

SYNERGY OF RESEARCH, DEVELOPMENT AND INNOVATION ACTIVITIES, SUPPORT FOR SUSTAINABLE DEVELOPMENT

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Abstract: *The main role of research, development and innovation, RDI, is to improve people's living conditions through the sustainable development of organizations. To find solutions to environmental challenges, organizations need to implement new projects that create synergy between science and society by involving all stakeholders in the sustainable development of society in general. Research, development and innovation activities should be seen as an investment in the harmonious development of future agribusinesses. Capitalizing on all the strengths and opportunities offered by the current environment and the current level of society development must stimulate innovative solutions to develop an economy in harmony with nature. Competition between states is also manifested through fiscal or other facilities offered to local or foreign investors. Among other factors, the attractiveness of a country for investors is also given by the incentives they can get for RDI activities. To this end, Romania has to align with EU standards in order to overcome the limits and to contribute directly to the well-being of European society and citizens by allocating resources to finance significant RDI activities.*

Key words: *sustainable development, innovation.*

JEL Classification: *Q01, O31, O32.*

1. Introduction

In any society, economic growth is based on decapital accumulation, organization development and technological progress. As a result of the international financial crisis, economic growth has been, and continues to be, a primary goal of national strategies at EU and international level. Considering that in the new context of global competitiveness technological progress is recognized as one of the key elements of sustainable economic development, R & D and Innovation (RDI) is central to this equation.

At the organizational level and in the field of human resources policy, R & D and innovation oriented companies can positively influence the strategy and the results of their activities in this field by encouraging their own employees to explore and adopt new ways to think. The main role of RDI, is to improve people's living conditions through the sustainable development of organizations.

To find solutions to environmental challenges, organizations need to implement new projects that create synergy between science and society by involving all stakeholders in the sustainable development of society in general. Research, development and innovation activities should be seen as an investment in the harmonious development of future agribusinesses. Capitalizing on all the strengths and opportunities offered by the current environment and the current level of society development must stimulate innovative solutions to develop an economy in harmony with nature.

The development research process must be future-oriented, taking into account new global and regional relevant trends, emerging technologies, societal challenges, global operator behavior, and sustained investment in research.

Competition between states is also manifested through fiscal or other facilities offered to local or foreign investors. Among other factors, the attractiveness of a country for investors is also given by the incentives they can get for RDI activities. To this end, Romania has to align with EU standards in order to overcome the limits and to contribute directly to the well-being of European society and citizens by allocating resources to finance significant RDI activities.

2. The EU Framework Program for Research and Innovation, Horizon 2020

EU countries account for almost a third of scientific and technological production in the world. Despite the economic crisis in recent years, the EU and its Member States have managed to maintain their stance on knowledge-based competitiveness.

However, the EU is facing increasingly fierce international competition in the field of research and technological production. That is why we need to make greater efforts to translate our innovative ideas into new products and new technologies.

The main milestones for implementing an EU research-innovation policy are (European Commission, 2014):

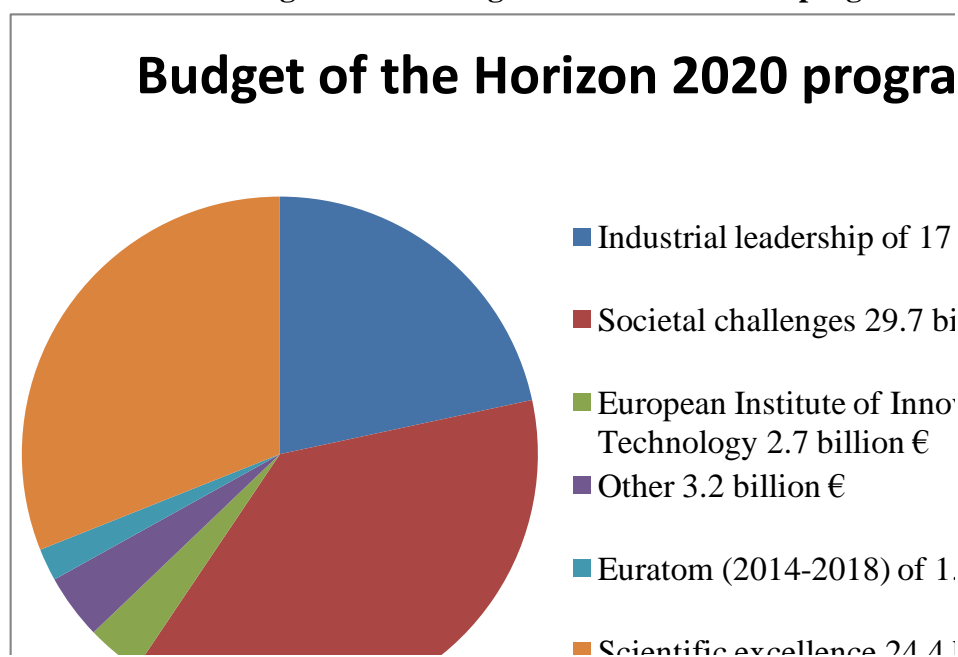
- 1950 - Treaty establishing the European Coal and Steel Community (ECSC, 1951) and the Treaty establishing the European Atomic Energy Community (Euratom, 1957).
- 1957 - The Treaty establishing the European Economic Community (EEC or the "Common Market") paves the way for a range of research programs in areas that are considered priority at the time, such as energy, the environment and biotechnology.
- 1983 - The European Strategic Program on Information Technology Research (ESPRIT) launches a series of integrated research programs in the field of information technology, as well as development projects and industrial technology transfer measures.
- 1984 - The first "Framework Program" (PC) for research is launched. This type of program will become the main tool by which the EU is funding research projects. PC1 targets in particular research in the fields of technology, telecommunication and industrial technology.
- 1986 - Research is formally a community policy devoted to a specific chapter in the Single European Act. The objective of this policy is "to strengthen the scientific and technological basis of European industry and to encourage the development of its international competitiveness".
- 2000 - Expresses its desire to create a European Research Area (ERA): an open space research space based on the internal market, in which researchers, scientific knowledge and technology can circulate freely.
- 2007 - The European Research Council (ERC) is established as part of the Seventh Framework Program (FP7). Its mission is to support frontier research actions in all fields based on scientific excellence.
- 2008 - Establishment of the European Institute of Innovation and Technology, based in Budapest. This is the first EU initiative to fully integrate the three dimensions of the "knowledge triangle" (higher education, research and enterprise) by supporting knowledge and innovation communities. The Institute begins its activity in 2010.
- 2010 - The EU is launching the "Innovation Union" initiative, which provides for 30 action points to improve conditions and access to research and innovation funding in Europe. The "Innovation Union" initiative, which is a core element of the Europe 2020 strategy, is intended to encourage the emergence of innovative ideas in products and services that generate growth and jobs.
- 2014 - Horizon 2020 is being launched, the largest research and innovation framework program in the history of the EU. This is a major financial instrument for implementing the "Innovation Union" initiative, which will benefit from a budget of nearly € 80 billion over the 2014-2020 period. Horizon 2020 is part of the drive to create growth and jobs in Europe.

Horizon 2020 is the largest research and innovation program in the history of the EU. It will facilitate more revolutionary breakthroughs, breakthroughs and world premieres by transferring ideas from the lab to the market. The amount available for funding is almost € 80 billion over a 7-year period (2014-2020), most of which is dedicated to the three basic pillars: scientific excellence, industry leadership and societal challenges. In addition, this investment will attract public and private national investment

Horizon 2020 has been endorsed by the governments of the EU Member States and the European Parliament, who have agreed that investment in research and innovation is key to Europe's future, placing it at the heart of Europe 2020. The aim is to ensure that Europe has a world class scientific and technological level that stimulates economic growth

The economic crisis has highlighted the central role played by the EU's industrial base and the need to renew it. Market failures can, however, prevent the private sector from obtaining the financial resources and knowledge needed to modernize our industrial base.

Figure no. 1. Budget of the Orizon 2020 program



Source: European Commission, 2014. *Understand the policies of the European Union. Research and innovation* [pdf] Available at: <https://europa.eu/european-union/sites/europaeu/files/research_ro.pdf> [Accessed 3 March 2019].

The budget of the Orizon 2020 program consists of investments in:

- Leadership in the industrial sector = Investing in promising and strategic technologies, encouraging businesses to invest more in research and cooperate with the public sector to stimulate innovation;
- Societal Challenges = Investments in research and innovation projects that can bring concrete benefits to citizens;
- European Institute of Innovation and Technology = Valuing the potential of Europe's talent pool and maximizing and distributing the benefits of innovation across the EU;
- Others = Science with and for society, spreading excellence and expanding participation, direct actions;

- e) Euratom (2014-2018, = Financing of EU fission and nuclear fusion research, safety and security issues, medical research, radioprotection, waste management, industrial uses of radiation, uses in energy production;
- f) Scientific Excellence = Stimulating the Union's competitiveness, creating jobs, improving living standards.

The Horizon 2020 program is seen as a way to boost growth and jobs, and benefits from the political support of European leaders and MEPs who have agreed that investing in research is an investment in our future by placing at the heart of the Europe 2020 Strategy for Smart, Sustainable and Inclusive Economic Growth.

By achieving a synergy between research and innovation, Horizon 2020 contributes to achieving these goals, focusing on scientific excellence, industry leadership and societal challenges, in order to ensure Europe's ability to produce world-class science, to remove barriers to innovation and to facilitate the collaboration of public and private sectors to deliver innovative solutions.

Horizon 2020 benefits from the political support of European leaders and MEPs who agreed that investing in research and innovation is key to Europe's future by putting them at the heart of the Europe 2020 strategy for smart, sustainable and inclusive growth. Horizon 2020 contributes to achieving this goal by combining research and innovation and focusing on three key areas: scientific excellence, leadership in the industrial sector and societal challenges. The aim is to ensure Europe's capacity to produce world-class science and technology to stimulate economic growth.

As a result of EU funding for research in previous school programs, scientists and industry representatives in Europe and around the world have joined efforts to find solutions to a wide range of challenges.

Their innovations have helped to improve the standard of living, protect the environment and increase the sustainability and competitiveness of European industry. Horizon 2020 is open to researchers from all over the world.

3. Research, development and innovation activities, supporting sustainable development in Romania

Sustainable development is the development process that responds to current needs without endangering the ability of future generations to respond to their own needs (Statement on Environment and Development, Rio de Janeiro, 1992).

The main objectives of the RDI at national level for the 2020 horizon are put into practice through several action lines that follow the principles of sustainable development.

Their role as a whole is to structure the innovation system in Romania.

In this context, the overall vision refers to the following objectives (Romanian Government, 2014):

- Increasing the competitiveness of the Romanian economy through innovation. The objective is to support the performance of economic operators on global value chains. The strategy supports the transition from cost-based competitiveness to innovation-based competitiveness. This implies developing companies' ability to absorb state-of-the-art technology, adapt these technologies to the needs of the markets served, and develop technologies or services that enable them to progress on value chains.
- Increasing the Romanian contribution to the progress of frontier knowledge. The strategy supports the increasing international visibility of research and experimental development in Romania. RDI activities involve the formation of a critical mass of researchers in the most promising areas, maintaining advancement in niche areas.

- Increasing the role of science in society. Science and technology become relevant to society when their effects are felt in the everyday life of the citizen. To this end, research and innovation respond to the concrete needs of the economic and public sector, especially those of increasing the quality of services offered (such as citizens' health or security), and offer attractive employment prospects in the private sector to as many people as possible. The strategy aims both to solve societal problems through innovative solutions and to provide expertise in public policy making.
- Creating a stimulating environment for the private sector initiative through tools to drive entrepreneurship and commercialization of RDI results, as well as by credible partnerships between public and private operators.
- Focusing an important part of RDI activities on societal issues to develop the capacity of the RDI sector to demand and adopt research results and to address issues related to the global challenges of relevance to Romania.
- Supporting the aspiration towards excellence in research at the frontier of knowledge through the internationalization of Romanian research, international evaluation, increasing the attractiveness of the Romanian RDI system through mobility and partnerships.

The development of innovation research activity requires the reorientation of RDI policies towards those research activities that deliver results relevant to the sustainable development of society.

An integrated approach to social, economic and environmental issues is needed.

This requires:

- stimulating a certain kind of economic behavior, oriented towards environmental policies;
- understanding the social impact of science, technology and economic activities in the relevant sectors;
- interdisciplinary research and development.

The main directions of action are oriented towards the development of projects initiated by firms, competence centers, innovation infrastructure, priority programs, research infrastructures, performance and organizational concentration, a strategic orientation mechanism.

The development research process must be future-oriented, taking into account new global and regional relevant trends, emerging technologies, societal challenges, global operator behavior, and sustained investment in research.

In sustainable development strategies at European and national level as well as in the Framework Program, special emphasis is placed on ensuring links between sustainable research and development. This link is also underlined in the latest R & D policy documents at European level: A Strategic European Framework for International Science and Technology Cooperation, Towards Joint Programming in Research: Working together to tackle common challenges more effectively.

The 2020 vision of the European Research Area also mentions that "it must have strong roots in society and respond to its needs and ambitions in the desire to ensure sustainable development" (European Commission, 2014).

Figure no. 2. Synergy between research, development, innovation and sustainable development



In order to implement national strategies that synergistically combine research-development-innovation activities with those of sustainable development, specific actions need to be taken:

- developing techniques and solutions for saving energy and using renewable energy;
- developing green infrastructure concepts and solutions in relation to Eco-innovation;
- making and preserving "green corridors";
- the implementation of measures to ensure the provision of public amenities and the prevention of pollution due to noxious substances, including noise pollution, the reduction of pollution caused by the storage of household waste;
- strengthening capacities of national and local administrations to develop and implement the climate change strategy, preserve and protect the environment, and ensure integration of these strategies into national programs;
- integrating environmental aspects into other sectoral policies, promoting green economic development.

4. Conclusion

The development of a strong research, development and innovation, RDI, activity at national level is the essence of a sustainable development of society. Companies that encourage the development of creative thinking, while creating an organizational culture and a strategy that supports this type of thinking, are those that are most likely to have sustainable development.

Creating and addressing a synergy between research and development concepts and activities - innovation and sustainable development of society is the most effective way to create a development that satisfies both the financial and human aspects of an activity.

The integration of sustainable development in innovation research projects expresses the commitment of organizations to implement the legal provisions and guidelines included in the relevant strategies, taking into account the positive impact that the implementation of these projects may have on the environment.

This must be understood as a long-term participatory process that can not be achieved without establishing the possible environmental impact that the innovation development research project may have.

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