

## JRC SCIENCE AND POLICY REPORT

# Stairway to Excellence Country Report: Hungary

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**Abstract**

In the frame of the Stairway to Excellence project, country analysis was performed for the EU MS that joined the EU since 2004, with the objective to assess and corroborate all the qualitative and quantitative data in drawing national/regional FP7 participation patterns, understand the push-pull factors for FP7/H2020 participation and the factors affecting the capacity to absorb cohesion policy funds. This report articulates analysis on selected aspects and country-tailored policy suggestions aiming to tackle the weaknesses identified in the analysis.

The report complements the complex qualitative/ quantitative analysis performed by the IPTS/KfG/S2E team. In order to avoid duplication and cover all the elements required for a sound analysis, the report builds on analytical framework developed by IPTS.

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## EXECUTIVE SUMMARY

Hungary is **well under EU average concerning the participation in direct funding** of research and development and innovation (hereinafter referred to as RDI) based on the Innovation Union Scoreboard of 2014 (European Commission, 2014), but showing a similar success rate compared to the newly joined Member States (EU13). According to statistics, among the newly joined states, Hungary is the second – following Poland – considering the number and the volume of approved projects within the FP7 program. (National Research and Development and Innovation Office, 2014)

**Comparing strategic documents written in 2007 and 2013** and onwards, **most of the issues raised overlap**, namely the **corporate RDI spending is considered to be low compared to Europe 2020 objectives, RDI activity is low and concentrated mostly within Budapest, knowledge transfer is weak, underdeveloped incubation and support for start-ups, and weak conditions for suitable human resources in the field of RDI.**

The **system of governance** of research and development and innovation has gone through **significant changes** over the past years. Responsibilities have shifted, institutions have merged and terminated. There is a new institutional system in place starting from the 1st of January 2015 following the governmental decree of (Governmental decision 1414/2013. (VII.4.), which is intended to provide an institutional framework to better support and to coordinate innovation within the country. Almost one and a half year has passed from the start of the programming period running between 2014-2020 without any RDI fund being published. Given the restructured institutional system with **a centralized role of the National Research and Development and Innovation Office** and also given the strength of the strategic documents there is a great potential that in case both achieve their stated objectives, there is a great chance to reach the desired synergies among RDI funds available.

There is a **promising trend for enhanced cooperation between businesses and public research institutions** given the requirements within the Operational program of Economic Development of the programming period between 2007-2013 and within the Operational Program of Economic Development and Innovation having started in 2014, which provides an opportunity for increased occurrence and enhanced intensity of cooperation in innovation activities among key actors.

Building on the experiences from the previous programming period of 2007-2013 **providing funding for the preparation, implementation and follow up of beneficiaries of FP7 or for rejected but highly scored applicants** is a promising direction. The possibility will be **offered within the Operational Program of Economic Development and Innovation** that is the biggest fund for RDI, within which there is a targeted priority for enhancing the participation of Hungarian actors within the Horizon 2020 program.

Within the programming period that lasted from 2007-2013, **unpredictability of publication and closure of calls has been a great drawback** of the system. From the year 2015, a **yearly plan of RDI fund** will be published, which allows potential, RDI activity intensive applicants to prepare their investments, their developments almost a year in advance.

Through the possibilities offered by **article 70(2) of the ESF Regulation** (Regulation (EU) N°1304/2013 of the EP and of the Council of 17/12/2013- OJ L 347/470 of 20.12.2013) stipulates a possibility of up to 15% of the support from the European Regional Development Fund (hereinafter referred to as “ERDF”) and Cohesion Fund to be allocated to operations located outside the programme area, **reallocation of 15%** of funds from EDIOP to CCHOP and concentration of national RDI sources in the Central Hungary Region will aim to **compensate the shortage of funds available within the Central Hungary region** that is the far most research intensive region within the country.

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# 1 INTRODUCTION

## Background of the *Stairway to excellence (S2E)* project

The European Commission Framework Programme (FP) for research and technology development has been vital in the development of European knowledge generation. However, there is considerable disparity across EU countries and regions in terms of FP participation and innovation performance.

Horizon 2020 will continue to provide funding on the basis of excellence, regardless of geographical location. However, it will also introduce novel measures for "spreading excellence and widening participation" by targeting low Research & Innovation (R&I) performing countries - most of whom are eligible for innovation funding under Cohesion Policy for the period 2014-2020.

In addition, the new regulations for ESIF aim to use funds more effectively to build regional/national excellence and capacities. By doing so, the key funding sources (ESIF and Horizon 2020) can complement one another along the entire innovation process.

## Objective of S2E

The Stairway to Excellence (S2E) project is centred on the provision of support to enhance the value of the key European Union (EU) funding sources for research, development and innovation: European Structural and Investment Funds and Horizon 2020 but also the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME), Erasmus+, Creative Europe, European Union Programme for Employment and Social Innovation ("EaSI") and the digital services part of the Connecting Europe Facility by actively promoting their combination. The S2E project is funded by the European Parliament and entrusted by DG-REGIO to JRC-IPTS and has two main objectives, namely:

- Providing of assistance to regions and countries that joined the EU since 2004 in closing the innovation gap, in order to promote excellence in all regions and EU countries;
- Stimulating the early and effective implementation of national and regional Smart Specialisation Strategies.

## Main purpose of the document

In the frame of the project, complex country analysis is performed for all 13 EU MS with the objective to assess and corroborate all the qualitative and quantitative data in drawing national/regional FP7 participation patterns, understand the push-pull factors for FP7 participation and the factors affecting the capacity to absorb cohesion policy funds. This report articulates analysis on selected aspects and country-tailored policy suggestions aiming to tackle the weaknesses identified in the analysis.

The report complements the qualitative/ quantitative analysis performed the IPTS/KfG/S2E team. In order to avoid duplication and cover all the elements required for a sound analysis, the report builds on analytical framework developed by IPTS.

## 2 QUALITY OF THE GOVERNANCE

The frame of the development of knowledge economy priority is defined within the **Investment into the future National Research and Development and Innovation Strategy 2020** that provides an analysis of the past achievements, current status research, development and innovation (hereinafter referred to as “RDI”) and possible future alternative strategies, furthermore it defines objectives and the strategy of implementation providing a basis for the programming period running between 2014-2020 to fund research and development and innovation on the basis of the Governmental decision 1414/2013. (VII.4.)

Several institutions are involved and responsible for science, technology and innovation policy making and implementation in Hungary creating a **matrix of responsibilities among bodies involved**. The system has gone through several radical changes since the early 1990s and over the past two years, implementing the merger, termination or conversion of certain institutions.

As of the 1st of January 2015, a new system was put in place according to which the **National Research, Development and Innovation Office (hereinafter referred to as “NRDIO”)** taking over the tasks of the National Innovation Office (hereinafter referred to as “NIO”) following the governmental decision on science, research, development and innovation (Governmental decision 1414/2013. (VII.4.)). The appointed President of the NRDIO is the ex-president of the Hungarian Academy of Sciences, Dr. Jozsef Palinkas.<sup>1</sup> The regulation established the NRDIO with a central function to coordinate RDI governmental actions and to finance a stable institutional system implementing efficient, predictable and transparent utilization of available resources of innovation following the Governmental regulation of 2014, number LXXVI. The regulation furthermore establishes the **National Research and Development and Innovation Fund** (merging the previously functioning Research and Technological Innovation Fund and the National Research Program into one single fund) (hereinafter referred to as “NRDIF”), which is the only national source of funding dedicated to support research and development and innovation besides the national funding provided to the Hungarian Academy of Sciences. The NRDIF aims to secure national sources of funding to support research and development and promote innovation thereby strengthening the utilisation of research results, RDI infrastructure. The logic behind the interventions of NRDIF is to provide funding for the following fields:

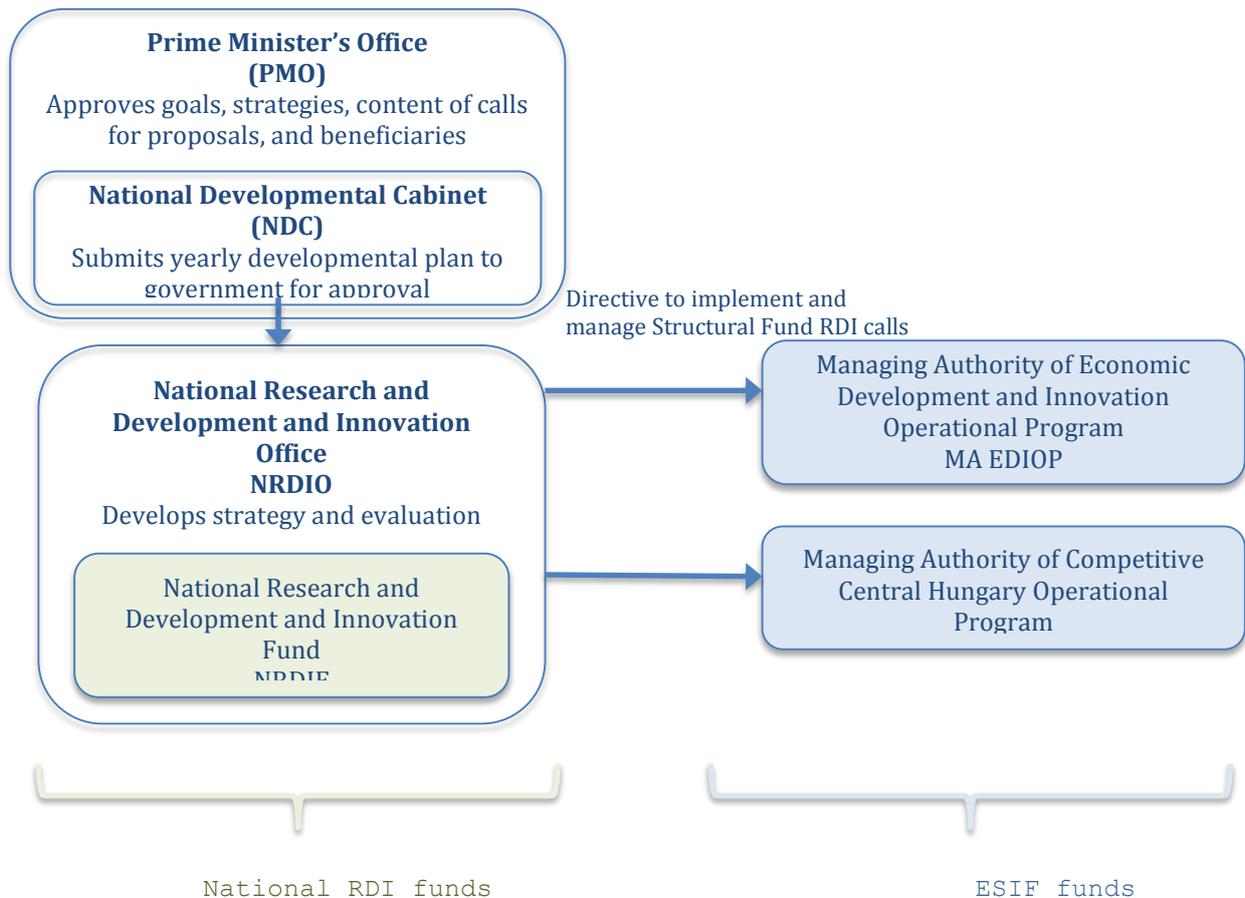
- 1) Activities that may not be supported from SF / ESIF (national brain research program, international membership fees, pre-, and post doctoral excellence programs, science and technology cooperation programs, etc.)
- 2) Territorial interventions (due to the low amount of ESIF RDI funds available and the concentration of RDI capacities located in Budapest.

The NRDIO is responsible for the management of the fund.

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<sup>1</sup> Short resumé of the president is available at: <http://nkfih.gov.hu/the-office/organization/the-president>

**FIGURE 1. ORGANOGRAM – GOVERNANCE OF R&D NATIONAL AND EU (ESIF) FUNDS**



(Source: own editing)

**TABLE 1: OVERVIEW OF THE MISSION OF NRDIO**

FIELD	ACTIVITY
RDI strategy conception	Preparation of RDI strategy and the implementation of the RDI strategy approved by the government.
NRDIF management	As the financing institution of the National Research and Development and Innovation Fund to finance research and development calls for proposal, research and development programs, innovation calls for proposal, innovation programs.
Coordination of RDI fund implementation	Responsible professionally for the utilization of RDI funds and its coordination. Central role of coordination of RDI funds and their implementation
International representation	Representing Hungary within international organization and cooperation for research and development and innovation.
Monitoring and evaluation	Monitoring and evaluating RDI strategy and program results.

(Source: Governmental decision 1414/2013. (VII.4.))

The **National Development Cabinet** (NDC) is located within the **Prime Minister's Office** (PMO) and is chaired by the prime minister. Other members of the Cabinet are the state secretary in charge of the Prime Minister's Office and the Minister of National Development. The NDC discusses all major policy documents related to DRI and submits development policy proposal documents to the government to bring decision upon. All policy documents have to be discussed and approved by the cabinet before the government decides upon it.

The functions of the Prime Minister's Office (PMO) include – among other functions – the coordination of European Union affairs and is responsible for the utilisation of European Union funds governed by the Governmental decision 152/2014 (VI. 6.).

RDI activities supported from the European Structural and Innovation Fund (ESIF) are managed by two Managing Authorities in the course of the programming period of 2014-2020. The Economic Development and Innovation Operational Program (EDIOP) is covering the six convergence regions out of the seven Hungarian regions, excluding the Central Hungarian Region, which is covered by the Competitive Central Hungary Operational Program (CCHOP).

The **Economic Development Operational** Program is the predecessor of the EDIOP and was financing RDI during the previous programming period from 2007-2013. EDOP's priority on R&D and innovation for competitiveness has been the biggest source of funding of research and development and innovation, which accounted for EUR 990 million between 2007-2013 including the 15% of national contribution. EDIOP is intended to support research, technological development and innovation within the convergence regions accounting for EUR 1,689 million including national co-funding, which represents a more than 50% of available funding for RDI.

The research and development and innovation actions within the Central Hungarian Region were financed through the **Central Hungarian Operative Program (hereinafter referred to as "CHOP")** within the programming period of 2007-2013. The program allocated EUR 478 million contrary to EUR 189 million funds available for RDI under the Competitive Central Hungary Operational Program (CCHOP) running from 2014 to 2020, representing a significant decrease of available funding in the region.

As noted before, the institutional system has gone through several all-encompassing changes regarding responsibilities and functions, and contrary to the institutional set up preceding the 1st of January 2015, the Managing Authorities will act as intermediary institutions for the management of proposals working under the aegis of the Ministry of National Economy. Professional input is provided from the NRDIF and implementation will be shared between NRDIO and the Managing Authorities.

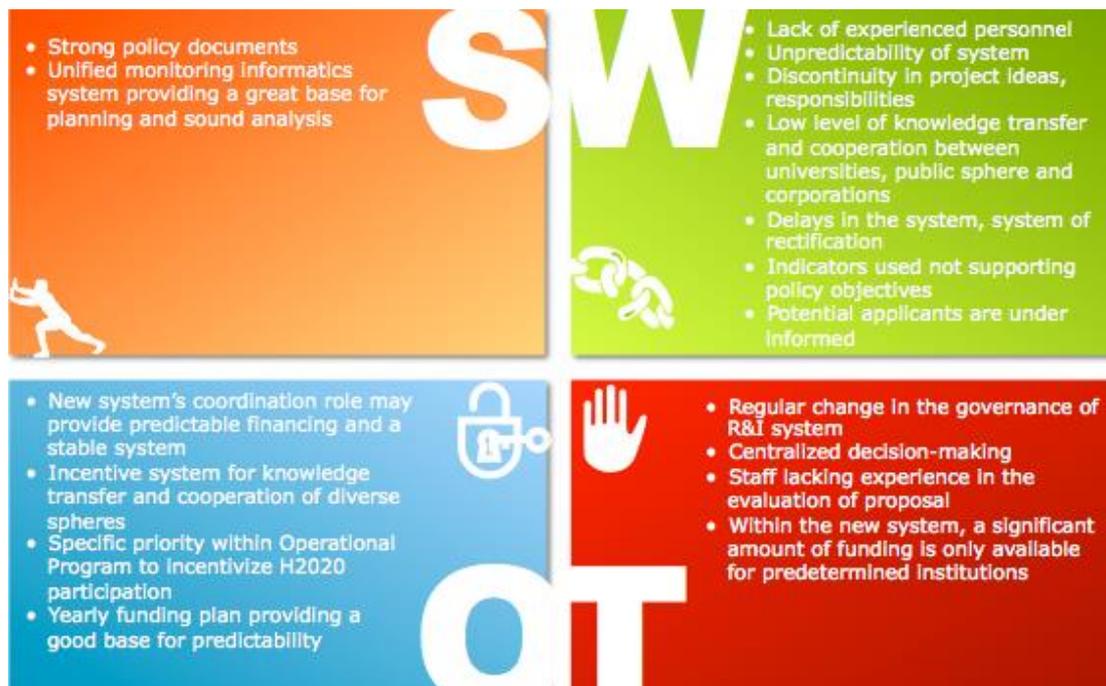
## **Suspension of EDOP due to system level error**

As of 10th of April 2015, the European Commission has **suspended the Economic Development Operational Program** affecting the payment of around EUR 500 million. In the course of audits undertaken, the services of the European Commission had found profound system level errors in relation to program management and operation of control, which accounts as a significant error within the system, providing a strong critic against the management of the ESF funds. The European Commission has already signalled the problem to the Hungarian authorities on the 14th of October 2014, stopping payments of the program and requesting the Hungarian authorities to take corrective actions regarding the severe deficiencies in its operation but the authorities failed to take the right corrective actions. Deficiencies were related to evaluation of calls for proposals therefore Commission asked the authorities to strengthen the project selection system to avoid similar deficiencies, to create synergies between the objectives of the operational program and the conditions of specific calls for proposals. In the official communication it was request that project selection methods should reflect transparency, equal treatment and efficient and effective financial

management, while fraud detection mechanisms should be improved also. Based on the deficiencies detected, new error rate has to be calculated based on an inspection of a given sample of projects. Actions taken by the Hungarian authorities were not approved by the Commission, since the magnitude and profoundness of actions taken were considered neither representative nor satisfactory (European Commission decision C(2015)).

Summarizing the strength, weaknesses, opportunities and threat of the governance system, the SWOT analysis is as follows:

**TABLE 2: SWOT ANALYSIS OF NATIONAL RDI GOVERNANCE SYSTEM**



(Source: own source)

**TABLE 3: KEY CHALLENGES OF THE RDI SYSTEM REGARDING GOVERNANCE**

The new system was set up with the aim to implement RDI policy objectives in an efficient manner. There are several factors that would predetermine the necessity of monitoring and evaluation of the effectiveness of the institutional system and the definition of actions to be taken based on the result of the monitoring and evaluating activities:

- As of June 2015, no RDI calls have been published yet. The first RDI calls are planned to be published in July 2015 after 1.5 year of the start of the programming period. Also national RDI funds are in great delay due to the restructuring of the institutional system.
- The NRDIIO has received a significant and central function for the coordination of RDI funds; while Managing Authorities have received much less function.
- Due to the significant change of function of governmental bodies, background and preparedness of professional personnel within each institution should be examined. Decision supporting mechanisms should be examined with a focus on:
  - how well decisions may be brought based on quantitative data

- to what extent decisions are brought by a single person or are brought participatory (involving others persons or institutions)
- Given the suspension of the EDOP, it should be evaluated if all necessary corrective actions have been implemented in the planning and execution of EDIOP.

### 3 FACTORS THAT SUPPORT OR LIMIT THE NATIONAL PARTICIPATION IN R&D CALLS FUNDED BY SF/ESIF

Throughout the programming period from 2007-2013, funds that were available from national sources and Structural Funds (hereinafter referred to as SF) were competing with each other since they were not delimited from each other neither in terms of geography, nor in terms of themes. This fact was supported by all key stakeholders interviewed throughout the preparation of the report, meaning that funds published from national sources were supporting the exact same actions, objectives and activities at the exact same times as funds published from EDOP and CHOP. The new institutional set up being in place from January 2015 aims at enhanced coordination of RDI funds through providing a centralized role and function to the National Research and Development and Innovation Office, which meant to serve as a solution to the above mentioned lack of coordination and competition among diverse source of RDI funds. As mentioned before, NRDIF aims to primarily finance RDI activities and territories (namely the Central Hungary region) that may not be financed from EDIOP that is the single significant source of RDI funding in Hungary.

Since funds dedicated to innovation were not reaching the desired pace of **absorption**, the eligibility criteria of funding were unburdened starting from 2011 in a way that projects with limited or no innovativeness have received funding from funds allocated to RDI. These changes funded a wide range of activities and have opened calls towards new target groups, which had a good result on absorption but offered limited support to RDI activities.

Calls for proposals in the field of innovation can be strongly considered risk avoiding in a way that they strongly limit the innovativeness of projects financed or exclude innovative business concepts completely. This idea may be supported from various angles. One angle is that RDI calls evaluate the operation of the applicant institution or business and does not evaluate the business potential of the idea itself or the innovativeness of the new product, service or process at all. Considering the **target groups** that were made eligible for funding, the institutional system was excluding real start-ups, since in general a minimum of two years of operation was requested to be eligible for funding (besides other criteria). In EDIOP, there is a so called incubation based system developed – according to key stakeholders interviewed – that may offer a solution for this given issue.

To provide an example, the RDI call financed from EDOP (EDOP-1.3.3.c call) with a 65% funding rate all corporation may have applied successfully for funding whom have been operating the business for at least 2 years supporting wages, purchases of equipment, info-communication technological developments. Projects were selected if they have fulfilled three out of the 16 ‘innovation’ criteria listed, which is obviously very easy to reach without any innovativeness of the project proposal (indicating criteria with bold letters that would allow a wide range of applicants to be eligible for funding without a project containing innovation). Such an easy eligibility of RDI funds has been a strong incentive for applying for RDI ESF funds, while the usefulness of RDI funds spent is questionable.

**TABLE 4: PROJECT SELECTION CRITERIA IN CASE OF CALL FOR FUNDING EDOP-1.3.3.c**

<b>List of innovation criteria</b>	
<b>1</b>	In the previous two years before applying research and development is among the registered activities of the applicant
<b>2</b>	In the previous two years of applying the applicant has requested RDI tax relief and / or at least once has reduced the annual gross amount of innovation contribution
<b>3</b>	In the previous two years of applying the applicant has activated at least one experimental development
<b>4</b>	<i>The applicant is member of an innovation cluster</i>
<b>5</b>	<i>Has already received RDI ESF funding previously</i>
<b>6</b>	<i>Has at least part time employees with <u>secondary</u> or tertiary educational background in the field of engineering, natural sciences, medicine or agriculture (20% in case of companies over 25 employees and minimum 5 in case of companies having lower than 25 employees)</i>
<b>7</b>	Have at least part time employees with a PhD degree
<b>8</b>	Has industrial property patents
<b>9</b>	Industrial property patents are in process at time of application
<b>10</b>	Before applying has acquired an industrial property patent
<b>11</b>	Before applying, in any years the added value per person has reached EUR 10,000
<b>12</b>	<i>Before applying income from export in a given year has reached 30% of all incomes</i>
<b>13</b>	<i>Before applying income from export in a given year has reached 20% of all incomes and had received ESF funding</i>
<b>14</b>	<i>Has received ESF funding previously</i>
<b>15</b>	<i>Has purchased fixed assets of a minimum value of EUR 50,000 in the previous two years.</i>
<b>16</b>	<i>Agrees to take part in International Innovation Management consulting activities</i>

(Source: Call for application EDOP-1.3.3.c)

Within the programming period running from 2007-2013, the **unpredictability of the system** was a significant hindering effect of applying to RDI ESF funds, since applicants had no information on the date of publication of RDI ESF calls, thereby not enabling applicants to plan their investments. Furthermore, in many occasions RDI calls for applications have been published without having budget behind or in other occasions calls have been published on a Friday afternoon and were closed the following Monday morning. RDI investments of institutions need a predictable system to enable the entity to plan ahead, which idea was reinforced by all private stakeholders interviewed. As a solution to this problem of the programming period of 2007-2013 the government has approved and published a yearly plan of available funding sources, providing dates (month) and criteria of calls, thereby enabling actors to plan their RDI investments. After publication of any calls, proposals may be submitted from the 30th day, which is again a positive step forward in terms of predictability, providing a solution for all previous ad hoc actions regarding the publication, opening and closing of calls, which may enhance the participation of actors in ESIF RDI calls in the future. It is important to note that out of the calls being planned and published for the year 2015, one third of the funds are only available for dedicated circle of – public – institutions, meaning that no other entities are eligible for funding in case of these RDI calls. For RDI, there will be HUF 207 billion (EUR 690 million) available based on the Governmental decision of Governmental decree 1171/2015. (III. 24.). Though one must mention that regarding the other EDIOP calls and despite the governmental regulation, there is a significant delay in the publication of calls that have been planned for the Spring 2015.

**TABLE 5: ADOPTED YEARLY TIMING OF RDI CALLS FOR 2015**

Source	Name of call	Budget (billion HUF)	Publication of call
EDIOP – 2.1.1.	Supporting RDI activities of corporations	25.0	December
EDIOP – 2.1.2.	Supporting RDI cooperation of corporations	25.0	December
EDIOP – 2.1.3	Industrial property	1.0	July
EDIOP – 2.1.4	Innovation voucher	3.0	December
EDIOP – 2.1.5	Innovation eco-system support (start up and spin off)	6.0	October
EDIOP – 2.1.6	Combined funding for corporations' innovation activities	13.3	August
EDIOP – 2.2.1	Research and development competitive and excellence project of cooperation – integrated projects	25.0	July
EDIOP – 2.2.2	Research and development competitive and excellence project of cooperation – social challenges	15.0	July
EDIOP – 2.3.1	Development of international RDI cooperation	3.5	December
EDIOP – 2.3.2	Excellence of strategic RDI centres	10	July
EDIOP 2.3.3	Strengthening RD infrastructure, network building, internationalisations	25.0	July
EDIOP 2.3.4	Research infrastructure of higher education and industry	21.0	October
EDIOP 2.6.3	ELI centre 2nd phase	34.58	March

(Source: Governmental decree 1171/2015. (III. 24.))

The **tightening of financial requirements** decreased the number of potential applicants throughout the years. **Eligibility criteria** regarding the financial background of applicants were becoming tighter throughout the years, which did not facilitate RDI activities within corporations. As an example, in the years 2007 and 2008 in case of the EDOP 1.1.1 call for proposal there was no strict financial eligibility criteria set for applicants. Those micro, small and medium size companies could apply that had minimum 1 employee in the previous financial year. In 2009 new criteria were introduced, regarding a closed financial year, which already excluded a significant number of applicants. In case of calls falling under 1.3.1 intervention, this condition was increased to two years starting from 2008. The newly introduced criteria were excluding many companies from RDI funds based on their financial results missing to evaluate business potential of ideas. On the other hand, the tightening of financial requirements parallel to the introduction of innovation criteria within SF RDI calls could offer a good direction for enhancing innovation according to interviewees.

**In EDOP commitments** required after having completed the projects were not in line with the nature of RD projects. Requirements for maintaining level of employment and revenue increase were expected to be committed from the side of applicants. Hence, these requirements should be eliminated from RDI funds, since they constitute a serious hindering factor for participation within calls. According to stakeholders interviewed, in EDIOP these requirements that applicants have to commit to after the completion of the project will be 'most probably' linked to result indicators:

- Increase of BERD / GDP ratio,
- Increase of ratio of cooperating corporations with public research institutes or government,
- Increase of H2O2O beneficiaries.

This does not exclude the possibility of having requirements of maintaining employment level in case of capacity building calls, since it is a common interest at European level too. Representatives of responsible governmental bodies found the indicators ambitious.

Specific measures that intended to support RDI within the last programming period from SF may be divided into four groups. One that facilitated market oriented research and development and science and technological cooperation. The other was supporting clusters and innovation and technological parks and the third was meant to fund corporations RDI activities. The fourth measure intended to provide support for the preparation of Extreme Light Infrastructure project.

**TABLE 6: RDI SUPPORT FROM ESIF FUNDS BETWEEN 2007-2013**

Sub-priority	Call for proposal	EDOP	CHOP
1.1 Market oriented research and innovation support and facilitation of research and technological cooperation	1.1.1 Support of market oriented research development	✓	✓
	1.1.1 B Pan-European research cooperation support	✓	
	1.1.2 Development of research development centres	✓	✓
1.2 Support of innovation clusters	1.2.1 Support of accredited innovation clusters	✓	✓
	1.2.1 B Innovation and technology parks and development centres' support	✓	
	1.2.2 Support of innovation and technology parks	✓	✓
1.3 Facilitation of innovation and RD activities of corporations	1.3.1 A Support of corporate innovation	✓	✓
	1.3.1 B Support of corporate innovation of accredited clusters	✓	✓
	1.3.1 C Utilisation of research results for SMEs	✓	✓
	1.3.1. D Suppliers' program	✓	
	1.3.1 E RDI umbrella project support	✓	
	1.3.1 F Innovation in dentistry	✓	✓
	1.3.2 Strengthening of corporate RD capacity	✓	✓
	1.3.3 Facilitation of corporate technological innovation for long term supplier position	✓	
1.5 Project preparation	1.5 Project preparation (ELI)	✓	

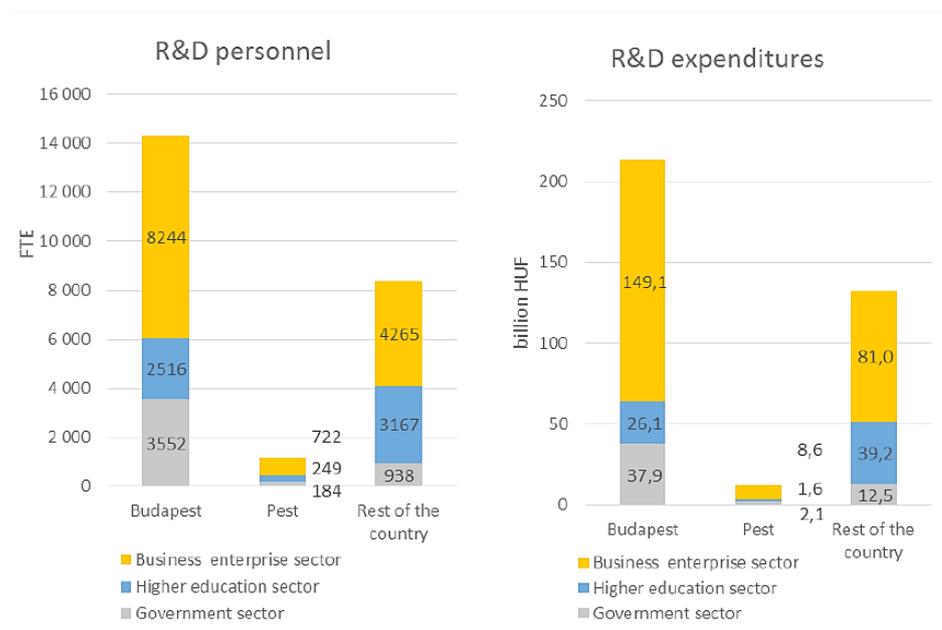
(Source: Action plans of Operational Programs)

Except for the 1.2.1 B, 1.3.1 D, 1.3.1 E and 1.3.3 all other calls cover the whole territory of the country (with different funding intensity and with different budget available) (and except for measures covering funding of the Extreme Light Infrastructure project).

The 2nd priority of EDIOP is supporting research, technological development and innovation. As mentioned before, EDIOP is covering the six convergence region of Hungary, leaving out the Central Hungary Region. It is a structural peculiarity of the country that in the **Central Hungarian Region** there is only a low amount of funding available despite that the region has a high RDI capacity. Within the six convergence region there are EUR 1,689 million funding available for RDI, while in the Central Hungary region EUR 189 million. Furthermore, it may be expressed that the domestic RDI that is primarily concentrated in Budapest that is within the Central Hungary Region. Quoting from the RIS3 strategy of Hungary to highlight the research intensity of Budapest: "Almost two thirds of the country's approximately 24 thousand researchers work in Budapest. Most decentralized is the higher education sector, where the majority works outside Budapest or the central region owing mostly to the research intensive universities of Baranya, Csongrád and Hajdú Bihar counties. On the other hand, the institutional sector is highly centralized: 80% of researchers work in Budapest and Pest county. The R&D expenditures develop similarly to the personnel data, and these data also show a high degree of R&D centralization in the capital." (National Smart Specialisation Strategy, 2014) For

this reason of concentration of RDI resources in Budapest except for RDI capacities of universities, RDI calls will need to be executed in consortium between higher educational institutions and industrial centers or such, where corporations and universities may operate jointly.

**FIGURE 2: CALCULATED NUMBER OF RESEARCHERS AND DEVELOPERS AND THE DISPROPORTION OF THE R&D SPENDING BETWEEN CENTRAL HUNGARY AND THE REST OF THE REGIONS, IN A SECTORIAL BREAKDOWN, IN 2012**



(Source: National Smart Specialisation Strategy, 2014)

Given this RDI intensity of Budapest and Central Hungary Region, EDIOP wishes to live with the opportunity laid down within the Article 70 of the Common Provision Regulations providing a 15% flexibility of budget, reallocating 15% of funds to the Central Hungarian Region due to the lower amounts of funds available within the region. Article 70 sets forth that only those projects may be financed outside the operational program area – that is in case of EDIOP the six convergence regions – that have a positive effect on innovation, growth, sustainability in the whole country.

Another hindering factor for participation in RDI funds is the **delay throughout the whole funding cycle**, more specifically in case of decision making with regards to funding, payments, signature of contracts, approval of modifications, and communication. Despite the fact that regulations control the number of days available for the institutional system to bring decisions, to answer any applicant requests or initiate payments, all actions are delayed on the side of governmental bodies involved. According to key stakeholders interviewed in case of payments regulations set that payments should be made within 45 days after request of payment, but the real average time used in practice was 100 days. These delays constitute a strong discouraging factor for national participation within ESIF calls, since RDI investment decisions of applicants had to be altered or delayed for extensive periods while waiting for the publication of ESIF funding, which in many cases happened with such a delay that by the time of publication of RDI funds, the original RDI investment was no longer in line with market expectations. Key stakeholders highlighted that in this sense, H2020 calls are more adequate to support innovation, since they encompass topics that will not be solved within a matter of few months. In case of SF / ESIF calls, applicants submit projects that respond to actual market situation or opportunities, which understandably cause a different attitude from applicants. Publication of thematic funds from ESIF would result in absorption risk according to stakeholders, though the RIS3 logic intervenes here. Calls from the NRDIF are always thematic; however their size may not be compared with the calls of EDIOP.

The **National Innovation Fund's**<sup>2</sup> first calls were published in 2004 at the same time when the Economic Development Operative Program's predecessor program has published its first calls. Between 2004 and 2007, calls from SF fund and National sources were rather complementary with each other. From 2007 onward, as the first EDOP calls were published ERDF and national funds were serving the same development goals that are to strengthen corporate innovation and cooperation between corporations and universities. Objectives and also supported activities, target groups of calls for application were completely overlapping, therefore the two sources of funds were competing with each other, which was even explicitly stated within the evaluation of the Research and Technological Innovation Fund of 2009. Results of the evaluation have shown that target groups preferred to apply for the national fund since bureaucratic burden were lower than in case of SF. In 2011 the budget of the National Innovation fund was running out parallel to the low amount of funds available in the CHOP, delimitations were introduced in a way that the calls of the National Innovation Fund were directly addressing the Central Hungary region, while funds of EDOP were supporting the convergence regions, thereby reaching complementarity of funds available at least in geographical terms.

**Project management** was not supported within RDI calls, which increased significantly the risk of implementation of projects. Despite the size of projects, project management costs could not be supported, which was the result of specific state aid rules that did not allow project management costs to be reimbursed under research and innovation funding. It was not very realistic and viable, since RDI projects require strong project management activity and expertise and also served as a hindering factor for participating in SF calls. Within ESIF RDI funds, 2.5% of funds allocated to projects may be spent on project management according to the Governmental Decision 272/2014.

Disregarding the differences of project size, the **administrative and reporting requirements** are the same for all projects. Data that could have been requested from authorities were asked from applicants thereby further increasing the burden put on applicants. The regular modifications of application form or the changing of regulations – often right before the deadline of submission - have created a great risk for applicants to be able to submit adequate proposals, which again hindered participants from applying. Until the time of writing this report, no RDI funds have been published from ESIF funds, therefore it is not possible to evaluate if the above-mentioned hindrances have been handled.

Research and Innovation Strategies of Smart Specialisation (RIS3) are to facilitate targeted support of RDI processes building on regional and / or national strength and opportunities thereby contributing to territorial competitiveness. Besides the national sectorial priorities defined, there are two horizontal priorities determined:

**TABLE 7: PRIORITIES OF RESEARCH AND INNOVATION STRATEGIES OF SMART SPECIALISATION**

<b>Sectoral priorities</b>	
Healthy society and wellbeing	understanding diseases, early diagnosis, advanced medical and instrumental therapies, clinical methods, pharmaceutical research and development, innovative health industry and health tourism solutions
Advanced technologies in the vehicle and other machine industries	machine industry RDI, advanced production technology systems, advanced materials and technologies (technical materials science, materials technology, nanotechnology, mechatronics and electronics)
Clean and renewable energies	green energy – renewables and bioenergy, nuclear energy, energy efficiency
Sustainable environment	natural resource management, advanced environmental technologies

<sup>2</sup> From 2015, it is called National Research Development and Innovation Fund

Healthy local food	food processing, locally produced and processed food of high added value
Agricultural innovation	agriculture, forestry, hunting, aquaculture and water management, horticultural technologies, agricultural biotechnology
<b>Horizontal priorities</b>	
ICT (info-communication technologies) & Services	Info-communication technologies in support of the sectoral priorities, info-communication technologies and services
Inclusive and sustainable society, viable environment	education and training, health conscious education and prevention, awareness raising, promoting entrepreneurial skills, development of cooperation, networking, organization and management development, social innovation, connection to local and regional development programs, regional development, tourism

(Source: National Smart Specialisation Strategy, 2014)

Besides the national and horizontal priorities, some country level priorities have been defined too. The RIS3 strategies are important because RDI sources of ESIF may only be allocated along the priorities defined to ensure the targeted use of resources to achieve significant improvements of competitiveness. To achieve this, a limited number of priorities have to be defined at regional and / or national level. It is questionable if the above detailed priorities complemented with additional country level priorities will support the expectations of the RIS3.

**TABLE 8: KEY CHALLENGES FOR ENHANCING NATIONAL PARTICIPATION IN RDI FUNDS FUNDED BY ESIF**

RDI funds published from 2015 onwards have to enhance national participation by building on the experiences of the SF funds. RDI calls for applications have to meet the following criteria:

- RDI funds should enable innovative start-ups to be financed from ESIF funds, not excluding entities without two year of operation to apply. Furthermore, RDI funds should evaluate business potential of ideas instead of financial background of entities. The risk avoidant attitude of governmental bodies should be altered in a way that innovative ideas need to be able to receive RDI funds. Four incubator centres have been accredited by the NRDI for the programming period of 2014-2020 thereby aiming to strengthen start-ups.
- Through the central role provided to the NRDI, the complementarity of national and ESIF and H2020 funds should be guaranteed.
- Project management costs have to be supported given the strong project management activity that an RDI project requires. Lack of professionalism regarding project management should not discourage applicants.
- Administrative burdens should vary according to project size, furthermore documents that may be received directly from authorities should not be asked from applicants, thereby easing the administrative burdens of applicants.

## 4 PUSH – PULL FACTORS FOR R&I PERFORMERS TO PARTICIPATE IN FP7/H2020

The first sub-priority of the priority dedicated to RDI of the **Economic Development and Innovation Operative Program** is focusing on intensifying the research and innovation of corporations, facilitating

innovation, productivity, and internationalisation. The sub-priority requires the cooperation of corporations and research institutes. Furthermore, this sub-priority intends to facilitate the participation of actors within Horizon 2020 calls and specifically states that it wishes to maximise the synergies between Horizon 2020 and European Structural and Innovation Funds. There will be dedicated calls for the preparation of participation of actors within Horizon 2020 calls from ESIF funds and funds for the follow up actions of Horizon 2020 projects that will enable participants to exploit research results. It is planned to prioritise projects in the course of ESIF evaluation that have succeeded to reach the threshold in Horizon 2020 calls but have not received funding.

The sub-priority wishes to facilitate the joining of centres of excellence into European value chains through supporting research infrastructure development. The explicit goal is to significantly increase Hungarian participation of actors in the Horizon 2020 program, the integration of research and development community into the European Research Area. The function of the sub-priority is to support and strengthen excellence and the target of these calls will be institutions that may take a significant part within Horizon 2020 programs with special focus on those that may facilitate the conversion of excellence.

According to the official document of Research Infrastructures in Hungary, the low degree of coordination in the use of national financing sources and uncertainty of access to these sources as regards to timing may cause unused parallel capacities, which have prevented the establishment of necessary infrastructure. The domestic decision-making system could not manage to reach the levels of international infrastructures.

A further indication is provided within EDIOP on the support of integration and strengthening the role of Hungarian actors within the Knowledge and Innovation Communities (KICs) of the European Institute of Innovation and Technology (EIT) and within the Joint Programming Initiative (JPI). Despite that EIT is located in Budapest, there are a small number of Hungarian actors participating within their KICs. The goal of this support would be to identify new projects, to prepare them for funding and to implement them.

According to the interview results of key stakeholders, language barriers, lack of information, high administrative burdens are the biggest hindrances of participation in FP7 / H2020 funds. Most actors do not possess information about FP7 / H2020 funding possibilities, eligibility criteria. What may be observed is that actors operating within the Central Hungary Region have more information on FP7 / H2020 calls since these actors have suffered from shortage of funding from CHOP. In the programming period running between 2014-2020, there is even a greater shortage of funding from CCHOP with very limited funding intensity falling between 0-55% depending on the size of applicants. According to key stakeholders interviewed large corporations will only be eligible for revolving funds. RDI funds from CCHOP accounting for EUR 189 million is the total funding available for the whole programming period for all types of entities including universities, research centres, corporations given the research intensive nature of the region described before. In this view, actors of the Central Hungary Region will be most probably active in applying for H2020 funds, therefore the lack of funding and the low intensity rate enhance the participation of actors in the region, while the abundance of funds available in the other regions, offering higher rates of funding hinders participants of the convergence regions to apply to H2020 funds.

Due the low success rate of application to FP7 / H2020 funds discourage strongly actors to apply to H2020 funds, given the costs and time needed of preparation of FP7 and H2020 proposals. Until the preparation of the report, there was a 2% success rate. Stakeholders claim that if there would be a dedicated budget for the newly joined Members States, thereby increasing the possibility of success that would encourage participation in H2020 calls. Just as in case of the H2020 call for twinning (H2020-TWINN-2015) addressing networking gaps and deficiencies between the research institutions of the low performing Member States and regions and internationally-leading counterparts at EU level.

**TABLE 9: KEY CHALLENGES FOR ENHANCING NATIONAL PARTICIPATION IN H2020**

There is a general lack of information on H2020 calls and possibilities among possible participants. To enhance their participation the following policy measures will be initiated:

Policy measures targeting the increased participation in H2020 through strengthening RDI capacities offers a great incentive for participation of Hungarian actors. Through prioritising projects in the course of ESIF evaluation that have succeeded to reach the threshold in Horizon 2020 calls decreases costs of applying.

Targeted preparation of possible participants of H2020 calls, with a special focus on Central Hungary Region.

## 5 POLICY INSTRUMENTS FACILITATING THE PARTICIPATION IN (FP7)H2020/(SF)ESIF

Throughout the previous programming period, the National Innovation Office has published several calls that aimed to facilitate the participation of Hungarian actors within FP7. These calls may be grouped into three categories:

- 1) ***Grant schemes promoting participation***: there are two calls that fall within this category and they aimed at supporting of Hungarian actors of joining FP7 and CIP programs. Additional funding was provided to help them to prepare project proposals, contracting and provided them supplement for own contribution. The BONUS and Consortium building calls were open from December 2008 until December 2010 and from May 2012 until June 2013.
  - 1) ***EUKONZ\_07 and EU\_KP\_12 calls***: the aim of these calls was to support Hungarian participants in joining FP7 and CIP programs (and other EU initiatives). Calls were facilitating the Hungarian participants to take lead partnership role to reach a more significant share of the projects' tasks and budget. The call was financed from the Research and Technology Innovation Fund with a total budget of EUR 2.3 million (HUF 700 million).

The EUKONZ\_07 call and the EU\_KP\_12 programs both aimed to support the integration of Hungarian entities within EU initiatives, to facilitate their lead partner role, thereby the call was financing beneficiaries of EU projects to help them to prepare the implementation of the project and the phase of contracting. A flat amount could have been requested for project preparation and for the phase of contracting financing legal advice, professional consulting services, rental fees, travel expenses, and salaries.

Beneficiaries of the program included:

**TABLE 10: BENEFICIARIES OF BONUS PROGRAM IN 2012 – FEW EXAMPLES**

Beneficiary	Project title	Approved grant (HUF)
Regional information and development knowledge centre Ltd.	Integrated adaptive LED street lighting module for Europe project	1,530,628
Pannon University	IALED4EU project	1,680,852
INNOVA Regional Development Ltd	IMALE project	4,990,550

PROMPT-H Ltd	CIP-ICT-PSP-2013 project participation, TELEPOC – point of care project	3,000,000
TARKI research institute Corp.	AGEFIN	3,000,000
KOPINT-TÁRKI Research Institute	Integration of financial markets	2,817,295
Polytechnic University of Budapest	FP7-ICT-2013-EU-Brazil project	2,324,037

(Source: NRDIO website)

- 2) **BONUS\_08 and EU\_BONUS\_12 programs'** objective was to provide supplementary sources for FP7, JPI, JTI, Era-net, Era-net+ beneficiaries (for higher educational institutions, public research institutions, non-profit organisations and for SMEs). Activities related to research, development and demonstration might have been financed through the programs that were not financed by the FP7 program. The total budget of these calls was EUR 12.6 million (HUF 3.8 billion) and was financed from the Research and Technology fund.

The program was funding costs up to diverse extent depending on the type of beneficiary: for public bodies it was 90%, while for other entities 80% and for SMEs between 50% and 80% depending on size of the company and type of activity. Costs that were covered were salaries of personnel active in the RDI activity and project management, services from third parties other operating costs, costs of equipment. Beneficiaries in 2012 of this program were:

**TABLE 11: BENEFICIARIES OF BONUS PROGRAM IN 2012**

Beneficiary	Project title	Approved grant (HUF)
Hungarian Academy of Sciences	Support for Hungarian participation within Neuroseeker FP7 project	80,610,412
Hungarian Geological and Geophysical Institute of Hungary Geological and Geophysical Institute of Hungary	Inter-planet non linear dynamics evaluation for ESA and NASA satellites	56,771,996
Polytechnic University Budapest	Wired and wireless access and distribution networks convergence	81,709,494
Hilase Ltd.	Compact and total water vapour content meter (Hilase-Hygro) development in the frame of IGAS project	45,441,240
National Agrarian and Innovation Centre	Research initiative for nourishment and aquaculture (ARRAINA)	66,128,821
Pharmacoidea Ltd.	Participation of Pharmacoidea Ltd within IMI Drug Delivery project	158,009,700
Polytechnic University Budapest	Geographical route selection architecture analysis	23,201,688
Polytechnic University Budapest	Solutions for air noise	14,431,377
Semmelweis University	Participation within PREDICT project, resistance forecast in therapies	122,220,827
Hungarian Academy of Sciences	Analysis of circulating tumour cells	157,431,781

(Source: NRDIO website)

- 2) **Five calls** may be grouped into the category of calls that were providing **support for Hungarian beneficiaries of international consortiums:**

- 1) **EUROSTARS\_HU\_07** program objective was to facilitate Hungarian participation of SMEs in RDI projects. The total budget available for the program between 2008 and 2013 was EUR 3 million (HUF 750 million) from the Research and Technology Fund.

**TABLE 12: BENEFICIARIES OF EUROSTARS\_HU\_07 PROGRAM IN 2011**

Beneficiary	Project title	Approved grant (HUF)
Naturen Industrial, Informatics Ltd.	Testing communication protocols of developmental and implementing frameworks	43,144,000
Micro Europe Industrial Ltd.	Elastic material waste reuse	45,000,000
Corporate values Ltd.	Hepatitis patients therapy	50,287,247

(Source: NRDIO website)

- 2) **ERANET\_HU\_09** aimed to strengthen the strategic partnerships of participant entities or ERA-NET projects. Total budget of the call was from 2009-2013 EUR 2.6 million (HUF 800 million)

**TABLE 13: BENEFICIARIES OF ERANET\_HU\_09 PROGRAM IN 2011**

Beneficiary	Project title	Approved grant (HUF)
Enviroinvest biotechnology Corp.	New biotechnological interventions	96,340,000
University of Debrecen	Forecasting catastrophes	27,229,000

(Source: NRDIO website)

- 3) **ARTEMIS-2008-1 and ARTEMIS-2009-1** aimed to support innovative international projects, providing a total support of EUR 1.98 million in 2008 and 2009 from the Research and Technology and Innovation Fund.
- 4) **ENIAC-2008-1 and ENIAC-2009-1** programs supporting international projects in the field of nano-electronics with a total budget of EUR 1.32 million for the years 2008 and 2009 from the Research and Technology and Innovation Fund.
- 5) **AAL** program aimed to support international projects under the ICT solution for prevention and chronic disease treatment for elderly. The total budget of the call available was EUR 6 million from Research and Technology and Innovation Fund.

**TABLE 14: BENEFICIARIES OF AAL PROGRAM IN 2012 – FEW EXAMPLES**

Beneficiary	Project title	Approved grant (HUF)
Ambient Assisted Living Association	AAL membership fee 2009-2011	9,327,900
Hungarian Academy of Sciences	Hungarian Swedish military RD project 2nd phase	120,000,000
National Innovation Office	X-FEL membership fee for 2013.	605,495,372

(Source: NRDIO website)

- 3) **Oversubscribed calls: High quality but rejected proposals** were financed from one call:

- 1) **ERC\_HU\_09** call was to fund rejected applicants of the “Starting grant” call, to provide support for those projects that has reached the threshold, but have not been awarded funding. Total budget of the call was EUR 18,000.

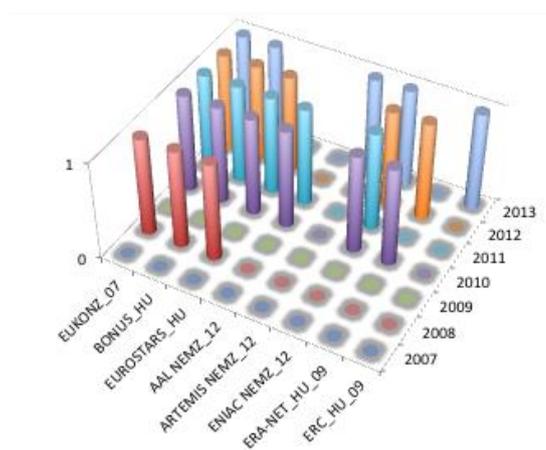
Table 15: Beneficiaries of ERC\_HU\_09 program in 2010

Beneficiary	Project title	Approved grant (HUF)
Polytechnic University of Budapest	Model transformation certifications for planning and analysis	100,000,000

(Source: NRDIO website)

These initiatives provided significant support and incentive for FP7 participants, though these programs should be available throughout the whole programming period, thereby contributing to predictability. The following figure depicts the years when the above detailed calls were available, for example ERC\_HU-09 was open in 2009 and 2013, while ERA-NET in 2010 and 2012. Number 1 signals the times when a given call was open, and number 0 signals when the given call was closed.

FIGURE 3 NATIONAL FUNDS FACILITATING FP7 PARTICIPATION



(Source: NRDIH, 2015)

In march 2015, a call has been published from the budget of the previous programming period, under the **Social Renewal Operative Program** addressing the **preparation of interdisciplinary teams for participation of international funding schemes**.<sup>3</sup> The basic objective of the call is to facilitate structural change within higher educational institutions to enable them to more actively participate within knowledge economy. The goal of the call is to support the development of institutional cooperation of within international RDI programs, to improve the conditions of human resources and services of higher education and to strengthen strategic partnerships between universities and corporations. Activities that may be supported within the frame of this call aim to widen the capacities of universities in the field of RDI, to prepare research teams in their preparation for international calls, specifically Horizon 2020 calls and development of related research and project management capacities. Projects fund 100% of costs and project size should be around EUR 1 million.

As mentioned before, the first sub-priority of the **Economic Development and Innovation Operative Program** is focusing on intensifying the research and innovation of corporations, facilitating innovation,

<sup>3</sup> Social Renewal Operative Program code: TAMOP 4.2.2D-15/1/KONV

productivity, and internationalisation. The sub-priority requires the cooperation of corporations and research institutes. Furthermore, this sub-priority intends to facilitate the participation of actors within Horizon 2020 calls and specifically states that it wishes to maximise the synergies between Horizon 2020 and European Structural and Innovation Funds. There will be dedicated calls for the preparation of participation of actors within Horizon 2020 calls from ESIF funds and funds for the follow up actions of Horizon 2020 projects that will enable participants to exploit research results. It is planned to prioritise projects in the course of ESIF evaluation that have succeeded to reach the threshold in Horizon 2020 calls but have not received funding. It is explicitly mentioned within EDIOP that parallel funding of projects from ESIF and H2020 are allowed if the financing sources complement each other (and surely avoiding double financing).

Looking at the yearly planning of RDI calls, some of the published call titles seem to support this sub-priority.<sup>4</sup> The proposal called Strengthening RD infrastructure, network building, internationalisations with a budget of EUR 82.5 million and the development of international RDI cooperation with a budget of EUR 11.5 million seem to serve this objective.<sup>5</sup> These interventions defined within EDIOP were previously financed from national RDI sources will be the successors of previously described EU\_KONZ and EU\_BONUS calls.

**TABLE 16: KEY CHALLENGES FOR EFFECTIVE POLICY INSTRUMENT FOR ENHANCING PARTICIPATION IN (FP7) H2020 / (SF) ESIF**

Throughout the programming period running between 2007-2013, several calls from national sources have supported Hungarian participants in their participation within FP7. It is explicitly mentioned within EDIOP that parallel funding of projects from ESIF and H2020 are allowed if the financing sources complement each other and building on the experiences gained from the calls financed by the National Innovation Office, a strict monitoring mechanism should be introduced to be able to measure if the policy instrument addressing increased participation in H2020 calls is reaching its objective. An increased level of success rate and increased number of Hungarian lead partnerships in H2020 projects would stand as a good indicator of successful policy instruments.

## 6 EVALUATION AND MONITORING MECHANISMS

Ex-ante, yearly, two yearly, program and ex-post evaluations are performed and are available publicly in case of all relevant programs of RDI funding. Regarding funding in the field of RDI, evaluation and monitoring mechanisms may be examined concerning the following fields:

- adequateness of objectives defined,
- fields of interventions,
- components and criteria of specific calls,
- evaluation of the institutional system
- monitoring mechanisms.

The electronic system used within the system, the Unified Monitoring Electronic System is a very well developed system able to monitor and evaluate the whole funding process in a very sophisticated way. The system has been renamed “FAIR” as of 2015 serving as the informatics background of development policy.

<sup>4</sup> No further information was provided by the Managing Authority on the objectives, target groups of calls planned for the year. Detailed information will be available 30 days before deadline of submissions.

<sup>5</sup> According to the average exchange rate as of March 2015 (303,53)

The unified system that contains all previous data of calls and applicant provides a strong basis for monitoring and evaluation.

Comparing strategic documents written in 2007 and 2013 and onwards, most of the issues raised overlap, namely the corporate RDI spending is considered to be low compared to Europe 2020 objectives, RDI activity is low and concentrated mostly within Budapest, knowledge transfer is weak, underdeveloped incubation and support for start-ups, and weak conditions for suitable human resources in the field of RDI.<sup>6</sup>

RDI performance in Hungary is considered average, according to the National Smart Specialisation Strategy and shows an increasing trend. Based on the figures published in the 2014 ranking of the Innovation Union, Hungary is a moderate innovator. The GDP proportionate R&D spending is growing mostly due to corporate and foreign sources. As described above in Figure 2, R&D capacities are highly concentrated in Budapest, which shows a great inequality in RDI performance, since two-thirds of the Hungarian research capacities are located in the Central Hungary region.

According to the National Smart Specialisation Strategy the structure of education is not adapting well to the new developmental plans of Hungary, therefore the quality of human resource needs development and should be aligned with the needs of the market. According to the higher educational strategy (Changing gear in higher education, 2014) the steps which have been taken from the government to align education with the market are as follows:

- Directions have been defined that allow dual education with which the number of students enrolled in engineering would increase, the cost of internships would decrease and corporations would receive incentives to employ young graduates,
- The strategy enabled the establishment higher educational and industrial centers.

Interventions within the Operational Programs strongly build on the directions defined within strategic documents, their basic aims meant to support the strengthening of RDI activities and of internationally competitive RDI capacities. Given the strong informatics background of funding, there should be a more adequate monitoring mechanism introduced to measure the effectiveness of RDI funds. According to stakeholders, these evaluations are not adequate to measure the dead-weight effect of RDI funds; therefore they would produce a distorted result.

Regarding target groups, the Operational Programs have been supporting stable, operating corporations regardless of size, but with a focus on SMEs. Due to the more intensive RDI activities of large corporation and its effect on employment, their support was reasonable. Target groups did not include innovative start-ups within the Operational Programs. Still the question remains how start-ups in Budapest will be funded. Their support was meant to be solved through JEREMIE venture capital funds, but their mentoring and incubation was not and is not solved due to the lacking capacity of the institutional system, which results in an underdeveloped incubation process in Hungary. One of the interviewed institutions is the Design Terminal that is a public institution offering incubation program for start-ups of creative industry players.

Conditions and evaluations of RDI calls have always been concentrating on the applicant and its financial stability, which limit the adequacy of the priority's objectives. As mentioned before, key stakeholders stated that the evaluation system is risk avoidant by not evaluating project ideas and business potential. Absorption was more in focus than supporting innovation. Just what happened in case of evaluation of projects: a so called financial institutions' perspective appeared in case of evaluation of RDI funds, hence the goal was to evaluate the applicant company objectively to enable the institution to award fund in a simple and cost effective way. This way, risk was minimised, but also it may be stated that through financing stable companies instead of innovative projects.

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<sup>6</sup> Economic Development Operational Program, Investment in the Future - National Research-Development and Innovation Strategy 2020.

According to the governmental regulation number 272 § 54, there are five types of evaluation mechanisms used, which are the so-called individual accelerated, standard, simplified, territorial and community driven. Most calls fall under the standard evaluation, which are all regulated in program documents. In EDOP RDI calls were evaluated according to the following mechanisms:

**TABLE 17: RDI CALLS EVALUATION MECHANISMS**

Intervention	Individual accelerated	Standard	Light
1.1.1		✓	
1.1.2		✓	
1.2.1		✓	
1.2.2		✓	
1.3.1		✓	✓
1.3.2		✓	
1.3.3		✓	
1.3.5	✓	✓	

(Source: Calls for Proposals of Operative Program)

Evaluations in general take much longer than what is set in the regulations. All key stakeholders interviewed expressed and supported this view. To justify the delay in evaluation, a so-called practice of rectification was used throughout evaluation, which meant that applicants have received letters of rectification instead of decisions taken, thereby the institutional system was able to win some time and postpone decisions. This practice strongly limited the competitiveness of applicants. In general, evaluations lasted more than 100 days, which greatly exceed the 30 days set in the regulations. 68% of proposals go under rectification, providing more time for the institutional system to decide. There is a similar delay in contracting and payment phases too.

Throughout the previous programming period, three diverse **evaluation procedures** may be differentiated:

**From 2007 to 2010** there was an external expert dataset including all together 150-200 persons based on field of expertise. The list of experts was proposed by the National Research and Technology Office, the Innovation Association, ICT association of Hungary, Biotech association and was approved by the Director of the Managing Authority. Each RDI project was evaluated by two evaluators: one from the private sector and one from academia. In case evaluations differed significantly, a third evaluator was involved to evaluate. After evaluation, the Evaluating committee sat together that was composed of professional organisations, besides representatives of the institutional system (Managing Authority, relevant Ministries, Intermediary organisations). This system was too complicated and lengthy; decisions took very long time. The system was considered corrupt by key stakeholders interviewed, meaning that evaluators were contacted by applicants to have a positive evaluation on proposals (despite that Managing Authority tried to keep the evaluator confidential).

**Changes from 2011** included that in case of all calls for application where there was no research, “only” development involved external evaluators were no longer involved in the evaluation process. Employees of the intermediary institution were evaluating these types of calls, and experts were invited to the Evaluating Committee meeting. Criteria were defined that made applicants eligible for funding for RDI funds – see previous description - and external evaluators were only involved in one type of call (EDOP 1.1.1)

**2013 onwards** the Evaluating committee and the expert list was terminated, the approval of the National Intellectual Property Office was enough for approval. Due to the lack of external or independent evaluators

involved, stakeholders interviewed considered this system even less transparent that gave way for an increased level of corruption.

Plans regarding evaluation for the period between **2014-2020** are as follows: as a basic rule, only those RDI projects may be funded, that are in line with the development policy objectives (approval of Ministry of National Economy and National Research Development and Innovation Office). There will be three types of evaluation procedures:

- 1) **Projects above EUR 330 million:** only those applicants may apply that have been accredited previously by the National Research Development and Innovation Office. Afterwards the Ministry of National Economy evaluates the proposal and may propose the project for approval to the National Developmental Cabinet.
- 2) **Standard procedure:** open call for application for all target groups defined within specific calls. Evaluation done through Preparatory Decision Committee
- 3) **Simple procedure:** since there is no innovation content, there is no RD evaluation (e.g. industrial property call)

Efficiency of each project phase largely depends on the availability and preparedness of customer service, which according to key stakeholders interviewed and according to survey results was not found effective at all. Furthermore, it would be greatly important that the selection of indicators should be revised in a way that indicators reflect the developmental success of projects. There will be new elements introduced in case of the newly published calls that aim to support participation within ESIF calls:

- In case an applicant is performing project management activities, it may be accounted as an in-kind contribution and may be accounted as a lump-sum,
- Applicant has to provide own funds only in the second phase of realisation of the project, thereby supporting the liquidity of project financing.
- Applicants that may prove stable financing of operations and has no taxes due are exempted from providing collateral.

**TABLE 18: KEY CHALLENGES FOR EVALUATION AND MONITORING**

FAIR system offers a great opportunity to provide a sound analysis of the results/objectives of RDI programs and may serve as a good basis for the advancement of programs, which possibility is not currently exploited.

Evaluations of RDI calls for proposals should be altered in a way that they bring supporting decisions of projects with great business and innovation potential. Approving projects of financially stable companies' results – in most of the cases – in creating deadweight effect through funding.

Project and program level indicators should be defined in a way that they contribute to the monitoring of each RDI call or priority's contribution to the fulfilment of RDI policy objectives.

## 7 ENHANCING OR LIMITING THE SYNERGIES?

Building on the experiences from the previous programming period of supporting Hungarian participation within FP7 calls through providing national funding, providing fund for the preparation, implementation and follow up of beneficiaries of FP7 calls or for rejected applicants, it is very promising that within the biggest fund for RDI there is dedicated sub-priority defined for enhancing the participation of Hungarian actors within the Horizon 2020 program.

The yearly plan of RDI fund allows potential RDI activity intensive applicants to prepare their investments and developments. Besides the possibility offered by article 70(2) of the ESF Regulation of reallocation of the EDIOP budget to the Central Hungary region, and the focus the national RDI sources on the region will have to compensate the shortage of funds available in the region to enable RDI intensive participants of the region to get prepared and to participate successfully in Horizon 2020 funds.

Through the central role of the National Research, Development and Innovation Office, great synergies may be reached among RDI sources, if this central responsibility will be used adequately and will not cause a less transparent system of funding. Since there have been no RDI calls published until the preparation of the report, it is not possible to evaluate the content of the calls and the operation of the institutional system regarding publication or evaluation.

At the same time there are many factors that limit synergies:

- Language barriers: H2020 proposals have to be written in English, while applications for complementary funding from national or ESIF sources have to be translated in Hungarian.
- Timing of calls for proposals: Timing of publication of calls, closure of calls and decision-making should be aligned.
- Decision making procedures: the decision making process of the national support was in many case so lengthy that at the time of the decision of the national fund, the support already lost its relevance (in case it would have been funding some preparatory actions or in case it would have provided support for own contribution).
- Alignment of reporting periods: Report periods of FP7 and national funds differed, which put a high administrative burden on applicants.
- Alignment of indicators: indicators requested differ in case of FP7 and national funds, which should be modified.

**TABLE 19: KEY CHALLENGES FOR EVALUATION AND MONITORING**

While within the strategic documents it is stated that it is a goal to achieve complementarity between H2020, ESIF and national funds, furthermore it is desired to enhance the participation of Hungarian actors within H2020 calls and there are policy instruments planned to achieve this objective, still a careful planning and monitoring is needed to be able to support Hungarian participants in their preparatory, implementation or follow up phase of their RDI projects: timing, language, decision, contracting period, reporting and indicators should all be aligned with H2020 calls to enhance and not to hinder participation.

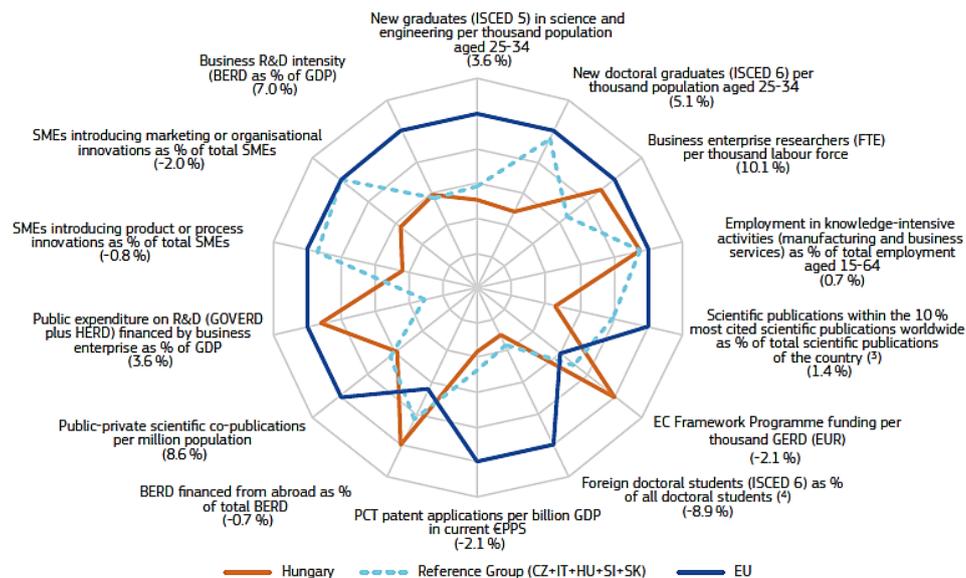
## 8 TAKE-UP OF PUBLIC SECTOR RESEARCH RESULTS

The Hungarian Academy of Sciences is the major player of Hungarian R&D domain as the National Smart Specialisation Strategy states. Strengthening cooperation is essential for all players of the RDI system. As regards the regional characteristics of RDI, two-third of the country's researchers' work in Budapest (please see more detailed description in the following chapter). The most decentralized is the higher educational sector, where most of the researchers work outside Budapest or the Central Hungary region due to the location of research-intensive universities of other regions. Looking at research institutes, 80% of researchers are located in Budapest and Pest County. R&D expenditure follows the same pattern to personnel data, showing a great concentration in the capital.

The figure below depicts the strength and weaknesses of the Hungarian R&I system, providing information on human resources, scientific production, technology valorization and innovation. Average annual growth rates

from 2000 to 2011 are shown in brackets. Hungary is below EU average in almost all areas, however business enterprise expenditure financed from abroad are higher than EU average. This fact provides a strong structural characteristic of the country, since the logic of foreign capital differs greatly from territorial development needs. Innovation activities of small and medium size enterprises are low, their introduction of new products or processes in the market are the lowest in the European Union. Only 5% of the Hungarian scientific publications are in the top 10% most cited scientific publication and Hungary also accounts for a low level of patent applications and the number is decreasing.<sup>7</sup>

**FIGURE 1: HUNGARIAN RESEARCH AND INNOVATION SYSTEM**  
**(IN BRACKETS: EVOLUTION BETWEEN 2001-2011)**



(Source: Innovation performance in Hungary, 2013)

Support of innovation clusters have been financed from EDOP and CHOP under the sub-priority EDOP-1.2 under which three separate calls have been published. EDOP-1.2.1 was supporting accredited innovation clusters, EDOP-1.2.1B was supporting Innovation and technological parks and development centres, while EDOP-1.2.2 has supported Innovation and technological parks. Looking at regional concentration of RDI funds, a more intensive concentration may be examined around cities with universities or cities where accredited innovation clusters exist. According to key stakeholders interviewed, the developmental level of Hungarian clusters is adequate compared to cluster organisations within the Central-Easter European Region. The number private-public scientific co-publications are low, but same as in the reference countries.

During the 2007-2013 programming period, there were calls for proposals aiming to enhance the cooperation between private entities and research institutions. Beneficiaries of these calls could only be corporations, since private entities were considered more efficient in the management of projects due to their operational and administrative capacities. Since universities and research institutes often perform commitments and obligations with a significant delay, there was a high probability of unrealized projects that resulted in an absorption risk. Such delays were due to the lengthy administrative processes, the regular restructuring and changes of responsible personnel within universities and research institutes. An advantage of corporations being the main beneficiaries in such project where it was necessary to involve a higher

<sup>7</sup> It is important to notice that the graph depicts a different figure for the European Commission Framework Program participation of Hungarian actors, signalling that it is higher than EU average, opposite to all other sources.

educational institution or a research institute is that it caused competition among universities to be involved in projects.

The Pole program published under EDOP-1.2.2 was addressing the cooperation between universities, local governments and corporations. Within the frame of this given call, there was only one project funded, since actors were not ready for this type of cooperation according to key stakeholders interviewed. Also, the necessary background for the realisation of such complex project is missing from the corporate culture and from the institutional systems of universities and public authorities. In line with this result, the position paper of the European Commission highlights that the biggest challenge in Hungary is the sustainable cooperation between universities, public sphere and corporations, the low level of knowledge transfer and researchers' mobility. (Position of the Commission Services on the development of Partnership Agreement and programmes in Hungary for the period 2014-2020)

As mentioned before, the first sub-priority of the second priority axes of the Economic Development and Innovation Operative Program is focusing on intensifying the research and innovation of corporations, facilitating innovation, productivity, and internationalisation. The sub-priority requires the cooperation of corporations and research institutes. Furthermore, this sub-priority intends to facilitate the participation of actors within Horizon 2020 calls and specifically states that it wishes to maximise the synergies between Horizon 2020 and European Structural and Innovation Funds. There will be dedicated calls for the preparation of participation of actors within Horizon 2020 calls from ESIF funds and funds for the follow up actions of Horizon 2020 projects that will enable participants to exploit research results. It is planned to prioritise projects in the course of ESIF evaluation that have succeeded to reach the threshold in Horizon 2020 calls but have not received funding.

Furthermore, within EDIOP the second sub-priority of the RDI priority is focusing on increasing the number of strategic research and innovation networks specifically between research intensive corporations and public and non-profit research institutes realising that a structural change built on innovation and sustainability may only be reached if these strategic cooperation are developed and sustained. These strategic alliances will be centred around cooperation in the fields of research and innovation strategies for smart specialisation presented before. The sub priority will address development of individual eco-system, knowledge transfer, networks of industrial cooperation with a focus on market entry.<sup>8</sup> Development and establishment of centres of excellence will be supported that provide a frame for cooperation among corporation and research centres for technology development and knowledge transfer and joint research and innovation activities. Examining the yearly plan for calls, some of the calls seem to support and facilitate the market uptake of public research results.<sup>9</sup>

**TABLE 20: KEY CHALLENGES FOR UPTAKE OF PUBLIC SECTOR RESEARCH RESULTS**

There is a strong lack of supply of researchers, which might be due to the uncertainties in the environment of education, the very low wage levels. Furthermore there is a lack of knowledge map in universities.

Entrepreneurship is lacking in the universities and research institutes can be caused by contradictory and over-regulated system.

The structure of education and training is not adapting to the new development plans. The quality of human resource development is questionable, which is currently not aligned with the needs of the market.

<sup>8</sup> Economic Development and Innovation Operational Program, pp 93.

<sup>9</sup> No information was provided on the specific objectives, potential applicants and financial possibilities of planned calls

The relations between the stakeholders of the RDI value chain are weak; therefore policy instruments must support the development of strategic alliances.

(Source: National Smart Specialisation Strategy, 2014)

## 9 COUNTRY TAILORED POLICY SUGGESTIONS

National sources of innovation and structural fund sources for innovation have to be delineated in way that calls for funding do not compete with each other. To be able to do so, a **map of available funding sources** should be developed that signals all available RDI sources. To reach the objectives of policy papers, diverse interventions' objectives, target groups, supported activities have to complement each other. Building on the National Research and Development and Innovation Strategy of 2020, instruments have to be mapped so not to have competing but complementary funding mechanism.

Such a map of available funds could provide a program perspective of innovation instead of a project focus, thereby diverse sources of funding could be made more complementing each other. Complementary of funds would mean the ability to plan RDI investments in a way that a successful project of a given technology readiness level, could receive further support to enter the market or for brand building through a simple evaluation mechanism. This would require a **technology readiness level** centred planning of SF and national funding sources.

Unpredictability was one of the most crucial points of the system for which the government took steps and offered a promising solution by publishing the **yearly funding plan indicating the timing and eligibility criteria of calls for proposals**.

Cooperation between corporations and academia / higher educational institutions should be facilitated, which may be done in a way that professional project management costs should be included in the supported activities, thereby guaranteeing the adequate and timely implementation of projects. Professional project management in case of RDI project would also contribute to minimizing risk related to realisation of projects.

Innovative start-ups must be made eligible for funding and mentoring and incubating programs have to be addressed to exploit their potentials. Within the objectives set in the Economic Development and Innovation Operative Program, this opportunity is provided and NRDI will be the responsible for the program.

In case of RDI funding requirements of maintaining levels of employment and revenues within the applicant's entity for a given number of years should be eliminated, since it is not realistic to ask for such requirements besides that these criteria hinder participations in RDI funds. As far as eligibility criteria concerns, changes in 2011 and 2012 did favour absorption but the trend did not provided support for real innovation activities, therefore eligibility criteria and indicator requirements should be aligned to promote and facilitate innovation. It may be stated that a great amount of RDI funds were allocated for projects without any hard-innovation content. Hence, in 2011 and 2012 changes in the funding schemes have been introduced to minimise absorptions risk, thereby new supported activities and new target groups have been included in RDI calls. These changes served as an opportunity to handle the shortage of funding from the other priority of EDOP addressing capacity building.

Given that a new programming period of 2014-2020 has started, there should be a paradigm shift made from reaching high absorption to the facilitation of realisation of project with real added value in RDI. In the last phase of the previous programming period, for understandable reasons, there was a focus on supporting projects that would result in a higher absorption rate and that were realisable within the necessary time limit.

In the course of evaluation, the business potential of projects should be put into focus instead of absorption. Evaluation involving a financial institutional perspective should be complemented (or rather substituted) with the evaluation of innovation content of projects. External reviewers should be involved to enable the evaluation of market potential of developments. Time required for evaluation should be made more predictable and instead rectification practice used throughout the whole project cycle, realistic timing for evaluations should be determined and set within the system, to further increase predictability. Furthermore, publication of calls and deadlines should be in line with the capacities of the institutional system and the human resource capacities within the institutions should be in line with the needs for evaluation of proposals in terms of professional background and experiences.

## 10 REGIONAL ANALYSIS

In Hungary, regions are for administrative purposes, so despite their existence, significant regional trends are difficult to be acknowledged. From structural funds, it may be rather noticed that RDI funds are allocated within cities with major universities or within cities that have accredited innovation cluster centres.

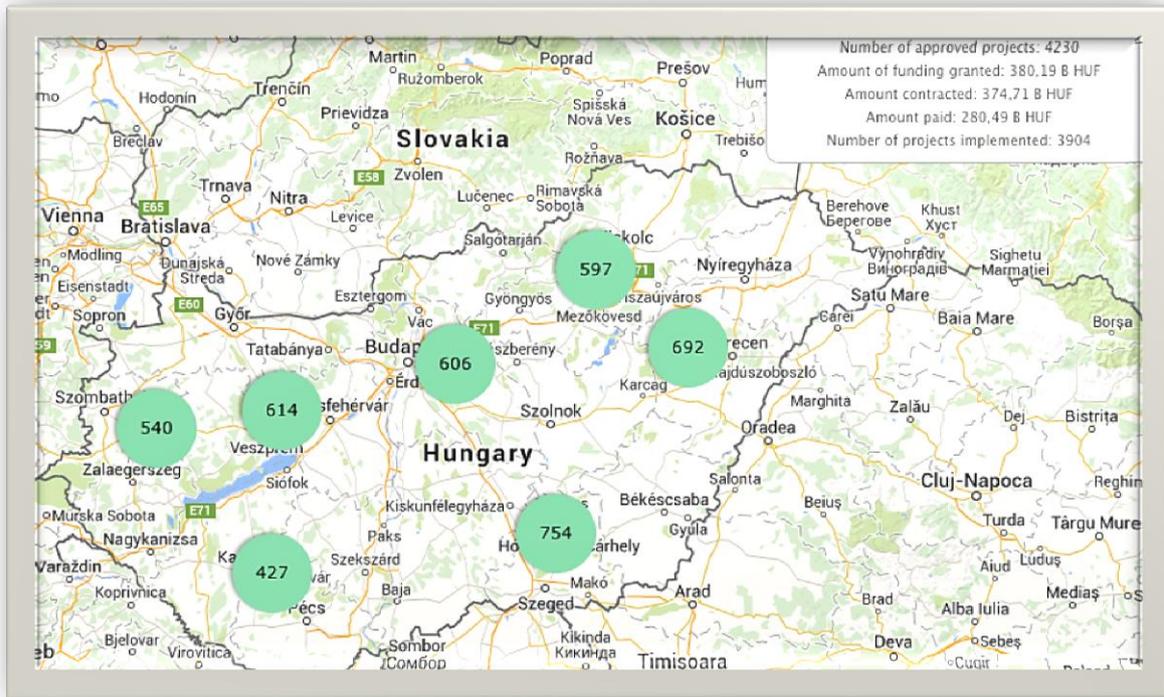
As it may be seen from the map, there is a small variability of the number of approved projects among regions. If there would be a bigger amount of RDI funds available within the Central Hungary region, then the number of the region would be significantly higher, since most of the RDI capacity of the country is located within this region. Within all these cities, there are big, historical universities and accredited innovative clusters are present. There are 17 such clusters, out of which 8 may be found in cities that are present on this top 10 list.<sup>10</sup>

The strong concentration of RDI found may be detected looking at city level statistics, since the top 10 cities having received the most RDI funding have received 56% of all RDI funding.

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<sup>10</sup> Accredited Innovation Clusters' list may be found:  
<http://www.klaszterfejlesztés.hu/aik.php>

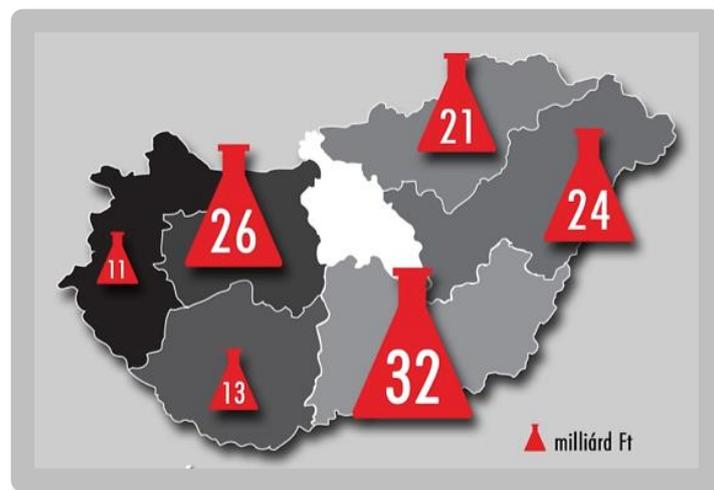
**FIGURE 2: SCIENCE AND TECHNOLOGY PROGRAM FUNDED PROJECTS BY REGIONS**



(Source: Governmental portal for call for proposals, [www.palyzat.gov.hu](http://www.palyzat.gov.hu))

What it means in terms of amounts funded within the regions covered by the Economic Development Operational Program is as follows:

**FIGURE 3: RDI FUNDS ALLOCATION IN COHESION REGIONS**



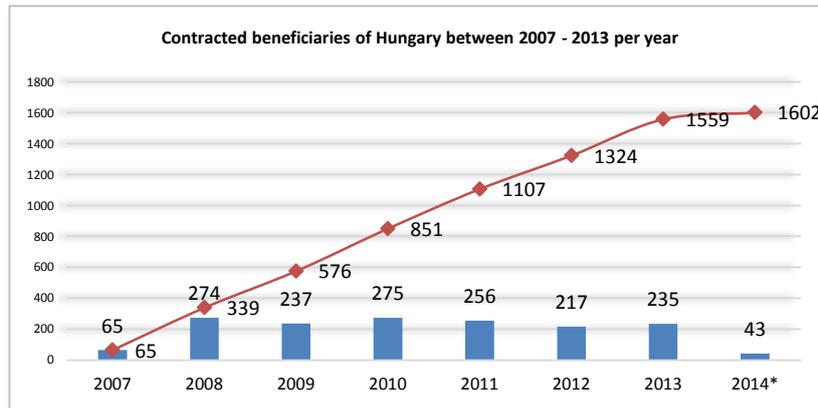
(Source: Evaluation of Economic Development Operational Program)

Regarding the successful applicants of the 7th Framework Program, 75% of successful applicants are from the Central Hungarian Region, which is due to the RDI intensity of the country and the scarce availability of

RDI funding within the region. Providing a few numbers that depict the RDI intensity of the Central Hungary regions:

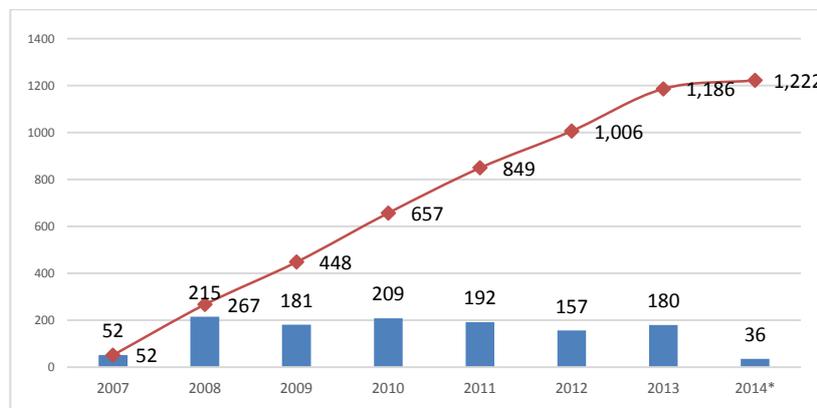
- 64.9% of all national researchers,
- 62% of the RD spending and
- 66% of corporate RD spending is concentrated within this single region.

**FIGURE 4: HUNGARIAN BENEFICIARIES OF FP7 PROJECTS PER YEAR**



(Source: National Research and Development and Innovation Office)

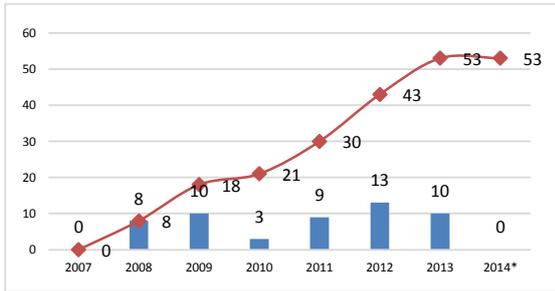
**FIGURE 5: BENEFICIARIES WITHIN CENTRAL HUNGARIAN REGION OF FP7 PROJECTS PER YEAR**



(Source: National Research and Development and Innovation Office)

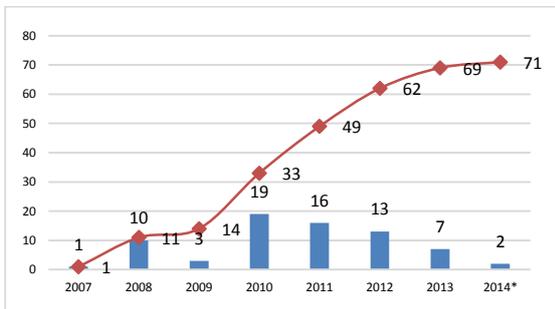
Considering number of successful applicants within the other regions, there is not a great disparity among regions. The following graphs depict the number of successful applicant of FP7 proposal per region. Hence, looking at the aggregated number of beneficiaries of FP7 projects, out of the 1,602 beneficiaries of FP7 calls 1,222 successful applicants are located within the Central Hungary Region and 380 are located in the other six regions of Hungary.

**FIGURE 6: BENEFICIARIES IN SOUTH TRANS-DANUBIA REGION OF FP7 PROJECTS PER YEAR**



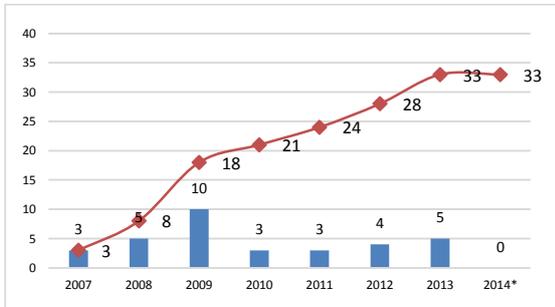
(Source: NRDIH)

**FIGURE 7: BENEFICIARIES IN CENTRAL TRANS-DANUBIA REGION OF FP7 PROJECTS PER YEAR**



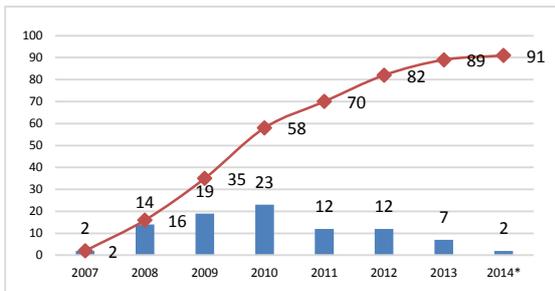
(Source: NRDIH)

**FIGURE 8: BENEFICIARIES IN NORTHERN HUNGARY REGION OF FP7 PROJECTS PER YEAR**



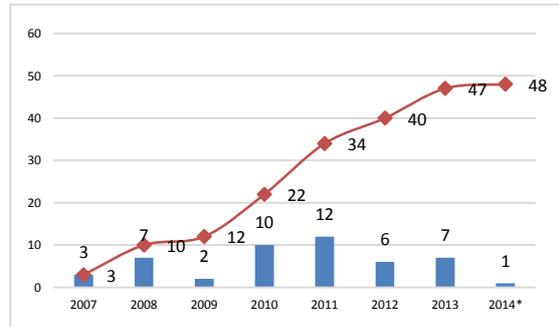
(Source: NRDIH)

**FIGURE 9: BENEFICIARIES IN NORTH GREAT PLAIN REGION OF FP7 PROJECTS PER YEAR**



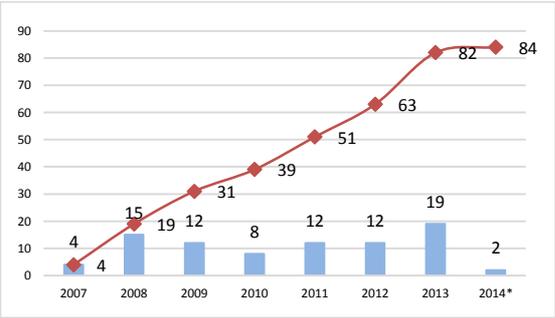
(Source: NRDIH)

**FIGURE 10: BENEFICIARIES IN SOUTH GREAT PLAIN REGION OF FP7 PROJECTS PER YEAR**



(Source: NRDIH)

**FIGURE 11: BENEFICIARIES WITHIN SOUTH GREAT PLAIN REGION OF FP7 PROJECTS PER YEAR**



(Source: NRDIH)

## 1 ABBREVIATIONS

BERD	Business Enterprise Research Development
CHOP	Central Hungary Operational Program
CCHOP	Competitive Central Hungary Operative Program
EDIOP	Economic Development and Innovation Operative Program
EDOP	Economic Development Operational Program
EIT	European Institute of Innovation and Technology
EU	European union
ELI	Extreme Light Infrastructure
EMIR	United Monitoring Information System
ESIF	European Structural & Investment Fund
GDP	Gross Domestic Product
JPI	Joint Programming Initiatives
KICs	Knowledge and Innovation Communities
MA	Managing Authority
MA CCHOP	Managing Authority of Competitive Central Hungary Operational Program
MA EDIOP	Managing Authority of Economic Development and Innovation Operational Program
NDC	National Development Cabinet
NIO	National Innovation Office
NRDIO	National Research and Development and Innovation Office
PMO	Prime Minister's Office
RDI	Research and Development and Innovation
RIS3	Research and Innovation Strategies of Smart Specialisation
SF	Structural Funds

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