
***FUNDING RESEARCH AND DEVELOPMENT THROUGH THE HORIZON 2020
PROGRAMME***

Mircea-Iosif Rus, PhD Student, "Babeş-Bolyai" University of Cluj-Napoca and Mircea-Ioan Păstrav, PhD, Senior Researcher, NIRD URBAN INCERC Bucharest, Cluj-Napoca Branch

Abstract: In European developed economies, research and development is supported by both public and private funding. Europe's competition with the US and Japan in research requires European companies to pay great importance to this field, and, implicitly, to its funding. Therefore, in 2011, the European Union launched the "Horizon 2020" Programme, for research funding in 2014-2020, programme which will include, for the first time, all sources of funding for research and development. This funding programme is the successor of Framework Programme 7, which provided partial funding for research and development in 2007-2013. The sub-programme which will provide funding for research and development is the Competitiveness Operational Programme (COP).

Key-words: *research and development, funding, European Union, Framework Programme 7, Competitiveness Operational Programme*

1. Introduction

Diverse transformations occurred at certain time intervals during the development of the human society and such transformations resulted in progressive leaps. Thus, the migration stop and the people settlement on geographic locations was considered a first revolution also due to the fact that they worked the land where they settled thus revolutionizing the agriculture. The second great transformation was the industrial revolution which marked the human society in the most profound manner as it was determined by the invention of the steam machine by J. Watt in 1788. This fact had as a result the making of stronger and stronger machines, the introduction of mechanization in the production processes, the involvement of an ever increasing number of workers and specialists, production and productivity growth. (Hall B.H. & Lerner J., 2010)

The new scientific-technical revolution fundamentally influenced the present epoch, an epoch which is characterized by technology fast changes, by the extension of automation but also by information fast processing and transmission. From the household domain to outer space, affecting life in its entirety, sciences and technologies develop in an exceptional rhythm. Some previously set up laws may be contradicted by the new scientific discoveries like the atom indivisibility, the theory of the species etc. The period between the scientific discovery and its application in practice decreases. (Plumb I. *et al.*, 2007)

2. Research Methodology

The achievement of any scientific research work presumes, in an implicit manner, the combined application of a number of research techniques and procedures through which the researcher tries to obtain a maximum of conclusions, starting from previous researches, completing with his own experiences and results in order to phrase the final conclusion on the analyzed theme. Thus, the etymology itself of the Greek words *metodos* (route, way) and

logos (science) guides us to the same thing. Many times though, even if these methods and techniques are well determined from the beginning of the research process, it is possible that during the said process the necessity to change them appears, under the influence of external factors which may impose the adoption of new methods of study or the abortion of others already adopted.

From the very beginning, the present work was intended to be a **qualitative research**. During the research, it became obvious and more and more acute the need to extend the research with elements of **quantitative research** meant to give a greater relevance to the research conclusions and, at the same time, to eliminate the subjective factors. The theme of the present work may be analyzed from several directions. Anyway, to be able to understand the diversity of all the senses which may be associated to the research – development activity it is necessary the adequate knowledge of the concept, its origin and utility, both at the theoretical level but mainly practically.

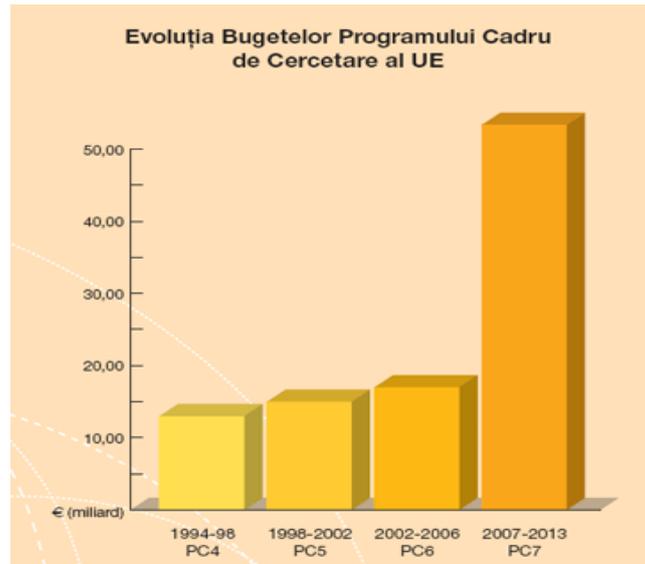
3. Research – Development activity funding through EU programs

3.1. Funding through Framework Program 7

The 7th Framework Program for technological research and development (PC7) is the main instrument of the European Union for research funding in Europe. PC7, which is applicable between 2007 and 2013, follows in a natural manner the 6th Framework Program (PC6) and is the result of the years of consultations with the scientific community, with the research institutes and those which draw up policies as well as other interested parties.

From their launch in 1984, the framework programs played one of the main roles in multidisciplinary research and cooperation activities in Europe and outside this continent (see figure 1). PC7 continues on this line being more extended and comprising than the previous research framework programs. Under development between 2007 and 2013, the program received a budget of 53.2 billion Euros for its duration of seven years and this represented the most important funds allocation until now for this type of programs. PC7 also represents important differences in relation to what was developed previously, these being as follows:

Figure 1. Sources allocated for EU Research Framework Programs



(Source: The author’s processing according to www.ec.europa.eu)

The value of the funding through this program is shown by table 1:

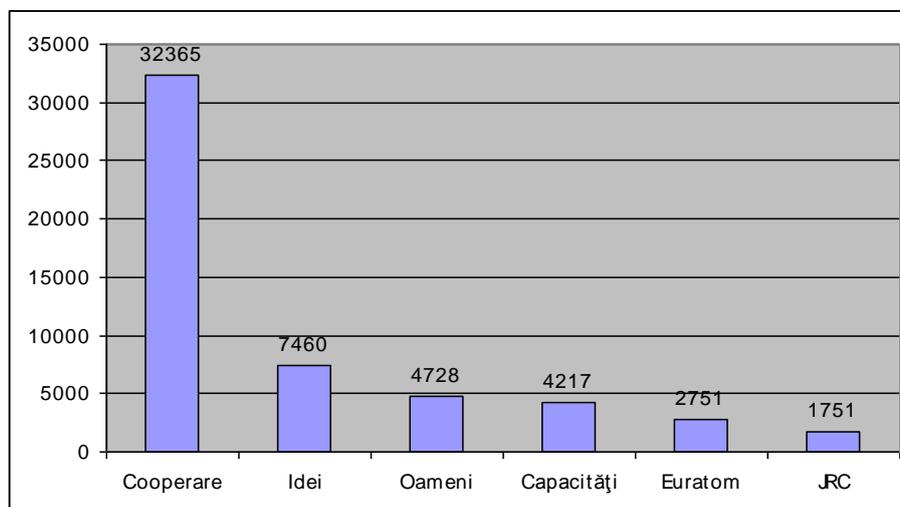
Table 1. The Budget allocated by activities of the PC7 (millions of Euros)

Cooperation	Ideas	People	Capacities	Euratom	JRC
32365	7460	4728	4217	2751	1751

(Source: The author’s processing according to www.ec.europa.eu)

As it may be seen in table 1, the largest amount of the budget was allocated for *Cooperation*, and it represented 60,84% of the total of the PC7 budget, for *Ideas* a percentage of 14,02% of the funds was allocated, for *People* a percentage of 8,89% of the funds, for *Capacities* 7,92%, *Euratom* received funds amounting to 5,17% and *JRC* received funds matching a percentage of 3,16%. From a graphical point of view, the budget shown by table 18 is presented in figure 2:

Figure 2. The Budget allocated by activities of the PC7 (millions of Euros)



(Source: The author's processing according to www.ec.europa.eu)

The *Cooperation* Program had the budget broken down for the domains shown by Table 2:

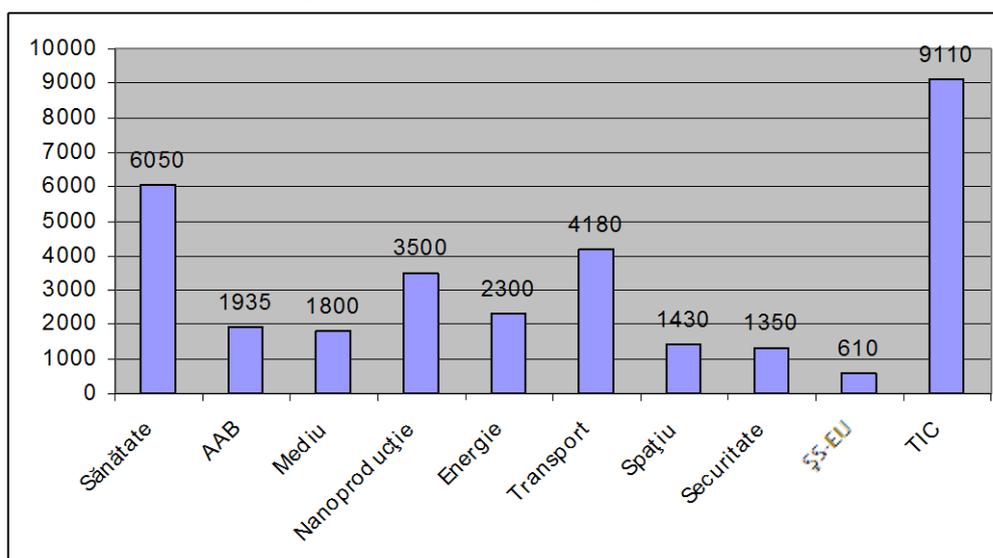
Table 2. Cooperation Program Budget (millions of Euros)

Health	Food, Agriculture and Biotechnology	Environment (including climate change)	Nano production	Energy	Transport (including Aeronautics)	Space	Security	Socio-economic and humanistic sciences	Information and communication technology
6050	1935	1800	3500	2300	4180	1430	1350	610	9110

(Source: The authors' processing according to www.ec.europa.eu)

From the point of view of the percentages allocated to the *Cooperation* Program, it can be said that the Health domain had funds allocated in a percentage of 18,69%, the domain Food, Agriculture and Biotechnologies funds in a percentage of 5,98%, the domain Environment got funds up to 5,56%, the domain Nano - production a percentage of 10,81%, the domain Energy received funds in a percentage of 7,11%, the Transport domain a percentage of 12,92%, Space, a percentage of 4,42%, Security received funds covering a percentage of 4,17%, the domain Socio-economic and humanistic sciences acquired funds amounting to 1,88% and the greatest allocation was for the domain Information and Communication Technology, 28,46%. Graphically, the amounts shown by table 2 may be found in figure 2:

Figure 2. Cooperation Program Budget (millions of Euros)



(Source: The authors' processing according to www.ec.europa.eu)

3.2. Funding through structural funds

The research – development activity funding was provided for within the structural funds in the Economic Competitiveness Increase Program (POSCCE), Priority Axis 2, and lower value funding were also done by the Priority Axes 1 and 3.

The status of Romania's absorption of structural funds for POSCCE is shown by table 3:

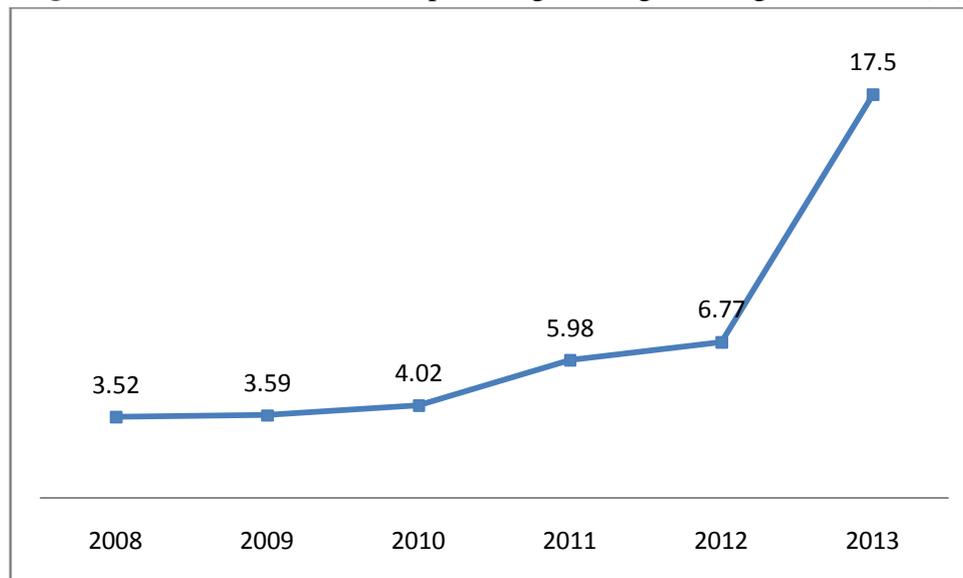
Table 3. POSCCE Structural Funds Absorption Status

Absorption reference date	EU allocations 2007-2013	millions EUR					
		2008	2009	2010	2011	2012	2013
POSCCE	2.554	90	91,8	102,75	152,81	172,91	447

(Source: The authors' processing according to www.ec.europa.eu)

From the point of view of European funds absorption degree weight, the figures are shown by figure 3:

Figure 3. Structural funds absorption degree weight through POSCCE (%)



(Source: The authors' processing according to www.ec.europa.eu)

The structural funds absorption degree registered an ascending path, from a value of 3,52% at the end of 2008 to a value of 17,5% by the end of 2013. Even if the increase was of over 5 times, Romania is still on the last but one place between the countries of the European Union in what concerns the level of funds absorption.

The value allocated to Romania for the period 2007-2013 was of 19.213 million Euros¹ but, with all the efforts that will be done until the end of 2015 to access those funds, the absorption

¹www.fonduri-ue.ro

degree will reach somewhere between 60%-70%, which is so little if we relate to Poland which accessed all those structural funds hence achieving an absorption degree of 100%.

3.3. The Europe 2020 strategy

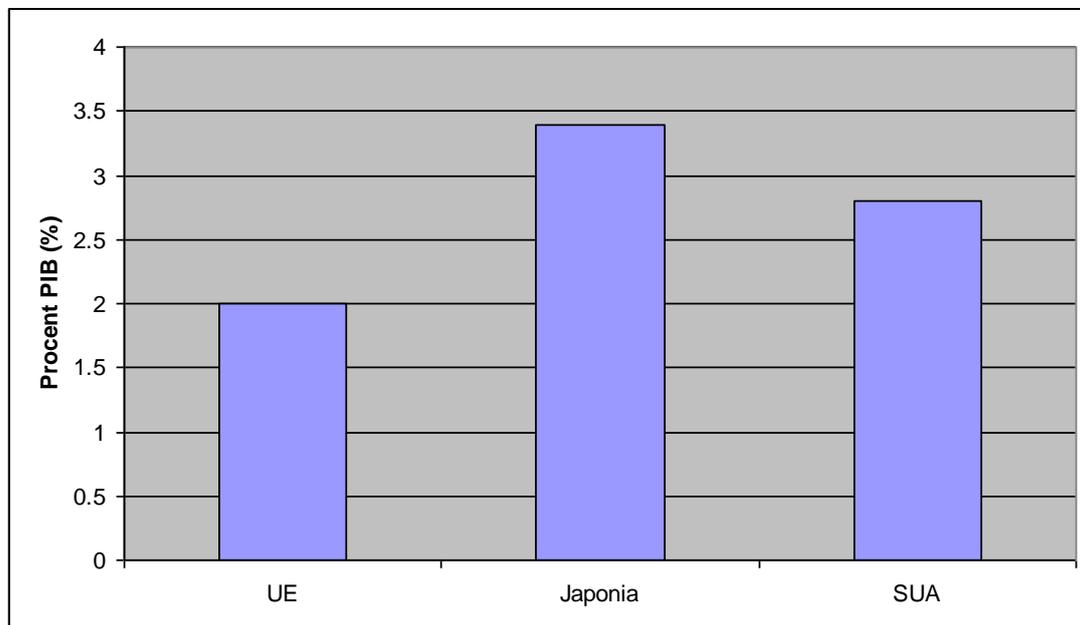
By the adhesion of other states to the European Union, the creation of joint policies which provide for the Union development became more and more necessary. Thus, joint policies were created in domains like agriculture, trade, fishing, taxation, justice, internal affairs etc.

The European Union research policy is part of a wider policy of this European construction, i.e. „Science and technology”. From this policy also spring the policies related to the domain of the information society, audio-visual and mass media, space, life sciences and biotechnology. (Taylor M., 2011)

The reason of a policy in the field of research and innovation is owed to the satisfaction of two needs. First of all, the need to coordinate the activity of the member states in what concerns the increase of efficiency and costs reduction and, secondly, the need to consolidate the international competitiveness of the European economy. At the same time, by research and development, the economy develops and new jobs are created and by technology innovation social problems like poverty, certain diseases or the environment degradation may be controlled, respectively diminished.²

In 2009, the part of the GDP allocated by EU countries for research, development and innovation was an average of 2%, whilst the USA allocated 2,8% and Japan 3,4%. For the year 2010, the average in EU states was of 2,7-2,8%.

Figure 4. CDI Budget 2009



(Source: Authors' processing according to www.ec.europa.eu/innovation)

²<http://www.euractiv.eu/uniunea-europeana/articles/Politicile-Uniunii-Europene.htm>

Also, we must not sight off the fact that, in what concerns the RDI net expenses, in 2014 China will spend more than EU.

Europe does not lack potential. It has world-class researchers, entrepreneurs and companies as well as great qualities in what concerns the values, traditions, creativity and diversity. (Topousis D., 2010)

The initiative „A Union of innovation” establishes such an ambitious, integrated and strategic approach, exploiting and amplifying our strengths by the use of new and productive ways, thus preserving the economic foundation which sustains the life quality and the social model under the terms of the population aging. The maintenance of the present situation („business as usual”) is equivalent to the gradual loss of the competitive advantages we have and the acceptance of Europe’s constant decline³.

4. Horizon 2020 – a new research and innovation funding program at the EU level

In 2011 November 30, the European Commission introduced a package of measures meant to stimulate research, innovation and competitiveness in Europe. Commissioner Máire Geoghegan-Quinn announced the launch of the Horizon 2020 Program for investments in research and innovation with a budget of over 80 billion Euros. Commissioner Androulla Vassiliou presented an Innovation Strategic Agenda for the European Institute of Innovation and Technology which will receive funds of 2.8 billion Euros within the said program. In parallel, vice president Antonio Tajani announced a new complementary program dedicated to stimulate competitiveness and innovation at the level of the SME’s with a supplementary budget of 2,5 billion Euros. The funding programs will be operated between 2014-2020, so that Horizon 2020 continues the Framework Program 7.

For the first time Horizon 2020 reunites within an unique program all the EU funds dedicated to research and innovation, focusing, more than ever, on turning scientific discoveries into innovating products and services which offer business opportunities and improve people lives. At the same time, the program severely cuts on bureaucracy by simplifying the norms and procedures in order to attract more top researchers and a wide range of innovating companies. Horizon 2020 is an essential pillar of the emblematic initiative „A Union of Innovation”, of the Europe 2020 Strategy which aims at the increase of Europe’s competitiveness at a global level. The European Union is a world leader in what concerns countless technologies but it has to cope with an ever increasing competition coming both from traditional powers and emerging economies. The Commission proposal will be discussed by the European Council and Parliament with a view to its adoption until the end of 2013.

The funding offered by Horizon 2020 will be more accessible due to the fact that this program has a simpler structure and stipulates a single set of norms and less bureaucracy. Horizon 2020 will mean: the reimbursement considerable simplification by the introduction of an unique flat installment for indirect costs and only two funding installments – for research and, respectively, market activities, an unique access point for participants, less administrative formalities related to proposals preparation and the abortion of all useless controls and audits. A key objective is the decrease by an average of 100 days of the time interval between the

³ www.ec.europa.eu/innovation

request of a grant and the funding reception which means that projects may be initiated earlier.

The financial package for the application of Horizon 2020 is of 87.740 million Euros, of which an amount of a maximum of 86.198 million Euros is allocated to the activities specified by the European Union Functioning Treaty (TUFÉ).

The amount for the activities stipulated by the TUFÉ is distributed as follows, for:

- a) Scientific excellence, 27.818 million Euros, i.e. to support the EU position as world leader in the field of science;
- b) The position of leader in the industrial sector, 20.280 million Euros, i.e. for the contribution dedicated to the assurance of the industrial primacy in the field of innovation through key technologies, as well as an increased access to capital and support for the SMEs,
- c) Societal challenges, 35.388 million Euros, meaning that funds will be allocated for the approach of the main joint preoccupations of all the Europeans, divided into six key themes: health, demographic changes and welfare; food safety, sustainable agriculture and research in the marine and maritime domains and bio-economics; safe, ecologic and efficient energy sources; intelligent, ecologic and integrated transport means; the fight of climate changes, efficient use of resources and raw materials; as well as safe, innovating and inclusive societies.⁴

Competitiveness Operation Program

The Competitiveness OP supports investments meant to respond to the needs and challenges related to the low level of the economic competitiveness, especially in what concerns (a) the insufficient support for research, development and innovation (RDI) and (b) the under developed infrastructure of TIC and, implicitly, weakly developed services, being thus positioned as a factor generating horizontal interventions in economy and society capable of triggering growth and sustainability.

The investments dedicated to the **consolidation of research, technological development and innovation** within the Competitiveness OP continue those started between 2007 – 2013 and whose results started already to become visible but are more oriented towards the involvement of the private sector in RDI activities, to the stimulation of the partnerships between the public research system and private actors, to market orientation and technological transfer and a greater exposure of the Romanian research internationally. Major projects like Extreme Light Infrastructure – Nuclear Physics (ELI-NP) or the International Center of Advanced Studies on the River – Delta – Sea Systems (DANUBIUS-RI) will also be funded through the Competitiveness OP. (www.fonduri-ue.ro).

For the period 2014 – 2020, Romania got an allocation of 1.329 billion Euros through the Competitiveness Operational Program.

⁴ <http://www.ec.europa.eu/horizon2020/presentation>

5. Conclusions

The dimensions, funding and legal form of the scientific companies are, to a great extent, governed by the expenses generated by communication and this, the communication, implies in an equal manner, the announcement of the models, of the verifications results, the colleagues' review and the publication, this being their main existence reason. Also, along time, the communication manner of the research activity results took various forms: meetings (conferences), minutes of such meetings (proceedings), letters, publications in magazines, bulletins, books, formal observations reports, scientific anagrams, deposits of secret documents, patents, e-mail messages, each one of them corresponding to a certain specific literary genre. All these communication means show us that there is a communication and archiving infrastructure composed of commercial publishing houses, libraries, organizations which keep electronic archives and databases, physical or electronic mail services, patent offices, etc.

Unfortunately, to economic analysis only defining facets of the research system are available. For example, it is easy to notice that the funds granted to the research system have three specific destinations: system employees' salaries, communication expenses (including trips and documentation), investment expenses and consumables. Salaries end up being spent on goods and wide consumption services. Communication expenses are, in fact, acquisitions of the publishing economic entities from tourism and communications.

The immediate impact of investments in research on industrial development is indirect, especially by the acquisitions of specific equipment, installations, services and consumables. The funds with such a destination, granted to research entities end up to the producers or sellers of such equipment, installations, software and consumables of a new type. If this market of the research laboratories would not exist, most of the new products would not make the leap from a prototype to a product which is present on a new general market: the healthy objective for an industry which generates new products is to satisfy a demand, a new industry presumes a demand of new products and a clients' capacity to evaluate them and such demand is, normally, created by the research system.

A fundamental role in the access of research – development activity funding is played by the project manager. Therefore, a successful project management needs a good planning, clear aims and objectives, a carefully selected mixture of technical skills and estimations of terms and resources and a permanently open communication channel with the client and with each of the project other stakeholders (Vrîncuț M. & Lungu A.-I., 2015)

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