problems only in terms of raw national product growth, now, when confronted on the ideational level, the fight against pollution is concerted with that of economic and social development without this struggle to produce a brake, a threat to development or negligence in supervision and environmental protection.

2.3. Dynamics's technologies: cycle of life and processes of adopting technology to the competitive environment demands

Effectiveness of any activities of Research and Development (RD) is based on the number of obtained inventions and how to develop and implement new technologies that have the effect of launching a new product manufacturing. The

purposes of the required crossing many intermediate phases (achievement prototyping, prototype testing, approval and launch of the manufacturing production series) of the RD process.

Time steps to reduce scientific research and technological development and its costs to achieve a new technology it is necessary to combine techniques of explorative and normative forecast. Completion stages of research, it is advisable to emphasize the normative forecasting techniques. Thus planning objectives RD can establish criteria for performance / price, dynamic role in RD activity and increasing its efficiency. Like products, technologies have also led a life cycle between two moments: the implementation and the disappearance of that technology.

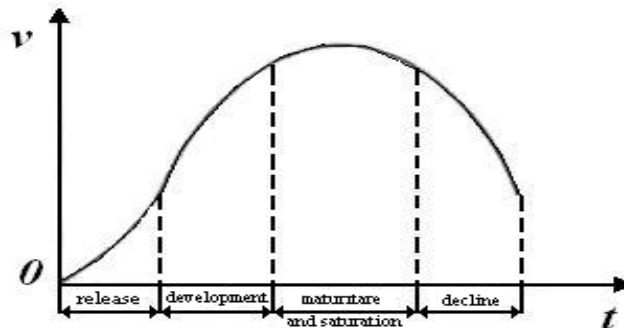


Fig. 1. The cycle of life of technology.

In the past vertical volume (V) are manufactured with technology here, and horizontally, time (T) which he lives through technology.

The diagram dynamics of technology adoption can be constructed passing orderly number of producers have adopted to achieve a product or a product category (N).

The diagram in Figure 2 shows the link between dynamic process of life and technology of its diffusion process. As a result, it should be clear separation between the innovative and adopted as the adoption of technologies, considered as a second phase of its broadcasting, new processes can occur innovation, improvement to render a different economic value, sometimes higher than the initial.

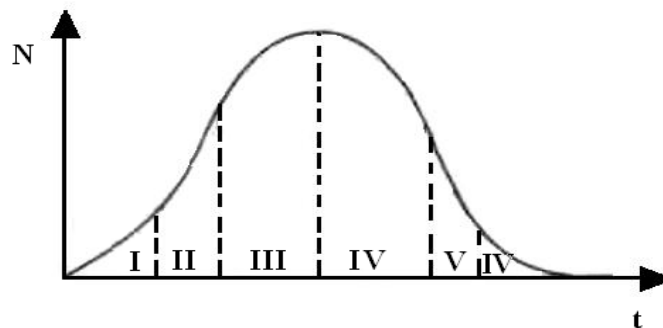


Fig. 2. Chart dynamics of technology adoption.

- I - Innovative, which developed and implemented new technology;
- II - The early adopt new technology, generally through licensing;
- III, IV – Normal adopts of new technology based market drop on their own development, complemented by its partial licenses purchased;
- V – Adopt based on the license late and cheap;
- VI - Adopted in related areas of existing technology.

Environmental issues are extremely complex and involve all sectors of economic, social and political. Therefore, in the current period, more than ever, environmental protection as part of sustainable development is a major problem of humanity and not just a certain group, representative of certain interests.

Promoting technical progress must be made in the context of compliance with environmental restrictions. Under these conditions pollution control costs should also include a share of the costs of introducing technical progress. Thus the recruitment of new technologies in environmental restriction results in achieving "obvious advantages in terms of compliance costs."

2.4. Innovation and environmental protection

Ecological exploitation of knowledge to Romania can be a key factor to attenuation the expansion of science and technology, destructive nature and a favorable factor for the protection of urban areas which are complex and complicated issues while creating many environmental problems: climate change, ozone layer protection, movements of hazardous waste across borders, water protection, biological diversity, soil protection, forest's protection.

Depending on how it is understood the idea of sustainable development and the implementation of this concept can achieve a "sustainable development policy in which consumption and production to achieve the qualities and preserving environmental resources."

The concept of sustainable development appeared and imposed as a result of gradual awareness of significant imbalances arising from the development process of contemporary human society, against social and economic globalization processes.

The future is now preparing and so should not be neglected by the new economic thinking of the concept of sustainable development, which many of us try to understand. Do not forget that we are at the turn of two millennia, which obliges us to prepare our entry, to all humanity, in the third millennium, without prejudice, but with the desire to build a world without pollution and war, a world where survival chances the conditions imposed by the concept of sustainable development is provided solely for implementation of environmental technologies in the economy.

3. Needing approaching interdisciplinary

From the above implicit that if humanity wants to survive, all its activities should focus on three key goals:

- a. remain unaltered, however, does not lead to worsening air and water pollution, environmental factors in life that carried all species and creatures.
- b. default drastically reduced burning fossil fuel consumption, consuming timber strictly within the limits of regeneration and without prejudice to the soil by making uncontrolled deforestation.
- c. drastically reduce water consumption other than for the physiological needs necessary creatures.

Needing communication requires common language specialists gathered in different collective work of interdisciplinary knowledge in areas in contact (other than those derived from their basic training). Like any field, especially in the ecology and environmental analysis is made to the finest details, but operations summary nature of a conclusion, resulting in the most varied forms: from basic definitions for the indicators of different phenomena.

Current state in which humanity reached, characterized by high levels of pollution and consumption of exhaustible resources, requires the forefront of concern to policy makers in developing strategies, the issue of sustainable development of methodological tools to support decision development and harmony with nature.

One can say that currently sustainable development strategies are the priority of priorities in social and economic establishments of the states.

It is also worth mentioning that to achieve global economic efficiency rate will be through the steps:

- research - development - innovation;
- use of recycled products;
- recovery of recyclable materials;
- investment;
- production;
- return waste to the environment.

On each of these stages is intended effort and effect, making calculations based on value added gain.

Conclusions

Our conclusion is that the strategies in any field of socio-economic activities, the two fundamental concepts - sustainable development and overall economic efficiency - essential tools necessary to ensure correctness.

REFERENCES

- [1] ȚICOVSCHI V., MITEA V., DĂNESCU I., *Transferul internațional de tehnologie și dezvoltare economică* (Editura POLITICĂ, București, **1983**).
- [2] NĂSTASE, I.,G., *Rolul interactiv al informației* (Editura RAPANA, București, 2001)
- [3] MĂRUȚĂ, Al.; CHIRIAC, V., *Probleme actuale ale apei din agricultură și alimentație*, (Editura TEHNICĂ, București, **1987**).
- [4] GHEORGHIU, Al., *Eficiența economică globală și dezvoltarea durabilă*, (TRIBUNA ECONOMICĂ, 2 mai **1996**) nr. 18, p. 58-61.
- [5] GEORGESCU, A., *Sinergetica, o nouă sinteză a științei*, (Editura TEHNICĂ, București, **1987**).
-