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Introduction

Research, Development and Innovation in the Czech Republic within the EU

Having joined the EU, the Czech Republic was included into the integration process of the national policies of research, development and innovation and related areas (e.g. education, enterprise or employment), which were identified by the Lisbon Strategy[1]. Like other member states of the EU, the Czech Republic can see the key to the growth of its own competitiveness in research and development, in the innovation abilities of its enterprises, the increasing quality of its human resources and the use of information and communication technologies.

The importance of research and development for the successful achievement of the Lisbon Strategy is clearly declared in several important EU documents. The crucial documents, which support investment into research, include two communications of the European Commission: "More Research for Europe: Towards 3% of GDP" and "Invest into Research: Action Plan for Europe" (hereinafter referred to only as "Action Plan for Europe"). These communications from the European Commision (or hereandafter only "Commission") include numerous measures to support R&D. The said strategic documents with all-European application found a response in the corresponding national strategic documents, especially in the Strategy of Economic Growth[2], the National Innovation Policy[3] and the National Policy for Research and Development[4], which form the basic orientation of the policy for R&D and innovation of the Czech Republic[5]. More recently, these strategic documents were complemented by the Reform of the System of R&D and Innovation in the Czech Republic[6] and the White Book on Tertiary Education[7], both published in 2008 and outlining the key reform steps in the field of research policy and tertiary education.

By joining the EU, the Czech Republic was included among the member states that used targeted support within European Regional Policy. For the period 2007–2013, all regions of the Czech Republic (with the exception of the capital city Prague) are included under the objective of Convergence[8]. In compliance with the objectives of European Regional Policy, one of the priorities of the Czech Republic is the strengthening of the growth of the competitiveness of the state and the orientation towards a knowledge economy.

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[1] Conclusions from the negotiations of the European Council reviewing the Lisbon Strategy, Brussels, 22/3/2005 and 23/3/2005

[2] Government Resolution of 16/11/2005 No. 1500 on the Strategy of Economic Growth of the Czech Republic.

[3] Government Resolution of 7/7/2005 No. 851 on the National Innovation Policy of the Czech Republic for the years 2005 to 2010.

[4] Government Resolution of 7/1/2004 No. 5 concerning the National Policy of Research and Development of the Czech Republic for the years 2004–2008.

[5] For more details refer to chapter 2.11. Coherence of OP R&DI with relevant national and European strategic documents.

[6] See http://www.vyzkum.cz/FrontClanek.aspx?idsekce=497373

[7] See http://www.msmt.cz/uploads/bila_kniha/BK_k_diskusi_tisk.pdf

[8] The objective of Convergence covers the regions NUTS II, the GDP of which, measured by purchasing power parity per capita, is below 75 % average GDP of the EU-25.

The Operational Programme Research and Development for Innovation (hereinafter referred to only as "OP R&DI") is one of the important Operational Programmes, which contributes to the achievement of the said objective. Together with the Operational Programme Enterprise and Innovation (hereinafter referred to only as "OP EI") and the Operational programme Education for Competitiveness (hereinafter referred to only as "OP EC"), the OP R&DI will represent a mutually interconnected system of interventions, which aims to ensure the long-term sustainable competitiveness of the Czech Economy and the targeted regions within the objective of the Convergence.

The global objective of the OP R&DI is **to strengthen the research, development and innovation potential of the Czech Republic that shall contribute to its economic growth, competitiveness and to the creation of highly qualified workplaces so that the Czech regions can become important locations for the concentration of these activities within Europe.**

For the preparation of the OP R&DI and the identification of its global objective, three basic standpoints were crucial. Firstly, the specific EU policies were reflected, in which the direction of support on the European level is anchored, which especially include "Community Strategic Guidelines, 2007–2013". The OP R&DI shall considerably contribute particularly to the achievement of the second strategic guideline "Improvement of Knowledge and Innovation: A Path to Growth" and the achievement of the objectives and mission of the Cohesion policy pursuant to the Article 3 of the Council Regulation (EC) No. 1083/2006, of 31st July 2006, general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and on the repealing of the regulation (EC) No. 1260/1999 (hereinafter referred to only as „ Council Regulation (EC) No. 1083/2006").

On a national level, the basic standpoint for designing OP R&DI was the National Strategic Reference Framework of the Czech Republic 2007–2013 identifying the strategic objectives for drawing the EU funds in the CR. The OP R&DI contributes to the achievement of the strategic objective "Competitive Czech Economy", which shall support, amongst other things, the strengthening of research, development and innovation potential of the Czech Republic. The primary tasks of the independent OP R&DI include the contribution to the implementation of one of the most important reform activities of the National Lisbon Programme 2005–2008, namely – the National Reform Programme of the Czech Republic, which is the creation of an environment to stimulate research, development and innovation. The OP R&DI is designed to support the supply on the side of research and development activities, especially the supply of universities, research institutions and other subjects engaged in research and development (hereinafter referred to only as "R&D") and to ensure the quality and production of relevant results of R&D and of graduates with profiles relevant vis-à-vis the needs of the labour market. At the same time, the planned interventions shall strengthen conformity of the supply with increasing demand on the side of the recipients of R&D outputs and it will contribute to the successful transfer of findings to the application sphere.

The third standpoint during the creation of the OP R&DI, its priority axes and specific objectives was a number of processed analyses mapping both the current environment and conditions of R&D in the Czech Republic and its achieved results. The considerations included the opinions and results of public discussions with experts from universities, public and private organizations engaged in research, development and innovation, enterprises, regions, central bodies of the state administration and economic and social partners. An integral part of the input information was the assessment of the policy of R&D, including the former way of using subsidies from the state budget and experience from the course of implementation of the current programmes, which have a link to

the innovation activities (it concerns especially the Operational Programme Industry and Enterprise, hereinafter referred to only as "OP IE"). The list of strategic, legislative and analytic materials, on which the OP R&DI is based, is provided in Annex 4.

Consultations and the use of partnership principle

The partnership principle in the Operational Programme Research and Development for Innovation was respected, according to art. 11 of the Council Regulation (EC) No.1083/2006, during the preparation of the operation program in this way:

- A close working team was established within the Ministry of Education Youth and Sports (further only referred to as MEYS) for the initial phase. This team is led by the representatives of MEYS and the Research and Development Council comprising representatives of the departments responsible for the content of the operation program within MEYS and further representatives of the social partners i.e. especially the representatives of universities. The working team set the scheduling of jobs, defined responsibility for creation of individual parts of the programme and set the procedure for processing of the implementation documents. The outputs of the closer team were given to the discussion to the wider group (further referred to only as WG) of the OP R&DI.
- For the purpose of preparation and evaluation of the OP R&DI a wider working group was created comprising representatives of the competent bodies of the public administration, economic and social partners. As well as the Managing Authority and representatives of the departments responsible for the content of the programme, members of WG of the OP R&DI also included representatives of the Research and Development Council, universities, research organisations, other government authorities (especially from the Ministry of Industry and Trade and the Ministry for Regional Development), all the regions (on the level of NUTS II) including the representatives of the municipal authorities of the capital city Prague and relevant economic and social subjects (e.g. trade unions, the Economic Chamber, the Union of Industry and Transport of the Czech Republic, the Association of non-governmental non-profit organizations, the Union of Towns and Municipalities of the Czech Republic). The WG of the OP R&DI took part in creation of individual program documents, regularly discussed, commented and expressed opinion on working versions of the document, checked an approved outputs of the Managing Authority of OP R&DI. The comments and suggestions given by representatives of the competent bodies of the public administration and economic and social partners were, to a large extent, taken into account when creating the OP R&DI. Those mainly concerned these fields: support of the undeveloped regions, interregional cooperation, networking among Czech R&D organisations, setting objectives of the priority axis and the areas of intervention, tools and the recipients of indicators.
- Public widely participated in the preparation of the programme. A number of seminars and presentations were given on the national as well as regional level. A number of discussions with the above mentioned representatives was organized about the content of the OP R&DI in the years 2006 and 2007. These representatives gave their opinions especially on the content of the supported activities in terms of the proposed OP R&DI.
- On the program of the public discussion of the OP R&DI that took place on 22nd May 2006 in Prague, these following topics were discussed: preparation of the OP R&DI, priorities of the programme, implementation, financial allocation and ex-ante evaluation of the programme.
- Communication with potential beneficiaries was used to build the absorption capacity through so-called screening. The goal of this screening was to get the true relation to the needs of the relevant segment. The ideas of users and creators were confronted this way and feedback from the public to the preparation of the program was ensured.

- At the end of 2007 three WGs were established. These automatically deal with problems related to the execution of the operation program. In detail these are WG 1-Strategy, which deals with specification and concretization of the proposed interventions and thus with the actual content of the priority axes; WG 2-Finance which deals with the problems of financing and sustainability of the investments; WG 3-Absorption capacity and major projects takes care of the issues related to the increase of the absorption capacity and organizational and technical problems related to the projects preparations with budget over 50 mil. EUR. Representatives of the main economic and social partners are members of the working groups.
- The comments and recommendations were discussed and conclusions met by the WGs were integrated into the text of the OP R&DI or taken into account for the next steps of preparation and implementation of the OP R&DI and strengthening of the absorption capacity. Concerning the interventions, particularly the role of the private sector was strengthened. In the case of Priority axis 2 the applicability of research results was stressed and in the Priority axis 1 more emphasis was put on the technology transfer and this activity was separated out to make the funding available to a broader spectrum of users. In the case of Priority 1 on the European dimension was emphasised as a result of the consultation process, especially with an emphasis on the European research infrastructures, ESFRI Road Map and the 7th Framework Programme for RTD. For both of these priorities the start-up grants (i.e. the running costs of the centres) were considered as an essential part of support, therefore their use was emphasised. Based on the discussions with the WG Strategy members the 8th field of research of the LBDR (social science) was included in the Priority axis 4.
- The principle of partnership will be maintained in the process of the OP R&DI projects approval as well. It is counted with the participation of the scientific-research, educational, economic and social partners also for individual negotiations of the selection committees. The collaboration with the industry / application sector will be set as one of the key assessment criteria, consequently, representatives of economic partners and experts with the relevant experience in academic-business collaboration will also take part in the process of major projects pre-assessment.
- Representatives of the research, educational, economic and social partners are also members of the Monitoring Committee of the OP R&DI. The Monitoring Committee of the OP R&DI was established by an act of the Minister of the Education Youth and Sports in accordance with the articlea 63, 64 and 66 of the Council Regulation (EC) No. 1083/2006 . Members of the Monitoring Committee of the OP R&DI are representatives of the Managing Authority and factual managers of MEYS, representatives of relevant ministries i.e. MIT, MRD, ME, MF, the Research and Development Council, CzechInvest, Council of Higher Education Institutions of the Czech Republic, Czech Rectors Conference, Czech Chamber of Commerce, Confederation of Industry of the Czech Republic, Czech-Moravian Confederation of Trade Unions, Academy of Sciences of the Czech Republic, representatives of NUTS II and other interested parties. Among observers without the right to vote are representatives of the department of internal audit and inspection of MEY&S, representatives of the European Community Commission (DG Regio), representatives of the European Investment Bank, representative of Transparency International CZ and a representative of the Audit Authority of the Ministry of Finance.

1 Current situation in the area of Research and Development

1.1 Analyses of Research, Development and Innovation in the Czech Republic

1.1.1 Expenditures on Research and Development and efficiency of the Czech system of R&D

The importance of investment in research and development for competitiveness has been repeatedly demonstrated by numerous studies and analyses[9]. The conclusions of such analyses underline not only the importance of investment in R&D generally, but also the importance of a suitable combination of public and private investment into R&D and a significant leverage effect, by means of which public investment can influence private investment into R&D[10]. Therefore, the establishment of appropriate system of public R&D investments can be considered to be the key, in respect of strengthening the motivation and incentive mechanisms for co-operation between the academic sphere and the application sphere. The existence of such a robust system and a governance mechanism conducive to such collaboration is a vital pre-condition for the long-term competitiveness of states and regions. It is especially in this domain that the Czech R&D policy needs substantial improvement.

It is no accident that, to maintain their own competitiveness and technological progress, the developed states invest 2–3 % of their GDP annually into R&D. The Czech Republic does not emerge well from such comparison in the international area of research, development and technological development. Despite the fairly positive trend of recent years, the Czech Republic continues to demonstrate below the average results with respect to all the main monitoring indicators in the EU.

The total expenditure on R&D has increased gradually year on year. Specifically, in years 2000-2006, the average net year-on-year increase in constant prices reached nearly 4.7 % per year (CSO). However, with respect to the relatively dynamic growth of GDP in recent years, the expenditure on R&D in relation to GDP has grown relatively slowly and the level of growth lags behind some of the other new member states of the EU. The total expenditure on R&D in 2006 was equivalent to 1.55 % of GDP, which puts the Czech Republic in 11th place in the EU and in 2nd place among the new member states. At the same time, this value represents a considerable lag behind the average of the EU-27 (1.84 %) [11].

The increase of expenditure on R&D in recent years has been formed, primarily, from investment by the private sector, which has lately experienced a dynamic growth. The intensity of public expenditure on R&D has also increased slightly and, according to medium-term forecasts, will continue increasing nominally, primarily in the university sector.

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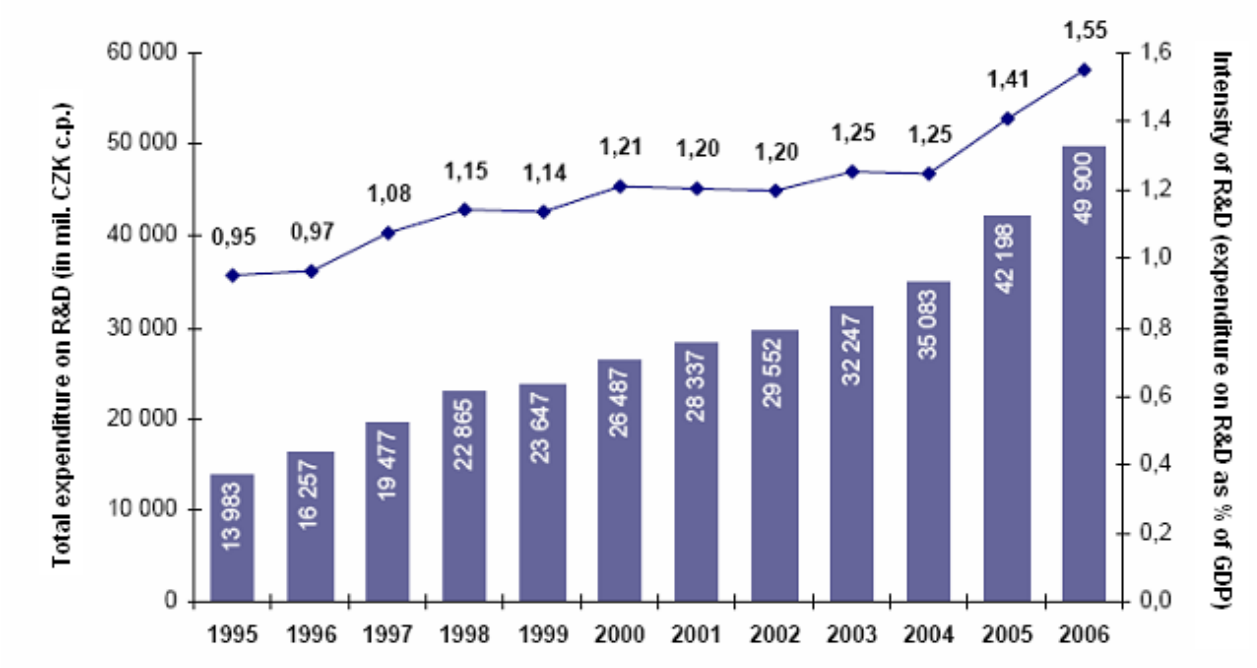
[9] Impact Assessment and Ex-Ante Evaluation (Annex to Proposal for the Council and European Parliament decisions on the 7th Framework Programme), COM(2005)119, (it includes a clearly arranged Research report).

[10] Facing the Challenge: The Lisbon Strategy for growth and employment. Report from the High Level Group chaired by Wim Kok, EC, 2004.

[11] Key Figures 2007 on Science, Technology and Innovation: Towards a European Knowledge Area. EC, DG Research, 2007. EU-27 R&D Spending stable at 1.84 % of GDP in 2006, Eurostat, 2008.

Chart 1.1.1. – 1: Total expenditure on R&D (GERD) in the Czech Republic and their GDP ratio in years 1995 – 2006.



Source of data: CSO

The structure of expenditure on R&D in the Czech Republic does not differ significantly from average values in the EU: in 2005, the expenditure of the private sphere represented 54 % of totalexpenditure, while in 2006 it was 57 % (the average of the EU-27 in 2005 was 54.5 %). Public expenditure slightly exceeded the level of 40 % (EU-27 = 34.8 %). The CR lags behind considerably in the utilization of the resources for R&D from foreign sources (in 2005 it was only 4%, in 2006 only 3% compared to 8.5% in the EU-27)[12], which demonstrates the insufficient involvement in international co-operation in the area of R&D and especially in the structures of the European Research Area.

Table 1.1.1 – 2: Expenditure on R&D in the Czech Republic by sectors (sources) of their financing in the period 2002–2006

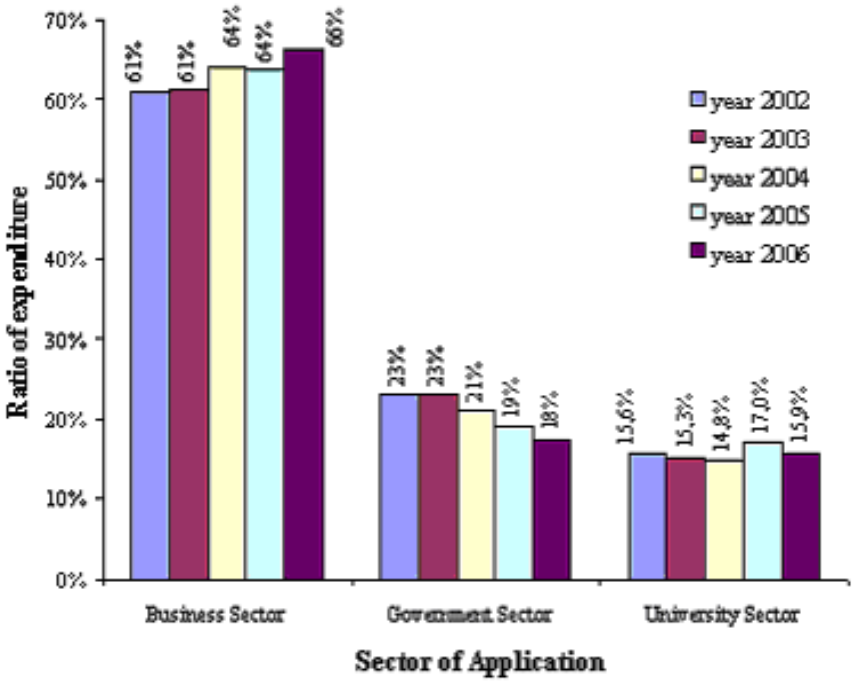
Source of financing	2002		2003		2004		2005		2006	
	mil. CZK	%	mil. CZK	%	mil. CZK	%	mil. CZK	%	mil. CZK	%
Private	15 876	54,5	16 590	52,6	18 530	53,7	22 825	54,1	28 399	56,9
Public	12 433	42,7	13 488	42,7	14 695	42,6	17 248	40,9	19 445	39,0
Foreign	802	2,8	1 473	4,7	1 297	3,8	1 669	4,0	1 529	3,1
Other	442	1,5	696	2,2	561	1,6	456	1,1	528	1,0
Total	**29 111**	**100**	**31 551**	**100**	**34 522**	**100**	**42 198**	**100**	**49 900**	**100**

Source of data: CSO

[12] Key Figures 2007 European Commission, page 56.

With respect to the structure of the application, the expenditure on R&D in the Czech Republic demonstrates fairly good parameters; nearly 2/3 of the expenditure go to the private sphere and their ratio has an increasing tendency (refer to chart 1.1.1-3). Other major users include the governmental sector, which includes both public and state research organizations (e.g. the institutions of the Academy of Sciences of the Czech Republic or other public Research Institutes). Like the majority of the post-communist countries, the Czech Republic belongs to a group of countries with a higher ratio of the governmental sector with respect to spending on R&D, which results from the specific position of the Academy of Sciences of the Czech Republic, which is financed primarily from public sources. With respect to the utilization of investment into R&D, universities represent a significant sector, and, in comparison with the average for the EU-25, which reached nearly 22 %, the ratio of total spending for R&D for universities in the Czech Republic is lower (15.9 % in 2006 with a slight increase from 2002), which is related to the existence of a significant governmental sector in the Czech Republic.

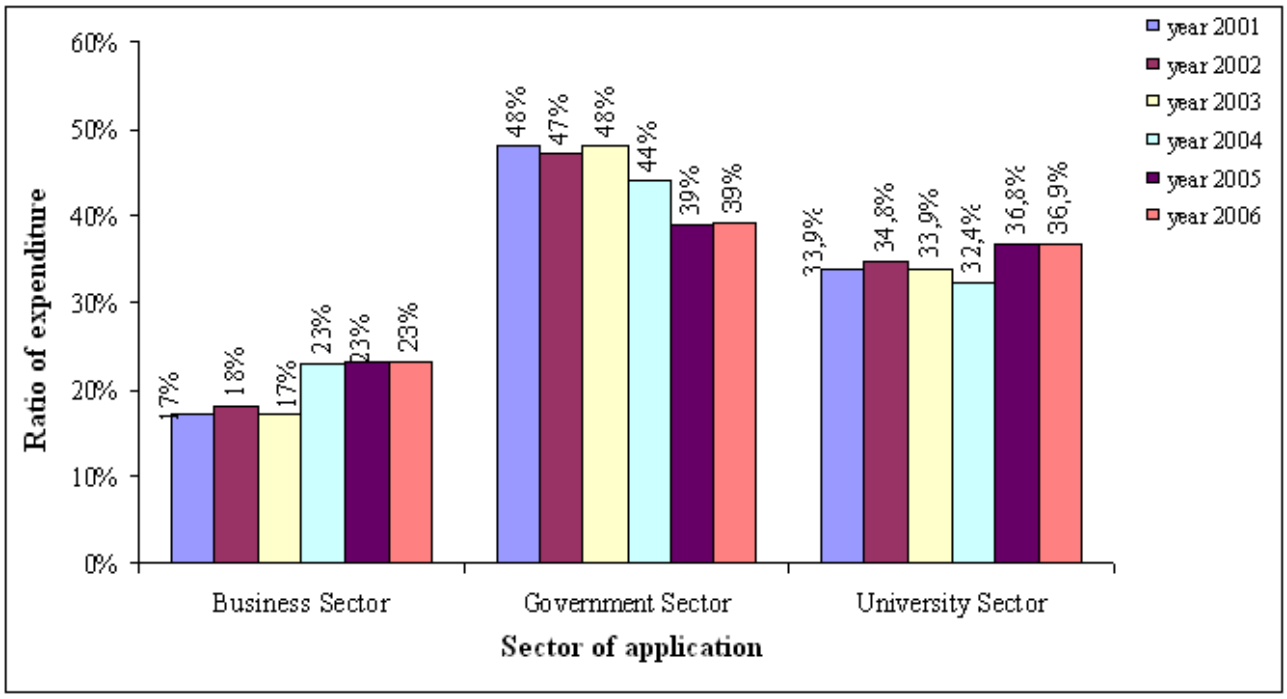
Chart 1.1.1 – 3: Total expenditure on R&D according to the sector of application [13]



Source of data: CSO

[13] **The chart does not include the application of expenditures on R&D in the private non-profit sector because the values are negligible.**

Chart 1.1.1 – 4: Public expenditure on R&D according to the sector of application



Source of data: CSO

1.1.2 Efficiency of the Czech system of R&D

The support of research and development in the Czech Republic suffers from several problems, which shall be dealt with adequately in the upcoming period. At the present time, public R&D in the Czech Rep. (or, more precisely, R&D supported from public resources) covers generally nearly all fields of science. However, considering the global competition in the production of results of R&D, it is vital for a state of a smaller size, like the Czech Republic, to concentrate its investment in a limited number of research domains and centres with critical size and top quality. On the other hand, the system of support of R&D in the Czech Republic features high fractionalism. Every year approximately 5500 projects are solved in the Czech Republic that are supported from state expenditure on research and development. In the case of a smaller-sized country, this fact represents a significant systemic limitation, which results in the pulverization of sources and undermines the possibility of the creation of top workplaces in selected strategic areas that have above-standard equipment.

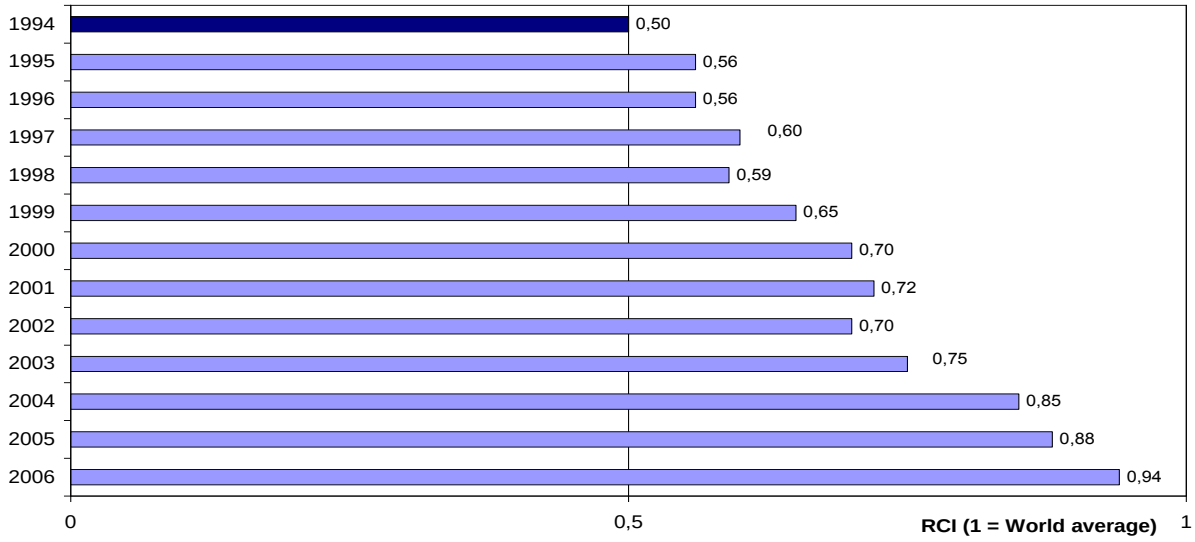
Over the past several years, a positive development has taken place, in this respect, when the Government approved, with its resolutions[14], eight Long-Term Basic Directions of Research and

[14] Government Resolution of 1/6/2005 No. 661 on Long-term Basic Directions of Research and Government Resolution of 18/10/2006 č.1192 on Updated Long-term Basic Directions of Research.

Development of the Czech Republic (LBRD): 1. Sustainable Development, 2. Molecular Biology, 3. Energetic Sources, 4. Material Research, 5. Competitive Engineering, 6. Information Society, 7. Safety Research and 8. Socio-Scientific Research. It represents the first step to the creation of a system of priorities and the concentration of sources on the key areas of research in the Czech Republic.

Generally, the results of R&D produced by Czech researchers do not achieve quality satisfactory international comparison. As an indicator of quality of Czech research, the world acknowledged database Web of Science was selected, namely its indicator of the relative citation index[15] of the Czech Republic in the period 1994–2006. Chart 1.1.1–6 demonstrates the considerable and fast growing potential of the Czech Republic in the area of Basic research, which has not yet, however, been fully utilized for the growth of competitiveness. At the same time, it shall be emphasized that this indicator has not even reached the average world level yet.

Chart 1.1.2 - 1: Development of relative citatation index of the Czech Republic in the period 1994–2006



Source of data: Thomson ISI® National Science Indicators (NSI),1981–2006, RVV(The Research and Development Council)

Comparison with other EU members also show that in the production of internationally acknowledged publications, the Czech Republic exhibits below average results. For the period 1981-2006, the Czech Rep. achieved less than 50 % of the performance of the EU-15 average. With respect to the impact of publications, the Czech Rep. achieved the relative citation index at the level of 0,75 in the period 2002-2006, while the average value of countries of the EU-15 achieved 1,07

[15] The relative quote index is defined as a ratio of the quote impact of a given country and the quote impact of the world database, i.e. without differentiating the field. The value 1 corresponds to the bibliometric quality of the average of the world database, while a lower value means a below average bibliometric quality.

and the USA 1,41[16]. This clearly demonstrates that twoof the key issues of Czech research are both a limited capacity to produce any results of R&D at all and a limited ability to produce quality, internationally respected results.

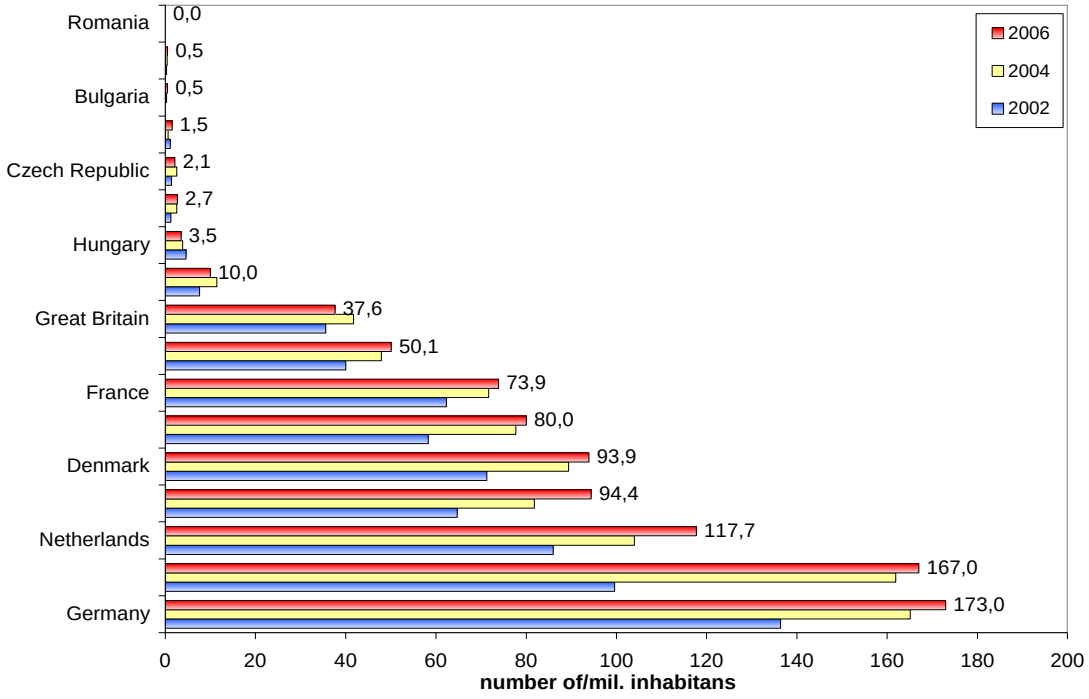
On the other hand, it can be considered positive that, despite the overall competitiveness of the Czech Republic in the area of production of the internationally acknowledged results tends to be below average, there are various fields in which the Czech Rep. achieves above average results and, in some cases, results significantly above average (especially some areas of human and veterinary medicine, mathematics, technical sciences, chemistry and physics). This demonstrates that in the Czech Rep. it is possible to identify workplaces or individual teams of experts that show the results that are also fully competitive in international comparison. At the same time, however, such experts often lack corresponding material conditions for work and their teams suffer from the lack of critical size allowing them to research a broader spectrum of a particular topic or theme, and they often suffer from departures of young workers abroad.

Another important indicator for the international evaluation of results of R&D is the number of patents. Despite some limitations (not all patents result in innovations and not all innovations are based on patents), this indicator reflects the ability to protect intellectual property and convert research and development activities into meaningful results suitable for commercial application and further application in practice. The very low number of submitted applications and accepted patents of Czech authors is one of the indicators of the poor innovation environment in the Czech Republic and overall low practical relevance of Czech R&D. The worst position is in the area of top patents of so-called triad (the patents submitted simultaneously to the Amercian, European and Japanese patent offices), where the Czech Rep obtained only 4 points out of 100 on the basis of the evaluation of EIS 2006.

The comparison of the Czech Rep. with other countries in the amount of patents granted by EPO is illustrated in chart 1.1.1–7:

[16] Source: *Analysis of the Conditions of Research, Development and Innovations in the Czech Republic and their comparison with foreign countries 2007*. Office of the Government of the Czech Republic, Council of the Government for Research and Development.

Chart 1.1.2 – 2 Patents granted by EPO (number of/mil. inhabitants)



Source of data: Yearbooks of the European Patent Office, 2002 to 2006, part statistics – total number of granted patents; RVV.

The aforesaid clearly indicates that the Czech Rep. lags behind the average of the EU not only in the level of public investment into R&D but in the case of production of commercially applicable outputs, it lags behind, in particular and to a great measure, in efficiency of spent resources for R&D in relation to the possible utilization of results of R&D for innovation. Measured by the level of patent activities with respect to both private and public spending for R&D, the Czech Rep. seriously lags behind below the average of the EU-27[17]. This fact demonstrates that in addition to the generally insufficient production of world acceptable results, the Czech system of R&D also suffers from a small application orientation (even when considering the limited ability of the patent data to capture this dimension).

Despite the fact that there has been significant progress in the area of the evaluation of R&D support efficiency from public sources, in recent years especially thanks to the quality improvement of the system evaluating the results of R&D (this activity is in the competence of the The Research and Development Council, which also administers the Central Information System of R&D), there has been a great potential for further improvement in this area. A crucial requirement for the solution of this problem will be the ability to establish binding conclusions on the basis of the evaluation, including an emphasis on the use of research results, and also on creating incentive mechanisms motivating R&D organisations to collaborate with users of research results. In doing so, the key will be a consistent bonification of workplaces and teams that spent the resources efficiently, as it is also outlined by the draft of the Reform of the System of research, Development and Innovations in the Czech Rep. published by the Council for Research and Development in the

[17] With the current intensity of BERD, the expected number of patent applications to EPO (with respect to the average values of the EU) should be from a four to five fold of the current value; a similar situation is when comparing the intensity of public investment into R&D. Key Figures 2007 on Science, Technology and Innovation: Towards a European Knowledge Area. EC, DG Research, 2007, page 83 and 88.

early 2008 and approved by Czech Government in March 2008. The OP R&DI offers a unique opportunity to create a strong incentive system encouraging greater efficiency in the Czech R&D system.

1.1.3 Regional analysis of R&D and regional specialisation

From the regional point of view, the capacities for R&D in the Czech Republic are very unevenly distributed. Nearly one third of all expenditure on R&D and nearly 2/3 of public expenditure on R&D are concentrated in the capital city of Prague, which is not included in the Convergence objective (see the table 1.1.1.-5). However, when the remaining Czech regions are considered at the NUTS II level their respective difference in R&D and innovation performance are relatively minor and the Czech regions show relatively homogenous characteristics[18]. More important concentrations also exist in the regions of Central Bohemia (especially a considerable concentration of corporate R&D capacities – automotive and aircraft industries in combination with the concentration of national R&D capacities in the area of the nuclear research) and Southeast (beyond Prague, the second biggest concentration of public R&D in combination with a significant concentration of private R&D capacities). With respect to more detailed classification (NUTS III), the main concentrations of R&D outside Prague are the Central Bohemia Region and the South Moravia Region. On the other hand, the lowest intensity of R&D activities is demonstrated in the Karlovy Vary Region and the Vysocina Region, on the level of NUTS II, it is the region Northwest.

[18] For example the *ESPON Atlas of: Mapping the Structure of European Territory* (2006), which concludes that all Czech NUTS II regions except for Prague, Central Bohemia, North-West and Moravia-Silesia fall in the same category of below average performance in terms of Lisabon competitiveness and innovation indicators (third quartile), while Prague and Central Bohemia fall in the average category and North-West and Moravia-Silesia fall to the well below average performance (fourth quartile). Similarly, a study *Enlarging the ERA: identifying priorities for regional policy focusing on research and technological development in the New Member States and Candidate Countries(*EC, DG Research, 2005) which places all NUTS II regions except for Prague, Moravia-Silesia and North-West in its regional typology in the category of „skilled manufacturing platform regions“, i.e. regions with a strong industrial base, relatively low unemployment levels, intermediate knowledge creation capacity, relatively high educational levels and high penetration of ICT. The region of North-West and Moravia-Silesia are characterised as „industrially challenged regions“ characterised by strong industrial base, relatively low knowledge creation capacity, higher unemployment rates and intermediate characteristics of ICT penetration.

Table 1.1.3 – 1: Expenditure on R&D divided to Total and Public realized in particular regions in the period 2003–2006

Regions (region NUTS 2) / type of expenditure	2003		2004		2005		2006
	Total	Public	Total	Public	Total	Public	Total
Prague	36.8%	67.9%	37.9%	63.4%	37.5%	62.1 %	38.4%
Central Bohemia	21.6%	10.7%	20.6%	14.0%	20.3%	14.2 %	17.1%
Southwest	5.4%	4.3%	5.7%	4.7%	6.5%	5.8%	6.1%
Northwest	2.2%	0.4%	1.8%	0.4%	1.6%	0.2%	1.3%
Northeast	8.8%	1.0%	9.8%	3.7%	9.3%	4.2%	8.9%
Southeast	12.1%	13.0%	12.8%	12.6%	12.7%	12.4%	10.2%
Central Moravia	5.6%	1.6%	5.2%	0.1%	7.0%	0.2%	6%
Moravia-Silesia	7.5%	0.9%	6.3%	0.9%	5.2%	0.9%	11.1%
	100%	100%	100%	100%	100%	100%	100%

Regions (region NUTS 3) / type of expenditure	2003		2004		2005		2006
	Total	Public	Total	Public	Total	Public	Total
Capital city of Prague	36.8%	67.9%	37.9%	63.4%	37.5%	62.1%	38.4%
Central Bohemia Region	21.6%	10.7%	20.6%	14.0%	20.3%	14.2%	17.1%
South Bohemia Region	3.2%	4.3%	3.3%	4.7%	3.8%	5.7%	3.4%
Plzen Region	2.2%	0.0%	2.4%	0.0%	2.7%	0.1%	2.7%
Karlovy Vary Region	0.3%	0.2%	0.3%	0.3%	0.2%	0.1%	0.1%
Ústi Region	1.9%	0.2%	1.5%	0.1%	1.4%	0.1%	1.2%
Liberec Region	2.5%	0.0%	2.5%	0.1%	2.6%	0.1%	3%
Hradec Kralove Region	2.4%	0.8%	3.4%	3.6%	2.8%	4.2%	2%
Pardubice Region	3.9%	0.2%	3.9%	0.0%	3.9%	0.0%	3.9%
Vysocina	1.3%	0.0%	1.5%	0.2%	1.7%	0.2%	1%
South Moravia Region	10.8%	13.0%	11.3%	12.4%	11.0%	12.2%	10.1%
Olomouc Region	2.8%	0.1%	3.0%	0.1%	3.3%	0.1%	2.7%
Zlin Region	2.8%	1.5%	2.2%	0.0%	3.7%	0.0%	3.3%
Moravia-Silesia Region	7.5%	0.9%	6.3%	0.9%	5.2%	0.9%	11.1%
	100%	100%	100%	100%	100%	100%	100%

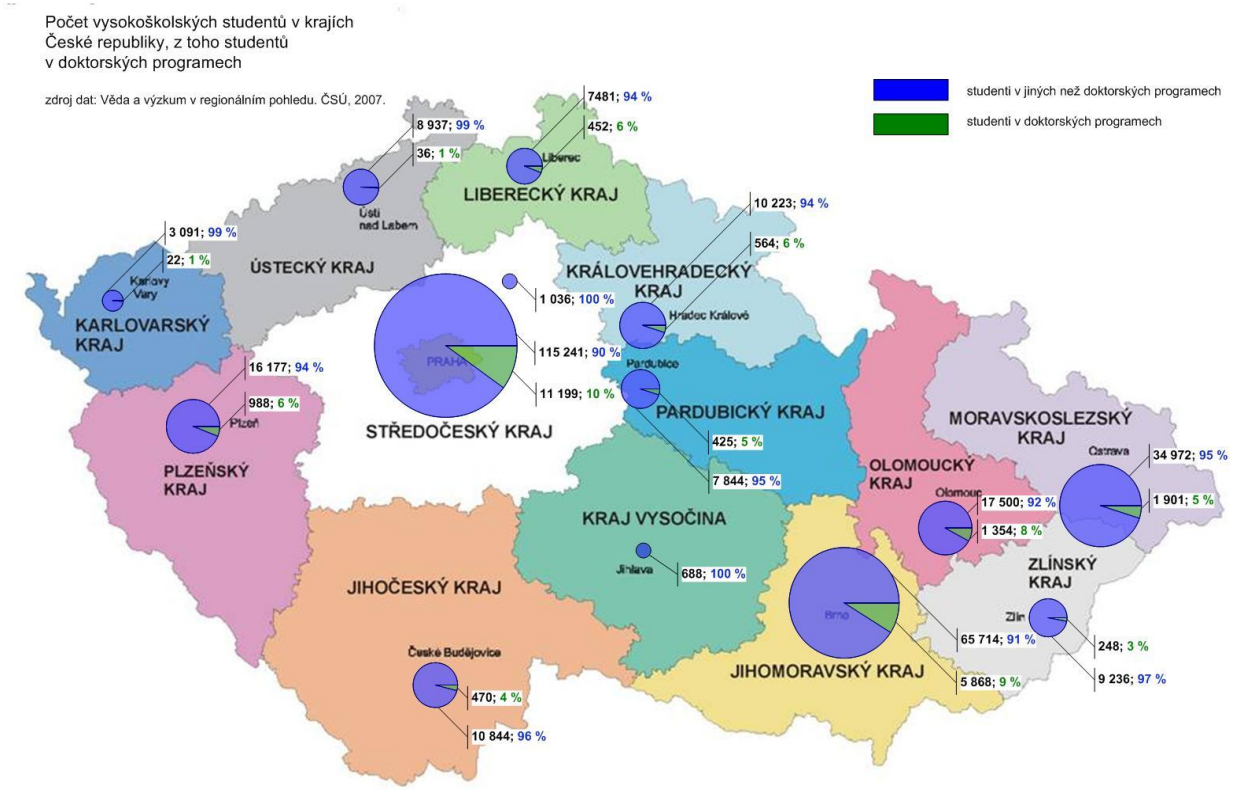
Source of data: CSO

The level of regional differences with respect to R&D capacity represents a major challenge that will be addressed adequately within OP R&DI. It is necessary to find a suitable combination of interventions, which will deal with the necessary requirements to achieve top quality R&D and, at the same time, with the requirement of cohesion in the regional policy and facilitating access to research results also to users in the regions that only have a weak, or non-existent research base (excellence versus cohesion). In practical this means, on one hand, a need to respond to a considerable level of dispersion of the R&D capacity within the Czech Republic and the need to strengthen the concentration. A logical response to this should be support of high quality centres where creation of the critical size workplaces will be supported in R&D sectors that promise to produce top quality research results, that can already demonstrate high quality results, have high quality staff and that can demonstrate the potential to become internationally visible research performers and partners to leading international players in future oriented research (supply driven research activities). On the other hand, the Czech R&D system also needs a set of specialised research entities oriented to the existing needs of the Czech business sector (demand driven research

activities), sometimes corresponding with regional economic specialisation, and closely linked to the demand of the individual industrial sectors.

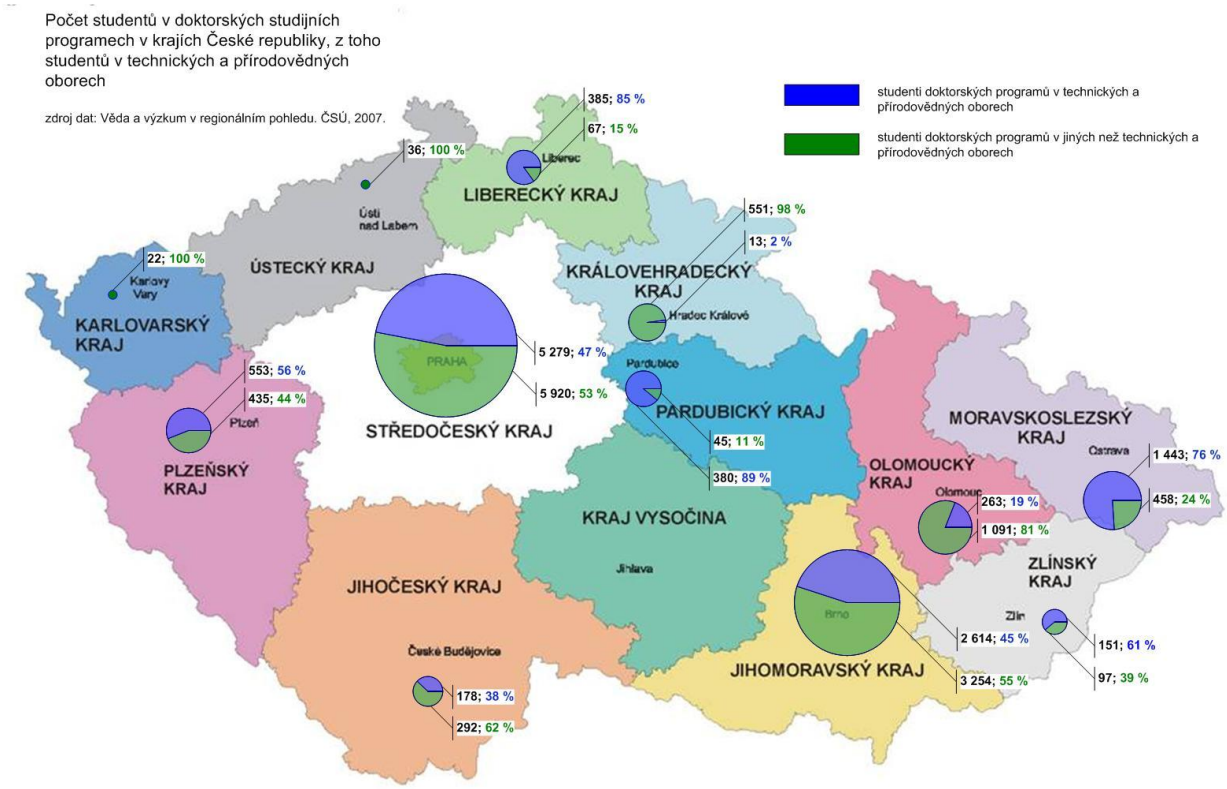
For a success of major, future oriented research centres the supply of fresh talent and human capital is the key. Therefore, the links to the universities that are producing high quality graduates in the relevant fields is the key. The maps below show the present situation in terms of human capital potential, namely the number of students enrolled at universities, with a special attention to PhD students who represent the main source of innovation and are crucial in pushing the boundaries of knowledge forward. The number of PhD students in science and technology courses are also shown separately. The data clearly shows that the leading regions in respect of human potential for R&D are (outside of the capital of Prague which clearly dominates) the regions of South Moravia (Brno) and Moravia-Silesia (Ostrava and Opava), followed, with a substantial gap, by regions of Plzeň, Pardubice and Liberec, while some potential also exists in the regions of Olomouc, Zlín and South Bohemia (České Budějovice).

Map 1: Total number of university students in bachelor and master degrees programmes (blue), and in PhD programmes (green) in the school year 2005/2006 by NUTS III regions (kraj)



Source: Věda a výzkum v regionálním pohledu (Science and Research in Regional Perspective), CSO, 2007

Map 2: Total number of PhD students enrolled and the the number of PhD students in the science and technology domains (blue) and other domains (green) in the school year 2005/2006 by NUTS III (kraj)



Source: Věda a výzkum v regionálním pohledu (Science and Research in Regional Perspective), CSO, 2007

In terms of sectoral specialisation, most of the Czech regions posess already a certain degree of regional research and innovation specialisation. Although the economy is developing dynamically and new sectors are developing fast, the historical specialisation in research and innovative capacity of the regional economies is expected to play a role in the future profiling of these regions and are also likely to play an important role in the types of projects that will aspire for funding, especially when considering the research centres that are more immediately linked to the demand of the end users in the region. The two main features which characterise the R&D and innovaton specialisation are the publication specialisation and the specialisation in terms of patenting activity. The publication activity shows the scientific specialisation predominantly of the public research base, while patenting activity reflects primarily the R&D and innovation activity of the business sphere. Clearly the classification of scientific fields and EPO patent classes are not easily compatible. Moreover, there is a great variety among scientific fields and their propensity to publish, just as there are very significant differences among industrial sectors in their propensity to patent. Nonethelss, the tables below show that there are, at least in most regions, existing relations between scientific activities of the public research and innovation activities of business sector which are more apparent in the technical fields.

Table 1.1.3-2: Number of scientific publications in Czech regions by scientific fields (years 1994-2004, ISI Thomson)

Region (NUTS III)	mathematics	physics	spcae science	chemistry	Earth sciences	ecology and environment	biological disciplines	molecular biology disciplines	microbiology	imunology	botany ane zoology	agricultural science	material sciences	computer sciences	technical science	pharma-disciplines	neuroscience	psycho-disciplines	clinická medicine	multidisciplinary
Capital city of	1420	5841	313	6348	1160	478	1970	1763	901	505	1108	1089	1621	632	1091	518	893	129	2839	126
Central	251	781	37	1219	134	209	438	480	304	99	1240	489	488	94	224	129	193	26	687	9
South Bohemia	9	54	10	121	23	270	172	165	499	12	834	174	17	3	9	18	6	2	28	11
Plzen Region	5	391	374	281	61	48	114	94	24	7	184	77	105	3	83	8	5	0	79	8
Karlovy Vary	91	335	3	263	10	28	134	119	43	29	248	60	15	13	9	39	45	3	248	10
Ústi Region	1	138	0	663	1	10	51	7	10	1	0	11	154	5	22	4	6	0	18	0
Liberec Region	6	29	2	237	6	9	144	53	26	27	43	10	10	2	9	137	44	6	250	1
Hradec Kralove	87	41	0	62	5	3	182	31	10	32	15	3	88	33	38	21	21	2	236	1
Pardubice	96	172	5	109	33	21	34	20	14	7	45	20	90	71	34	19	25	2	86	3
Vysocina	2	19	0	138	12	7	10	1	6	1	16	38	36	2	10	2	3	1	13	0
South Moravia	18	86	0	34	7	2	6	0	1	0	8	7	62	2	24	0	5	0	11	0
Olomouc	1	30	0	54	4	13	14	8	5	2	10	39	13	1	3	6	10	0	30	0
Zlin Region	0	0	0	1	1	3	5	3	3	0	12	29	0	0	0	1	3	1	3	0
Moravia-Silesia	1	0	0	5	2	2	2	0	0	0	2	1	1	0	1	0	1	0	5	0

Table 1.1.3-3: Number of patents to the Czech Office of Industrial Property (ÚPV) in Czech regions (NUTS III) according to IPC classes (1994-2004)

Region (NUTS III)	Human needs	Industrial techniques and transport	Chemistry and metalurgy	Textile and paper	Construction	Mechanics, lighting, arms	Physics	Electricity
Capital city of Prague	140	175	335	36	54	97	110	73
Central Bohemia Region	31	66	94	0	13	40	17	10
South Bohemia Region	18	21	15	3	6	10	9	8
Plzen Region	18	61	15	1	17	24	9	26
Karlovy Vary Region	2	19	4	0	5	9	2	2
Ústi Region	13	29	80	1	4	16	8	7
Liberec Region	7	52	42	35	4	17	17	1
Hradec Kralove Region	18	29	18	8	12	12	7	4
Pardubice Region	31	53	47	59	6	15	11	24
Vysocina	18	47	8	14	10	15	6	2
South Moravia Region	70	109	87	11	33	79	40	26
Olomouc Region	15	28	38	5	11	32	15	4

Region (NUTS III)	Human needs	Industrial techniques and transport	Chemistry and metalurgy	Textile and paper	Construction	Mechanics, lighting, arms	Physics	Electricity
Zlin Region	15	56	28	3	7	31	10	12
Moravia-Silesia Region	25	98	101	0	39	67	28	17
ČR total	**421**	**843**	**912**	**176**	**221**	**464**	**289**	**216**

Table 1.1.3-4: Number of patent application to the EPO origin by a region (NUTS II), in IPC class classification (1994-2004)

Region NUTS II	Human needs	Industrial techniques and transport	Chemistry and metalurgy	Textile and paper	Construction	Mechanics, lighting, arms	Physics	Electricity
Prague	45	38	61	3	10	34	33	12
Central Bohemia	10	17	12	2	2	7	10	3
Southwest	7	26	6	1	6	13	4	9
Northwest	3	3	3	1	1	2	2	1
Northeast	18	33	9	32	6	13	19	4
Southeast	30	29	34	9	13	16	12	16
Central Moravia	8	14	16	3	2	11	8	11
Moravia-Silesia	15	20	10	1	8	8	8	5
ČR celkem	**137**	**180**	**153**	**52**	**47**	**103**	**95**	**62**

Source: Vaněček, J. (2006): Regionální analýza výsledků vědy a výzkumu – publikace a patenty (Regional analysis of scientific and research results – publications and patents). Ergo, no.. 1, November 2006, pp. 6–9.

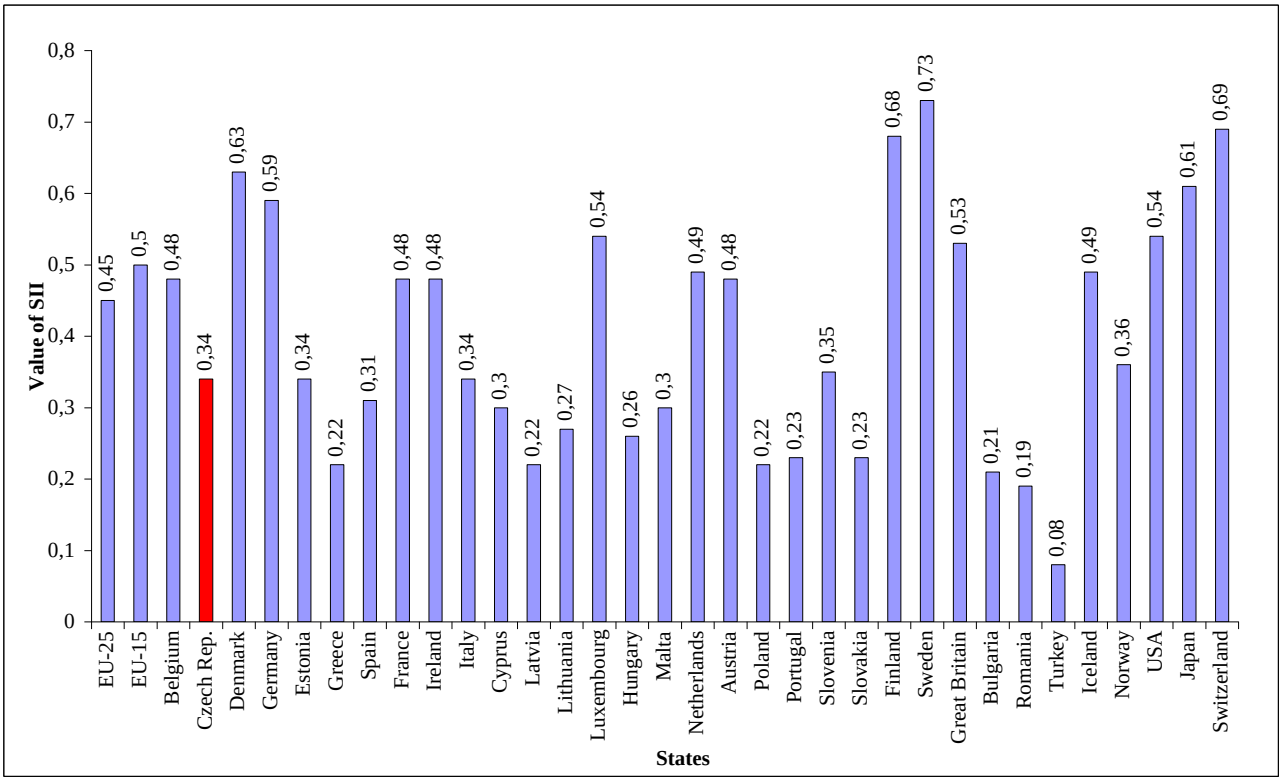
1.1.4 Innovation ability of the Czech Republic and relationship with the areas of research and development

In the summary measurement of the innovation performance, the Czech Republic demonstrates rather unsatisfactory results. According to the **European Innovation Scoreboard** (EIS), which evaluates the innovation performances of the country by means of the summary indicator (so-called Summary Innovation Index - SII), the Czech Republic, with the value 0.34 in 2006, lags behind the average of the EU-25 (0.45), leading Sweden (0.73) and Switzerland (0.69) and is in the 18th place from 34 classified states (refer to chart 1.1.2–1). In 2007, the value of SII increased to 0.36, while

the average of the EU-27 remained on the level 0.45 and, therefore, the Czech Rep. maintained the 13th place among the members of the EU.

In comparison with the data for 2005, the position of the Czech Republic has improved considerably. The Summary Innovation Index increased from 0.26 to 0.34 (i.e. by one third) and in the EU the Czech Rep. improved its ranking by 7 positions (from the 20th to the 13th place). This can be partially credited to the positive effect of the public policy in the area of R&D and innovation[19].

Chart 1.1.4 – 1: Summary Innovation Index 2006

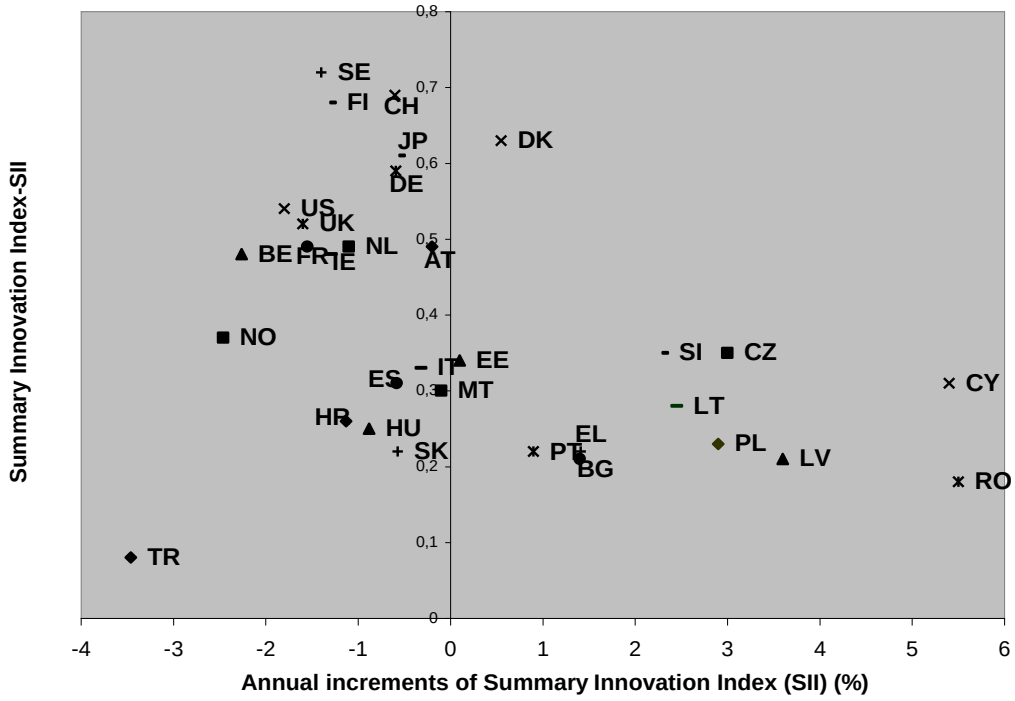


Source of data: EIS

The comparison for 2006 ranks the Czech Rep. to the group of countries, where the current situation is not optimum in comparison with the performance of the EU-27, but there have been fast positive changes. Regarding the four groups identified in the following chart 1.1.2-2 ("lagging", "catching-up", "stable level", "leading innovators"), the Czech Republic belongs to the second group of countries ("catching-up") that are identified in the bottom right quadrant.

[19] The development of the SII indicator needs to be interpreted carefully because its calculation also tends to be modified over time. That is why it is more efficient to monitor the indicators on the level of individual components of this summary indicator.

Chart 1.1.4–2: Trends of summary innovation index 2006



Nevertheless, the Czech Rep. continues to lag behind in numerous other areas measured within EIS.

A more detailed system of evaluation of EIS 2006 illustrates the main weaknesses of the Czech Research and Innovation Environment:

- The most significant lag of the Czech Rep. behind the average values of the EU is evident in the whole area of protection of intellectual property. The comparison in the number of submitted applications for patents of all types seems the worst (with American USTPO and European EPO patent offices).
- A significant weakness is also the co-operation between public and private spheres in the area of R&D as measured by the ratio of private resources spent for financing R&D in universities.
- The application of risk capital and closely related insufficient application of forms of support of the creation and development of technological firms from the research environment, which is given by still little pro-innovation environment in research organizations and in universities, are totally inadequate.
- A significant shortcoming of the Czech Rep. is the lag behind the average of the EU in the ratio of the population with a university education and also in the ratio of graduates from technical and scientific fields.
- Lagging behind the average of the EU is also evident with respect to the total expenditure on R&D both in the public and private sectors.

The results of **other analytical studies**[20] show that the key shortcomings of the whole system of R&D and innovation exist in these areas:

- the interconnection and co-operation of the public and private sectors in R&D,
- Human Resources for R&D,
- financing the research, development and innovation activities, including remuneration level of workers in R&D,
- material conditions of public institutions of R&D,
- low relevance of results of R&D, which is reflected in the low ratio of practically applicable results of R&D[21], and to the fact that the results do not serve sufficiently to increasing competitiveness of the Czech Republic[22].

Numerous items of innovation infrastructure in the public sector and their interconnection to the functional system, as is common in developed countries, are missing. Sources of financing for the creation and the embryonic at stage of the innovation firms, especially in universities and other research organizations, are totally insufficient. Other shortcomings are also in the area of legislation and in the business environment.

In connection with a low ratio of the population with a university education and a low ratio of graduates from technical and scientific fields, it shall be emphasized that the number or ratio of such graduates itself is not the only significant parameter. The key factor of education is especially the quality of education determined primarily by relevance of the provided education to the requirements of practice. Nowadays, there has been little interconnection between universities and the application sphere, little involvement of universities in the applicable directions of R&D, which is a vital prerequisite of increasing the qualification level of university graduates.

The following text analyzes in more detail individual problematic areas, which crucially limit the full exploitation of the scientific-research potential of the Czech Republic for innovation and competitiveness. It concerns the following problem areas:

- Co-operation of the public and private sectors in the area of R&D and innovation
- Material equipment of R&D workplaces
- Human Resources in R&D
- Internationalization and international co-operation in R&D

These problematic areas are analyzed especially with respect to public R&D, but also across the board regardless of whether or not the interventions derived from the analysis are realized through ERDF (OP R&DI or OP EI) or ESF (OP EC). The question of the mutual follow-up and complementarity of the interventions realized within ERDF and ESF or, as the case may be, individual OPs, is described in chapter 2, Article 2.12 of this Operational Programme.

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[20] E.g. the study "Barriers to Growth of Competitiveness of the Czech Republic" developed for the Ministry for Regional Development or the document "Analysis of the status of Research and Development in the Czech Republic and their comparison with foreign countries in 2005 and 2006".

[21] E.g. the Evaluation of Research and Development shows that from 162 205 recognized results from 2000–2004, there were only 299 patents and 1 051 technologies.

[22] Barriers to Growth of Competitiveness of the Czech Republic.

1.2 Major problematic areas in Research, Development and Innovation in the Czech Republic

1.2.1 Co-operation of research and application spheres

The research sphere in the Czech Rep. is represented especially by public research institutions, department research organizations and public universities. The application sphere includes both commercially based companies of the production and non-production spheres and e.g. some public organizations utilizing the results of R&D (public medical facilities, museums etc.). The co-operation of both sectors, research and application, hits various barriers in the Czech Republic. The biggest ones include mutual distrust, which reigns between both sectors and which is a characteristic feature of the R&D systems in a majority of EU countries. This problem can only be overcome with partial steps and measures with the objective to build trust on both sides gradually and create the conditions motivating the co-operation and create strong incentives for such co-operation. They include an active support of mutual communication of both sectors, increasing mutual sharing of information in the area of R&D and strengthening awareness of domestic enterprises and the whole application sphere of Czech workplaces of R&D, their results and offer. To overcome the lack of communication, it is especially important to support direct involvement of application sphere in the activity of public R&D, in particular through joint projects and formation of joint research agendas. The consequences of insufficient mutual awareness and communication isolate the research sphere and divert it from the applicable directions of research. On the other hand, there are also deficiencies on the side of the industry which often does not articulate their requirements in a very clear way and thereby fail to create a relevant demand for applicable results of R&D. The research organisations often have insufficient capacity to map the demand of the application sphere on on-going basis, process it individually and offer corresponding forms of a specific type of co-operation and adapt their internal processes to it.

Insufficient communication between academia and the application sector is related to another area of issues. It concerns the hindrances in the area of legislation, that significantly limit and undermine the possibilities of further co-operation. This area is fully in the competence of national bodies of the Czech Republic and in recent years, individual problems have started to be solved gradually and systematically. This area includes e.g. the elimination of some of the limitations for dealing with the intellectual property of the results of R&D, which were created by the solution of the projects supported from public sources, or recently eliminated limitations related to the possibilities of public R&D institutions to invest into some types of private enterprises founded for the purpose of commercialization of R&D results. Nevertheless, in the area of co-operation between the research and application spheres, the Czech Republic has demonstrated considerable shortcomings, which leads to generally unfavourable results in the international comparison (refer to the results of EIS in the ratio of private means for financing R&D at universities).

Overall, the low degree of collaboration is linked with the absence of strong incentives for collaboration on the side of public R&D and also with the underdeveloped system of relevant intermediary bodies (sometime their complete absence) that would facilitate technology transfer and collaboration between academia and application sector. Development of a professional technology transfer service in all research organisations active in applied research became a requirement proposed by the recently proposed Reform of the System of Research, Development and Innovation (approved by Czech Government in March 2008) and the interventions planned under this OP should significantly contribute to meeting this ambitious target.

Generally it is possible to note a totally inadequate system of the protection and utilization of intellectual property in the research sphere and a very limited ability to deal with such intellectual potential economically. To overcome the long-term lag of the CR in this area, the mechanisms for systematic protection and utilization of the intellectual property in public research institutions and at universities are missing. The solution should be a targeted system of support including the financing of the development phase from the discovery to the verification of the concept and bringing it to the commercially applicable phase (proof of concept). The systematic support should also include the support of the system ("service") for the protection of the intellectual property (including the support of those, who will link their carreer with the realization of results) up to the way of commercialization of results (sales of patents / licences, identification of shared R&D projects with commercial partners, foundation of spin-offs etc.).

A significant area of problems, as outlined above, includes organizational barriers. Until recently (namely until 2005, when basic national strategic documents and especially the first national innovation policies of the Czech Republic were accepted and started to be realized), the workplaces of R&D operating in the public sphere did not have any motivation for the patent activity or, as the case may be, for the application of their results of R&D. Even in this area the situation has improved gradually, a significant emphasis has been placed on patents and other applicable results in the evaluation of organizations according to the results of R&D and in recent years, the number of patents has started to grow slightly.

A positive feature that became evident in the last five years or so is the increasing interest of foreign entities in systematic co-operation with the Czech R&D workplaces, especially with universities and public research institutions (VVI). Since approximately 2000, the Czech Republic has experienced an increasing interest of such foreign subjects in investment into the more advanced types of activities, including the activities of R&D. The amount of expenditure on R&D from foreign sources compared to expenditure of the business R&D sector in the Czech Republic has increased considerably; namely from less than 20 % in 1995 up to nearly 50 % in 2004[23]. This trend clearly illustrates the dynamic role which was played by foreign investments in the Czech business R&D sector. This significant increase of interest from the side of foreign firms in the co-operation with the public R&D sector does not only concern a growth of interest in recruiting university graduates resulting from their shortage in the labour market. In some cases there has been systematic co-operation in the training of graduates, guidance of student works; the foundation of joint shared laboratories and participation in joint R&D projects have occurred. It can be expected that this tendency will continue in the future and the planned interventions should encourage such existing activities.

1.2.2 Material equipment of R&D workplaces

The insufficient material equipment of R&D workplaces represents a significant hindrance to the utilization of the potential for the production of top findings. One of the main causes is the limited and outdated capacity of public R&D and the resulting limited offer of quality results, which could be then used commercially. This problem is of a general nature and concerns an overwhelming majority of R&D institutions in the CR; be they public or private institutions[24]. A significant prerequisite for ensuring a consistent production of quality and relevant results of R&D is to

[23] Key Figures 2007, page 77.

[24] According to the results of the study the Survey Report about the Czech Research Infrastructure (MEYS, 2008), the average physical age of research infrastructure is 15.8 years.

achieve a sufficient critical size of the research infrastructure and research teams. In the CR there is virtually no unique R&D equipment of European importance.[25] In the Czech conditions, which feature a high level of fractionalism, it represents one of the main limitations. If the investments into R&D are to be utilized and exploited adequately, a considerable concentration of a part of research and development capacities within the whole CR will be necessary and, consequently, a major modernization and strengthening of their ability to produce top results needs to be boosted. The CR largely lacks genuine centres of excellence with above-standard material equipment and HR staffing, which would use their academic capacities for the development of high-tech fields in the long-term.

The common Czech R&D workplaces are also insufficiently equipped in terms of devices and material. It has a negative impact on both the quality of research carried out at universities and the quality of training, ability of graduates to work with technologies on the international level (state of the art technology) and the ability to produce relevant results of R&D in sufficient quality and quantity. It is estimated that e.g. in universities approximately 80 % of the device equipment is outdated or even exceeded its service life. Long-term insufficient financial backing of university education did not permit more massive investment into device equipment. Despite a fairly high increase of financial means, the average value of financial means allocated to one student lags behind the average of the OECD countries and the EU countries. Since 1997/98 the number of university students has nearly doubled so that the investment resources had to be used primarily for the reconstruction of old buildings and the construction of new and only to a limited extent were they used for the refurbishment and modernization of devices, technological equipment, equipment of libraries etc. Refer to tables 1.2.2.-1 to 1.2.2.-3.

Table 1.2.2 – 1 Progression of the number of university students in years 1997/98 – 2006/07

Year	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Students total	177 723	187 148	198 961	209 298	223 008	248 756	274 192	282 958	296 435	328 426
Index	100	105.3	112.0	117.8	125.5	140.0	154.3	159.2	166.8	184.8

Source: Student register

[25] Survey report about the Czech Research Infrastructure, MEYS, 2008.

Table 1.2.2 – 2 Overview of financial means at universities in the period 2003 – 2006, their relationship to GDP, estimation for 2006 and forecast for 2007

Year	Total expenditure on public universities (thousands of CZK)	Expenditure from public means (thousands of CZK)	University revenues from their own activity (thousands of CZK)	% of university own revenues related to their total income	GDP, common prices pursuant to CSO (billions of CZK)	% GDP, public sources only (billions of CZK)
2003	25 744 672	20 214 610	5 530 062	21.48	2 577	0.78 %
2004	28 257 293	22 460 199	5 797 094	20.52	2 817	0.80 %
2005	33 747 119	26 438 631	7 308 488	21.66	2 994	0.88 %
2006	37 493 238	29 141 149	8 352 089	22.28	3 220	0.91 %
2007 from university budget		30 263 505			3 340*/	0.906%

*/Prediction for 2006 increased by estimated year-on-year 6 % increment

Source of data: MEYS – data partially obtained from the university Annual Reports on Economy

Table 1.2.2 – 3 Ratio of investment according to public expenditure on university education in the Czech Republic in years 2000 – 2006.

(in thousands of CZK)	2000	2001	2002	2003	2004	2005	2006
Total expenditure of MEYS*/	13 663 118	15 416 237	17 747 466	19 257 759	21 495 179	25 100 567	28 017 308
Of which							
Common	11 822 085	13 589 272	15 723 945	16 514 427	18 780 570	21 221 584	23 782 169
i.e. % of Total	*86.5*	*88.1*	*88.6*	*85.8*	*87.4*	*84.5*	*84.9*
Capital	1 841 033	1 826 965	2 023 521	2 743 332	2 714 609	3 878 983	4 235 139
i.e. % of Total	*13.5*	*11.9*	*11.4*	*14.2*	*12.6*	*15.5*	*15.1*

*/ Total expenditure from public resources, which include e.g. resources of the Czech Republic GA, from other ministries etc., are higher by approximately 1 billion – see below.

Source of data: MEYS

Investment in costly devices is a problem faced not only by public institutions but also by a majority of private research organizations,[26] which results in the limitation of the international competitiveness of the Czech research sector. Clearly, the interest of graduates in research carriers and the interest of young researchers, who can possibly come back to the Czech Rep. from foreign countries, will be proportional to the conditions of material equipment of research workplaces in the Czech Republic.

The lack of required infrastructure and equipment for the research and development activity, the results of which could be directly applied in practice, also represents the basic limitation for the consistent co-operation of the research and application spheres. This problem is related to the underdeveloped network of research infrastructures and workplaces of R&D that can flexibly respond to the demand of business subjects focused on innovation and incremental improvements of products and services. The absence of this type of infrastructures negatively impacts especially

[26] Barriers to Growth of Competitiveness of the Czech Republic.

small and medium enterprises and their associations, for which it is not profitable to maintain their own R&D departments. Nevertheless, such enterprises have the need to solve technical problems, which require temporary utilization of research and development capacities. In this respect, a negative consequence of the conditions of the privatization of the sectoral R&D centres which lead to many closures of such centres in the 1990s is still apparent today. Therefore, contrary to a majority of the developed countries, the Czech Republic lacks the development and innovation infrastructure capable of actively developing targeted research and transferring its results to practice or, as the case may be, develop them to the level so that they could be utilized by commercial subjects.

The conditions of infrastructure intended for research, education and training at universities are, in many cases, also inadequate. The expansion of capacities of the universities in the period since 1989 has failed to keep the pace with the increasing interest of students, whose number has increased since the early nineties from less than 120,000 to the current nearly 330,000 (refer to the table 1.1.2.-1). In this respect there are considerable differences between individual universities and faculties but the overall conditions are unsatisfactory. The unsatisfactory conditions of infrastructures for tertiary education, and especially for education of experts for the area of R&D, are proven by the generally low intensity of spending on tertiary education with respect to GDP. In 2004, the Czech Republic spent 1.1 % of its GDP on university education, which represents, together with Slovakia and Italy, the lowest values in OECD countries and less than 60 % of the average value of OECD.[27] Therefore, a majority of universities has an internal debt resulting from an increasing discrepancy between the number of students, which has increased by 86 % within 1995-2003, and spending on tertiary education, which only grew by 39 % within the same period. The inadequacy of expenditure is critically demonstrated especially in case of investment resources. With respect to the structure of expenditure on a student in the tertiary education, it is also important that in comparison with other EU members the Czech Republic spends a relatively small ratio of expenditure on research and development activities (while the ratio of expenditure on educations reaches a comparable level).[28]

This historical legacy of underfunding, combined with increases in the number of students, often results in the premises and buildings that are inadequate for the needs of university education and insufficient or outdated equipment. Therefore, the quality of instructions is often limited e.g. as a result of using outdated laboratory and device equipment, a lack of computer equipment, missing studying capacities in libraries and lecture rooms, insufficient equipment of libraries with studying literature and professional journals. Quality education, considering the current status of scientific knowledge, is conditioned by the concurrently performed research and development with the utilization of modern device equipment and access to the required information. It is obvious that without adequate equipment, students will not be able to obtain the key skills that are required by practice. It concerns especially the fields, the study of which is related to costly R&D activities with high demands on equipment. However, some problems are of a general nature and concern the supporting infrastructures for education and research activities, irrespective of the field of study.

[27] Education at a Glance, OECD, 2006..

[28] Spending on tertiary education in Europe in 2002. Statistics in Focus, 18/2005. Eurostat, 2005.

1.2.3 Human Resources in Research and Development

Presumably the most serious barrier to the development of R&D and consequent increasing of the intensity of innovation processes in the Czech Republic has been the lack of well prepared, initiative and motivated people. In the international comparison, the Czech Rep. has a **below-average ratio of R&D workers and research workers** per 1000 inhabitants. The total number of employees in R&D[29] in the Czech Rep. in the period 2000–2005 is characterized in the following table 1.2.3-1.

Table 1.2.3–1: Number of employees in R&D converted to full-time equivalent **(FTE) in the period 2000–2005**

Employees in R&D	2000	2001	2002	2003	2004	2005
Research workers	13 852	14 987	14 974	15 809	16 300	24 169
Technical workers	7 319	8 109	8 090	9 001	9 446	13 773
Other	3 027	3 011	2 968	3 147	3 020	5 429
Total number of employees in R&D	**24 198**	**26 107**	**26 032**	**27 957**	**28 765**	**43 371**

Source of data: Analysis of the Conditions of Research and Development in the Czech Republic and their comparison with foreign countries in 2006 (primary source), OECD, Main Science and Technology Indicators, May 2007 and CSO 2007 (secondary source)

Like in cases of expenditure on R&D, the regional distribution of Human Resources in R&D is strongly regionally imbalanced with marked concentration of Human Resources to the capital city of Prague and, to a smaller extent, to the South Moravia Region (NUTS II Southeast) and Central Bohemia Region (NUTS II Central Bohemia).

[29] The number of R&D employees in the majority of international comparisons is converted according to the methodology identified in the Frascati manual to the full time employment dedicated to research and development activities (FTE – Full Time Equivalent). The R&D employees mean research workers directly performing R&D and also support, technical, administrative and other employees in the R&D workplaces. The R&D employees also include the employees, who ensure direct services for research and development activities, like e.g. R&D managers, administrative offices, secretaries etc. Between 2004 and 2005, there was a methodical change in reporting of R&D employees, which resulted in an unrepeated increase.

Table 1.2.3-2: Number of employees in R&D converted to full-time employment (FTE) by regions

Regions (NUTS III)	2005		2006	
	Number of employees	Shareof the total number in the CR	Number of employees	Share of the total number in the CR
Capital city of Prague	17 584	40.54%	19 889	41.67%
Central Bohemia Region	4513	10.41%	4 924	10.32%
South Bohemia Region	1644	3.79%	1 815	3.80%
Plzen Region	1432	3.30%	1 799	3.77%
Karlovy Vary Region	70	0.16%	94	0.20%
Usti Region	697	1.61%	793	1.66%
Liberec Region	1 295	2.99%	1 857	3.89%
Hradec Kralove Region	1 365	3.15%	1 198	2.51%
Pardubice Region	1 936	4.46%	2 145	4.49%
Vysocina	699	1.61%	605	1.27%
South Moravia Region	6 036	13.92%	6 200	12.99%
Olomouc Region	2 058	4.75%	2 049	4.29%
Zlín Region	1 665	3.84%	1 775	3.72%
Moravia-Silesia Region	2 376	5.48%	2 585	5.42%
		100%		

Source of data: CSO

The most important group of R&D employees consists of research workers, who are engaged in the concept or creation of new knowledge, products, processes, methods and systems or, as the case may be, who manage such projects. While in the EU-27, there are about 2.6 research workers per 1000 inhabitants, in the CR it is less than 1.6, i.e. only 61 % of the average of the EU[30].

The limited number of research workers is closely related to the generally low ratio of scientific and technical workers and with a low ratio of university graduates with respect to the total labour force. In the Czech Republic, 54 000 students graduated from universities in 2004, which represented, in conversion to 1 000 inhabitants, less than 75 % of the average value of the EU-27. In case of graduates from technical and scientific fields, it is actually only 71 % of the average of the EU-27[31]. Nevertheless, the ratio of students accepted to universities ranks the Czech Rep. (despite the positive trend since 1989) to one of the last places in developed countries[32].

The lack of qualified human resources identified in numerous studies (e.g. the Barriers of knowledge use for the growth of Competitiveness of the Czech Republic) concerns several domains, next to specialized R&D workers also e.g. high quality executive management in innovative enterprises and quality businessmen with insufficient ability to "sell" new ideas or products. Furthermore, not only the lack of graduates is considered serious but also various soft skills necessary for this work are missing (such as insufficient language knowledge, lack of practical skills, team work abilities and responsibility spirit) in both enterprises and research organizations.

[30] Own calculations on the basis of the data from Key Figures, 2007, page 81.

[31] Own calculations on the basis of the data from Key Figures, 2007, page 78.

[32] In the Czech Rep. 38 % of young people from the relevant age groups enter the tertiary education, which ranks the Czech Rep., together with Mexico, Turkey and Austria, among the countries with the lowest ratio. The average of OECD is 53 %. At the same time, the Czech Rep. and Turkey rank among the countries with the smallest ratio of people with the university education at the age category 25-34 years. Education at Glance, OECD, 2006.

These facts have a fundamental negative impact on the ability of the economy to produce new findings in the required volume but also on the ability to absorb new findings and apply them practically on all levels – in enterprises, public sector and public administration. In doing so, the current production of university graduates starts failing to meet the growing demand of the private sphere for university qualified workers. Therefore, insufficient production of university graduates in the required quality and with the required practical skills for practice represents one of the key limitations of future competitiveness of the Czech Republic. It also corresponds to the unsatisfactory number of graduates from doctoral studies in comparison with the European average, when this group is the key with respect to the ability to use the leading scientific findings, new information and, consequently, with respect to the competitiveness of the CR. While in the EU-27, there are 1.5 graduates of doctoral studies per 1 000 inhabitants in the age group 20-29 years, in the Czech Republic it is only 1.1, i.e. only 73 % of the European average[33].

The lack of researchers is further worsened by the **unsatisfactory age structure** of workers. Within the EU, the Czech Republic has highly above average ratio of researchers in the age category 45-64 years and lags behind in the age category 25-34 years and especially in the category 35-44 years[34]. The said fact is related with the crisis that hit the Czech system of R&D in the nineties, when a considerable part of the whole generation of researchers totally left the area of R&D. This generation gap has been filled gradually but it still represents a considerable limitation. A serious problem of the high age average of research workers with a marked maximum in the category 50–60 years[35] is also demonstrated by chart 1.2.3-3, which represents the age structure of main R&D project managers in the Czech Republic. The current status of Human Resources in R&D is also characterized by the relatively low ratio of women working in R&D, which reached approximately 31.5 % in 2006 [36]. In this respect, the Czech Rep. achieves roughly the average values within the EU; the Czech Rep. slightly exceeds this average in the private sector, it is about the average in the university sector and slightly below the average in the governmental sector (represented especially by the Academy of Sciences). In any case, there is the yet unused potential of women and the question of further increasing of the number and ratio of women with respect to the total number of researchers deserves further attention. The slightly above average ratio of women to the number of graduates of technical fields (24.7 %) in comparison with the EU can be considered positive while the ratio of female graduates from scientific fields is slightly below average from the European perspective (38.7 %).[37]

The resulting conditions are characterized by the total lack of researchers, who have the task to produce new findings for the needs of the application sphere, but also to reproduce the knowledge within the public R&D sector and bring up a new generation of research and technical workers. In particular the lack of youth for the area of technical and scientific fields is alarming. There is the yet unused potential of the involvement of women in R&D. This situation shall be solved promptly both by means of measures to increase the interest in scientific carriers among women, students and the youth, especially in the area of technical and scientific fields (science & engineering), and

[33] Science, Technology and Innovation in Europe. Eurostat, 2008.

[34] Ageing Work Force – How old are Europe's Human Resources in Science and Technology? Eurostat, 2006.

[35] Analysis of the conditions of Research and Development in the Czech Republic and their comparison with foreign countries in 2005.

[36] Source: CSO. In 2005 there was a fundamental change in the methodology of reporting R&D workers and research workers, the data for 2005 according to the previous methodology would correspond to the value of approx. 30 %. That is why it is not possible to make a direct comparison with the previous years.

[37] Key Figures 2005: Towards a European Research Area – Science, Technology and Innovation. DG Research, 2005, page 55.

measures for the popularization of R&D and new technologies among children, the youth and general public. A vital prerequisite is also the increase of capacities of tertiary education and modernization of equipment and infrastructures for the tertiary education.

On the contrary, a positive aspect is a considerable general interest of the Czech public in the area of science and engineering and generally a very high prestige, which is attributed to the carrier of a scientist among the public. It is also related with the above average knowledge of the Czech society in the issues of science and engineering and a positive relationship of the public to further financial support of R&D from public sources. On the other hand, the Czech public considers the efforts of the scientific community to inform about the results of their work to be inadequate.[38]

Chart 1.2.3 – 3: The numbers of research projects by the age of the main solvers in years 2001–2006

Source of data: RVV, Analysis of the conditions of Research and Development in the Czech Republic and their comparison with foreign countries in 2007, Information System of R&D, part – Central Evidence of Projects (CEP) (primary source)

In the case of researchers in the public sector, there is also a limitation resulting from the adverse monetary evaluation of R&D workers. The level of salaries is very varied; on principle it does not correspond to the high level of qualification and varies by individual regions. It especially concerns younger R&D workers. In case of older and more experiences researchers, the salary situation has improved considerably in recent years and a considerable wage differentiation has also occurred between R&D workers and R&D workplaces that are successful in achieving long-term research goals, international research projects (including projects in framework EU programmes) and in the participation in joint projects with the application sphere. In 2005 the average gross monthly salary of a university professor reached the level of nearly 50 000 CZK (approx. 1 800 EUR in the exchange rate of 2005, roughly 2.5 fold of the average salary), while the average annual level of

[38] Europeans, Science & Technology, 06/2005, Eurobarometr. http://ec.europa.eu/public_opinion/archives/ebs/ebs_224_report_en.pdf

growth was between 10-15 % in the recent years[39]. The level of salaries and wages of ordinary research workers still remains unsatisfactory, as it is close to the national average (approx. 21 000 CZK/750 EUR in 2005). However, there are significant differences even here and the R&D workers in the teams, which participate in international projects and co-operate with the application sphere to a greater level often achieve a much higher level than the said average value. However, for efficient functioning of R&D, it is vital to financially motivate and obtain young talented experts for the research career.

In the foreseeable future, it is not possible to expect a general increase of wages and salaries in public R&D institutions and in public universities. On the other hand, it will be necessary to ensure that researchers in the centres which obtain a project for increasing quality of the R&D infrastructure are adequately financially remunerated and do not leave to go abroad. A possible solution is to enable even young researchers to manage their own projects (both international and joint projects with the application sphere), which will also enable the increase in their wage and salary remuneration. That is why it will be possible to concentrate the support on centres which have a potential for the international co-operation and for the co-operation with the application sphere and, therefore, they have the prerequisite to ensure long-term above average payment conditions for their employees. Such ability can be considered one of the key criteria for the selection of projects for the support of infrastructure of projects from OP R&DI. At the same time, it will be necessary to ensure desirable complementarity with the activities for the development of Human Resources in R&D for such projects, especially with training and education of the new generation of research workers.

The positive factor of the current conditions in the area of Human Resources in R&D is the existence of quality scientific workers and expert R&D teams in some scientific fields that can compete in the international competition. Available data demonstrate that the potential exists e.g. in the area of medicine, some chemical and physical fields, mathematics but also technical sciences and engineering[40].

The conditions created for the horizontal mobility of research workers, university lecturers, students and experts from the business sphere from the research sector on one side and the business sector on the other side[41] do not result in the desired changes. In addition to the generally known barrier, which is represented by insufficient motivation to changes (e.g. among the middle age and older generation there is an unwillingness to change the employment, its place and focus, there are problems with the inclusion of the academic practice during the stay in the private sector etc.), one of the critical places is also the outdated infrastructure of R&D for university studies. Absence of quality laboratory equipment does not create an adequate incentive and motivation of the business sector and the whole application sphere for the co-operation with the public research sector. In case of stays of experts from the practice, it happens that such experts can only share their experience to a limited extent, orally and theoretically, without the possibility to use a modern device and laboratory equipment, which are normally used in the commercial application sphere.

[39] Source: Institute for information in education.

[40] Analysis of the conditions of research and development in the Czech Republic and their comparison with foreign countries in 2005.

[41] The National Innovation Policy of the Czech Republic for the years 2005–2010.

1.2.4 Internationalization and international co-operation in R&D

For successful integration in the global economy, the engagement in the international flow of information and findings is necessary. The information, new knowledge and know how are more and more mobile and only the economies, which will be able to get engaged actively in the circulation of findings and knowledge, have a chance to stand in the international competition in the long-term. Therefore, it is desirable for the representatives of the Czech research and development, who are the main bearers of new findings and ideas, to participate as much as possible in the international division of labour in R&D, engage in international networks of co-operation and international mobility of R&D workers.

In international comparisons, the Czech Republic does not stand too well in this aspect either. From the available data it is obvious that the Czech research is not too markedly internationalized. As it is demonstrated in table 1.1.1-4, foreign sources account only for 3.1% of the total expenditure for R&D in the Czech Rep., which represents less than one half that is usual in the whole EU-27. In other words, the Czech research teams are only engaged in the international division of labour in R&D to a very limited extent and that is why there is only a limited communication and sharing of new findings with foreign countries.

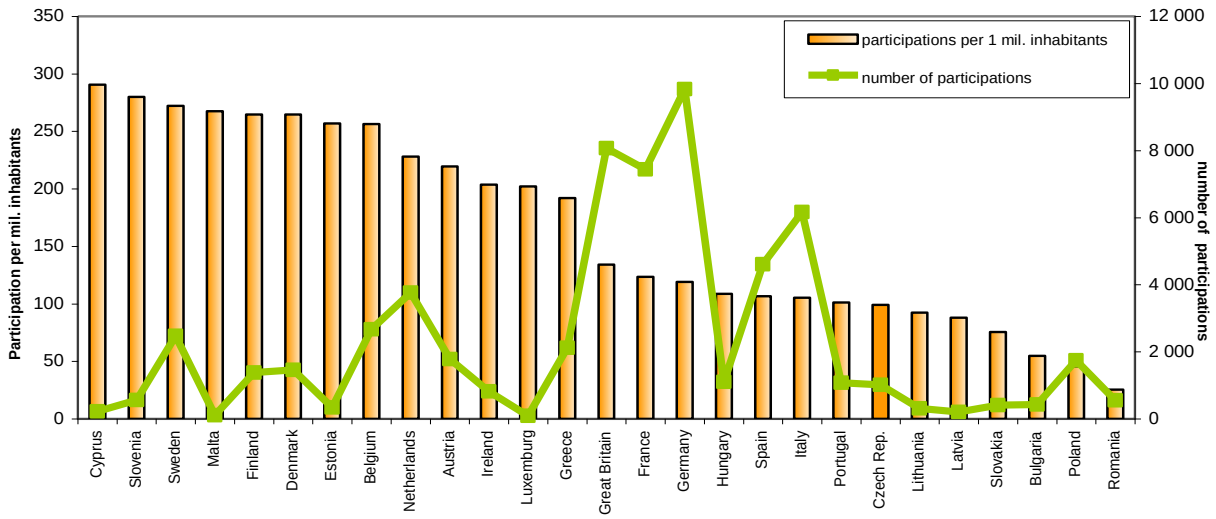
A similar situation can also be monitored in the area of Human Resources for R&D. While in the EU-27, workers in R&D of a non-domestic nationality account for 5.7 % of all R&D workers on average, this ratio in the Czech Republic is only 1.1 %[42]. Insufficient attractiveness of the Czech Republic with respect to the international mobility is given by the unsatisfactory salary situation to a great extent. At the same time, it is also related with a lack of leading R&D workplaces with above standard equipment, which could play a key role with respect to the mobility and the following circulation of new ideas and results of R&D and their consequent sharing within the Czech Republic.

A significant indicator of participation in the international division of labour in R&D on the European level is the participation of a particular country in the Framework Programmes (FP) of the EU. What is important is not only the actual financial benefit resulting from grants funded from the FP, but especially the possibility to work with the best R&D teams and workplaces in the EU and contribute to the development of knowledge in the key strategic areas, on which the challenges in the FP are focused.

The participation of the Czech Rep. in the Framework Programmes started slowly from the 5th Framework Programme (in years 1998-2002) and it was increased during the 6th Framework Programme (2002-2006). Nevertheless, the Czech Rep. belongs to the less active participants in the FP of the EU, as it is demonstrated in chart 1.2.4–1.

[42] How mobile are highly qualified Human Resources in Science and Technology? Eurostat, 2007.

Chart 1.2.4–1: Participation of teams from EU-27 member states in 6th FP as a unit



Source of data: Database E-CORDA, Europe in figures, calculation of Technological Centre ,Academy of Science, May 2007

From the total number of 8,861 registered projects, there are 830 projects, the solution of which has been attempted by 1,012 teams from the Czech Republic. The said data puts the Czech Rep. in 21st place among the states of the EU-27. If we classify the states pursuant to the absolute numbers of the participations in projects of the 6th Framework Programme, the CR is in 16th place. Furthermore, the average size of the allocation per a Czech partner in the project of FP6 was considerable lower than the average of the participants of the EU-15.

The current experience with the involvement of Czech teams in the Framework Programmes of the EU show less ability to be involved in individual projects. One of the key causes of this situation could be the fact that the conditions for the development of international co-operation in the Czech Republic are insufficient. The unfavourable conditions have two major dimensions: Firstly there has not been a sufficiently strong awareness of the possibilities and the strategic importance of the participation in the FP among the Czech R&D workplaces as well as a consistent support of R&D teams in this area. At the same time, the Czech Rep. lacks key internationally acknowledged R&D workplaces with above average equipment, which would regularly become desirable partners in the international R&D consortia.

On the other hand, the improving involvement of the Czech R&D teams during the 6th FP can be considered positive; it can be attributed to the gradual improvement of the information service and awareness of the FP. It can also indicate that the CR has not fully used its potential for the participation in the FP and during the 7th FP, the participation of the Czech teams could keep increasing. However, to achieve that it will be necessary to improve promotion and information sharing and strengthen awareness of the possibilities of the international co-operation but also purposefully strengthen the leading teams with the potential to become an important international partner.

1.3 SWOT analysis

The SWOT analysis (analysis of strengths and weaknesses for the area of R&DI in the Czech Republic and external opportunities and threats for this area) is based on the current findings identified in the previous text of the analytic part and their summary in the four identified categories.

SWOT analysis

Strengths

- Existence of quality scientific workers and scientific R&D teams that can be international competitive in some research fields in research organisations in the Converegence regions.
- Existence of the system of evaluation of R&D results with the emphasis on high quality and applicability of results and its acceptance by the R&D workplaces.
- Gradually increasing interest in the co-operation with public R&D institutions on the side of the application sphere (especially foreign subjects) as a result of growing private spending on R&D and attractiveness of the Czech Rep. for the investment into R&D activates.
- High and continually growing interest in university studies.
- Positive relationship of the Czech public to science and engineering, good knowledge of the public and interest in better sharing of information in this area.
- Slightly increasing expenditure on R&D and their favourable structure (nearly 2/3 of private expenditure).

Weaknesses

- Major level of dispersion of expenditure and the small concentration of R&D capacities (especially outside Prague) do not enable to create R&D workplaces of the critical size and achieve the required quality and quantity of results in R&D.
- Insufficient motivation and a lack of incentives for public R&D workplaces to the co-operate with practice, insufficient orientation on the needs of the application sphere resulting in low application relevance of R&D results and low efficiency of spending.
- Insufficient capacity and high quality of technology transfer offices at research institutions and universities and resulting low intensity of contact and joint activities between the two spheres.
- Unsatisfactory material conditions for high quality R&D of a majority of workplaces limit the ability to produce top results, ensure high quality education of the generation and limit the possibilities of co-operation with the application sphere especially in the applied research.
- Insufficient support of commercialization of R&D results, low level of awareness and experience with the protection of the intellectual property (evident in the low patent activity), absence of the system of protection and utilization of the intellectual property in a majority of research organizations and universities.
- Insufficient awareness of R&D results and their utilization both among the subjects of the academic and business spheres and the general

SWOT analysis

public.

- Low involvement of the Czech R&D in the international co-operation results in a limited sharing and circulation of knowledge and new ideas.
- Low number of qualified workers in R&D with respect to the EU-27, their unsatisfactory age structure and not too high share of women.
- Low number of qualified human resources in executive management in both enterprises and research organizations, as well as in public administration responsible for research policy.
- Low share of the population with university education and low number of university graduates in the required structure and quality.
- Limited capacities of universities for education and especially for R&D activities related with education (equipment devices, computer equipment, limited capacities of libraries), especially in case of more costly fields (technical and natural science)
- Low expenditure on R&D in comparison with the states of the EU-27 and, therefore, limited production of R&D results and limited possibilities for required changes in its structure

Opportunities

- Strengthening trust, awareness and co-operation between the private and public sectors of R&D, introduction of incentrives for their collaboration.
- Strengthen the concentration and critical size of R&D capacities, set priorities for the leading workplaces and provide them with above average equipment in selected strategic fields with the link to the growth of competitiveness.
- Renewal and modernization of capacities, especially of applied research, with the link to the local innovation potential of the application sphere (means of development of the regions with limited R&D capacities).
- Support of regions with a high innovation potential and a strong demand of recipients for

Threats

- Persistence of a lack of communication and collaboration between public R&D sphere and the users of R&D results
- Marginalization of the importance of R&D as a source of long-term competitiveness and the foundation of the knowledge based society.
- Preserving fractionalism of R&D, small concentration of capacities and resulting permanent absence of top workplaces capable of keeping quality R&D workers.
- More advantageous conditions for R&D activities in developed countries resulting to the departure of Human Resources and financial sources from the Czech Republic.
- Lack of attention to the need for a professional

R&D outputs.

- Strengthen the involvement in the international co-operation in R&D, especially in the European Research Area.
- Develop and improve quality of the system of protection and commercial utilization of the intellectual property in public R&D institutions, develop and profesionalise technology transfer function in public research organsiations.
- Popularize science and technologies, increase interest in a scientific carrier.
- Increase capacities of the tertiary education (selective) and modernize equipment and infrastructures for the tertiary education with the objective to increase the relevance of education with respect to the needs of R&D and innovation.
- Keep improving quality of the system of evaluation of R&D results, improve the system of managing the R&D policy with the utilization of foreign experience, resulting in a higher efficiency of the R&D system.
- Increasing the expenditure on R&D to the average level of the developed countries will enable to obtain better equipment, quality of Human Resources and, as a result of that, increase the production of results and make it more efficient.

technology transfer may cause a lack of relevance and efficiency in public R&D funding.

- Continuing small involvement in the international co-operation in R&D and closeness of the Czech R&D
- Low capacity and quality of university equipment threatening quality of the tertiary education, limiting the influx of qualified workers capable of utilizing the R&D results and limiting the innovation ability of the economy.
- Low interest of the young generation in the carreer in the area of R&D.
- Insufficient increase, stagnation or drop of spending on R&D resulting in a decreasing production of quality results.

2 Selected strategy

2.1 Starting points of the OP R&DI strategy

Research and development represent one of the key points of long-term development strategy of the economy that is applied in majority of the developed states in the world. In this area the Czech Republic was rather losing the position captured in the past. Therefore, with respect to the programming period, the area of R&D totally deservedly becomes one of the crucial strategic topics, which is also closely related with other key components of the development strategy in the area of the economic growth, competitiveness, development of education and Human Resources and permanently sustainable growth.

The conclusions of studies (e.g. Barriers to Competitiveness) realized during the preparation of this programme, including the socio-economic analysis and the SWOT analysis, and regular annual analyses of the evaluation of R&D[43] (processed by The Research and Development Council of the Czech Republic Government), which have also included the results of the international comparisons in the area of innovation and competitiveness since 2005; they keep pointing out the same group of problems in the Czech system of R&D. The structure is not adequate and the results of the Czech R&D are below average, including its technical equipment and staffing. The Czech R&D does not assert itself too much both on an international level and in co-operation with industry and practice. On the other hand, the sources for R&D are limited (both public and private) and 15 years after the foundation of the Czech Republic they are still not sufficient for a relatively fast elimination of problems, which have been accumulating for 40 years.

R&D is one of the key conditions for the long-term competitiveness of regional economies. Therefore it is necessary to implement fundamental reforms in the area of the Czech research, development and innovation. The first reform was initiated in 2005 by accepting the national strategic documents and it began to bring results. Another impulse to increasing the reform efforts was the draft of the Reform of the system of research, development and innovation by Research and Development Council published in early 2008 and approved by the Czech Government in March 2008. Similarly, the White Book on Tertiary Education published by an expert team sponsored by Ministry of Education, Youth and Sports in May 2008[44] revealed the contours of the higher education reform which should substantially change the behaviour of Czech universities, especially by strengthening the so called "third role" of universities (i.e. their involvement in economic development, collaboration with industry, technology transfer etc.) [45] and reform in the management of higher education institutions. The OP R&DI, along with the operational programmes OP EI and OP EC, has the objective to speed up this national reform considerably and deepen some reform steps initiated in the past. In respect to the reform of tertiary education and the strengthening of the third role of universities, the OP will serve as an additional incentive mechanism.

[43] Refer to http://www.vyzkum.cz/ section R&D Documents.

[44] http://www.msmt.cz/uploads/bila_kniha/BK_k_diskusi_tisk.pdf

[45] The „third role" of universities covers mainly strenthening the involvement of universities in economic development, closer collaboration between tertiary education institutions and industry, interconnecting the educational process with the practice, involvement of experts from the practice in the teaching process and modernisation of curricula in line with the demand of practice. The third role is distinguished from the two traditional roles of university - education and research. See the White Book on Tertiary Education (http://www.msmt.cz/bila-kniha)

As described in the "White Book of Tertiary Education", the universities do not need require very substantial and direct public financial support to develop their third role.[46] What is needed instead are legal changes (already initiated in some cases) and above all a change in the culture of tertiary education institutions. The change of culture is conditioned by existence of robust incentive mechanisms. In order to create such incentives, the intention is to use part of the Operational Programme interventions so, that universities that advance in strengthening their third role can benefit from additional resources for improvement of their material conditions (priority axis 4 of the OP R&DI).

Various European and national analyses show that to ensure competitiveness of enterprises, regions, member states of the EU and the EU as a whole, it is necessary to maintain a corresponding balance between the investment into R&D from public and private sources. It is necessary to engage R&D in the fulfilment of requirements of the whole application sphere, whereby ensuring gradual increase of the innovation ability and commercial utilization of R&D results by involving the industrial partners more closely in the strategic orientation of public research activities, by introducing measures to support entrepreneurship, exploitation of intellectual property, technology transfer and commercialisation of R&D results.

Involving partners from business sector into research and innovation activities is regarded as one of the crucial aspects of the OP R&DI. To ensure this, several measures were taken in the process of preparation of the OP R&DI; others are being prepared and are expected to be taken in further implementation process. Above all, representatives of the business sector are present among members of the Monitoring Committee of the OP R&DI. Moreover, to ensure practical synergies of the business and research sphere in the framework of operational programmes, the Monitoring Committee of the OP R&DI consists of representatives of the same institutions as the Monitoring Committee of the OP EI. The time schedule of both Monitoring Committees sessions has been synchronised, as well as publishing of calls (as the selection criteria of both OPs have to be approved by both Monitoring Committees).

Business sector representatives are also present in all working groups in which the orientation of the interventions and the implementation of the OP R&DI have been discussed. Based on consultations and discussions in the working groups several changes have been made – such as more emphasis was given to start-up grants, the applicability of research results and emphasis on research issues identified in collaboration with the application sector have been stressed in priority axis 2, interventions aimed at technology transfer were separated out and concentrated in priority axis 3. Furthermore, support of establishment and management of funding mechanisms to finance the verification phase and initiation phase of the establishment of technology companies (proof of the concept stage) was included in the priority axis 3.

Representatives of the industry as well as experts on assessment of the collaboration with the application sphere have also been involved in the preliminary evaluation of the major projects (assessment of their potential for cooperation with the application sphere). Close attention will be focused on developing this cooperation further, e.g. bringing such concerned experts (national or international, with relevant experience on the application sphere) into advising on the evaluation procedure in formal calls.

[46] White Book of Tertiary Education, p. 27-28.

Furthermore, there will be an emphasis on **performance orientation** at the level of individual projects and incentives will be provided for relevant projects to achieve a pre-fixed share of income from **contract-based-activity** (which represents the purest and the most important form of cooperation of R&D and application sphere).

In addition, to provide a stronger **application orientation** to the research programmes implemented by individual centres, representatives of the application sphere are expected to be members of "**advisory boards**" or alternatively existing supervisory bodies of the research centres. These bodies will consist of the representatives of the application sphere who are expected to actively take part in the strategic orientation of the research centres and provide their feedback and recommendations on its future activities and objectives.

At the same time, it is necessary, however, to strengthen R&D in the public sector by improving the governance of public R&D, leading to an increased quality and improved performance of the research and development base. The policy in respect of public R&D should include the foundation of new, especially interdisciplinary research entities staffed with high quality researchers who are entrusted with the freedom to carry out future-oriented and risky research, increasing the horizontal and international mobility of researchers and improving the quality of management and administration, while introducing performance-based incentives for those entities that achieve excellent results and/or results with the potential for practical application. Only high quality, well staffed and technically equipped R&D workplaces with the right mix of incentives balancing the originality and novelty of research with its practical relevance can produce radically novel results, can become desirable partners for the application sphere and be the source of competitive advantage for the Czech economy.

2.2 Thematic focus

In terms of thematic focus, the Czech Republic decided in the past years to concentrate its resouces for R&D on a limited number of domains. As a consequence, the document Long-term Basic Directions of Research was approved by the Czech Government in 2005 and amended in 2006. It represents a broad national expert and political consensus which was based on an extensive assessment of existing research capacities and achievements, comparison with international context, SWOT analysis of each field, on a national foresight, and on anticipation of future societal and economic needs and challenges. At present, it represents the only guiding strategic document of its kind in the Czech Republic. The national priority fields defined in the Long-term Basic Directions of Research include the following:

1) sustainable development
2) molecular biology
3) energy resources
4) material research
5) competitive engineering
6) information society
7) security research
8) socioeconomic research

The OP R&DI adheres strictly to this document, however, after a due strategic consideration, the interventions in the first three priority axes were limited to only the first seven of the national research priorities as they represent science and technology domains and are in their majority strongly linked to practical application and have a cross-cutting nature vis-à-vis industrial sectors. In case of the fourth priority axis, the eighth priority field (socioeconomic research) was, in line with the findings of the the analysis and SWOT analysis, maintained.

Given the limitation by the existing set of long-term basic directions of research the interventions largely exclude research fields that lack the application dimension or promise to bring practical application in a very long-term time horizont (e.g. astrophysics, archaeology). In addition, to narrow down the sometimes broad definition of some of the long-term basic direction, for the purpose the OP R&DI an emphasis will also be laid on the possible contribution of supported projects to the regional and national competitiveness in the sense of potential production of results and know-how that can create business opportunities and/or increase the export of goods and services. This will be done at the level of individual projects which are expected to be conceived with this aspect in mind and a due attention will be paid to this in the evaluation process.

2.3 Relation between research and technology transfer and its implications in the strategy of the OP R&DI

The question of contribution of public research and development activites to technology transfer, innovation and competitiveness represents a complex issue which includes a number of aspects that have been extensively studied and researched by both academics and policy-making bodies. The overall consensus on the positive effect of R&D on the economic development can be summarised in the following set of positive spill-over effect that are directly derived from research activity.

Firstly, the most important contribution of research to innovation and competitiveness is through **increasing the existing stock of useful knowledge** that usually takes the form of codified knowledge (publications, conference abstracts, patents, methodologies) which can be used by partners from the application sector, as well as by other researchers. The actual use of this type of result of research activity is conditioned by the necessary absorptive capacity on the part of the application sector (existence of own R&D capacity), as well as by the transfer of know-how through personal contact necessary for the transfer of tacit (non-codified) knowledge. Only truly excellent R&D teams with very innovative results tend to attract the interest of users of results and to initiatiate of collaboration thanks to their outstanding quality.

Secondly, the research activity contributes in an important way to the **training of graduates and researchers** themselves. This type of positive impact – development of human resources - is crucial since the quality of training is directly linked to the future creative and innovative capacity of the economic sector. Importantly, the quality of training achieved is conditoned by a close interlinkage between teaching and research, and also by closer involvement of the application sector in the training and education.

Thirdly, the contribution of research to innovation and competitiveness is through creation of **innovative scientific instrumentation and methodologies** (e.g. unique new equipment) which can then be put to commercial application in a number of domains.[47]. Positive spill-over effects have

[47] A classic example of this is the construction of a space shuttle, the development of which led to a number of positive externalities (development of new materials, new techniques and methodologies) which led to scientific discoveries that

been demonstrated in cases of development of unique research facilities across the world which require intensive training, learning through interaction and application linked to development, installation and setting up the new equipment.

Fourthly, creation of **formal and informal networks with end-users and partners from the application sector** is another important impact of research activity with positive spill-over effects on the economy. Social networks, networking with the end users increases capacity for formulation of relevant research issues, as well as capacity for problem-solving on both the side of research teams and the application sector. This is of a key importance for the actual technology transfer and for producing innovative solutions with a potential for commercial success.

Fifthly, the impact of research activity on the competitiveness of economies is also represented by **creation of new, mainly technology-based companies**. However, this type of effect often tends to be overrated and takes time to develop. Importantly, to reap this type of beneficial effect of research requires an existence of a mature **professional system dedicated to the support of technology-based start-up companies.**

Sixthly, and finally, the positive effect of research on competitiveness takes also the form of **social acceptance of innovation**, one of the crucial requirements for the actual introduction of innovative products, services and processes to the market and to the society. Popularising the research results, education and training of broader public represent examples of activities that can augment this type of positive effect of research. The role of **non-technical, societal innovation** (with important effects especially in service industries) and input from research in social sciences is of key importance in this respect.

The proposed strategy reacts to the described relation between research, technology transfer, innovation and competitiveness and addresses adequately all its key parameters: increasing the stock of knowledge, development of human resources, creation of innovative scientific equipment, creation of networks of research and application sphere, creation of system of support to start-up companies and strengthening social acceptance of innovation.

To sum up the inverventions in relation to the technology transfer, the proposed priority axis 1 is expected to contribute to technology transfer and competitiveness mainly through production of new ideas and know-how, increased production of high-quality human resources, as well as highly specialised training linked to development, deployment and use of highly demanding, sophisticated equipment which creates absorption capacity for technological innovation in the Czech economy. Last but not least, the first prioriy is also expected to create partnerships with the application sector based on collaboration in problem-solving.

The priority axis 2 is equally expected to contribute to production of new know-how, and focuses especially on its adaptation and adoption by collaborating partnes from the application sphere. The collaboration networks with application sector is likely to play a crucial role in stimulating technology transfer. Also the contribution to development of highly skilled human resources is expected to represent an important contribution of interventions in priority axis 2.

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turned into a source of important competitive advantage in a number of diverse economic sectors such as information technology, material engineering, chemical industry etc.

In the priority axis 3 the contribution to competitiveness is expected to take the form of strengthening the networks with application sector (through support for technology transfer offices), and the form of support to projects that promise to be transformed in new technology-based companies. The interventions aimed at popularisation and promotion of R&D are also expected to contribute to social acceptance of innovation and its dissemination in the economy and society.

Finally, priority axis 4 is expected to contribute mainly to the capacity to produce greater quantity and quality of qualified human resources which is of key importance for the ability of the economy to survive in international competition in the globalising knowledge-based economy. Finally, the intention of this priority axis is also to function as an incentive mechanism motivating universities to strengthen their “third role”.

The table below shows in a schematic way the types of positive effects of research on technology transfer, innovation and competitiveness that are expected under each type of intervention planned under the OP R&DI.

Table 2.3.-1: Impacts of research and technology transfer on competitiveness, their relation to the interventions of the OP R&DI and their measurement

	Interventions of the OP R&DI					*Dominant form of measurin impact*
Types of impact of research activity on the competitiveness of the economy	**PO 1 Centres of Excellence**	**PO 2 Regional R&D Centres**	**PO 3 – 3.1. Commercialisation**	**PO 3 – 3.2. Popularisation**	**PO 4 – Infrastructure for university. education related to R&D**	
1) Increasing existing stock of knowledge (codified knowledge)	XXX	XX				Internationally recognised publications competitive funding
2) Training, development of human resources	XXX	XXX		X	XXX	PhD, MA graduates
3) Innovative instrumentation and methodologies (their use and application)	XXX	X				Unique research equipment
4) Networking (of the research and technology transfer)	XX	XX	XXX	XX		Contract research
5) Professional system of support to technology-based start-ups			XX			Number of newly created technology-based
6) Social innovation			X	XX	XX	Share of population interested in technic technical innovation and open to its use
Form of measuring the impact of interventions of the OP R&DI at the level of priotiy axis/intervention	- Share of competitive funding, including the share from international sources (1)[48] - Patents per researcher (1)	- Patents per researcher (1) - Impacted articles per researcher (1) - Completed PhDs and MAs per researcher (2) - Newly created positions in	- Number of subjects using the services for commercialisation (3) - Projects and mechanism for commercialisation (4)	-Visitor centres and science learning centres (6) - Number of visitors in visitor centres and science learning centres (6)	- Increased capacity of infrastructure for tertiary education (2) - Number of students (of which PhD students) benefiting from the infrastructure (2)	

[48] The numbers in brackets indicate the type of one of the six types impacts of research and technology transfer on competitiveness which is being monitored by a given indicator.

	- Impacted articles per researcher (1) - Completed PhDs per researcher (2) - Newly created positions in R&D (2) - Unique research infrastructure (3) - Share of contract research (4) - Number of cooperation projects with application sphere (4)	R&D (2) - Share of contract research (4) - Number of cooperation projects with application sphere (4)				

X – limited impact

X – moderate impact

XXX – strong impact

2.4 Global strategic objective of OP R&DI

The global objective of the OP R&DI is to strengthen the research, development and innovation potential of the Czech Republic that shall contribute to its economic growth, competitiveness and to the creation of highly qualified workplaces, so that the Czech regions can become important locations of these activities within Europe.

The global objective covers a significant part of the Strategic Objective of the National Strategic Reference Framework (hereinafter referred to only as "NSRF") "Competitive Czech Economy" and is fully in compliance with the Community Strategic Guidelines, 2007–2013 (hereinafter referred to only as "CSG"), namely the principle "Improving Knowledge and Innovation: for Growth" and the Guideline "Increase and improve investment in R&D" and partly also "Facilitate innovation and promote entrepreneurship". At the same time, the global objective of OP R&DI fits in the overall framework of the reform steps of the National Programme of Reforms of the Czech Republic (hereinafter referred to only as "NPR") in the area of microeconomics.

2.5 Outline of the strategic framework and specific objectives

Based on the analysis of the state of R&D and innovation, SWOT analysis (Part 1) and analysis of the relationship between research, technology transfer and competitiveness (Section 2.2), the proposed strategic framework can be described as a 2-tier strategy supported by three cross-cutting objectives. The strategy aims to react adequately to all of the key challenges described, with a specialized approach in each type of intervention. Specific objectives of the OP R&DI are a response to strengths and weaknesses resulting from the aforesaid analyses and they represent the way that will lead to the achievement of the global objective. They are set so as to eliminate the factors that represent a hindrance to the development and growth on one hand and, on the other hand, to utilize the advantages that provide opportunities for growth.

Strategic approach to the support of the R&D in the Czech Republic

Concerning the application of the abovementioned **2-tier strategy**, it is proposed in the first place to support and develop a relatively limited number of high quality, interdisciplinary research centres (future **Centres of excellence**) equipped with up-to-date, potentially unique research infrastructure and create a new quality of research centres that do not exist in the Czech Republic yet. They are to use and strengthen the potential of existing high-quality research teams to become internationally visible research partners. The centres of excellence are expected to contribute in an essential way to the creation of new knowledge, to training of human resources and to the advancement of cutting edge technology in their respective field (through design and application of new, unique equipment). Last but not least, as they are expected to attract a strong interest from the part of the application sphere, to create collaborative networks and engage in joint projects with partners from the application sector will represent an important part of their future activities.

Secondly, application-oriented, often more sector-specific research institutions that already have, or have the potential to develop, strong partnerships with the application sector will also be supported (future **Regional R&D Centres**). Also here a new quality will be created of demand-driven centres that are largely absent in the Czech regions. Their contribution is expected primarily in networking and intensive collaboration with application sector through contract research and provision of

services demanded by the application sector and in the training of human resources for highly qualified positions in R&D. However, they are also expected to contribute to the creation of new knowledge, mainly through incremental improvement and adaptation of existing knowledge

Centres of Excellence

The **Centres of Excellence** shall place an emphasis on concentration of R&D capacities and R&D funding of the researchers and teams identified as the most promising and most talented (including those re-settling to the Czech Republic). Providing them with high quality R&D infrastructure and equipment and clearly link to a long term research programme should provide them with a concrete and attractive research profile. This is expected to them to produce high quality research results that have the potential to create radical innovation, to attract the interest of the application sector, and thus to bring important economic benefits to the regional and national economy.

The support will consist of both investment/infrastructure support and support for high-quality research activity. The latter (in the form of start-up grants) will be aimed at increasing international collaboration with leading partners in the given field, as well as for collaboration with leading research bodies nationally. The support for research activities is expected to create conditions for future involvement in international research networks, collaboration with major international research infrastructures and for the use of international funds for R&D.

Further objective of the support, next to the international excellence, is to create long-term top quality partnerships with the application sphere. In order to stimulate the interaction, part of the funding will be directed at supporting the collaboration and networking with the application sector and public sector (the principle of triple helix), such as joint platforms, workshops, conferences. The quality of research is likely to attract the interest of the industry both nationally and internationally and so to create bridges not only between the different institutions and spheres in the Czech Republic but also between the Convergence regions and leading partners in more advanced regions abroad.

The combination of international R&D funds and collaborative links with partners from the application sector is expected to guarantee that in the future the centres do not fully depend on a national public R&D funding.

Regional R&D Centres

The **Regional R&D Centres** shall place an emphasis on a more immediate practical relevance of research and development, and on upgrading of research institutions producing results relevant for the users and working closely with them (concrete industry partners and other partners from application sector).

The support will be provided both for investment/infrastructure and for research activity. The aim is to strengthen the links with the application sector (collaborative research), so that the capacity for contract research in the medium term future is increased. The supported research activities are expected to play a key role in facilitating technology transfer, thus increasing the competitiveness of regional economies and creating such conditions for contract research that it will play a key role in their future funding. For this reason a part of the funding will be directed at supporting the collaboration and networking with the application sector and public sector (the principle of triple helix), such as joint platforms, workshops, conferences.

The regional R&D centres will thus deepen the technological specialisation of the regions in a given economic domain and by cooperating with other centres and industrial partners create a bridge between their economic specialisation and technological development of the country.

In a few and well justified cases, the Centres of Excellence and the Regional R&D Centres may take the form of the so called major projects (over 50 mil. Euro). Especially in these cases, the supported projects are expected - through networking and collaboration with partners from the public and private sector on the triple-helix principle - to become important players in the respective regional development strategies based on research and innovation and help to stimulate development of knowledge-based economy.

A key feature of both centres of excellence and regional R&D centres will be an emphasis on **performance orientation**. The so called performance contracts are going to be negotiated on an individual basis with each of the centres and will form a basis of research programme set for each of the centres. The performance orientation will also be built into the mode od governance of individual supported centres. This feature is of crucial importance for overall strategic orientation and steering of the research activity supported through the OP R&DI and represents a completely new, progressive characteristic in Czech research policy. The performance contracts will be concluded by the project beneficiary and the Managing Authority (as a part of the Decision/Agreement). The contracts will contain binding parameters to achieve (which will be translated into project indicators) - it will define the minimum number of results of R&D activity: such as number of publications, patents, spin-offs, share of income of contract-based-activity (which represents the purest and the most important form of cooperation of R&D and application sphere) and others. These contracts will be set individually, depending on the scientific field and content of the project specifications and based also on international benchmarks. In the process of setting the performance contract, top national or foreign experts with relevant expertise to asses the cooperation with the industry and experts with relevant experience from the application sphere are expected to take part. Further information to the performance contracts will be provided in the implementation documentation.

In addition, to provide a stronger **application orientation** to the research programmes implemented by individual centres, representatives of the application sphere are expected to be members of the so called “advisory boards” or alternatively existing supervisory bodies of the research centrse. These bodies will consist of the representatives of the application sphere who are expected to actively take part in the strategic orientation of the research centres and provide their feedback and recommendations on its future activity.

Technology transfer, popularization of R&D, infrastructure for HR development

Apart from the two pillars of the strategy - excellent research teams with international dimension (centres of excellence) and application centres involved in a close collaboration with the application sphere (regional R&D centres) **- three cross-cutting themes support the strategic orientation of the OP R&DI.**

First of all, as a major cross-cutting theme, close attention will be paid to the **technology transfer** support throughout the entire Czech R&D system. The capacity to protect and exploit the results of research, to liaise and collaborate with the application sector needs to be strengthened through the whole R&D system.

Support will be provided to the establishment, development and professionalization of technology transfer offices at universities and research institutions active in applied research. The objective is to create sufficient capacity of qualified employees dedicated to collaboration with the end-users, identification of partners for collaborative projects, dealing with the contractual aspects of

collaboration and links to other parts of the technology transfer system. Simultaneously, the OP R&DI will support creation of instruments supporting commercialisation, encouraging researchers to test their novel ideas and bring them to the market. Given the underdeveloped state of technology transfer profession in the Czech Republic, use of foreign know how in this domain will be critical.

All Centres of Excellence and Regional R&D Centres will benefit from this type of support, nonetheless the support will be extended to the whole spectrum of research organisations in the Convergence regions.

Secondly, **popularisation** of science, technology and **presentation of results of research** and **innovation** represents an important pre-condition for a successful dissemination of innovation in the application sector and in the society at large. It is also a key for the attraction of young talent to research careers. In this domain, a strong synergy exists between this OP and the OP Education for Competitiveness which will support a number of 'soft' activities. Nonetheless, an important pre-condition for successful popularisation and promotion of science and technology is also existence of adequate infrastructure, such as modern science and technology museums, visitor centres, access to specialist databases etc. which will also be supported under OP R&DI.

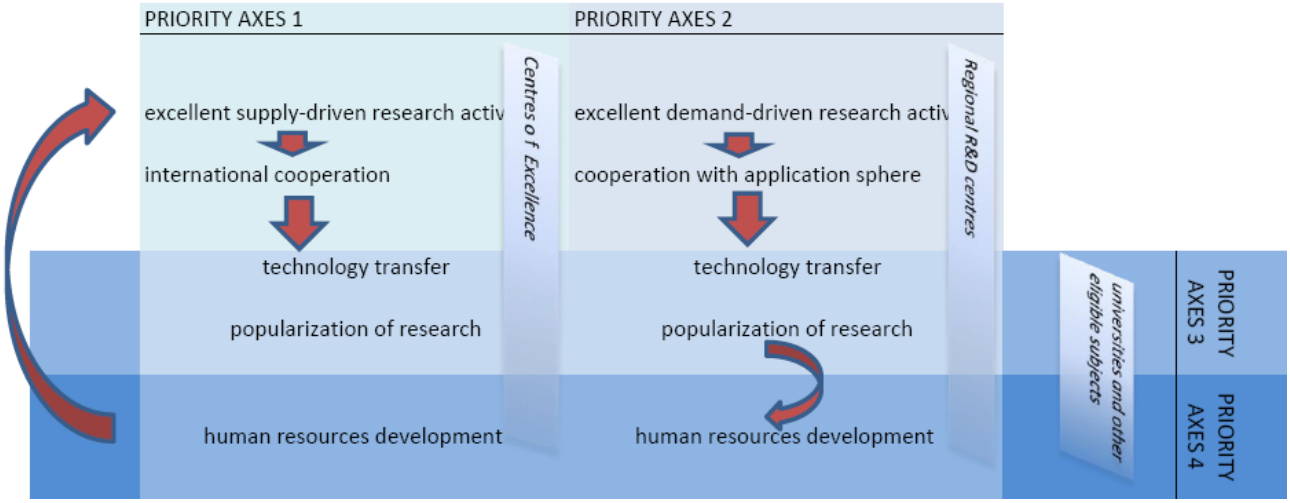
The third cross-cutting theme is based on the fact that the Czech economy as a whole needs to **increase the supply of well-trained human resources**. The need is most urgent in the case of human resources that can contribute to an increased competitiveness, especially researchers in the science and technology domains, but also qualified managers, designers, competent public administrators etc. This activity is again very closely linked to 'soft' interventions under the OP Education for Competitiveness.

The support under the OP R&DI will help to increase the capacity of tertiary education through investment in infrastructure for education related to research and innovation. The support will be directed to investment projects that are complementary to "soft" activities of higher education institutions that are actively adopting the third role of universities and encouraging modernisation of their curricula.

In this way, the interventions from OP R&DI will represent an important contribution to the competitiveness of Czech regions by improving the environment in the progressive universities for both training of future high-quality researchers, and for training of highly qualified staff for the private and public sector.

This approach is schematically indicated in the following scheme.

2.5 – 1 Scheme of strategic approach (2 pillars, 3 cross cutting objectives)



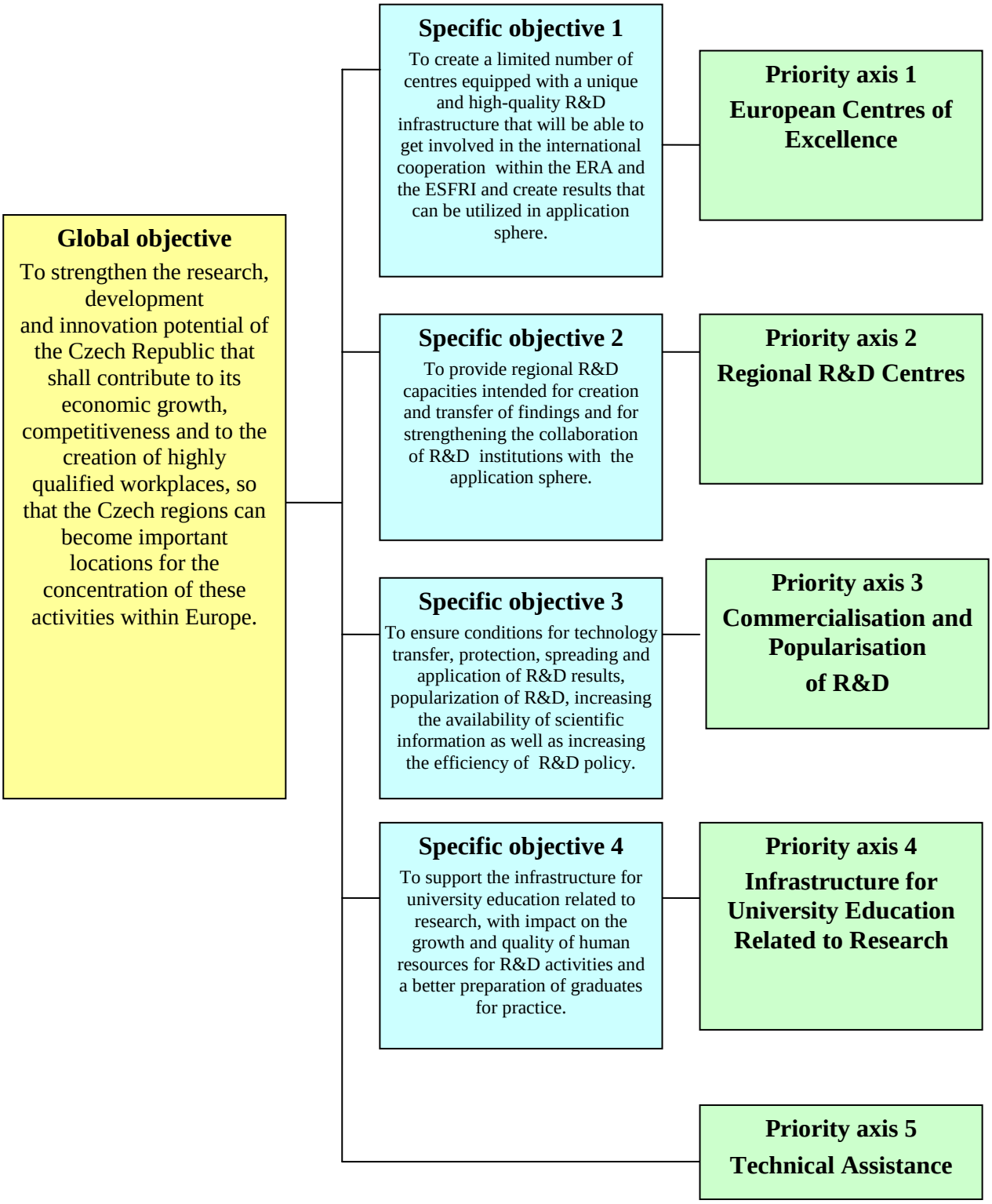
2.6 Specific objectives of the OP R&D

The strategic framework described in the previous chapter is translated into four specific objectives. These are represented in the following scheme.

Individual priority axes are specified in detail and completed with an indicative list of operations in section 3 of this operational programme. The indicative list of operations does not represent the final list of interventions but it identifies individual typified examples how to achieve individual specific objectives.

The objectives and priority axes of the OP R&DI are clearly illustrated in the following scheme 2.5–1.

Scheme 2.3 – 1: Objectives and priority axes of the OP R&DI



2.7 Beneficiaries of support pursuant to the Community Framework for State Aid for Research & Development and Innovation

The beneficiaries of support for the realisation of the OP R&DI projects are legal entities regardless of the legal form, the main activity of which is research or development and circulation of their results by means of education, publication or transfer of technologies, when all profit is reinvested into such activities or circulation of their results or in education (universities, research institutions, public research institutions, non-profitable organizations and legal entities established by them etc.) and which simultaneously comply with the conditions established by the applicable Czech legislation and the Community Framework for State Aid for Research & Development and Innovation (2006/C 323/01), hereinafter referred to only as **"research organization"**[49] as well as associations of said legal entities.

The interface and links between the OP R&DI and OP EI are described in section 2.12.2.

The Managing Authority ensures that all support or, as the case may be, state-aid granted within this programme complies with all process and material rules for granting and utilizing such support, that will apply at time when its provided

2.8 Financial sustainability of the activity of capacities built from the OP R&D and current R&D support from the state budget of the Czech Republic

One of the key factors for the OP R&DI strategy is the requirement of financial sustainability for the capacity built from the means of the operational programme after its termination. The OP R&DI is focused especially on the investments, which modernize and expand the capacities of the Czech research and development with the required concentration on priority fields of R&D and a smaller number of key projects, which will enable the concentration of investment on modernization and expansion of capacities of the Czech R&D in the priority areas. In case of construction of new capacities, it is necessary to consider the current capacities within the region so that they are not duplicated and the activity of the built capacity is economically sustainable. The objective and conditions of the OP R&DI were formulated in such a way to avoid the pulverization of resources to less significant, small, mutually non-interlinked projects. A condition of acceptance of the project in the OP R&DI will be the demonstrability and providing evidence of financial sustainability of the activity after its termination. Given the fact that the beneficiaries are public sector research organisations, the sustainability will be derived from the national model of funding R&D which, in turn, is largely based (and will become increasingly so) on the historical results of research organisation and its teams. For this reason, the quality of the research teams will play a prominent role in the selection criteria and should ensure financial sustainability of supported projects.

[49] According to the definition of the Community Framework for State Aid for Research & Development and Innovation (2006/C 323/01), Article 2.2., Letter d): "The research organization shall mean a specific subject, e.g. a university or research institute, regardless of the legal form (subject established pursuant to the public or private law) or the type of financing, the main purpose of which is to realize basic research, applied research or experimental development and spread their results by means of education, publication or transfer of technologies; the whole profit shall be reinvested into such activities or spreading of their results or transfer of technologies; the enterprises that can influence such a subject as partners or members shall have no preferential access to research capacities of such a subject or results of the research created by such a subject.

The Government of the Czech Republic directs repeatedly[50] in all approved documents virtually the whole increase of expenditure on R&D in the following period to ensuring interventions of the OP R&DI. It means that at the time of termination of the support, it will be possible to release the financial resources at the amount of approx. 35 % of the total annual allocation for the OP R&DI (or, as the case may be, 41 % of the resources provided from the sources of the EU) for the increase of the costs for ensuring the activity of the built capacities from the state budget for R&D. In this way a sufficient increase of the operation means for such submitter will be ensured, whose projects will demonstrate partial financing of the operation costs in the phase of sustainability. It has two practical consequences on the strategy of the OP R&DI. Firstly, a majority of the resources will have to be intended for the reconstruction, modernization and expansions of the current capacities. In a limited number of cases, when it concerns the development of new capacities, the allocation of the support will be conditioned by the resolution of the issues of sustainability, especially with respect to the existing, i.e. current capacities in the region. Secondly not only the state budget but also other public and private sources will have to contribute to the coverage of the expenditures on the activity differentially in individually priority axes.

A significant role with respect to sustainability of infrastructure projects supported from the OP R&DI will be played by the National Research Programme III, the preparation of which takes place with the sponsorship of the MEYS. From 2010, the NRP III should ensure a part of financing from the state budget for the research capacities built from the OP R&DI. The NRP is the major source of financing of the research activities (R&D projects) from public sources and that is why close co-operation will be ensured between the preparation of the NRP III and the OP R&DI. Especially in terms of the major projects supported in the priority axes 1 and 2, it will be necessary to reflect their topical focus in the break-down of financial allocations of priorities of the NRP III.

The Centres of Excellence projects within the range, which is expected in the OP R&DI, have been unparalleled in the environment of the Czech R&D. With respect to their range and strategic importance, it can be expected legitimately that the centres of excellence linked to the major European R&D centres and to significant European research infrastructures will become the future core of R&D in the Czech Republic in terms of quality. With respect to the focus of the specific objective 1, the following increase of expenditures on the activity of the Centres of Excellence supported in the priority axis 1 assumes a majority ratio of the state budget. As a part of the engagement in the European Research Area (ERA)[51], it is simultaneously expected that a considerable financial contribution to the operational costs of these centres will originate from foreign sources, especially from the participation in the projects of the Community Framework Programme for RTD.

In case of the specific objective 2, financing of the operation of new infrastructures can be linked to the current experience with the implementation of NRP II. It indicates that in the Czech Republic there is a relevant demand for the programmes creating conditions for development of R&D activities and mutual co-operation of R&D institutions and application sphere, not only on the side of the solvers but also the users of their results. At the same time, it is demonstrated that even in this area there is a high potential in the Czech Republic for further development because the dynamic development of the fields of industry and services in the recent years in various regions has continually strengthened the demand of the application sphere for the co-operation with the public

[50] At the latest with its resolution of 23rd May 2007 No. 564 on the proposal of costs of the state budget of the Czech Republic for research and development for 2008 with forecast for the years 2009 and 2010 and on an amendment of the resolution of the government of 2nd April 2007 No. 323 (concerning reform steps realized in 2007 to 2010 to achieve the established deficits of public budgets).

[51] "Green Book – European Research Area: New Perspectives", KOM(2007)/161

R&D sector. With respect to financial sustainability, it is expected that the increase of public resources necessary to cover the operational costs of the newly built capacities will be smaller in case of the priority axis 2, although the basis will be provided by national public funding. However, the beneficiaries will have to obtain a considerable part of the resources from private sources by means of co-operation with the application sphere, mainly through contract research.

As an example of co-operation of research organizations (including universities) and the application sphere in a given sector on the national level it is possible to identify the programme of the MEYS for years 2004 - 2009 **"Research Centres"** (a part of NRP). In 2007, 36 projects were solved with the total volume of resources drawn from the state budget in 2007 at the amount of 136.5 mil EUR (i.e. 3.8 mil. EUR/project). A condition is co-financing from other sources outside the state budget of the Czech Republic for R&D. In this programme, the number of project applications and the resulting requirement for the allocation of financial resources exceeded the value of the total allocation of the programme; the success rate was only 24 %.[52]

Another programme of co-operation of research organizations (including universities) and the business sector on the national level (in co-ordination with the previous programme) is the programme of the MIT for years 2004 - 2010 **"TANDEM"**. In 2007, 236 projects were solved, for which the total amount of 122.5 mil EUR (i.e. 0.5 mil. EUR/project) was spent from the state budget of the Czech Republic. A condition of this programme is co-financing from other financial sources outside the state budget of the Czech Rep. for R&D. The volume of requested financial resources included in the project applications exceeded the allocation value even in this case; the success rate was 56 %.[53]

The financial resources for the follow-up activity of the capacities built within the priority axis 3 will be obtained from the contributions of the founders (i.e. own resources of universities and research centres), from private sources, from co-operation with the application sphere and from the revenues of their own activity or, as the case may be, within follow-up national programmes.

In case of the priority axis 4, the costs for the follow-up activity of the capacities built within the OP R&DI will be covered from the state expenditure on universities and, as the case may be, from the tuition fees. As a result of strengthening and improving quality of the capacities, a certain growth of the number of students is expected. To ensure the operation of the new investment, the beneficiaries will therefore obtain additional operation resources from the funds of the state budget that are provided to public universities for research and educational activity (the numbers of students are reflected considerably in them) and private universities will collect tuition fees from a large number of students. In case of the priority 4, financial participation of the applicants is also expected through reimbursable state assistance.

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[52] The data about the supported projects are publicly accessible on www.vyzkum.cz. As an example of the projects, it is possible to specify Aerospace Research Centre (Technical University Brno, 2005-2009, the total state subsidy was 8 mil. EUR), where the research activity of the centre represents a complex applied research in the area of aeronautics in compliance with the priorities of the aircraft industry but also the EU (refer to the priorities of the 7th FP). The objective is to create together a new quality of research in the area of aircraft based on the professional co-operation of all experts in the aircraft industry, catch up the interest of the young people, maintain the reputation of a leading workplace and expand it abroad, too.

[53] The data about supported projects are publicly accessible on www.vyzkum.cz again. As an example of the projects, it is possible to specify Composite Repairs of Airframes (AERO Vodochody, a.s. 2006- 2009, the total state subsidy was 0.5 mil. EUR), where the objective is the research and verification of the technology of the repair material system for repairs of fatigue damages to aircraft structures by means of composite patches. It concerns a system-wise, technological-material development in the area of progressive technologies and materials.

2.9 Experience with support from the EU structural funds

In the previous programming period 2004–2006 in the targeted region of the Convergence regions, the structural funds did not support the activities proposed for support within the OP R&DI. In the Czech Republic, in the current shortened period within the OP IE (financed by the ERDF)[54] the realisation of partial programmes – PROSPERITY and INNOVATION, which have a link to the area of R&D, has been terminated. In case of the Prosperity Programme, the infrastructure for the transfer of technologies was supported and in the Innovation Programme, the support was provided for the implementation of innovations in enterprises. Contrary to some other EU member states (e.g. Hungary, Slovenia), the said programmes support the activities of the innovation process to a limited extent only and they do not interfere in the actual R&D process directly. The support within the PROSPERITY and INNOVATION Programmes will be followed with the support from the OP EI in the period 2007–2013. Therefore, in the period 2004–2006 the activities, which would be directly followed with the OP R&DI, were not supported in the target regions of the Czech Republic from the structural funds.

The operational programme financed from the ERDF resources is completed with the Operational Programme Human Resources Development (hereinafter referred to only as "OP HRD") financed from ESF, the objective of which is (measure 3.2.) to increase the applicability of graduates of all types of the study programmes and the programmes of the education for life in the labour market and expert level of the workers in R&D. This programme is being followed with OP EC (ESF) in the new programming period 2007-13.

2.10 Synergy with the EU Seventh Framework Programme

In case of projects supported from the OP R&DI, especially in the priority axis 1 (to some extent also in the priority axis 2), successful involvement of the supported teams in the activities of the 7th Framework Programme of the EU is expected. The Centres of Excellence should systematically develop strong international links and partnerships, including links with major European research infrastructures, and project-based funding from 7th FP should constitute an important part of such activity and of their future research funding.The topical priorities of the Czech Republic in the area of R&D (so-called LBRD) show a great level of similarity with the priorities of the 7th FP which is a good prerequisite for close interlinking of the projects supported from the OP R&DI with the projects financed from the 7th FP. The systematic support of the infrastructure within the OP R&DI and, at the same time, the foundation and development of teams of the project support in universities and in the research organizations within the OP EC (measure 2.3. Human Resources in Research and Development – see also section 2.12.1. below) will strengthen the integration of the Czech R&D workplaces in the European Research Area. The resources obtained from the ESF for the professionalization of teams supporting the preparation and management of international R&D projects will contribute to the strengthening of the international links of the Czech workplaces and it

[54]The Operational Programme Industry and Enterprise is intended for the regions falling under the objective 1 for the period 2004–2006. For the capital city of Prague, similar programmes are designed: the Single Programming Document 2, measure 2.1 Increasing quality of partnership of the public and private, non-profitable sectors, science and research and the Single Programming Document 3, measure 4.2 Co-operation of research and development workplaces with the business sphere, support of innovations; the total allocation on both measures reaches 26,059,584 EUR.

is also expected that they will become an indispensable contribution to the sustainability of the investment supported from this operational programme.

In addition, complementarity with the the Specific Programme “Capacities” of the 7th FP will be sought, especially with the programme Research Infrastructures and projects identified in the ESFRI Road Map, should any project with relevant focus and synergies be selected for funding.

Importantly, the risk of double funding of certain activities from Structural Funds and 7th FP, according to the Article 54 (5) of Council Regulation (EC) No. 1083/2006, will be prevented by legal means.

2.11 Coherence of the OP R&DI with relevant national and European strategic documents

The strategy of the OP R&DI is fully in compliance with the basic strategic documents of the European Union and the Czech Republic. With the plan of the OP R&DI, the Czech Republic meets its obligations towards the EU and its recommendations resulting especially from the Lisbon Strategy from 2000[55] and its reviewed version from 2005[56], from the objectives identified in Barcelona in 2002[57], from the budget outlook of the EU for the period 2007–2013 accepted by the European Council in December 2005 in Brussels and from a number of other documents of bodies of the EU accepted in years 2004 to 2006, when considerable changes occurred in the concept and in the strengthening of the role of the knowledge economy, innovation and the role of research and development[58].

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[55] Presidency conclusions from the session of the European Council in Lisbon on 23rd – 24th March 2000.

[56] Presidency conclusions from the session of the European Council in Brussels on 22nd – 23rd March 2005.

[57] Presidency conclusions from the session of the European Council in Barcelona on 15th – 16th March 2002.

[58] The important role of research and development for the development of competitiveness of the EU is reflected e.g. by:

a) Conclusions of the session of the Council "Competitiveness" on 28th and 29th November 2005 in Brussels [points 3, 4, 5, 12a), e) and f) and 13 b) and c)];

b) Conclusions of the session of the European Council on 11th and 12th December 2005 in Brussels (e.g. point 10);

c) Document of the Council of the EU "Financial Outlook 2007–2013", Brussels 19th December 2005, 1591505, CADREFIN 268, discussed in the session of the European Council on 11th and 12th December 2005 (e.g. point 8 and Event 1);

d) Notification of the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions "Implementation of the Programme of the Communities: More Research and Innovations – Invest into Growth and Employment: Joint Strategy"; COM (2005) 488, 12/10/2005 (part 1.2, chapter 2, part 2.1, part 2.2);

e) Notification of the Commission for the spring session of the European Council in 2006 "Time to Shift into Higher Gear: New Partnership for Growth and Employment"; COM (2006) 30, 25/1/2006 (e.g. part 3.1 and Event 1).

f) Notification of the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions "Transfer Findings into Practice – Broadly Based Innovation Strategy for the EU", COM (2006) 502, final wording, 13/9/2006.

g) The session (2801.) of the Council (for) Competitiveness on 4th December 2006 in Brussels. The conclusions for the Innovation policy and competitiveness were accepted.

h) The conclusions of the session of the European Council on 8th and 9th March 2007 in Brussels. The evaluation of the Lisbon Strategy for Growth and Employment and especially points 13 to 17 of the conclusion of the "Strengthening of Innovations, Research and Education (refer to annex A)

i) In March, a detailed 80-page study was submitted to the European Parliament, at its request, about the issues of the foundation of the European Technological Institute. CIP/A/ITRE/IC/2006–157.

j) Notification of the Commission to the Council, the European Parliament, the European Economic and Social Committee and Committee of the Regions "Improvement of the Transfer of Findings among Research Organizations and the Industry in Europe: Towards Open Innovations" COM (2007) 182, final wording, 4th April 2007.

k) Informal session of the Council (for) Competitiveness 26th – 28th April 2007 in Würzburg (Germany). Amongst other things:

- Green Book "European Research Area: New Perspectives"
- Support of basic research
- European research infrastructures – roadmap
- European Technological Institute
- Charter for the Protection of Intellectual Property

l) The session (2801.) of the Council (for) Competitiveness 21st and 22nd May 2007 in Brussels. The conclusions for the infrastructure of the research in the European Research Area were accepted.

OP & RDI fully complies with the requirements of EC stated in Article 9(3) of the General Regulation, No 1083/2006. Table No. 5 – 3 („Theme 1“) in Chapter 5 „Financial Provisions“ gives the list of intervention codes, including the amounts of the funding allocated to the Lisbon strategy. The categories of expenditure determined for particular priority axes of OP & RDI in compliance with the categories of expenditures according to Annex IV. of General Regulation (EC) No 1083/2006 and in their framework proposed allocations point to the fact, that 96,5% of OP & RDI funding focuses on the Lisbon Strategy. The highest allocations are hereat geared towards categories relating to research and technology development, innovations and enterprise.

With respect to the selected strategy and identification of individual priority axes, it can be said that the content of the OP R&DI meets the objective and priorities identified in the documents covering the issues of R&D both on the supra-national and the national levels. In other words, the proposed content of the OP R&DI consistently completes and further develops the current concept of research, development and innovation in the Czech Republic.

The orientation of the OP R&DI follows up the priorities of the National Strategic Reference Framework of the Czech Republic 2007–2013 (hereinafter referred to only as “NSRF”). The NSRF closely corresponds with the National Development Plan (NDP) of the Czech Republic for years 2007-2013. With its focus, the OP R&DI respects the policy of cohesion supporting growth and employment, or, as the case may be, the Community Strategic Guidelines, 2007–2013 (CSG), which are based on the integrated general principles for growth and employment and from the renewed Lisbon agenda. The operational programme also closely corresponds with the corresponding parts of the National Lisbon Programme 2005–2008, i.e. the National Programme of Reforms of the Czech Republic(NPR).

At the same time, the OP R&DI follows up several other national strategic documents, which are further developed with it and it contributes to their achievement. It concerns especially the Economic Growth Strategy (hereinafter referred to only as “EGS“), the National Innovation Policy of the Czech Republic for years 2005-2010 and the National Research and Development Policy (hereinafter referred to only as “NR&DP) for years 2004-2008.

With respect to the increase of transparency, it can be said that the overall concept of research, development and innovation in the Czech Republic is based on the set of mutually concurring documents, which can be divided into the following levels:

SUPRA-NATIONAL:

- Community Strategic Guidelines, 2007-2013

NATIONAL STRATEGIC:

- National Development Plan of the Czech Republic 2007-2013
- National Strategic Reference Framework of the Czech Republic 2007-2013
- National Lisbon Programme – National Reform Programme of the Czech Republic

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m) The conclusions of the European Council session on 21st and 22nd June 2007 in Brussels. The Presidency conclusions, points: (34) Joint Technological Initiatives, (35) European Technological Institute, (37) European Charter for the Protection of Intellectual Property

n) The session (2811.) of the Council (for) Competitiveness on 25th June 2007 in Luxemburg. Amongst other things: A proposal for the foundation of the European Technological Institute; the conclusions concerning the issues of knowledge transfer.

NATIONAL SPECIFIC:

- Economic Growth Strategy
- National Innovation Policy of the Czech Republic for years 2005–2010
- National Policy of Research and Development of the Czech Republic for years 2004–2008

2.11.1 Community Strategic Guidelines (CSG)

The CSG represent the basic strategic document for the policy of the economic and social cohesion of the EU. The general principle of the CSG "Improvement of Knowledge and Innovation: Path to Growth" challenges the EU member states to strengthen the building of the capacities in R&D, including the research infrastructure and the human capital in the areas with a significant growth potential; to strengthen the co-operation between the application sphere and the research sphere through the support of the regional centres and the centres of excellence of the national importance; to support the international co-operation in R&D and to build capacities in the priority areas of R&D (set out by the EU policy); to simplify the access of SME to R&D realized in the research organizations financed from public sources; to increase efficiency of the offer of R&D, innovation and education in the regions and to their directing and bigger availability for the application sphere, including the building of the poles of excellence.

The link of the content of the document the OP R&DI to CSG can be identified primarily in the General principle 1.2. "Improvement of Knowledge and Innovation for Growth" and especially in point 1.2.1. "Increase and Improve Investment in Research and Technological Development", which specifically identifies the following:

- Strengthening the co-operation between individual enterprises and also between enterprises and public research institutions or institutions of the tertiary education, e.g. by providing support for the creation of regional and supra-regional groups of excellence,
- Supporting the activities in the area of research and technical development in small and medium enterprises and transfer of technologies (enabling the access of such enterprises to the services in the area of research and technological development in publicly financed research institutions),
- Supporting the regional cross-boundary and supra-national initiatives focused on the strengthening of the research co-operation and building capacities in the priority areas of R&D of the Community policy,
- Strengthening building of capacities in R&D, including information and communication technologies, research infrastructure and human capital in the areas with a considerable potential of growth.

Further to that, point 1.2.2. "Facilitate Innovation and Promote Entrepreneurship" identifies the following principle, among other things:

- Increasing the efficiency of regional innovation and education in the area of research and technological development and their accessibility to enterpeises, especially to small and medium ones, e.g. by means of the foundation of the poles of excellence, which will be the contact points of small and medium enterprises operating in the area of the top technologies for the co-operation with research and technological institutions, or by the creation and development of the regional groups concentrated around large enterprises.

With its content, the submitted document of the OP R&DI meets and develops the content of all aforesaid general principles in the area of research and technological development.

The OP R&DI contributes fundamentally to the achievement of the general principle "Improvement of Knowledge and Innovation for Growth", namely by resources of the investment into the technological infrastructure for R&D both when building the Centres of Excellence and when building the regional research infrastructure that conditions the increase of competitiveness. Further to that, OP R&DI also meets the CSG by supporting commercialization of R&D results, strengthening of the international co-operation of the Czech R&D, increasing the efficiency of the public support of R&D and investments into the infrastructure of universities with the objective to improve the preparedness of the graduates and their applicability, whereby strengthening the ability of the application sphere to absorb new findings. In this sense, it can be said that the OP R&DI is in full compliance with CSG.

Table 2.11.1 – 1: Links of the OP R&DI and the CSG

Community Strategic Guidelines	**Priority axes of the Operational Programme Research and Development for Innovation**			
	Priority axis 1 European Centres of Excellence	**Priority axis 2 Regional R&D Centres**	**Priority axis 3 Commercialization and popularization of R&D**	**Priority axis 4 Infrastructure for university education related to research**
General principle 1: More Attractive Europe and the Regions of Europe for Investors and Workers				
Expansion and improvement of transport infrastructures				
Strengthening co-operation between protection of environment and growth				
Solution of intensive utilization of traditional sources of energy in Europe				
General principle 2: Improvement of knowledge and innovation: Path to Growth				
Increase and improve investment into research and technological development	XXX	XXX	XXX	XX
Facilitate innovation and support enterprise	XXX	XXX	XXX	XXX
Support information society for all	X	X	X	XX
Improve access to finances			XXX	
General principle 3: Creating more and better jobs				
Bring more people to employment, ensure that they will stay employed and modernize the systems of social protection				X
Increase adaptability of workers and enterprises and flexibility of labour markets		X		

Community Strategic Guidelines	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 European Centres of Excellence	**Priority axis 2** Regional R&D Centres	**Priority axis 3** Commercialization and popularization of R&D	**Priority axis 4** Infrastructure for university education related to research
Increase investment into human capital by means of better education and qualification	X	X	X	XX
Administrative capacity			XX	
Help maintain healthy labour force				

Notes: XXX the priority axis of the OP is primarily focused on the achievement of objectives of that particular priority of CSG;

XX the priority axis of the OP considerably contributes to the achievement of objectives of that particular priority of CSG;

X the priority axisof the OP is not directly focused on the achievement of objectives of that particular priority CSG, but it implicitly helps to the achievement of such objectives.

2.11.2 National Development Plan of the Czech Republic 2007–2013 (NDP)

NDP ensures the follow-up of CSG and other European and national strategic documents. It also represents a support and specific starting point for processing NSRF for period 2007–2013. Its objective is the identification of prerequisites for sustainable economic growth and employment by means of strengthening competitiveness in dependence on varying needs and conditions of individual regions of the Czech Republic. It also proposes the areas of competence of individual operational programmes. With respect to a close follow-up of the NSRF to the NDP, the following table only captures the link on the level of the priority axes. The OP R&DI contributes to the achievement of the measures of the priority axis "Strengthening Competitiveness of the Czech Economy" by the support of innovation and knowledge economy, strengthening of research capacities, technological development, infrastructure for undertaking and innovation networks, including the utilization of new information technologies. In this respect, the OP R&DI is fully consistent with the NDP.

Table 2.11.2–1 : Links of the OP R&DI and the NDP

National Development Plan of the Czech Republic	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 European Centres of Excellence	**Priority axis 2** Regional R&D Centres	**Priority axis 3** Commercialization and popularization of R&D	**Priority axis 4** Infrastructure for university education related to research.
Strengthening competitiveness of the Czech economy	XXX	XXX	XXX	XXX
Development of modern and competitive society	XX	XX	XX	XX
Environment and availability	X	X		X

National Development Plan of the Czech Republic	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 European Centres of Excellence	**Priority axis 2** Regional R&D Centres	**Priority axis 3** Commercialization and popularization of R&D	**Priority axis 4** Infrastructure for university education related to research.
Balanced and harmonic development of the territory of the Czech Republic	XX	XXX	XX	XX

Notes:

XXX the priority axis of the OP is primarily focused on the achievement of objectives of that particular priority axis of NDP;

XX the priority axis of the OP considerably contributes to the achievement of objectives of that particular priority axis of NDP;

X the priority axis of the OP is not directly focused on the achievement of objectives of that particular priority axis of NDP, but it implicitly helps to the achievement of such objectives.

2.11.3 National Strategic Reference Framework (NSRF)

One of the priorities of the NSRF is "Strengthening the Competitiveness of the Czech Economy", which includes support focused on the completion of restructuralization of the Czech economy, support of development of progressive fields in the area of industry and services and strengthening the links between applied research and development on one hand and specific subjects of the application sphere on the other hand.[59]

The NSRF is based on the priorities identified in NDP. Its objective is the conversion of the socio-economic environment of the Czech Republic in compliance with the principles of sustainable development so that the Czech Republic is an attractive place for the realisation of investments, work and life of the inhabitants. This document sets out the system of operational programmes of the policy of economic and social cohesion in years 2007–2013, by means of which individual priorities will be realized. The OP R&DI contributes to the achievement of the priority axis "Competitive Czech Economy", namely in particular the priority "Support Capacities of R&D for Innovation", where the submitted OP R&DI represents the core of interventions together with the OP EI.

At the same time, the OP R&DI contributes to the achievement of other strategic objectives of NSRF. It concerns especially the strategic objective "Open, flexible and coherent society", the priority "Education", when the OP R&DI completes the interventions realized by resources of the OP EC (ESF). The OP R&DI also partially contributes to the achievement of NSRF in the strategic objective "Attractive Environment"; namely by the activities in the area of R&D, which can create the conditions for the development of the eco-industry and environmentally friendly technologies. Further to that, it contributes to the technological development of the regions of the objective of Convergence, which forms a part of the strategic objective "Balanced Regional Development".

[59] To emphasize the follow-up of three operational programmes: OP R&DI, OP EI and OP EC, the scope of the description of the strategy is broader than the area covered by the actual OP R&DI. Relationships to other programmes are described below.

The realisation of the objective of a balanced regional development represents an increase of the competitiveness of the economy of all Convergence regions in the Czech Republic. The objective of this effort is to ensure that in the long run balanced development brings advantages to all regions while mainting the principle of concentration and support for critical mass of the R&D capacities. Balanced regional development and reducing regional disparities in terms of GDP per capita represent one of the main conditions for cohesion across the regions at NUTS II level.

The OP R&DI support will be provided to the regions within the whole Czech Republic (with the exception of the Region of Prague as not eligible under the Convergence objective) by building, increasing and strenghtening their research and innovation potential. A considerable regional and urban dimension is an important feature of the support for establishing and developing R&D infrastructure in the regions and development or regeneration of educational infrastructure in urban centres. Furthermore, support will be provided for mutual cooperation of relevant R&D centres their collaboration with partners from the application sphere, universities (were relevant) and with other relevant subjects in the regions. Also networking activities of representatives of research and application sphere will be supported, as well as involvement of the R&D centres in clusters, technological platforms and other relevant institutions. Moreover, it is expected that supported R&D centres (both Centres of Excellence and Regional R&D centres) will, as an important side effect, promote further regional and local activities contributing to the increase of competitiveness (such as creation of new, qualified workplaces, development and inflow of innovative enterprises to the regions, development of supporting infrastructure, industry and services and last but not least also improving the image of the regions).

Table 2.11. 3 -1: Links of the OP R&DI and the NSRF

National Strategic Reference Framework	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 European Centres of Excellence	Priority axis 2 Regional R&D centres	Priority axis 3 Commercialization and popularization of R&D	Priority axis 4 Infrastructure for university education related to research.
I. Competitive Czech economy				
Competitive business sector	XX	XXX	XXX	XX
Support capacities R&D for innovation	XXX	XXX	XXX	XXX
Development of sustainable tourism				
II. Open, flexible and coherent society				
Education	XX	X	XX	XXX
Increasing employment and ability to be employed			X	XX
Strengthening social cohesion				
Development of information society	XX	XX	XX	XX
Clever public administration				

National Strategic Reference Framework	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 **European Centres of Excellence**	**Priority axis 2** **Regional R&D centres**	**Priority axis 3** **Commercialization and popularization of R&D**	**Priority axis 4** **Infrastructure for university education related to research.**
III. Attractive environment				
Protection and improvement of quality of environment	X	X	X	X
Improvement of transport availability				
IV. Balanced regional development				
Balanced development of regions	X	XX	X	X
Development of urban areas	X	X		X
Development of rural areas				
Territorial co-operation	X		X	

Notes:

XXX the priority axis of the OP is primarily focused on the achievement of that particular strategic objective of NSRF;

XX the priority axis of the OP considerably contributes to the achievement of that particular strategic objective of NSRF;

X the priority axis of the OP is not primarily focused on the achievement of that particular strategic objective of NSRF, but it implicitly helps to the achievement of such objectives.

2.11.4 National Programme of Reforms of the Czech Republic (NPR)

The National Programme of Reforms (hereinafter referred to only as "NPR") defines the commitments resulting from the reflection of the principles of the Lisbon Strategy to the conditions of the Czech Republic. The NPR is oriented on the revised Lisbon Strategy, which is focused on the solution of the long-term structural problems of the EU and individual states in the macroeconomic and microeconomic areas and the policy of employment for period 2005–2008. As a result of that, the NPR identified one of its priorities in the microeconomic area to the development of the environment stimulating research, development and innovation and established specific measures in the area of R&D. The OP R&DI fully follows up the priority measure of Research and Development, Innovation, when it is expected that it will contribute to the solution of some problem areas, formulated in the following priority measures:

- Increase year-on-year public expenditure on R&D.
- Change the structure of directing public spending on R&D.
- Support private investment into R&D by indirect support measures.
- Increase intensity of utilization of the tools, in particular legal protection of the intellectual property in the area of R&D
- Develop innovation infrastructure.

- Improve access of the innovation potential to the financial sources.

The OP R&DI also contributes to the realisation of the priority measure Education and partially also some other priority measures, as can be seen in the enclosed table.

Table 2.11. 4 -1: Links of the OP R&DI and the NPR

National Reform Programme	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 European Centres of Excellence	**Priority axis 2 Regional R&D centres**	**Priority axis 3 Commercialization and popularization of R&D**	**Priority axis 4 Infrastructure for university education related to research.**
Business environment				
Simplify start of undertaking			XX	
Research and development, innovation				
Increase intensity of utilization of the tools of protection of the intellectual property by the subjects of application and research spheres	X	XX	XXX	X
Develop innovation infrastructure	XX	XXX	XXX	X
Improve access of the innovation firms to financial sources			XX	
Sustainable utilization of sources				
Support of environmental technology	X	X		
Modernization and development of transport and ICT networks				
Support of development and efficient utilization of ICT	X	X	X	XX
Integration in the labour market				
Decrease unemployment of the youth below 25 years				XX
Increase participation of older people in the labour market				
Simplify access of foreigners in the labour market	XX	X		
Education				
Implement curriculum reform				X

National Reform Programme	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 **European Centres of Excellence**	**Priority axis 2** **Regional R&D centres**	**Priority axis 3** **Commercialization and popularization of R&D**	**Priority axis 4** **Infrastructure for university education related to research.**
Expand access to higher professional and university education				XX
Support co-operation of employers, employees and educational and expert professional institutions	XX	XX	XX	XX
Improve interconnection of the system of initial and further education		X	X	XX
Support permeation between individual grades of tertiary education		X	X	XXX
Increase information awareness	X	X	XX	XX

Notes: XXX the priority axis of the OP is primarily focused on the achievement of objectives of that particular priority measure of the NPR;

XX the priority axis of the OP considerably contributes to the achievement of objectives of that particular priority measure of the NPR;

X the priority axis of the OP is not directly focused on the achievement of objectives of that particular priority measure of the NPR, but it implicitly helps to the achievement of such objectives.

2.11.5 Economic Growth Strategy of the Czech Republic (EGS)

In the follow-up to the principles of the Lisbon strategy, one of the main objectives of the Economic Growth Strategy (EGS) is to establish such priorities to enable the Czech Republic to become a knowledge-technological centre of Europe with a growing standard of living and a high level of employment. The EGS is the starting point for the co-operation of the economic policy and directing financial means from the EU funds for period 2007–2013. In compliance with the EGS, the OP R&DI considerably contributes to the achievement of the forth pillar and especially the fifth pillar of growth. In the area of research, development and innovation, the EGS identifies the following objectives:

- Increase public expenditures on R&D by 20 to 25 % every year and by 2010 the public expenditures on R&D should reach the level 1 of % GDP.
- Change the structure of directing public expenditures on R&D, especially strengthen purposeful financing at the expense of the institutional one. Direct the increase of public expenditure preferentially on the programmes of industrial research.
- When preparing new programmes and activities, start preferentially from the long-term basic research directions approved by the Government (hereinafter referred to only as “LBRD”).
- Efficiently support the protection of yet unprotected results of R&D with the system of ensuring protection of the intellectual property. Increase the level of knowledge of graduates from

scientific and technical study programmes in universities about the protection of the intellectual property and its economic utilization.

- Declare the programmes supporting the mobility of workers between academic and application spheres.
- Declare the programme of support of the transfer of technologies and findings obtained within the public support of R&D to a wide group of users.
- Motivate the interest in taking scientific and technical study programmes in universities, especially by the improvement of material and technical conditions for education and research and the improvement of material conditions for the study of such fields (scholarships etc.).
- Support educational programmes focused on research and development workers and R&D managers. The objective is to increase the level of their knowledge and capability for the utilization and expansion of results of R&D.

The OP R&DI creates the conditions for strengthening R&D and innovation (R&D&I) by the development of networks of research workplaces, both leading centres of excellence and regional capacities of R&D focused on application. Further to that, it supports the protection and utilization of the intellectual property and commercialization of R&D results, promotion of R&D and the total increase of the awareness of R&D results. In all aforesaid areas, it clearly contributes to the achievement of the objectives of the EGS in the area of R&D and, at the same time, it completes the relevant interventions of other operational programmes (especially the OP EC and the OP EI).

Table 2.11. 5 -1: Links of the OP R&DI and the EGS

Economic Growth Strategy of the Czech Republic	**Priority axes of the Operational Programme Research and Development for Innovation**			
	Priority axis 1 European Centres of Excellence	**Priority axis 2 Regional R&D centres**	**Priority axis 3 Commercialization and popularization of R&D**	**Priority axis 4 Infrastructure for university education related to research**
P 1: Institutional environment for undertaking				
Beneficial legislative environment and improvement of law enforcement				
Ensure efficient and powerful public service				
Competitive tax system				
Improve competitive environment and eliminate barriers	X	X	X	
Efficiently utilize market compliant support tools				
P 2: Sources of financing				
Ensure sufficient sources from the EU	XX	X	X	X
Maximize influx of investment and efficiently privatize assets in public ownership				
Create environment for efficient cooperation between public and private sectors	XX	XX	XX	X

Economic Growth Strategy of the Czech Republic	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 European Centres of Excellence	**Priority axis 2 Regional R&D centres**	**Priority axis 3 Commercialization and popularization of R&D**	**Priority axis 4 Infrastructure for university education related to research**
Support commercial sources of financing	X	XX	XX	
Carefully deal with public resources	X	X	X	XX
P 3: Infrastructure				
Increase mobility of people, goods and information	**X**		XX	X
Speed up implementation of the investment plans of public and private sectors	X	XX		
Speed up economic development of the regions	XX	XX	XX	XX
Ensure protection of nature, environment and cultural heritage				
Ensure competitive manufacturing-operation costs, optimize field structure of comparative price advantages				
P 4: Development of Human Resources – education and employment				
Increase flexibility of the system of education			X	XX
Increase awareness of the older generation			X	
Ensure sufficient labour force	X	X	X	XXX
Increase flexibility of the labour market	X	XX	X	XX
Ensure policy of employment motivating to work				
Improve strategic management of the development of Human Resources	X	X		XX
P 5: Research, development and innovation				
Strengthen research and development as a source of innovations	XXX	XXX	XXX	XXX
Create functional co-operation of public and private sectors in R&D&I	XX	XXX	XXX	X
Ensure Human Resources for R&D&I	XX	XX	XX	XXX
Increase efficiency of the state administration in R&D&I		X	X	XX

Notes: XXX the priority axis of the OP is primarily focused on the achievement of objectives

of that particular pillar of the EGS;

XX the priority axis of the OP considerably contributes to the achievement of objectives of that particular pillar of the EGS;

X the priority axis of the OP is not directly focused on the achievement of objectives of that particular pillar of the EGS, but it implicitly helps to the achievement of such objectives.

2.11.6 National Innovation Policy of the Czech Republic for years 2005–2010 (NIP)

The National Innovation Policy (NIP) thoroughly analyses the sources of competitiveness of the Czech Republic, especially the conditions of innovation activities, and proposes four strategic objectives for their development and permanent growth.[60] To achieve such objectives, 48 specific measures were defined, including responsibility and deadlines for their completion. The OP R&DI is fully consistent in follow-up to the implementation of all four strategic objectives of the NIP: strengthening the R&D as the source of innovations, creating the functional co-operation of public and private sectors, ensuring the Human Resources for innovation and increasing the efficiency of performance of the state administration in research, development and innovations.

Table 2.11. 6-1: Links of the OP R&DI and the NIP

National Innovation Policy of the Czech Republic	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 European Centres of Excellence	Priority axis 2 Regional R&D centres	Priority axis 3 Commercialization and popularization of R&D	Priority axis 4 Infrastructure for university education related to research.
Strengthen research and development as a source of innovations	XXX	XXX	XXX	XXX
Create functional co-operation of public and private sectors	XX	XXX	XXX	X
Ensure Human Resources for innovation	XX	XX	XX	XXX
Increase efficiency of the performance of state administration in research, development and innovation		X	X	XX

Notes: XXX the priority axis of the OP is primarily focused on the achievement of that particular strategic objective of the NIP;

XX the priority axis of the OP considerably contributes to the achievement of that particular strategic objective of the NIP;

X the priority axis of the OP is not primarily focused on the achievement of that particular strategic objective of the NIP, but it implicitly helps to the achievement of such objective.

[60] Refer to the Government resolution of 7. 7. 2005 No. 851 on the National Innovation Policy of the Czech Republic for the years 2005 to 2010.

2.11.7 National Research and Development Policy of the Czech Republic for years 2004–2008 (NR&DP)

The NR&DP is the main concept document of the Czech Republic in the area of administration and management of R&D, which is followed up with other documents and legislative tasks in this area.[61] The document formulates the relationship of the Czech Republic to R&D and identifies basic topical and system priorities of R&D in the mid-term perspective. The NR&DP considers a number of objectives of the Action plan for Europe[62] and in the link to the priorities, it proposes the measures, which apply its strategy to the conditions of the Czech Republic. The NR&DP solves especially the efficient utilization of strategic tools of R&D, such as financing, legal environment, organizational structure or information and technological infrastructure. Both materials, the NR&DP and the NIP, were also mutually interconnected in terms of the concept into the document "Harmonization of the National Research and Development Policy of the Czech Republic for years 2004–2008 with the National Innovation Policy and other relevant documents of the Czech Republic and the European Union".[63]

The following areas were chosen as the system priorities for the period of applicability of NR&DP: Human Resources, international co-operation in R&D, regional aspects of R&D, utilization of R&D results in practice and evaluation of R&D. Therefore, the OP R&DI is fully consistent with the NR&DP. Thanks to investment into R&D infrastructure, which will result in the improvement of working and material conditions, increasing attractiveness of work in R&D and its efficiency, support of development of the top centres of excellence, support of the links of public and private sectors in the regions, support of conditions leading to the foundation of spin-off firms and support of utilization of the intellectual property, it can be expected that the OP R&DI will contribute to the achievement of objectives of the NR&DP .

Table 2.11. 7 -1: Links of the OP R&DI and the NR&DP

National Innovation Policy of the Czech Republic	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 European centres of excellence	Priority axis 2 Regional R&D centres	Priority axis 3 Commercialization and popularization of R&D	Priority axis 4 Infrastructure for university education related to research.
Human Resources	XX	XX	X	XXX
International co-operation in R&D	XXX	X	X	X

[61] Refer to the Government resolution of 7/1/2004 No. 5 on the National Policy of Research and Development of the Czech Republic for the years 2004–2008.

[62] Investment into research: Action plan for Europe. Document of the European Commission COM(2003) 226.

[63] Refer to the Government resolution of 22/2/2006 No. 178 on the harmonization of the National Research and Development Policy of the Czech Republic for the years 2004 to 2008 with the National Innovation Policy and other relevant documents of the Czech Republic and the European Union.

National Innovation Policy of the Czech Republic	Priority axes of the Operational Programme Research and Development for Innovation			
	Priority axis 1 **European centres of excellence**	**Priority axis 2** **Regional R&D centres**	**Priority axis 3** **Commercialization and popularization of R&D**	**Priority axis 4** **Infrastructure for university education related to research.**
Regional aspects of R&D	X	XXX	XX	XX
Utilization of R&D results in practice	XX	XXX	XXX	X
Evaluation of research	X	X	XX	X

Notes:

XXX the priority axis of the OP is primarily focused on the achievement of objectives of that particular system priority of the NR&DP ;

XX the priority axis of the OP considerably contributes to the achievement of objectives of that particular system priority of the NR&DP ;

X the priority axis of the OP is not directly focused on the achievement of objectives of that particular system priority the NR&DP , but it implicitly helps to the achievement of such objectives.

2.12 Relation of OP R&DI to other operational programmes

The OP R&DI is objectively complemented by two other operation programmes. These are the OP EC and the OP EI. These three operation programmes respond to the weak aspects identified in the analysis of the present socio-economical situation in R&D. The result of the response is a mutually interconnected group of priority axes and areas of support that will lead to the long term sustainable competitiveness of the Czech economy based on the development of regions supported by a targeted and efficient support of solidarity.

The group of three mutually interconnected operation programmes is an important element for fulfilling the aims of the Lisbon Strategy consisting of the improvement of the knowledge economy, innovation and the role of R&D. In addition, the interventions realised within these three operational programmes will also become important instruments in implementing national political objectives in the field of research, development and innovation, as well as tertiary education, namely the Reform of the System of R&D and Innovation in the Czech Republic (approved by the Czech Government in March 2008[64]) and the White Book on Teritiary Education (published by the Minsitry of Education in May 2008[65]). Aside from the distinct target groups the above mentioned programs differentiate especially by the sources of support (OP EC – ESF, and OP R&DI – ERDF) and the limits set by the state aid rules for R&D[66] (the OP R&DI – supports “non-profit R&D organizations” and the OP EI – supports the “enterprise” sector.)

[64] See http://www.vyzkum.cz/FrontClanek.aspx?idsekce=497373

[65] See http://www.msmt.cz/bila-kniha/bila-kniha-terciarniho-vzdelavani

[66] The Community Framework Community Framework for State Aid for Research and Development and Innovation, Official reports E

2.12.1 Operational Programme Education for Competitiveness

OP EC will be financed by the ESF and its Managing Authority is the MEYS. The synergic effects of the OP EC and the OP R&DI will be gained by a combination of the provisions of ESF focused on the human resources and provisions of ERDF supporting the investments in such a way that both activities support one another. In OP EC the support for research and development is focused in priority axis 2 – Tertiary education research and development in the sector of human resources support for research and development.

The OP Education and competitiveness is designed in such a way that the training, educational and other activities will suitably supplement the infrastructural capacity built with the help of the OP R&DI, both in the research and educational domain. In the case of priority axes 1 and 2 the synergistic effect will stem mainly from support for development of international links and networks (including strengthening the capacity for participation in the 7th Framework Programme), support for setting up high quality teams, development of closer ties with the industry and public sector, training to improve management of research organisations and universities. In the case of priority axis 3 synergistic effect will be achieved mainly by support of training in technology transfer and IPR, as well as support of activities for popularisation of research and networking with private and public sectors. Finally, in case of priority axis 4 the support is focused on a number of activities (innovation of study programmes, internships, involvement of experts from industry and from abroad, development of competencies, intersectoral mobility, greater collaboration with primary and secondary schools etc.) leading to modernization of university education in line with the reform steps proposed in the White Book on Tertiary Education. Its goal is to increase the capacity of university study programs, their quality and practical relevance, to introduce an element of evaluation to tertiary education and, as a consequence, improve the relevance of graduates' skills for the labour market.

In concrete terms the support for human resources for research and development comprises of several subprograms focused on the following areas: 2.2. Higher Education. 2.3. Human resources in R&D, 2.4. Partnerships and networks. For each of the sub-programmes an indicative list of supported activities is given with an indication in the brackets to which priority axes of OP R&DI this intervention is linked:

2.2. Higher Education (link to priority axis 4 of OP R&DI)

- innovation of study programmes in line with the requirements of knowledge-based economy and labour market, including distance learning, education to promote entrepreneurship, support of interdisciplinary study
- support for practical training and internships of students with future employers
- involvement of specialists from business and from abroadin creation of innovated educational programmes
- creation of quality teams by increasing professional competencies of teaching staff, including ICT, languages, managerial skills etc.
- co-operation between tertiary education institutions and secondary schools to increase motivation to study
- co-operation with foreign educational and scientific institutions, including involvement in international projects and networks
- introduction of quality assessment systems
- systems to monitor labour market demands for graduates in a particular field

- co-operation between universities and primary and secondary schools, incluindg support to talented youth
- intersectoral mobility

2.3. Human resources in R&D (links to priority axes 1, 2 and 3 of OP R&DI)

- support and creation of high quality and perspective teams in R&D, including young starting researchers, scientific workers returning from long-term professional stays abroad (PA1 and PA2)
- involvement of individuals and teams in international networks and projects in the area of R&D (PA1 and PA2)
- support for intersectoral mobility, especially between research institutions and public and private sectors (PA3)
- education and training of R&D employees in managerial skills, popularisation and communication of scientific and R&D results, training in technology transfer and intellectual property (PA1, PA2, PA3)
- activities aimed at popularising R&D and its benefit to society (PA3)

2.4. Partnerships and networks (links to priority axes 1, 2 and 3 of OP R&DI)

- preparation of human resources for technological platforms and technology-based clusters (PA3)
- support for co-operation between tertiary education institutions, R&D centres, businesses and the public sector, including communication and interactive platforms (PA1 and PA2)
- support for educational and training activities aimed at increasing mutual co-operation between educational institutions, R&D centres, businesses and the public sector (PA1 and PA2)
- setting up contact points in tertiary education institutions and R&D institutions for interfacing with business and public sector (PA3)

Since the responsibility for the implementation of both OPs lies with the same division within the MEYS, the co-ordfination between OP R&DI and OP EC will be achieved at the level of daily management, as well as by personal unity of the chair of both Monitoring Commitees. Co-ordination is also foreseen in respect of promotional activities of both OPs in relation to potential beneficiaries.

2.12.2 Operational Programme Enterprise and Innovation

The OP EI is financed by the ERDF and its Managing Authority is the MIT. The precise setting of the boundaries and coordination mechanisms will be the key to gaining synergies of the two operation programs. The starting point for the coordination setting of both operation programmes is the agreement of system mechanisms for gaining the synergic effects between the OP R&DI and the OP EI (see. annex no. 5). The OP R&DI represents a system of support that systematically focus on the academic domain, especially on universities, research organizations and other corporate entities acting in R&D. The OP EI will be tied together with innovative company support programs, development of R&D capacities in enterprises and in the field of commercialization of R&D outputs through individual companies.

Operational programmes rely on the creation of two synergies; vertical and horizontal synergy. Horizontal synergies originate between two operational programmes especially in the form of consequent projects (these are prepared in different time periods, i.e. projects presented to the OP EI are related to the outputs of the OP R&DI) and simultaneously prepared projects (created in the same time period and referring one to the other). Vertical synergy originates within the OP R&DI due to the fact that the projects are prepared in cooperation with the application domain.

Institutional coordination resulting from the powers approved in the NSRF will be important for the synergies (in particular in chapter 11. "Management and Coordination of Economic and Social Solidarity Policies"). This relies on the creation of a coordinating committee called the Competitive Czech Economy which will be subordinated to the Monitoring Committee of the NSRF (i.e. Management and Coordination Committee). The Research and Development Council representative will be a member of the committee. This committee will especially focus on the observation and evaluation of agreed horizontal and vertical synergies; furthermore it will coordinate the participation of the national part of financing the OP R&DI. The committee will also check the fulfilment of the following obligations in terms of regional support where synergies arise:

- Coordination of the level of monitoring committees (e.g. setting the criteria for acceptability)
- Coordination of the level of evaluation committees (e.g. appointment of members by both controlling bodies),
- Coordination of the level of external project evaluators (e.g. common database of external evaluators),
- Coordination of calls for proposals (e.g. the thematic subject of calls)

Propagation and their common presentation is an important aspect of the coordination of both programmes. The key factor will be the setting of particular coordination mechanisms, which is underway between both controlling bodies on the working level.

2.12.3 Operational Programme Prague Competitiveness

The Operational Programme Prague Competitiveness (OP PC) is financed by the ERDF. Its Managing Authority is the City of Prague and it covers the whole area of the capital city of Prague. The OP PC is implemented within Regional Competitiveness and Employment objective and it is oriented towards the accessibility of key services, a city environment, innovation and entrepreneurship, which are some of the key factors in city competitiveness.

The global objective of the OP PC is to improve the competitiveness of Prague as a dynamic metropolis of a EU member country by removing the development barriers and the weaknesses of the region, improving the city environment, improving the accessibility of transportation and telecommunication services and developing the innovation potential of the city. The priority axes of the OP PC are "Accessibility and Environment" and "Innovation and Enterprise", especially the area for the support of the "Development of the Innovation Environment and the Partnership Between the Research and Development Base and Practice", closely related to the OP R&DI.

Prague is the only area in the Czech Republic included in the target of Regional Competitiveness and Employment. Activities carried out in terms of the OP PC are supplementary to the activities carried out in terms of the OP R&DI, especially the priority axis 3. As part of the priority axis 3 –

Innovation and Entreprise, and namely activity area 3.1. Development of innovation environment and partnership between R&D base and application sphere, the OP PC foresees support for projects of innovation and research infrastructure in the City of Prague. In concrete terms the following activities will be supported: science parks, incubators, innovation centres, centres of excellence, advisory and information centres for innovation, support to partnership between clusters and research centres, Academy of Science, universities and businesses etc. The financial allocation for priority axis 3 is 97 million euro for the entire prioriy axis 3. This amount includes also two other activity areas which makes the overall budget for support of RTD activities relatively small compared to the amount of national public spending for R&D and innovation in the City of Prague.

The cohesion and complementarity of both operational programmes co-financed by the ERDF will be ensured during the entire implementation by virtue of the cooperation and mutual coordination of activities as stated in chapter 11 of the NSRF (Management and Coordination Committee). The cooperation will be implemented especially on the basis of the mutual coordination of calls for proposals, criteria and intervention sectors including the involvement of the representatives of both programmes on the evaluation and selection committees.

2.13 Ex-ante evaluation of the OP R&DI

2.13.1 Introduction

Ex-ante evaluation of programme documents is an integral part of their preparation according to the requirements of the European Union. In compliance with the above mentioned requirement of the European Union, an ex-ante evaluation of the OP R&DI has been worked out by the Centre of Regional and Administration Sciences of the Faculty of Economics and Public Administration at the University of Economics in Prague. Ex-ante evaluation was carried out in four phases with the outputs on 18/4, 4/5, 30/6 and 31/10/2006.

In accordance with the rules and regulation for Ex-ante execution of program documents evaluation, three main principles were applied during the evaluation and processing:

1) Principle of continuity, i.e. the evaluators continuously evaluated individual parts of the prepared document and took their partial stands to them. In these comments they above all mentioned their own recommendations for supplementation changes or modification of the prepared document. The stands had a form of written materials as well as verbal comments.

2) Principle of cooperation, i.e. the activity of assessor is not isolated from the activity of the creators of the program document but on the contrary. Both groups of professionals closely cooperated for example in terms of working groups, there was a direct personal communication between individual team members as well as electronic communication.

3) Principle of active help – the evaluation team has formed a number of recommendations and alternatives that helped overcome the initial problems related to the determination of the content of the OP R&DI and its linking to the other programmes.

The evaluation team has stated that the program document contains all the relevant parts required by the European Commission.

As a result of the application of the above mentioned principles, the program document for the Operational Programme Research and Development for Innovation was successfully prepared to the extent that it reflects the idea of the evaluators team about its content.

2.13.2 Running standpoint and comment of the evaluators

a) Socioeconomic analysis and SWOT analysis

- Socioeconomic analysis is a summary of a few basic materials that are mutually inconsistent. The recommendation of the evaluators is to put the analysis in the conceptual documents for the research, development and innovation support.

- Due to the objectives of the selected strategy of the operational programme the analysis lacks evaluation of the results and efficiency of the public R&D. The recommendation of the evaluators is to amend this part.

- Chapter evaluating cooperation of the public and private sector in the field of research and development for innovation should, according to the evaluators, include an identification of the main causes.

- The SWOT analysis does not describe sufficiently in detail and depth the range and areas that due to its subject enter the scope of the Research and the Operational Programme Development for Innovation. Therefore the recommendation is to elaborate on the SWOT analysis in depth.

b) Priorities, provisions and indicators

- For individual areas of support the evaluators recommend to implement the basic conditions for project acceptability in such a way that they will be in accordance with the operation objectives.

- The evaluation team dealt with the set of indicators in detail and suggested the addition of some other indicators and, in individual cases, to implement its quantification as well (e.g. to watch the number of employed females in the number of new working positions, further to increase the target value of the number of patents.)

- The evaluators recommend that the indicative list of the major projects should have the character of an outline in which potential fields and in what intensity major projects can be expected, because indication of a particular applicant would, in fact, mean a “pre-selection” of potential supported major projects regardless of the evaluation criteria for project selection.

c) Implementation

- The evaluators suggest close linking and coordination of support provided by resources of the Operational Programme Research and Development for Innovation with the Operation Program Enterprise and Innovation under the auspices of the Ministry of Industry and Trade. They suggest creating a coordinating body.

- The evaluators warn that one of the key elements of the implementation of the whole operational programme will be intermediary subjects and that is why the recommend their indicative supplementation to the text of the OP R&DI whereas the evaluators understand that a detailed specification will be carried out in the implementation document.

- In relation to the above mentioned comments, the Managing Authority of the OP R&DI initiated a workshop in the presence of the evaluation team in April 2006. All the comments of the evaluation team were thoroughly discussed at the workshop and these were, to various extents, implemented in the text of the programming document.

2.13.3 Final opinion of the evaluators on the main attributes of the program dokument

a) Evaluation of the overall consistency of the program

The Operational Programme Research and Development for Innovation is focused generally on building-up capacities, including the regional ones, in the field of research and development in the Czech Republic.

The team of evaluators states that the information contained in the analytical part of the OP R&DI essentially prove the need of development of capacities on the offer side in the field of R&D (especially in the public sector) In apposite evaluation of the up-to-date results and experience with the use of capacities in the R&D limits the quality of the performed analyses in terms of the OP R&DI.

Strategic part and specification of the priority axes of the OP R&DI reflect the real needs of the Czech Republic. The evaluation team appreciated the effort to focus on the support of selected projects that will have clear territorial dimension. The strategy of the OP R&DI is to try to take into account different level of development potential of regions or cities, but only on a general level. The territorial (regional and urban) dimension should reflect the territorial priorities of NSRF and the strategies of regional development of the Czech Republic; implementation should be supported by complementary projects of ROP.

The OP R&DI is focused especially on the offer side in the field of R&D, while the immediate partnership Operational Programme Enterprise and Innovation is focused on the application and commercial utilization of knowledge from R&D as well as in the form of innovation i.e. the side of demand. This implementation requires strong linking and close cooperation of support provided through both programmes, including the creation of a systematic monitoring mechanism for monitoring of the real linking implementation (projects linking of the above mentioned programmes). The evaluation team suggests creating a coordinating body at the controlling level of the above mentioned operational programmes.

b) The evaluation of the accordance of the program document with the corresponding document on the national and supranational level

The evaluation team states that the submitted the OP R&DI is in accordance with the Lisbon Strategy and the following documents especially the National Lisbon Programme 2005 – 2008 – NPR. It is also in accordance with the strategic policy documents of the social solidarity, on the European level with the Community Strategic Guidelines and on the national level with NSRF.

The OP R&DI is becoming a tool for implementation of other national long-term concepts and strategies such as National Innovation Policy and the National Program for Research and Development.

A successful realization of support provided from the OP R&DI requires strong linking especially to the OP EI and the OP EC, which supports the development of human resources for R&D. A detailed description should be a part of the OP R&DI implementation document.

c) Indicators setting

The evaluation team states that the indicator setting complies with the content of the OP R&DI. The indicators of context and impact of the OP R&DI are included in the text of the document and the indicators on the level of priority axes are included in the annex.

d) Financial plan

Distribution of the utilization of financial resources to individual years is characterized by its gradual increase. The evaluation team respects the wide consensus achieved for distribution of financial resources among individual priority axes of the OP R&DI.

e) Implementation

The implementation of the program document is set according to the valid rules and regulations. The evaluation team recommends stating the means of cooperation and coordination of activities of controlling and intermediary subjects of the OP R&DI implementation and partner operation programs.

f) Conclusion

The OP R&DI can help to fulfil the targets of economic and social solidarity expressed through the Community Strategic Guidelines and the NSRF in the field of innovation potential development of the Czech Republic and its regions.

Recommendations and suggestions of evaluators were fully respected during finishing of the OP R&DI.

The outputs of ex-ante evaluations are in accordance with article 47 par. 3 of Council Regulation (EC) No. 1083/2006, published on the web pages of the Managing Authority.

2.14 Strategic evaluation of the impact on the environment (SEA[67])

The assessment of the Operational Programme Research and Development for Innovation from the viewpoint of impacts on the environment was executed in compliance with Act No. 100/2001 Coll., on Environmental Impact Assessment of some related acts (Act on Environmental Impact Assessment) as subsequently amended. This act transforms into the Czech legislation the provisions of the Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment.

The Act No 114/1992 Coll., on Protection of Nature and Landscape, further stipulates an obligation to determine if the realisation of the concept affects the area of the special protection statute (Natura 2000) and if so, to what extent and what measures should be taken.

The objective of SEA – in compliance with the legislative of the Czech Republic and the legislative of the EC – was to review the impacts of the realisation of the Operational Programme Research and Development for Innovation (OP R&DI) on the environment and public health including evaluation of impacts on the locations of the Natura 2000 system with emphasis on the evaluation of the impact of its realisation on sustainable development in the meaning of the Lisbon strategy and of the objectives of the cohesion policy of the European Union.

The process of SEA

The process of SEA was started in February 2008 by submitting a request to authorities of environmental protection in accordance with Provision § 45i Article 1 Act 114/1992 Coll. about environment and landscape protection in relation Environmental Impact Assessment of OP R&DI on important European localities and bird zones (Natura 2000). The authorities of environmental protection provided their statements including potential impact on important European localities and bird zones. From those statements it was obvious that the evaluation Natura 2000 must be undertaken. Announcement of the concept (OP R&DI) prepared in accordance with the requirements of Annex 7 of the Act No 100/2001 Coll., on Environmental Impact Assessment, was submitted to the Ministry of Environment (MoE) on April 9 2008. Inquiry proceedings commenced on May 16 2008 by way of public notification in the Information system SEA and by circulating relevant administrative authorities and relevant municipalities. The inquiry proceedings were terminated on June 19 2008 with the issuance of the conclusions of the inquiry proceedings.

Involvement of public

The proposed concept including the assessment of the effects on the environment was submitted to the MoE of the Czech Republic on 9 July 2008 and after a control of requisites it was published according to Act No 100/2001 Coll. in the information system SEA and it was sent to respective administrative authorities and competent municipalities. General public hearing of the concept including evaluation of environmental impact took place on July 30 2008 at the seat of Ministry of Education, Youth and Sports, Karmelitská 7, 118 12, Prague 1. The public hearing was attended by general public including organizations, institutions and initiatives engaged in environmental protection. The aforesaid organizations did not mention any suggestions or questions. The report of the public hearing was sent to Ministry of Environment on July 31 2008. The report is a part of SEA documentation.

For the purposes of raising the awareness of the public about the preparation and process of SEA, the results and other relevant information were published on the web site of the Ministry of

[67] SEA = Assessment of the OP R&DI impacts on the environment and public health

Education, Youth and Sports (www.msmt.cz) and author of SEA documentation – Integra Consulting, s. r. o. (www.integranet.cz).

Documents (in accordance with Act No. 100/2001 Coll.) were gradually published also by the Ministry of Environment of the Czech Republic at the information channel (www.env.cz).

Statement of Agreement
On August 15 2008 an approving statement was issued by the Ministry of Environment of the Czech Republic, related to the concept „Operational programme Research and Development for Innovation for years 2007 – 2013“, reference No. 59 492/ENV/08 (hereinafter only as Statement).

Measures decided concerning the SEA conclusions on monitoring

After the Statement was published it was suggested to incorporate the selected environmental indicators from the selected environmental criteria file, which is a part of Concept evaluation, according to Act No100/2001 Coll., of Environmental Impact Assessment, as amended, including the assessment of impact of the concept on important European localities and bird zones under Act No. 114/1992 Coll. on nature and landscape protection, as amended. For this reason there was selected an environmental indicator and evaluation criteria taking into account the quality of technical solution of the projects, especially in relation to the energy savings and utilization of renewable energy sources. Both criteria and indicator will be used in all relevant cases. Their precise description is incorporated in the Implementation Document of OP R&DI.

The environmental indicator is a part of the monitoring system of OP R&DI. The results of indicator fulfilment will be published in annual reports of OP R&DI and global assessments of OP R&DI implementation from the point of view of environment impact will be analysed in evaluation reports of OP R&DI and published on the internet web page of MŠMT (www.msmt.cz).

Conclusion

The author of SEA evaluation submitted to the Managing Authority of OP R&DI the following documents related to the assessment of the impact of the OP R&DI on the environment and public health, including an evaluation of its impact on sites in the Natura 2000 system:

- Assessment of the concept under Act No. č. 100/2001 Coll., on environmental assessment, as amended, including assessment of the concept impact on bird sites and sites of European significance, in accordance with Act No. 114/1992 Coll., on nature and landscape protection, as amended

- Approval of the Ministry of the Environment

The Final „Assessment of the Concept“is at disposal for general public on the web pages of Ministry of Environment and in the information system EIA/SEA (http://eia.cenia.cz/sea/koncepce/prehled.php) for the purposes of authorities that had been consulted in compliance of SEA, according to Article 6(2) of the Directive 2001/42/EC of the European Parliament and of the Council.

2.15 Horizontal topics of the OP R&DI

2.15.1 Equal opportunities

The principle of Equal opportunities was respected during preparation of the OP R&DI in all priority axes in terms of persons as well as in terms of regions in CSG. Projects will be evaluated in terms of provision of the equal access to the offered services. The target solution is to support projects that can remove barriers to participation in projects for target groups because of gender, race, ethnical, handicap, religious or sexual orientation discrimination.

In terms of utilization of equal opportunities principles, special attention will be given to the position of women. The current position of women on the employment market is usually characterised by lower wages, a low number of women in managerial positions and the continuing feminization of some sectors.

Indicator of the number of women in R&D is closely monitored for newly created working positions in R&D at relevant priority axes / areas of the OP R&DI support.

2.15.2 Sustainable development

The strategy of the sustainable development of the Czech Republic is the basic document on a national level trying to resolve the issue of sustainable development of the Czech Republic. The OP R&DI continues with this target of a sustainable growth strategy especially by creating conditions for a flexible economy based on knowledge and skills and for the increase in competitiveness of the economy.

The basic contribution of the OP R&DI to sustainable development is expressed by targeting the long term basic orientation of research, where two out of a total of eight strategic targets of development (or out of the seven supported in terms of priority axes 1 and 2) are focused on areas with direct relation to the support of sustainable development. This is primarily direction 1- sustainable development and direction 3 – energy sources. The accordance of the project with the Long-term Basic Directions of Research (LBDR) is a qualification standard of the priority axes 1 and 2 of the OP R&DI.

Furthermore, the subject of sustainable development is considered in terms of mutual support between the OP R&DI and the OP EI. The common purpose of both operating programmes defined in the area of mutual support is to create environment serving for a faster advancement to know-how economy by stimulating know-how flow and maximum utilization of human resources and output of innovation activities which is aimed at raising of the number of activities with high added value and with high valorization of energy and material inputs and at stimulation of the Best Available Techniques (BAT) utilization. The environmental dimension of sustainable development is going to be realized by an indirect implementation of the latest environment-friendly technologies.

The principle of sustainable development is going to be considered within the project selection.

The Initiative "Regions for economic change"

The EU initiative "Regions for Economic Change" represents a new instrument of the Commission and regions for the programming period of 2007 - 2013 focused on implementation of experience

gained in regions in the EU Programmes related to regional development. The purpose is to create a network of cooperating regions being able to identify disputable development areas of the respective region, to mutually exchange the experience gained within the cooperation and to produce conclusions to the Commission.

The Czech Republic is aware of a need for the best practice exchange and mutual learning within the member countries and their regions and that's why the Czech Republic is supporting the utilization of results that are going to arise from the initiative "Regions for Economic Change", according to how it is suggested in the announcement of the European Commission to the "Regions for Economic Change" COM (2006) 675, i.e through experimentation and pilot projects within the extension and development of technical research capacities in the respective regions.

Within the initiative "Regions for Economic Change", the Managing Authority of the OP R&DI is going to undertake:

- all necessary measures to include the innovation procedures relating to outcomes of activities within the cooperating network, the respective region took part in, in the programming process
- in case of successful pilot projects related to the Initiative "Regions for Economic Change", within the agenda of the Monitoring Committee, there are going to be discussed activities within the cooperating network and relevant suggestions related to operational programme at least once a year and it is going to be made possible that in the Monitoring Committee there can be present the representatives (or observers) of the cooperating networks, the respective region is involved in, who are going to inform about progress and outcomes of the activities within the cooperating network.
- is going to inform about the implementation of regional activities included in the Initiative "Regions for Economic Change" in an annual report.

3 Priority axes, supported areas and indicators

3.1 Priority axis 1 – European Centres of Excellence

3.1.1 Supported area 1.1. – European Centres of Excellence

Rationale for intervention:

The Czech Republic suffers from a high dispersion of R&D capacity that relates to insufficient material equipment and finances (including wages) of the majority of workplaces. Due to such dispersion and insufficient equipment and finances, it lacks even a limited number of workplaces that would have the critical size and would be able to achieve high quality results on a permanent basis. The result is an overall low efficiency of the public R&D support, leading to generally insufficient production of internationally recognized and relevant results.

In a small country like the Czech Republic, it is necessary to concentrate resources in areas having the highest potential in terms of international competitiveness and being among the research priorities of the Czech Republic (a link to the LBDR in the technical and natural science fields). It is necessary to concentrate the support on the regions and **research teams that can demonstrate the quality and potential to develop critical mass** in **clearly identified research domains** and to **reinforce their material, instrumental and personnel background** so that they are able to maintain and further develop their position within the European Research Area[68].

Main objectives:

The main objective of the intervention is creation of a **limited number of Centres of Excellence, well equipped R&D centres with modern, sometimes unique research infrastructure, with a critical size and able to contribute to the networking and closer integration of the leading Czech R&D teams with leading international research organisations and European research infrastructures**. The intervention will create internationally attractive partners in the Convergence regions, research bodies with a clear research programme and a high profile. As a consequence, an important "bridge" between the Czech regions and key international partners from both public and business sector will be created, linking to international know-how, networks and to new technologies available in more advanced regions.

The objective is to identify, support and strengthen the **best research teams** which will obtain the best **material conditions** for their strengthening and expansion and also the opportunity to research and explore novel topics, develop intensive contacts and strategic partnerships with the leading **international partners** (private and public). Through these contacts and networks, the centres are expected to accelerate the **production and transfer of technology** and know-how into practice.

Importantly, these centres are expected to provide **high quality training to students** (especially post-graduate students) and young researchers, and to **integrate research with educational and innovation activity** (so called knowledge triangle) thus contributing to technology transfer through "transfer on two legs".

[68] „The Green Book – European Research Area: New Perspectives", KOM(2007)/161.

Emphasis will be put on international co-operation and interconnection of the Czech workplaces with prominent research partners and infrastructures in the EU, especially with the infrastructures identified in the documents of the European Strategy Forum on Research Infrastructures (ESFRI)[69].

Simultaneously, the creation of Centres of Excellence is likely to contribute to greater integration, concentration and creation of critical mass in selected research fields. It is expected that the supported projects will often be large and relatively few (in some cases major projects, i.e. over 50 million €) possibly based on consortia of several thematically related leading teams and institutions, based on pre-existing high quality of research and education and thus largely concentrating in the regions that represent the bulk of Czech research capacity. Such centres have to be selected well and have to have a clear performance-based financing and incentives to achieve high quality relevant results with a practical relevance.

Under these conditions they will have the potential to provide very important economic benefits to the regional and national economy by bringing in new sources of funding from abroad, creating collaborative links to major international companies and creating highly qualified graduates, jobs and environments favourable to innovation and development of high-tech industries.

Basic principles and conditions of acceptability:

The basic principles of intervention include supporting the concentration of R&D into the centres of excellence of critical size associating a significant proportion of the existing and newly developing research capacities in the concerned area in the Czech Republic, supporting centres that are able to demonstrate their top and internationally recognisable quality in relation to one of the seven priority fields set up in the LBDR in the engineering and natural science fields. Critical will also be the contribution to the development of highly qualified human resources and young talented researchers.

The assessment of individual draft projects will include both aspects of the present international cooperation and internationally recognised results, as well as the relevance of the research activities vis-à-vis the competitiveness of the Czech economy.

The key prerequisite for acceptability will be the assurance of the system for technology transfer and commercialisation of R&D results (possibly through a synergistic project from the priority axis 3 of OP R&DI). Due attention will be paid to networking and collaboration with partners from the application sector, and to sufficient participation of the centre in international R&D activities.

The international R&D collaboration and collaboration with application sector should jointly contribute to the long-term sustainability of supported centres so that they are not 100 % dependent on national public funding.

The centres of excellence must appropriately combine the role of research, teaching process and training of young research workers and the role of support to innovation (so-called “knowledge triangle”). Each project should clearly define a strategy for the acquisition and training of human resources in new or reconstructed capacities (possibly through a synergistic project from the OP EC) and a clear plan for the utilisation of these capacities, including ensuring their operation after the termination of financing from the ERDF.

A link to the OP EI is equally expected and will be taken into consideration in the evaluation process. A high proportion of young research workers and the above-average presence of women in projects will also bring a preference bonus for such projects.

[69] European road-map for research infrastructures – ESFRI (European Strategic Forum for Research Infrastructures) Report 2006, ISBN 92-79-02694-1

Type of operations:

The priority axis will be fulfilled through individual projects with major projects included.

A limited number of major projects [70] (i.e. projects with the overall cost exceeding € 50 million) are expected.

Indicative list of operations:

- Reconstruction and extension of the R&D capacities, or economically reasoned building of new capacities, including the necessary design documentation;
- Purchase of instrumentation, laboratory and information equipment and infrastructure for research and technological development, including training for the use of new facilities and work procedures (with 10 % flexibility for actions falling within ESF);
- High quality, collaborative R&D projects (research grants/start-up grants) with leading national and international partners and relevant for the market and economic development, aiming to develop partnerships and the capacity for interantional collaboration and absorption of research funds from abroad. The grants will also include personnel and running costs and costs of research activity linked to the new infrastructural investment;
- Activities aiming at at strengthening collaboration with leading international research partners (e.g. organisation and participation at conferences, workshops, study stays, membership fees, promotional and networking events and materials;
- Activities aiming at strengthening collaboration with the application sector and public sector (e.g. networking, promotional events, joint information and communication platforms, participation in regional and national platforms for collaboration with public and private sector, including clusters and technology platforms);
- Support of other activities aimed at fulfilling the operational objectives of the supported area (e.g. project preparation and management, cost related to preparation of joint projects, studies and analyses and international benchmarking).

Categories of the intervention areas:

Code	Priority theme
01	Activity in research and technology development in research centres.
02	Infrastructure for research and technological development (including equipment, instruments and high-speed computer networks interconnecting research centres), and professional centres for specific technologies.
03	Transfer of technologies and enhancement of the networks of cooperation among small and medium enterprises and other businesses and universities, institutions of post-secondary education of all types, regional bodies, research centres and scientific and technology centres.

Target group:

The target groups of the support beneficiaries within the priority axis 1 particularly include research institutions, universities and other entities that meet definition of "Research organization"

[70] See the indicative extensive list of major projects in Attachment 6.

according to the "Community Framework for State Aid for Research, Development and Innovation".

Form of support and financing:

The priority axis 1 will be fully financed from the public funds: 85% from the ERDF and 15% from the Czech Republic State Budget. 33.1% from the Community contribution to the OP R&DI (of € 2,070,680,884), i.e. € 685.4 million, will be allocated to this priority axis in the period of 2007–2013.

Following the OP R&DI completion, the centres of excellence will receive funds for their operation from national public sources to support research and development, which are to be complemented by a considerable proportion of funds obtained from international cooperation, particularly from the European sources (EU FPs) and a certain proportion from private sources.

Within the priority axis 1, the 10% flexibility will be used for actions falling into the ESF framework being necessary for satisfactory performance of the operation and directly related to this performance (e.g. increasing adaptability and ensuring mobility of workforce for these capacities; stipulation of future work and qualification requirements and development of specific services for these capacities etc.). For actions falling into the ESF framework, the principle of monitoring regulatory conditions will be observed; these actions will cover specific training directly related to the fulfilment of the project objective, whereas no actions will be supported that are already aided by OPs from the ESF.

Implementation body:

The MEYS is the Managing Authority of this supported area.

3.2 Priority axis 2 – Regional R&D Centres

3.2.1 Supported area 2.1. – Regional R&D Centres

Rationale for intervention:

The Czech Republic is insufficiently covered with the network of R&D institutions that can act as suitable partners for R&D cooperation with the application sphere, capable to respond to their demands. The existing infrastructure of this type has insufficient material and technology equipment for successful cooperation and is mainly concentrated in the capital city.

At the same time, the demand for R&D results applicable in the private area is becoming more intense. The application sector suffers from a lack of adequate partners equipped with the infrastructure and human resources necessary for cooperation. A low number of R&D institutions with this mission and insufficient and outdated facilities in the existing institutions (mainly former resort research institutes) is a major problem.

Therefore, it is necessary to **strengthen the capacity of application-oriented, demand-driven research entitites** that have the potential to become partners **for collaboration sought by the application sector**, capable of **training people**, providing **practical solutions, qualified services** and **transferring their findings to the regional economies**.

Main objectives:

The intervention will support the **establishment and development of R&D workplaces with quality equipment focused on applied research** and reinforcement of **cooperation with the application area** (enterprises, hospitals etc.) according to the needs of the region.

The objective of regional R&D centres is to fulfil the function of a relevant research partner for collaboration with the application sphere (enterprises, hospitals, etc.), including partnerships with innovative small and medium-sized enterprises (SME's) and clusters. Through the advancement of knowledge in the respective domain, adaptation and transfer of technology and know-how, these centres will be able to contribute in an important way to the competitiveness of the economy of Czech regions.

It is expected that the choice of these centres will often correspond to the existing regional economic specialisation and that the centres will deepen the regional economic and technological specialisation (a "bridge" between research activity, economic specialisation and industrial/business partners.),

The objective is to identify thematically specialised centres (existing institutes of applied R&D, specialized university workplaces or public research organizations, mainly units of the Academy of Sciences) with good quality research teams that have a promising potential to produce relevant, applicable results that can reduce the length of the innovation cycle.

These centres will be provided with the necessary support so that they can develop into **demand-driven research centres with strong, long-term collaboration partnerships with the industry** (especially for contract research and provision of technological services). Partners from the application sphere will be closely involved in the strategic orientation of the research activity of the centres and incentives will be built-in to motivate the researchers to work on issues that can increase the competitiveness of their industrial partners. This feature is likely to increase the relevance of the research results, improve the accessibility of results to partners from the application spehere, and speed-up the transfer of technology.

Importantly, training of human resources for R&D (especially at the master and PhD levels) will be of key importance in the operation of the regional R&D centres and will, as a consequence, lead to an increase of a pool of qualified workers experienced in cooperation with the industry.

Basic principles and conditions of acceptability:

The basic principles of the intervention include supporting projects that are based on close cooperation with the application area and involvement of the users of results in the strategic orientation of the research activity. The applicant must submit a proof of a successful track record of cooperation with the application sphere in concrete projects that have been implemented already, along with the proof of the partners' interest in the future cooperation in R&D and their willingness to influence the strategic orientation of the centre. In justified cases (with a proven demand of the industrial partners), also establishment of brand new workplaces will be possible.

Projects focused on themes complying with the LBDR in engineering and natural science fields will be supported. Each project should include a clear plan for training of human resources and training and education of R&D workers in new or reconstructed capacities (possibly through a synergistic project for OP EC), and a clear plan of utilization of capacities, including maintaining their operation following termination of the project financing from the ERDF.

The key prerequisite for acceptability will be the assurance of the system for commercialisation of R&D results (possibly through a synergistic project from the priority axis 3 of the OP R&DI, i.e. developing and strengthening the technology transfer function of the research centre), synergistic

projects with the OP EI are also expected and will be encouareged (e.g. collaboration with clusters and technology platforms) through preferentaion points in the evaluation process.

A high proportion of young staff and an above-average proportion of women included in projects will also be highly assessed, i.e. get a preference bonus for the projects.

Type of operations:

The priority axis will be fulfilled through individual projects with major projects included .

Indicative list of operations:

- Reconstruction and extension of R&D capacities, or economically justified construction of new regional R&D capacities, including the necessary design documentation;
- Acquisition of instrumentation, laboratory and information equipment and infrastructure for research and technological development, including staff training for work with new equipment and the use of new technological procedures (with 10% flexibility for actions falling into the ESF framework);
- Collaborative R&D projects for cooperation of the supported workplaces with the application sphere (research grants/start-up grants), aiming to develop partnerships and increase the capacity for collaboration and for contract research. The grants will also include personnel and running costs and costs of research activity linked to the new infrastructural investment;
- Activities aiming at strengthening collaboration with the application sector and public sector (e.g. networking and promotional events and materials, workshops, joint information and communication platforms, participation in regional and national platforms for collaboration with public and private sector, including costs related to participation in clusters and technology platforms, costs for promotion in relation to the application area, acquisitions of partners from the application area etc.);
- Support of other activities aimed at fulfilling the operational objectives of the supported area, including support of pilot projects (e.g. project preparation and management, cost related to preparation of joint projects, studies and analyses and international benchmarking).

Categorisation of the intervention areas:

Code	Priority theme
01	Activity in research and technological development in research centres.
02	Infrastructure for research and technological development (including equipment, instruments and high-speed computer networks interconnecting research centres) and professional centres for specific technologies.
03	Transfer of technologies and enhancement of the networks of cooperation among small and medium enterprises and other businesses and universities, institutions of post-secondary education of all types, regional bodies, research centres and scientific and technology centres.

Target group:

The target groups of the support beneficiaries within the priority axis 2 particularly include research organisations, universities and other subjects that meet definition of "Research organization" according to the "Community Framework for State Aid for Research, Development and Innovation".

Priority axis 2 will be fully financed from the public sources: 85% from the ERDF and 15% from the Czech Republic State Budget. 33.1% from the Community contribution to the OP R&DI (of € 2,070,680,884), i.e. € 685.4 million, will be allocated to this priority axis in the period of 2007–2013.

Following the completion of the OP R&DI, the regional research centres will receive considerable funds for their operation from cooperation with the commercial/application area, which are to be complemented by partial financing from the national public sources and, additionally, also from funds gained from international cooperation, primarily from the European sources (EU FPs).

Within the priority axis 2, 10% flexibility will be used for actions falling into the ESF framework being necessary for satisfactory performance of the operation and directly related to this performance (e.g. increasing adaptability and ensuring mobility of workforce for these capacities; stipulation of future work and qualification requirements and the development of specific services for these capacities etc.). For actions falling into the ESF framework, the principle of monitoring regulatory conditions will be observed; these actions will include specific training directly related to fulfilment of the project objective, whereas no actions will be supported that are already aided by OPs from the ESF. More detailed defining criteria will be a part of the Implementation Document and then elaborated in the relevant support programmes and calls.

Implementation body:

The MEYS is the Managing Authority of this supported area.

3.3 Priority axis 3 – Commercialisation and popularisation of R&D

This priority axis concentrates support for several horizontal, **cross-cutting themes** which are crucial for successful implementation of projects under priority axes 1 and 2. However, it but remains open to other potential beneficiaries in view of putting commercialisation and popularisation of research on the agenda of as broad as possible spectrum of Czech R&D institutions.

Firstly, it aims to create conditions in research organisations for the successful **commercialisation of the results of R&D activity**, enhance the **system of the intellectual property** protection, and **support establishment of new technology-oriented firms**.

Secondly, the priority also aims to improve the system of **providing information on R&D results**, **availability of R&D information**, contribute to **promotion and popularisation of researc**h, improve the **evaluation** system of research organisations while using foreign experience and contribute to making the **public support for R&D more effective**.

Therefore, the priority axis 3 is divided into 2 supported areas that are interrelated, but, at the same time, need differentiated approaches (commercialisation and intellectual property protection; promotion, popularisation and evaluation).

It is expected that the individual supported areas in the priority 3 will appropriately supplement projects supported in priority axes 1 and 2. At the same time, synergistic projects with the selected supported areas of the OP EC (in commercialisation, popularisation and evaluation of R&D) and the OP EI are expected (for more details refer to Chapters 2.12.1. a 2.12.2). In the implementation phase, close cooperation in implementation of this priority axis with the first two priority axes of the OP R&DI is expected.

Type of operations:

Individual and system projects.

Categorisation of the intervention areas:

Code	Priority theme
01	Activity in research and technological development in research centres.
02	Infrastructure for research and technological development (including equipment, instruments and high-speed computer networks interconnecting research centres), and professional centres for specific technologies.
03	Transfer of technologies and enhancement of the networks of cooperation among small and medium enterprises and other businesses and universities, institutions of post-secondary education of all types, regional bodies, research centres and scientific and technology centres.
04	Aid for research and technological development, in particular in small and medium enterprises (including the access to services in research and technological development in research centres)
07	Investments in enterprises directly related to research and innovation (innovation technologies, establishment of new enterprises by universities, the existing centres of research and technological development etc.)

Target group:

The target groups of the support beneficiaries within the priority axis 3 include research institutions, universities and other entities. such as the state administration bodies and other non-profit organizations dealing with specialized activities in popularisation and promotion of R&D (e.g. museums, libraries, observatories etc.) that meet the definition of "Research organization" according to the "Community Framework for State Aid for Research, Development and Innovation".

Form of support and financing:

The priority axis 3 will be fully financed from the public sources: 85% from the ERDF and 15% from the CR State Budget. 10.3 % from the Community contribution to the OP R&DI (of € 2,070,680,884), i.e. € 213.3 million, will be allocated to this priority axis in the period of 2007–2013.

Following the OP R&DI completion, the supported projects will receive funds for their operation through a combination of own sources, from contributions of their founders and proceeds from cooperation with the commercial and application areas.

Within the priority axis 3, 10% flexibility will be used for actions falling into the ESF framework and being necessary for satisfactory performance of the operation and directly related to this performance (e.g. increasing adaptability and ensuring the future work and qualification requirements and development of specific services for these capacities etc.). For actions falling into the ESF framework, the principle of monitoring regulatory conditions will be observed; these actions will cover specific training directly related to the fulfilment of the project objective, whereas no actions will be supported that are already aided by the OPs from the ESF. Further defining criteria will be a part of the Implementation Document and then elaborated in more detail in the relevant interventions and calls.

Implementation body:

The MEYS is the Managing Authority of this supported area.

3.3.1 Supported area 3.1. – Commercialisation of results of research organisations and protection of their intellectual property

Rationale for intervention:

In the Czech Republic the situation is unsatisfactory in terms of commercialisation of knowledge of research workplaces supported from the public sources. Consequently, the effectiveness (outputs are not adequate to inputs) and the application relevance of public expenditure for R&D are generally very low. There is only low awareness of the need to focus R&D activities on commercially viable applications, and low awareness of the intellectual property protection. There are no tools that would allow research staff and students having commercially applicable ideas to finance the critical phase from the birth of the idea to its commercial realisation and establishing a company (pre-seed phase).

The application area is not ready to utilise commercially exploitable knowledge of research institutions because, in many cases, there are no specialised workplaces in research institutions collecting and disseminating this information. There is no capacity for taking the commercially exploitable R&D knowledge to the phase where it is verified and taken to the phase for being accepted by commercial entities. In many cases, there is no specialized staff that is able to direct partners from the application area to the relevant R&D staff. Aavailability of information on potential commercially interesting R&D results is insufficient as well.

The support for **commercialisation and technology transfer** therefore represents one of the cornerstones of the proposed Reform of the System of R&D and Innovation in the Czech Republic and a **critical cross-cutting theme in the overall strategy of the OP**.

Main objectives:

The main objective of this intervention is to support the commercialisation of R&D results in research institutions especially through support to the **systems of commercialisation and intellectual property protection**, including the establishment and development of **technology transfer offices** (TTOs) within research institutions.

In addition, the intervention will also provide support to **funding the stage from the R&D knowledge to the phase of the following commercial utilization** (proof of the concept stage)..

The intervention aims to change the attitude of Czech research organisations to collaboration with users of results and increase economic relevance of their activity.

The proposed intervention will increase the quality of systems of commercialisation of R&D results in research organizations through the support for the establishment or development of the existing capacities for commercialisation and cooperation with the application area. This will include the costs of creating dedicated units (TTOs) within research organisations dealing with technology transfer and liaison with the business sector (identification of early-stage commercially viable projects in the research organisations, assistance in their commercialisation, establishment of links between research teams and the users of results, identification of potential users, provision of facilities and equipment for testing of novel concepts and their verification by researchers and students etc.).

The intervention will provide support especially for the necessary operating costs of TTOs, costs related to the exploitation of intellectual property and costs related to the commercialisation itself. The purchasing of external services necessary for technology transfer, commercialisation, and exploitation of intellectual property will also be supported (especially in cases where the size of the research organisation does not justify in-house TTO capacity).

In addition, the intervention will also support targeted funding for research staff and students in the stage leading to the establishment of new technology companies (e.g. spin-off) and services related to their following commercial valuation.

As a consequence of these interventions, a higher focus of research institutions on commercially exploitable research, a higher rate of valuation of public expenditures for R&D, and, in the long-term perspective, creation of new, highly-qualified jobs is expected.

Basic principles and conditions of acceptability:

The verifiable potential for commercialisation (e.g. commercially successful projects in the past and demonstrable interest of the commercial area in this cooperation) and proof of quality results in the applied R&D (patents etc.) will be the basic condition for giving approval to the support. Each project must contain a clearly designed plan of using the systems being established and their capacities, including assurance of their operability following termination of the financing from the ERDF.

The parallel implementation of complementary activities of this operational programme, in the OP EC (cooperation of universities, R&D institutions and companies, establishment of communication platforms etc.) is exptected. The support within the intervention will be provided in a close relation to the support provided from the OP EI (e.g. area 5.1 – cooperation platforms – for more details see chapter 2.12.2.).

Priority will be given to projects complementary to projects supported under priority axes 1 and 2 in order to ensure that all such projects have adequately ensured their technology transfer and commercialisation function.

Indicative list of operations:

- Support to establishment, development and operation of technolgy transfer offices (TTOs) inside research institutions, including the necessary costs for their operation, purchase of services related to transfer of technologies, transfer and utilization of foreign know-how, costs of membership in professional associations (national and international), networking, promotion and cooperation with the commercial sector, in justified cases also reconstruction or new construction and equipment of the TTO premises etc;
- Purchasing of services related to technology transfer, commercialisation and protection of intellectual property in research institutions;
- Equipment, instrumentation, laboratory equipment, reconstruction or new construction (in justified cases and within existing institutions only) of measuring, testing and verification

centres up to the semi-operation phase required for technology transfer activities and for verification of technical feasibility of concepts;

- Establishment and management of funding mechanisms to finance the verification phase and initiation phase of the establishment of technology companies (proof of the concept stage), including costs for advisory services and purchase of other services, costs related to the intellectual property protection, wage costs for the entity implementing the project and others; these funding mechanisms need to be related to a research organisation or number of research organisations;
- Supplementary activities aiming at fulfilment of the operational objectives of this supported area, such as, for example, costs of networking and exchange of experience among technology transfer experts nationally and internationally, costs for professional advisory in technology audit, technology watch, databases of partners for technological development, participation in exhibitions, conferences and seminars, costs of assistance in securing sources of funding for establishment of new companies.

3.3.2 Supported area 3.2. – Promotion and providing information on R&D results

Rationale for intervention:

Low effectiveness of the Czech R&D system is substantially caused by insufficiently developed instruments focused on enhancing the quality of the system of public support, and by poorly developed evaluation culture.

Therefore it is necessary to **enhance the quality of evaluation** on the level of the entire national system of R&D support (procedures, methods, information systems), as well as to reinforce the evaluation of the individual workplaces and teams (with the emphasis on the management systems and the cooperation with the application area), or to improve the quality of the system of long-term orientation of research (e.g. by applying foresight).

The proposed interventions should enhance the quality of the system of supporting R&D from the public sources.

The area of R&D also suffers from insufficient offer in the area of providing information and popularisation, despite the existence of a considerable interest of the general public[71].

Therefore, it is necessary to boost the all-society discussion on R&D, and to suppot projects that can increase the prestige and positive popular image of R&D. **Popularisation of science and technology, and of research activity** in general, are important pre-conditions for sustaining the interest of young generation in scientific careers. **Publicising the results of research and improving access to scientific information sources** are one of the key pre-conditions for a fast dissemination of scientific knowledge and its subsequent practical use.

Main objectives:

The objective of this intervention is to enhance the effectiveness of the system and quality of R&D institutions in the Czech Republic by introducing **new elements of evaluation and strategic governance of R&D policy**. This objective will be achieved through projects for gradual improvement of the R&D policy (in particular analyses, studies, systemic evaluations).

[71] This fact closely correlates with the stagnation of the interest in studying engineering and natural science disciplines.

At the same time, the objective of this intervention is to **reinforce the perception of the field of research and development** by the general public by investing in activities that will attract the interest of public, and especially of young generation (science learning centres, exhibitions etc.).

Finally, the objective of the intervention is also to **facilitate the access to sources of scientific information** and improve access to research results by wider public (specialised databases, internet sources etc.).

Basic principles and conditions of acceptability:

In the case of projects for enhancing the quality of the R&D system, the support will be received by the state administration bodies, particularly the bodies responsible for the national R&D policy and for the innovation policy (MEYS, the Council for Research and Development etc.). Thus, the conditions of acceptability will be based on the strategy and needs of these institutions.

In the case of measures to be taken to promote and popularise science and technology, as well as for improvement of accessibility of scientific information and information on R&D results, , the prerequisite will be demonstrable experience in such type of activity.

Preference will be given to projects in which a broad spectrum of partners (e.g. the private sector, museums, professional and scientific libraries, universities) will be involved.

In the field of popularisation and increasing the efficiency of R&D system a strong synergy exists between this OP and the OP Education for Competitiveness which will support a number of 'soft' activities targeting both young population and general population at large, as well as several systemic projects aimed at increasing the efficency of R&D system

Indicative list of operations:

- Support to activities aiming to enhance the quality and effectiveness of the R&D policy (especially evaluation of research organisations, international peer review and benchmarking, applications of foresight etc.);
- Support to projects for popularisation, promotion and publicity of science and technology, primarily to projects that are complementary to the activities carried out within the OP EC (e.g. visitor information centres and centres in research institutions, science and technology museums, science learning centres, single promotional events of a large extent etc.);
- Support to activities aiming at better availability of information needed by R&D users (e.g. the access to specialised databases, metasources, equipment of professional and scientific libraries etc.), including activities to ensure the information infrastructure and information sources for R&D and services related to their acquisition and use;
- Support to activities aiming at higher availability of information on R&D results and trends, in particular considering the needs of users and the application area (e.g. specialized internet portals, databases etc.);
- Support to other activities aiming at fulfilment of the operational objectives of the supported area (e.g. exhibitions, road shows, conferences and others);

3.4 Priority axis 4 – Infrastructure for university education related to research

3.4.1 Supported area 4.1. – Infrastructure for university education related to research

Rationale for intervention:

The existing infrastructure of universities has not been able to cope with a demand for university education which has been growing steadily since the early 1990s. The overall deficiency is apparent also in insufficient capacity of teaching space and offices for academics and PhD students, especially in cases where the current level of education and training does not correspond to the needs of subsequent R&D and, particularly, innovation.

The often inadequate state of repair of such infrastructures does not allow multi-purpose utilisation in accordance with modern research and educational trends and, in some cases, even hinders compliance with hygienic and safety standards. For the most part, universities do not have sufficient instrumentation and laboratory equipment to carry out research, (the priority axes 1 and 2 react to this need). They often lack also modern teaching aids and computer laboratories, library capacities are limited, access to information resources including foreign professional literature is not on a corresponding level.

Importantly, these handicaps are of generic nature and all fields of tertiary education suffer from the legacy of underfunding of educational infrastructures combined with the recent dramatic increase in the number of students. This fact, combined with one of the lowest shares of adult population with tertiary education in the EU, represents an important bottleneck for future development of knowledge economy in the Czech Republic.

The proposed interventions promise to remedy the negative legacy of underfunding accumulated from the past while allowing a **selective support for universities that are actively working on modernising their curricula and educational methods and make them more responsive to the requirements of the labour market**.

Main objectives:

The main objective of the priority is to support **development of a quality infrastructure of universitie**s with the purpose of increasing the capacity of tertiary education and creating conditions for the improvement of the quality of education. This type of investment represents a **prerequisite for a necessary quantitative and qualitative increase in supply of human resources for research and innovation.**

Importantly, a strong complementarity will exist between this type of intervention and interventions from OP EC related to improving the quality and relevance of tertiary education and on strengthening the third role of universities. The involvement of the given university or faculty in the reform of the teriary education and its efforts to closely combine education with research activity, and involve students in innovation activities, will play an important role in the selection of projects. The investment from OP R&DI will thus play an important incentive for the universities to take a pro-active approach and adopt the reform steps outlined in the White Book on Tertiary Education.

These investments, in combination with “soft” interventions from OP EC, are of key importance for increasing the stock of well trained and qualified graduates (especially future R&D staff, but also professionals and knowledge workers for both private and public sectors) with the skills relevant for the labour market, which is crucial for long-term competitiveness of the Czech economy.

The investment will aim to provide adequate training capacities and infrastructures, including lecture rooms, academic office space, libraries, ICT infrastructures, access to information sources

and scientific information. On the other hand, excluded will be investment in infrastructures for leisure activities, as well as accommodation and catering facilites for students.

Support will be directed mainly to projects that can prove a demand for their graduates and inadequacy of existing infrastructure. While preference will be given to technical and natural science domains, in justified cases the support in this priority axis will also be open to the university faculties active in the socioeconomic domain. This is motivated by the need to develop high quality human resources in all domains that are important for the future competitiveness of the Czech economy. Given the increasing importance of innovation in service industries and the role of non-technical innovation for economic growth[72], the support should clearly encompass also domains such as economics and management, education, public administration, elements of social science, as well as applied arts and design.

Basic principles and conditions of acceptability:

Within the priority axis 4, preference will be given to projects that focus on the infrastructure in those fields producing graduates in the fields of engineering and natural sciences. The support to infrastructures in other fields beyond the boundaries of science and technical disciplines is also permited, if the beneficiaries prove sufficient relevance with respect to the objectives of the intervention, i.e. increased production of high quality graduates that can contribute to greater competitiveness of the Czech economy.

In general, the support shall be conditioned by the quality of the tertiary education institution, its track record in supplying graduates demanded by the labour market and the modernisation of its curriculum, in combination with a demonstrated need or deficiency of the existing infrastructure, will be the key guiding principles.

The interconnection of the teaching process with the research and development aiming at innovations (demonstrable production of quality R&D and innovative results), collaboration with users of research results and, more generally, compliance with the principles enshrined in the recently approved White Book on Tertiary Education will also play an important role in the evaluation of projects.

Preferential points in the evaluation will be given to those applicants who will be simultaneously implementing a synergic project within the OP EC aiming at innovation of curricula (including participation of experts from practice and abroad, traineeships of university students with their future employers, joint preparation of graduation thesis and dissertation projects, active participation in the life-long education etc.). The intervention will therefore play an important role as an investment support for strengthening of the third role of universities in the Convergence regions.

The applicant's mandatory financial participation in the scope defined by the call will also be a condition of acceptability.

Type of operations:

Individual projects.

[72] See e.g. COM (2003) 747 The competitiveness of business-related services and their contribution to the performance of European enterprises, or SEC (2007) 1059 Towards a European strategy in support of innovation in services: Challenges and key issues for future actions.

Indicative list of operations:

- Investments in the infrastructure for education and teaching at universities, particularly the infrastructure related to scientific training of students - classrooms, offices for academic staff and PhD students, reconstruction and alterations of the existing capacities (modernisation of existing buildings and equipment, in justified cases extensions and construction of new facilities);
- Update and extension of the information infrastructure of universities necessary for research and training (e.g. introducing new information technologies, modernization of libraries, costs of information resources including their purchase, purchase of specialized literature and database licenses, development of networks of libraries and information centres and interconnecting information systems etc.);
- Extensions of existing and construction of new academic library facilities (building new capacities only in justified cases, with a preference for projects targeting a higher number of users;
- Support to other activities aiming at fulfilment of operational objectives of the supported area (e.g. expenditure for preparation and management of the projects etc.).

Categorisation of the intervention areas:

Code	Priority theme
02	Infrastructure for research and technological development (including equipment, instruments and high-speed computer networks interconnecting research centres), and professional centres for specific technologies.
12	Information and communication technologies (TEN-ICT)

Target group:

The target groups of the support beneficiaries within the priority axis 4 include public, state and private universities and other entities pursuant to Act no. 111/1998 Coll., on Universities[73], also meeting the definition of "Research organization " according to the "Community Framework for State Aid for Research, Development and Innovation".

Form of support and financing:

The priority axis 4 will be financed as follows: 85% from the ERDF funds, the remaining 15 % are covered from the Czech Republic State Budget funds provided to beneficiaries for educational activities. 20% from the Community contribution to the OP R&DI (of € 2,070,680,884), i.e. € 414.1 million, will be allocated to this priority axis in the period of 2007–2013.

Following the OP R&DI completion, the supported projects will receive funds for their operation through a combination of contributions from public sources, tuition fees and proceeds from cooperation with the application area.

[73] Act no. 111/1998 Coll., on Universities (University Act), as amended

Implementation Body

The MEYS is the Managing Authority of this supported area.

3.5 Priority axis 5 – Technical assistance

Rationale for intervention:

In accordance with the Council Regulations (especially No.1083/2006) the objective of technical assistance is to contribute to the improvement of the quality of performed measures, i.e. to ensure an effective management of the operational programme, its propagation and evaluation and, thus, to provide the Managing Authority and the OP R&DI intermediating subjects with sufficient technical assistance for the purposes of responsible and effective management of the OP R&DI. This priority axis also includes evaluation of trends in R&D, knowledge economy and innovation, using international benchmarking and proposing and realising corrective measures.

Main objectives:

Providing support activities performed by the OP R&DI Managing Authority to ensure the efficiency of performed support

The OP R&DI support within the Priority Axis 5 "Technical assistance" is aimed at the area of preparing, monitoring, administrative and technical assistance, evaluating, auditing, and controls that are necessary for an effective realisation of the OP R&DI.

Support within this priority axis will cover especially the following:

- Costs of preparing, selecting, implementing, evaluating and monitoring the OP R&DI;
- Costs connected with meetings of evaluation committees and the OP R&DI Monitoring Committee, including the costs of participation of external experts;
- Costs of data processing;
- Costs of audits and inspections performed in place;
- Costs of remuneration of employees (including social insurance) participating in preparation, selection, evaluation of the programme and its monitoring, auditing and inspections;
- Financing elaboration of studies, analyses, strategies and evaluations;
- Financing seminars, workshops, experience and information exchange, propagation and publicity, informative events, elaboration of information analyses, acquisition and installation of computer systems needed for managing, implementation and monitoring;
- Support activities ensuring coordination and synergy within the OP R&DI, primarily by evaluating effects using international benchmarking;
- Support activities for enhancing absorption capacity of the OP R&DI;
- Support activities of preparation for the periods after the end of the OP R&DI.

Operations type:

Individual projects

3.5.1 Support area 5.1 – Administration of the OP R&DI

Rationale for intervention:

The main rationale for intervention 5.1 is to ensure the preparation, managing, implementing, evaluating, monitoring, controlling and auditing the OP R&DI in accordance with Council Regulation (EC) No. 1083/2006 and Commission Regulation No. /2006 and national legislation.

Main objectives:

The main objective is to continuously follow-up and improve the implementation of the OP. The activities will focus mainly on updating or improving methodological practises of implementation, directives and suggestions ensuring realization of the OP R&DI. Technical expertises, analysis, studies, methodologies aiming setting or evaluating functionality and efficiency of managing systems, controls, rules and program realization practises will be elaborated. The subject of activities will also be ensuring the needs of implementation structure from the point of administration capacities (including ensuring qualified human sources and their stabilization), as well as with ensuring activities connected with the OP R&DI Monitoring Committee, working groups and coordination groups.

3.5.2 Support area 5.2 – Information and publicity of the OP R&DI

Rationale for intervention:

The starting point for informing and publicity is Council Regulation (EC) No. 1083/2006. The intervention aims to ensure timely, precise and accurate provision of information about the OP R&DI, while taking into considearation adequacy and purposefulness of expenditure.

Main objectives:

The main objective is to create and realize an integrated system of informing public about the OP R&DI and evolution, management, development and technical support of informative instruments for the OP R&DI communication and implementation support.

The activities will mainly focus on formation and operation of a platform for communication with the public, on mass media, aiming to present the progress in implementation of the program, of the successfully implemented projects, and for supporting the management of the Communication plan of the OP R&DI.

3.5.3 Support area 5.3 – Absorption capacity of the OP R&DI

Rationale for intervention:

The intervention aims to support activities focused on development of absorption capacity, cross-sectional expert information and consultation services, specific expert trainings, ensuring and promotion of the best solutions, networking and others.

Main objectives:

The main objective is ensuring activities focused on strengthening, monitoring and assessing of absorption capacity. The activities will include mainly continuous monitoring and evaluation of

absorption capacity, including the interest (or the lack thereof) in the support area, development trends, specific groups and others. Studies will be elaborated and, based on the findings, suitable actions for increasing the absorption capacity will be formulated, approved and implemented.

Categorization of intervention domains:

Code	Priority theme
85	Preparation, performance, monitoring and control
86	Evaluations and studies, information and communication

Target group:

The MEYS as the Managing Authority of the OP R&DI and Intermediating subjects for single priority axes are the target groups of support beneficiaries within the Priority axis 5.

Support form and financing:

Priority axis 5 will be fully financed from the public sources: 85% from the ERDF and 15% from the Czech Republic State Budget. 3.5% from the Community contribution to the OP R&DI (of € 2,070,680,884), i.e. in total € 72.5 million EUR, will be allocated to this priority axis in the period of 2007–2013.

Implementation body

The MEYS is the Managing Authority of this supported area.

3.6 Experimenting and pilot projects

Experimenting is a work method starting with mapping and diagnosing groups of problematic issues, structured dialogue with partners and then by generating new ideas. It is assumed that the method of experimenting will be applied within the OP R&DI in the form of regional round tables, work groups, regional innovation strategies etc. These new ideas are tested through the realisation of short-term pilot projects and the results of the pilot projects are then subject to analysis. Once the results are known and they confirm benefits of projects, the successful activity is developed further within single priorities of the Operational Programme. Considering that the Czech Republic did not have a chance to perform experiments as a part of regional innovation programs in the years 2000-2006 it is supposed that these activities will be included directly into the OP R&DI.

Within the Priority axis 1 – “European Centres of Excellence”, the assumption is made as to fulfilling the objectives through several major projects. Major projects in the R&D area are very specific and the experience with investment projects the Czech Republic realised from the structural funds, or from the Cohesion Fund in the previous period.

The OP R&DI Managing Authority considers a short pilot project from the area of preparation and management of a major project aimed at research and development. In this respect, it assumes exploiting the knowledge potential of DR Regio experts from, EIB and EBRD, eventually of the single EU member states through the JASPERS (Joint Assistance to Support Projects in European Regions) initiative. This project is already contained in the Czech Republic Action Plan for the

JASPERS initiative. The amount of € 1.3 million is planned for above-presented activities within this priority axis.

In connection with the activities supported within the Priority Axis 2 – "Regional R&D centres", the Czech Republic is aware of the need for exchanging and sharing so-called "good practices" and mutual learning among the member states and their regions. For this reason, it is assumed that the results coming from the "Regions for economic change" initiative will also be utilised within experimenting. It specifically concerns the "Improving the capacity of regions for research and innovation" area. The amount of € 1.8 million is planned for the above-presented activities in this priority axis 2.

The Priority Axis 3 - "Commercialisation and popularisation R&D" is primarily aimed at commercialisation of the R&D results. The "Regions for economic change" European initiative also deals, among others, with the theme of " Bringing innovative ideas to the market more quickly". Within experimenting, the Czech Republic is ready to integrate the results of this network in the maximum extent. One of possible forms of commercialisation of the R&D results is establishing spin-off firms that subsequently benefit economically from the generated solution, patent, technology know-how etc. The OP R&DI Managing Authority is interested in the generation of a pilot project that will test the possible function of pre-seed fund for scientists and researchers. The realization of this project supposes tight cooperation with "Enterprise and innovation" Operational Programme, the Managing Authority of which is the Ministry of Industry and Trade. Some funding of these pilot actions will be made available for activities contributing to improving the Regional Innovation Strategies and experimental projects aimed to increase the absorption capacity of regions The amount of € 12.0 million will be allocated for the above-presented activities in this priority axis 3.

Thus, the way of experimenting and the factual contents of potential pilot projects logically complement the overall concept and aiming the support at R&DI OP support area. Due to the experimental nature of presented activities, the planned projects will be realised in a low scale and in shorter times, and only based on their successful evaluation their broader use in the R&DI OP will be realised. No indicators will be attached to the pilot projects. Direct management, planning and coordination will be delegated to a specific work group consisting of the MEYS experts, external experts and representatives of implementation agency that will be within responsibility of the R&DI OP Managing Authority. Also cooperation with the Ministry of Industry and Trade will be very close. The overall process of experimental actions and outputs from pilot projects will be discussed at meetings of the OP R&DI Monitoring Committee and presented in annual reports.

3.7 OP R&DI indicators

For the needs of monitoring and evaluating the OP R&DI, a system of indicators is designed. The purpose of this system is to measure the fulfilment of the overall objectives using quantifiable indicators that allow monitoring the OP R&DI realisation and evaluating its performance with respect to the stipulated objectives.

The rules of the monitoring are set accordingly to the article 66 of the Council Regulation (EC) No. 1083/2006. Continual monitoring of the running fulfilment of indicators' values will be carried out

by means of the Operational Program Monitoring System (refer to Chapter 4.5.3 Monitoring system). It will be reported on a regular basis in the Annual OP R&DI implementation reports, including the development o the values of indicators. The evaluation of the resulting values of indicators will be discussed at regular meetings of the OP R&DI Monitoring Committee.
The evaluation involves interrogating information from monitoring and other sources to find out and explain the effects of the interventions.

The evaluation of indicators along with the data from statistical sources provides groundwork for monitoring reports of the program level, annual reports and for the final report, program management, elaboration of evaluation studies and others; this groundwork will also be provided to relevant bodies: National Authority for Coordination and the European Commission (refer to Chapter 4.5.4 Annual and final report on implementation).

Indicators of results will be systematically evaluated at least once a year. Analyses of some indicators of results and impacts are dependent on the elaboration of evaluation studies. The R&DI OP Managing Authority is responsible for collection and analysis of indicators. Indicators will also be evaluated in ongoing OP R&DI evaluation reports delivered by external providers (see Art. 48 of the Council Regulation (EC) No.1083/2006).

The evaluation of the progress in accomplishing specific objectives of the programme will be regularly observed by the Monitoring Committee that will also propose, in cooperation with the Managing Authority and in case of need, measures aimed at proper fulfilling the Operational Programme objectives (for more details refer to Chapter 4.5.1 Monitoring Committee).

Futher information on monitoring and evaluation is included in chapters 4.7 and 4.8.

Specific set-up of indicators

Indicators on the level of the programme and priority axis have been selected so that they would correspond to the character of the goals defined in the NSRF.

The **target values** of all indicators (as well as the indicators themselves) were determined on the basis of the qualified estimate while using number of reference points (national and EU statistics, similar projects and activities in internationally renown workplaces ERA) and discussed with the members of the workgroup Strategy.

The **source of data** for **context and programme indicators** (tables 3.7.1-1-3.7.1-2) will come from the Czech statistical office, University registers, EIS and also from the “Register of Information of R&D results” (RIV). RIV is one of the parts of the Czech R&D Information System. The R&D Information System is an information system of the public administration for collecting, processing, publication and utilization of information about the research and development supported by public budget of the Czech Republic. The RIV is a database that serves to collect information about results of research projects and R&D programmes supported by different state and other public budgets, according to the R&D Act (No. 130/2002 Coll.). The data for RIV are provided by public institutions (different ministries and other state offices with the responsibility for a state R&D long-term intention financial aid and/or R&D project financial aid, the Grant Agency of the Czech Republic, the Academy of Science of the Czech Republic and local authorities / territorial self-government) providing institutional or targeted support for R&D activities. The content of the RIV, the way of handing the data, the integration of the data into the R&D Information System database, the processing of the data and the way of data publication are determined by the R&D Act (No. 130/2002 Coll.) together with “The Regulation of the Czech government (No. 267/2002 Coll.)

about the R&D Information System", by other legislation and by The Standard Operating Procedure Manual of the R&D Information System.

The data in the RIV include: type of the result (e.g. publications, patents, prototypes, pilot plants, certified technologies, new species etc.), data about the submitter of the result, and specifications about the result (according to the type of the result). The administrator of the RIV is the Council for Research and Development.

A new system of financing the R&D institutions is being prepared at the moment (2008) and is codified in a "Reform of the System of Research, Development and Innovation in the Czech Republic".One of the key proposed reform steps concerns the reform of institutional funding provided to research organisation from public budget. After the Reform this type of funding will be provided to the research organizations according to their results of research (collected in the RIV) stemming from their R&D activities during past predecessing 5 years.

Indicators of **priority axes** will be monitored in the OP R&DI information system, i.e. on the basis of data provided by beneficiaries. A request for this data from beneficiaries will be integrated in the Decision/Agreement pursuant to Act no. 218/2000 Coll. And , as amended and to Act no. 130/2000 Coll., as amended; . The tables of indicators for priority axes of the OP R&DI are shown in the chapter 3.7.3 (3.7.3-1 to 3.7.3-5).

An important comment needs to be made in relation to the **baseline values** of the indicators. The OP R&DI MA paid an attention to defining the baseline values of the indicators. However, where the baseline figure equals 0, it is either for the reason of a lack of source data and thus the impossibility to define it (such as the indicator 11.05.00[74]) or because the figures will be counted out of the results of the supported projects (all other indicators with the baseline figure 0). This follows from the fact that the planned interventions from the OP R&DI are expected to create a completely new quality in the Czech R&D environment. The results of PA 1 and PA 2 (with direct and indirect support from the results of PA3 and PA4, the outcome of which will represent also a new quality in the Czech R&D system) will be R&D centres - European Centres of Excellences, national infrastructures or Regional R&D centres – all defined by specific parameters, newly built or significantly improved so that qualitative change will be achieved, not existing in the Czech R&D system yet. For this reason the baseline values of the indicators measuring effects of interventions in these fields must equal 0, as no such centres function yet. The effect of the interventions from the OP will thus represent a formation of qualitatively completely new R&D institutional environment in the Czech Republic. With the use of these indicators a net contribution of the Structural Funds interventions of the OP R&DI to creating such new quality in the Convergence regions will thus be measured.

All indicators have their exact definitions which will be included in the implementation documentation, communicated to the monitoring committee and to project managers. In order to maintain the clarity of the indicators, some indicative definitions are included in the following text (or in footnotes).

[74] At the moment of defining the indicators, the system of the RIV did not allow the division of data between the Converegence and other regions within the Czech Republic. This function will be enabled.

3.7.1 Indicators of kontext

Indicators of context provide measurable information on social-economic situation of the environment in which the objectives of the OP R&DI are being fulfilled. Indicators of context express tendencies of major indicators and comparison of the Czech Republic position in the area of the R&DI with the EU averages. The target values are in line with the values stipulated on the national level within the NSRF. For the baseline the data from 2005 are used in order to comply with the baseline data used for the NSRF which, in some cases, complement those in the OP.

Table 3.7.1–1: Context level of the OP R&DI indicators

Name	Type	Indicator Code	Indicator	Measure Unit	Initial Data (2005)	Target (2015)	Source	Periodicity monitoring
Social and economical situation	Context	11.05.00	Increase of total number of recognised R&D results for all work places in Convergence regions (includes impacted and not impacted publications, patents, technologies and other recognized results according to the methodology of the R&D council)	Number	0	8,000	R&DI OP monitoring systems / RIV[75]	annually
		11.04.00 Lisbon	Total expenditure on R&D as a share of GDP	%	1.42	2.2	CSO	annually
		14.01.00 / 14.01.02	Total number of employees in R&D per 1 000 employees in national economy (and from that women)	Recalculated work loads (FTE)	9.1 (5.1)	10.8 (6.3)	CSO	annually
		13.10.00	Summary Innovation Index (SII)	Value	0.26	0.36	EIS	annually

3.7.2 Programme Indicators

Indicators of program (type of impact) provide measurable information on effects of the support within the OP R&DI and quantify impacts of the program above the scope of immediate effects.

[75] See description of RIV system in the chapter 3.7

Table 3.7.2–1: OP R&DI indicators on programme level

Name	Type	Indicator code	Indicator	Measure unit	Initial data (2005)	Target value (2015)	Source
Global objective	Impact	11.05.01	Increase of total number of recognised R&D results for supported work places [76]	Number	0	2 000	Monitoring system of the OP R&DI / RIV[77]
		14.05.10	Increase of number of graduates from doctor studies in convergence regions	Number	1000	1 700	OP monitoring system / University Registers
		11.03.00 / 11.03.02 Core 6	Number of newly created working positions in R&D (employees in R&D) in all supported centres (and women from that) [78]	Number	0	2500/840	Monitoring system of the OP R&DI

3.7.3 Indicators per priority axes

For purposes of monitoring and evaluating, indicators of results and outputs (Refer to Table 3.7.3-1 to 3.7.3.-4) are set up for priority axes 1-4. These indicators express quantification of the direct and immediate effect of the support on users (result type) and information on effects of single support domains within the program (output type).

The indicators of the PA 1 were defined based on the definition and parameters of the future Centres of excellence and unique R&D infrastructure, in accordance with the objectives of the strategy of the OP R&DI. Centres, supported in the PA 1 in order to be defined as **European Centres of Excellence,** will have to be a research institution (or a clearly defined part of it) of a critical size, with own research and educational programme, connecting **research, education** and **innovation**. In order to achieve the objective, the centres of excellence will have to comply with following indicative parameters (reflected in some indicators included in table 3.7.3 – 1, however others will be defined as project indicators):

- Number of successfully accomplished PhD graduates per year per researcher
- Cooperation with application sphere (share of contract research out of the total budget, number of cooperation projects) per year

[76] This indicator is measurable as number of impacted and not impacted publications, patents, technologies and other recognized results, according to the methodology of the Research and Development Council.

[77] See description of the RIV system in the chatper 3.7

[78] This indicator will be measured as the sum of all newly created working positions in R&D in all supported centers – both Centers of Excellence and Regional R&D centers.

- Competitive R&D funding (share of competitive R&D funding from international and national sources out of total budget) per year
- "Codified" research results (number of patents , impacted articles and publications, share of patents and publications produced jointly with international partners etc...) per year per researcher

Some of the centres supported in the PA 1 are also expected to be equipped with **unique research infrastructure.** This is defined by the following parameters:

- Unique in the Czech Republic (in the given quality),
- The purchase and operation is normally beyond the means of a single research entity in the Czech Republic
- Open access / availability of its capacity to external users (defined in terms of a share of external users)

The indicators of the PA 2 were defined based on the definition and parameters of the future regional R&D centres, in accordance with the objectives of the strategy of the OP R&DI. Centres, supported in the PA2 will be represented by **R&D workplaces, thematically specialized,** focusing on **research** and **cooperation with the application sphere** and will have to comply with following indicative parameters (reflected in indicators in the table 3.7.3. – 2, however, others will be defined as project indicators):

- Number of successfully accomplished MA and PhD graduates per year per researcher
- Cooperation with application sphere (share of contract research out of the total budget, number of cooperation projects) per year
- "Codified" research results (number of patents and impacted publications) per year per researcher

The actual level of the parameters that need to be met in order to qualify as centres of excellence and the regional R&D centres, is highly field-specific. The specification of the parameters will therefore be part of the performance contract negotiated on an individual basis between the beneficiary and the MA, using other comparable research entities from abroad as a benchmark.

Priority axis 1 – European Centres of Excellence

Table 3.7.3–1: Indicators of results and outputs of Priority axis 1 – European Centres of Excellence

Type	Indicator code	Indicator	Measure unit	Initial value	Target value (2015)	Source
Output	11.06.00	Number of supported R&D projects to support the initial phase of the centres (start-up grants)	Number	0	5	Monitoring system of the OP R&DI
	11.08.00	Centres equipped with *unique R&D infrastructure* of national significance	Number	0	3	Monitoring system of the OP R&DI
	11.05.11	Reconstructed, extended and newly built capacities	Sq. m.	0	60 000	Monitoring system of the OP R&DI
Result	11.07.00	Number of *Centres of excellence*	Number	0	5	Monitoring system of the OP R&DI
	11.08.10	Number of research personnel using created infrastructure	Number / year	0	2500	Monitoring system of the OP R&DI
	11.08.20	Number of students of master and doctor studies who use the created infrastructure	Number / year	0	500	Monitoring system of the OP R&DI
	11.07.10	Number of cooperation projects of application sphere with centres of excellence per year[79]	Number / year	0	30	Monitoring system of the OP R&DI
	11.08.30	Capacity share on new infrastructures used by other subjects[80]	%		30 %	Monitoring system of the OP R&DI
	11.03.00 11.03.02 Core 6	Number of newly created work positions (gross) in R&D (employees of R&D) in supported Centres of Excellence centres (from that women)[81]	Number (FTE)	0	1 000 (340)	Monitoring system of the OP R&DI

[79] This indicator is in its content very close to the Core indicator 5 (number of cooperation projects enterprises – research institutions), however narrowed in its definition (to Centres of excellence and application sphere).

[80] This indicator will be measured on the basis of time-sheets of the working time of given equipment/laboratory etc., divided by internal / external users. The proportion of time used by "external subjects" will be the result value of this indicator as a measure of contribution to the concentration of R&D activities in the Czech Republic, compying with the parameters of the Centre of Excellence.

81 Created jobs are defined as directly created jobs brutto, converted to the FTE. The method of calculating the number of jobs created will be described in more detail in the implementation documentation.

Priority axis 2 – Regional R&D centres

Table 3.7.3–2: Indicators of results and outputs of Priority axis 2 – Regional R&D centres

Type	Indicator code	Indicator	Measure unit	Initial value	Target value (2015)	Source
Output	11.10.00	Number of equipped *regional R&D centres*	Number	0	20	Monitoring system of the OP R&DI
	11.06.00	Number of supported R&D projects (start-up grants) realized in supported centres	Number	0	20	Monitoring system of the OP R&DI
	11.05.11	Reconstructed, extended and newly built capacities	Sq. m.	0	60 000	Monitoring system of the OP R&DI
Result	11.11.00	Number of *regional R&D centres*	Number	0	20	Monitoring system of the OP R&DI
	11.07.20	Number of cooperation projects of application sphere with regional R&D centres per year[82]	Number / year	0	100	Monitoring system of the OP R&DI
	11.08.15	Number of students of all degrees who use the created infrastructure / involved in activities of the centre	Number / year	0	400	Monitoring system of the OP R&DI
	11.03.00 11.03.02 Core 6	Number of newly created work positions (gross) in R&D (employees of R&D) in supported Regional R&D centres (from that women)[83]	Number (FTE)	0	1 500 (500)	Monitoring system of the OP R&DI

[82] This indicator is in its content very close to the Core indicator 5 (number of cooperation projects enterprises – research institutions), however narrowed in its definition (to Regonal R&D centers and application sphere).

[83] Created jobs are defined as directly created jobs brutto, converted to the FTE. The method of calculating the number of jobs created will be described in more detail in the implementation documentation..

Priority axis 3 – Commercialisation and popularisation of R&D

Table 3.7.3–3: Indicators of results and outputs of Priority axis 3 – Commercialisation and popularisation of R&D

Type	Indicator code	Indicator	Measure unit	Initial value	Target value	Source
Output	13.20.00	Number of supported projects and mechanisms for commercialization	Number	0	20	Monitoring system of the OP R&DI
	13.21.00	Number of visitors centres projects and science learning centres for popularization of R&D	Number	0	2	Monitoring system of the OP R&DI
	13.22.00	Number of supported information centres projects and centres for improving accessibility of information for R&D	Number	0	5	Monitoring system of the OP R&DI
Result	13.20.10	Number of subjects using the service for commercialization support per year[84]	Number / year	0	500	Monitoring system of the OP R&DI
	13.21.10	Number of visitors in supported visitors centres and science learning centres per year	Number / year	0	30 000	Monitoring system of the OP R&DI
	13.22.10	Number of mediated information sources (including databases and metasources) for R&D	Number	0	50	Monitoring system of the OP R&DI
	13.22.11	Utilization rate of mediated information sources for R&D [85]	%	0	50 %	Monitoring system of the OP R&DI

[84] E.g. enterprises or persons (research workers or students), that enter into contact with the centre for technology transfer and that confirm the received services provided by the centre in at least minimum of 8 working hours during one year.

[85] Such as number of actually user accesses carried out to the given information source (such as databases and/or metasources) in relation to the overall capacity of user accesses.

Priority axis 4 – Infrastructure for university education related to research

Table 3.7.3–4: Indicators of results and outputs of Priority axis 4 – Infrastructure for university education related to research

Type	Indicator code	Indicator	Measure unit	Initial value	Target value	Source
Output	11.05.10	Number of supported projects - R&D infrastructure	Number	0	20	Monitoring system of the OP R&DI
	11.05.11.	Reconstructed and newly built capacities	m^2	0	70 000	Monitoring system of the OP R&DI
Result	11.05.20 11.05.21	Number of students benefiting from new / reconstructed infrastructure / from that PhD students	Number	0	50 000/ 5 000	Monitoring system of the OP R&DI

Priority axix 5 – Technical assistance

Table 3.7.3–5: Indicators of results and outputs of Priority axix 5 – Technical assistance

Type	Indicator code	Indicator	Measure unit	Initial value	Target value	Source
Output	48.05.00	Number of newly created products (studies, reports realization)	Number	1	20	MA of the OP R&DI
	48.03.00	Number of comitees meetings (monitoring, consultive, managing)	Number	0	65	MA of the OP R&DI
	48.11.00	Number of realized trainings, seminars etc.	Number	0	50	MA of the OP R&DI

4 OP R&DI Implementation

In accordance with Council Regulation (EC) No. 1083/2006 and in connection with National Development Plan and National Strategic Reference Framework of the Czech Republic 2007–2013 and relevant national regulations, this chapter shall define basic principles for realisation of the Operational Programme Research and Development for Innovation (hereinafter referred to as OP R&DI).

The chapter primarily determines general framework for management of the OP R&DI, financial flows, checks, monitoring, promotion and publicity and operational programme evaluation.

Detailed description of all relations, responsibilities and activities of all involved bodies shall be given in the Implementation document for OP R&DI and other programme documentation.

4.1 Management and implementation

Implementation of the Operational Programme shall take place at several levels. Correct and efficient management of the OP R&DI shall be responsibility of the Managing Authority supervised by the Monitoring Committee.

- In accordance with Article 59, Par. 1a of Council Regulation (EC) No. 1083/2006 the Czech Republic Government Resolution No. 175 of February 22, 2006 authorised the Ministry of Education, Youth and Sports to act as the OP R&DI Managing Authority;

  In accordance with Article 63 of Council Regulation (EC) No.1083/2006 a Monitoring Committee of the OP R&DI was established. The Monitoring Committee was established on the principle of partnership and equal opportunities.

Paying and Certifying Authority (hereinafter referred to as PCA) mainly performs the following activities: certification of expenditure released and preparation of a certificate of expenditure, which is sent to the Commission, along with a request for payment; for the certification purposes PCA verifies proper functioning of the Operational Programme Management and Control System at all levels of implementation and transfers finance from the SF to receipt accounts of the State Budget chapters based on summary applications submitted to the MA. The PCA function is performed by the Ministry of Finance National Fund.

- In accordance with Article 59, Par. 1b of Council Regulation (EC) No. 1083/2006 the Czech Republic Government Resolution No. 198 of February 22, 2006. authorised the Ministry of Finance to act as the Paying and Certifying Authority. The PCA function is performed by the Ministry of Finance National Fund department.

The Audit Authority responsible for checking efficient functioning of the managing and control system shall be the Ministry of Finance Audit Authority Department.

- In accordance with Article 59, Par. 1c of Council Regulation (EC) No. 1083/2006 the Czech Republic Government Resolution No. 198 of February 22, 2006 authorised the Ministry of Finance to act as the Audit Authority

In accordance with the Czech Republic Government Resolution No. 198 of February 22, 2006 Ministry for Regional Development is determined to be the National Coordination Authority;

In order to ensure proper co-ordination mechanisms for management and implementation of the Operational Programme Enterprise and Innovation and Operational Programme Research and

Development for Innovation a Competitive Czech Economy Coordination Committee under the NSRF Monitoring Committee was established in compliance with the National Strategic Reference Framework of the Czech Republic. Coordination of the two operational programmes is referred to in the chapter 2.12.2.

4.1.1 Managing Authority

Pursuant to the Government Resolution No. 175 of February 22, 2006, the Ministry of Education, Youth and Sports was appointed the OP R&DI Managing Authority.

The minister of MEYS entrusted the Section of the EU Operational Programmes management with perfoming the function of the OP R&DI Managing Authority.

Managing Authority

OP R&DI Managing Authority	Ministry of Education, Youth and Sports
Department authorised to act as the Managing Authority	Section of the EU Operational Programmes management

Responsibilities of the Managing Authority are defined pursuant to Article 60 of Council Regulation (EC) No. 1083/2006.

The OP R&DI Managing Authority shall primarily:

a) be liable for the preparation and discussion of OP R&DI and its submission to the European Commission, ensuring the objectives and priority axes of the OP R&DI with other operational programmes, National Development Plan of the Czech Republic (NDP), National Strategic Reference Framework of the Czech Republic (NSRF) and the Community Strategic Guidelines (CSG) and elaborating a preliminary expert evaluation of the programme;

b) ensure that operations for financing are selected as per criteria for the OP R&DI and remain in line with the valid Community regulations and the national legislature throughout the period of implementation;

c) check the delivery of co-financed products and services, the actual release of expenditure resources on operations reported by the beneficiaries, and their compliance with the Community and national regulations in accordance with Article 13 of the Implementation Regulation;

d) ensure the existence of a system for recording and storing accounting records in computerised form for each operation financed under the operational programme, and for collection of data on execution of operations required for financial management, monitoring, validation, auditing and evaluation;

e) ensure that beneficiaries and other subjects involved in the execution of operations maintain either a separate accounting system, or a corresponding accounting code for all transactions connected with an operation without prejudice to Act on accounting No. 563/1991 Coll., as amended;

f) ensure that evaluation of operational programmes pursuant to Article 48, Par. 3 of Council Regulation (EC) No. 1083/2006 is carried out in compliance with Article 47;

g) stipulate procedures to ensure that all the documents related to expenditures and audits necessary for making a corresponding instrument available for audit aimed at financial flows are stored in compliance with Article 90 of Council Regulation (EC) No. 1083/2006;

h) ensure that for the purposes of certification the PCA receive all necessary information on procedures and verifications performed in connection with expenditures;

i) manage work of the Monitoring Committee and provide it with documents allowing the quality of the operational programme implementation to be monitored with respect to its specific objectives;

j) elaborate annual and final reports on implementation and, following the Monitoring Committee's approval, submit them to the Commission handing over a copy to the Audit Authority;

k) ensure compliance with requirements for providing information and promotion as stipulated in Article 69 of Council Regulation (EC) No.1083/2006;

l) provide the European Commission with information allowing the Commission to assess major projects.

m) ensure that the Audit Authority receives documents and records required for the purpose of analytical and reporting activities; on request, provide the Audit Authority with required documents and records for analytical and reporting purposes, especially with data not maintained in the integrated information system;

n) be liable for issuing Decision/Agreement on support provision

o) be liable for recording and monitoring all inconsistencies and their verification;

p) be liable for submitting estimates related to applications for payment for the current and the following fiscal years to the Paying and Certifying Authority by the 31 March of the relevant fiscal year (in compliance with Article 76, Par. 3 of Council Regulation (EC) No. 1083/2006 and the methodology of financial flows).

Implementation structure within the Managing Authority

In accordance with Council Reulation (EC) No.1083/2006 and Commission Regulation (EC) No.1828/2006 all formal activities of the potential intermediate body will remain on the MEYS itself. There will be no external intermediate body acting on behalf of the MA (such as CzechInvest). **All activities of the MA will be realized in-house** as the MA considers this arrangement as the most efficient alternative. This arrangement will imply a simple implementation structure where the MA will be in direct contact with the beneficiaries. The administration capacity within the MEYS will be increased in all levels of the implementation structure adequately according to the needs of the Managing Authority. The MA will use the resources of technical assistance to ensure that the demands of the implementation structure are fulfilled.

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The function of the coordination of all the Managing Authorities responsibilities will be performed by the of the **OP R&DI Management Department** (a department within the Section of the EU Operational Programmes management). **Special units** will be established within this department so that the agenda of the implementation (including above all methodological support, preparing implementing manuals, monitoring and evaluation, financial management of the programme etc.) is separated from the overall coordination activities of the programme (including overall strategic management or communication and publicity). Furthermore, a particular unit will comprise a task force for major projects with project managers assigned to each major project. Other special units will be created according to the needs of the Managing Authority.

Following tasks will be performed by the

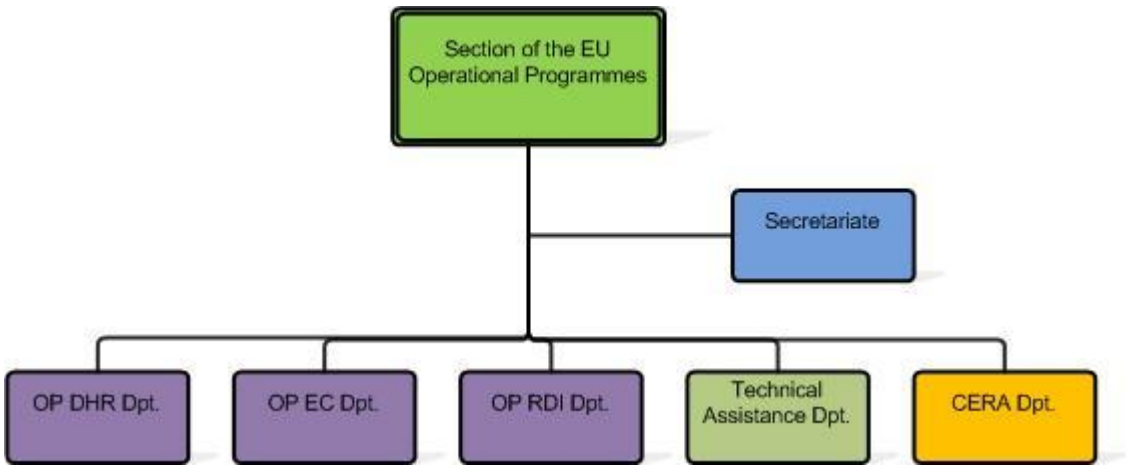
Czech Education and Research Agency Department (CERA) – another specialized department of the Section of the EU Operational Programmes management created for the administration of both the OP R&DI and the OP EC:

1. cooperation in preparing the Implementation Document and other implementing manuals and regulations for effective and correct implementation of the programme;
2. the receipt of project applications and organising calls for submitting projects and securing necessary information service for applicants;
3. assessment of completeness and formalities of submitted project applications;
4. organisation of the cooperation in the evaluation of the project applications;
5. producing documents for the issuing the decision on financing a project and their possible amendments including assessment of the amendments;
6. control of the implementation process of individual projects with the aim of verifying that co-financed products and services have been delivered and that requested expenditures have been spent in compliance with the terms of the Decision/Agreement;
7. verification that all applications for payments submitted by a beneficiary are based on reliable accounting documentation and the system of document filing complies with an expedient *audit trail*;
8. revision of payment applications submitted by beneficiaries (in the first place verification of compliance with prescribed indicators and financial plan of the project, compliance with EC policies, assessment of eligibility of expenditures etc.) and ensuring that only eligible spent expenditures shall be submitted;
9. processing data about expenditures related to projects within the programme as basis for certification;
10. communication with support beneficiaries necessary for effective implementation of projects;
11. storing electronic data for monitoring and evaluation of programme implementation;
12. preparation of data for annual and final reports on the programme;
13. cooperation in promotion and publicity of the programme.

Furthermore, a new Department "Technical Assistance" was created within the Section of the EU Operational Programmes management which serves to both OP R&DI and OP EC to ensure the realization of PA 5 projects.

The organisational structure[86] of the Section of the EU Operational Programmes management is depicted in the following scheme.

[86] Please note that the organizational structure may be subject to changes according to the needs of the MA / MEYS if these needs arise during the implementation period of the OP R&DI.



4.1.2 Beneficiaries of support

Beneficiaries of support for realization of projects under the OP R&DI are legal entities regardless their legal status whose major activity is research or development and the distribution of their results by means of teaching, publishing or transferring technologies; the whole profit gained is reinvested in these activities or in distribution of their results or in teaching (universities, research institutes, public research institutions, non-profit organisations and legal entities established by them etc.). At the same time, they meet conditions stipulated by the law and the conditions of the "Community Framework for State Aid to Research and Development and Innovation" (2006/C 323/01); hereinafter referred to as "**research organisation**"[87]. Beneficiaries of support shall also be associations of the aforementioned legal entities.

In the course of implementation of the project's implementation Beneficiaries shall be bound by both rules stipulating conditions for eligibility of costs and by documents, guidilines, manuals and other conditions stipulated by the OP R&DI Managing Authority.

Beneficiaries shall introduce a system of internal control and shall maintain this system in the course of the project's implementation in line with the financial management rules.

Beneficiaries' duties will be specified in detail in the guidelines for beneficiaries. Beneficiaries shall primarily:

a) ensure a proper realization of the project as per Resolution on Financing and conditions for providing the support;

b) ensure effective management of the project and its risks in accordance with issued methodical guidelines and standards for project management;

[87] According to the definition of the Community Framework for State Aid for Research & Development and Innovation (2006/C 323/01), Article 2.2., Letter d): "The research organization shall mean a specific subject, e.g. a university or research institute, regardless of the legal form (subject established pursuant to the public or private law) or the type of financing, the main purpose of which is to realize basic research, applied research or experimental development and spread their results by means of education, publication or transfer of technologies; the whole profit shall be reinvested into such activities or spreading of their results or transfer of technologies; the enterprises that can influence such a subject as partners or members shall have no preferential access to research capacities of such a subject or results of the research created by such a subject

c) ensure preparation of the project specification documentation, announce tenders (public procurement) in accordance with relevant regulations and conclude agreements with selected suppliers;

d) verify invoices and ensure that they are paid to suppliers;

e) maintain a separate accounting system for the project or a corresponding accounting code for all the transactions related to the project;

f) ensure introducing and maintaining of an adequate internal control system, including financial control throughout the duration of the project implementation;

g) submit applications for payments using standard forms while demonstrating that the stated costs correspond to the projects' terms and conditions as contained in the Decision/Agreement; all payment claims are to be documented by confirmed copies of invoices or, if not possible, by accounting documents of an equal probative value;

h) maintain project documentation on the progress of the project and ensure availability of this documentation for purposes of control performed by authorised persons, and allow on-site performance of the control or audit;

i) ensure permanent availability of project's documents for purposes of control performed by authorised persons, co-operate in performance of controls and audits and allow the controlling persons to access relevant premises and properties;

j) report immediately all substantial changes and circumstances that have an influence on or are connected with the fulfilment of the obligation under the Decision/Agreements[88];

k) ensure that an independent financial audit is carried out where required by the conditions for providing the support;

l) fulfil obligations connected with monitoring, i.e. particularly the submission of regular quarterly reports and other required reports on project realization;

m) ensure project publicity.

4.1.3 Paying and Certifying Authority

For the implementation of the support from the Structural Funds (SF) and the Cohesion Fund (CF), a single Certification Authority is established ensuring activities pursuant to Article 61 of the Council Regulation (EC) No. 1083/2006. Within the Czech Republic, the function of the Certification Authority is performed by the Paying and Certifying Authority (PCA). By the decision of the Minister of Finance issued according to Government Resolution No. 198 of February 22 2006, the Ministry of Finance National Fund Department is authorised to perform the PCA function for the SF and CF.

The PCA shall not delegate any part of its competences to any intermediary subject.

The PCA tasks are primarily specified in Council Regulation (EC) No. 1083/2006 and "Methodology of Financial Flows and Control of Programmes Co-financed from the Structural Funds, the Cohesion Fund and the European Fishery Fund for the 2007-2013 Programming Period", as amended.

The PCA shall primarily:

a) manage resources provided from the EU budget in accounts opened at the CNB;

b) elaborate and submit applications for interim payments and for the final balance payment to the Commission for all programmes based on expenditure statements produced by the Managing Authority;
c) manage and coordinate the flows of financial resources provided from the EU budget and ensure smoothness of the flow of financial resources from the PCA to beneficiaries;
d) accept payments from the Commission and, based on the performed control of correctness of summary applications submitted by the Managing Authority, transfer resources from the EU budget to the receipt accounts of administrators of single State Budget chapters within 5 working days from receiving the summary application;
e) keep records on accounting cases for the PCA resources area within the Ministry of Finance accounting unit;
f) maintain a system of financial reporting for the PCA resources;
g) certify expenditure released and prepare a certificate of expenditure, which it shall send to the Commission, along with a request for an interim payment or the final balance payment (it sends copies of the request and the certificate in writing and electronically to the Audit Authority), and, for these purposes, it shall verify proper functioning of the Operational Programme Management and Control System at all levels of implementation, including on-site controls;
h) evaluate drawing up of allocations of the EU budget resources, or observe fulfilling of the N+2(N+3) rule;
i) refund expenditure paid out without authorisation, including interest, to the Commission, unless a decision is made in accordance with the Community rules on reallocation of such expenditure within the scope of the operational programme in which the unauthorised utilization of resources occurred;
j) elaborate and update methodological documents for performing certification of the expenditure from the EU budget, for financial flows and controlling the resources from the EU budget;
k) refund unused resources to the European Commission;
l) submit, based on estimates drawn up by managing authorities, updated estimates related to payment request (expenditure perspectives) to the European Commission for the current and the following budget years by 30 April every year;
m) ensure the concept and methodology of developing the VIOLA SF/CF IS for the performance of the PCA's function, including data communication with the MSC2007;
n) submit to the Audit Authority manuals on the PCA procedures;
o) monitor manuals of work procedures used by subjects involved in the SF and CF implementation and verify the accordance of the activities and procedures of managing authorities and intermediary subjects with the CR and EU legal regulations;
p) cooperate with the Commission in verifying mid-term and ex-post additionality.

4.1.4 The MEYS Financial Department

The function of the Financial Department for the Operational Programme Research and Development for Innovation as defined in Methodology of Financial Flows and Control of Programmes Co-financed from the Structural Funds, the Cohesion Fund and the European Fishery Fund for the 2007-2013 programme period, issued by the Ministry of Finance, is performed by the Department of General Accountant and Accounting Methodology, which is a part of the MEYS Section for Financing of Education Chapter. The Department of General Accountant and Accounting Methodology was entrusted to act as a Financial Department by Order No. 13 of the Minister of Education, Youth and Sports of April 3, 2007, effective as of July 1, 2007, in order to guarantee the condition requiring separation of payment, management and control functions.

In terms of function the Financial Department is fully independent of the OP R&DI Managing Authority and in connection with drawing finance from EU structural funds the Department of General Accountant and Accounting Methodology shall primarily fulfil the following tasks.

The Financial Department shall primarily perform the following activities arising out of the Methodology of Financial Flows:

a) ensure transfers resources from the state budget sources for pre-financing the expenditure to be covered from the EU budget sources, and the state budget resources designated for international financing;
b) keep accurate and complete records on transfers resources from the state budget sources;
c) provide the Managing Authority with requested data on performed transfers resources as per its records (primarily data on the recipient, amounts of resources transferred, date of payment remitted to the recipient) electronically by means of the monitoring System;
d) conduct accounting procedures in accordance with national legal regulations; it keeps records on all the operations related to administration of resources from the structural funds in compliance with guidelines given in the Methodology of Financial Flows, and while performing single activities connected with transfers of resources to beneficiaries in accordance with internal written work procedures (manuals).

4.1.5 Audit Authority

The Audit Authority (hereinafter referred to as "AA") is established pursuant to Article 59, Par. 1 c) of Council Regulation (EC) No. 1083/2006 and in accordance with Article 62 thereof. Government Resolution No. 198 of February 22, 2006 entrusted the Ministry of Finance with performing the function of the Audit Authority. Pursuant to the Decision made by the Minister of Finance, execution of the function shall be intrusted to the Central Harmonisation Unit for Financial Control Department (recently renamed as MF Audit Authority), is functionally independent of the Managing Authority and on the PCA.

Pursuant to Government Resolution No. 760 of July 11, 2007 on securing performance of functions of AA and AA authorised subjects in compliance with Article 62, para. 3 of Council Regulation (EC) No. 1083/2006 and in accordance with the Order No. 31 of the Minister of Education, Youth and Sports of August 31, 2007 the Department of Internal Audit and Control shall be authorised to act as the Authorised Audit Subject (AAS) for OP R&DI. Detailed description of activities performed by AA and AAS is given in chapter 4.4 Control and Audit System.

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4.1.6 Ministry for Regional Development – National Coordination Authority (NCA)

The Czech Republic Government Resolution No. 198 of February 22, 2006 established the National Coordination Authority and entrusted the Ministry for Regional Development with its function execution.

The NCA as the central coordinator forms an integrated framework for implementing operational programmes by managing bodies. It directs managing bodies in order to ensure effectiveness and legal validity in operational programmes management. The National Coordination Authority of NSRF shall primarily:

a) issue instructions and methodologies in the areas of management, evaluations, data collection and electronic exchange thereof, establishing monitoring committees, it shall

check and supervise all activities falling under duties of managing bodies of operational programmes;

b) monitor implementation of the NSRF and operational programmes and suggest system solutions in case the implementation is slow, there are obstacles hampering the implementation, or in case of breaching duties arising out of regulations;

c) ensure compatibility of the NSRF and the OP with national policies and the EU priorities and compliance of interventions with the national and Community legislation especially in the area of economic competition, public procurement, environmental protection, eliminating disparities, equal opportunities and non-discrimination principle, and shall suggest suitable instruments for efficient implementation thereof;

d) stipulate the framework for the NSRF monitoring committee functioning;

e) elaborate, in cooperation with the PCA, rules for the expenditure eligibility;

f) coordinate and prepare reports to be submitted to the Commission;

g) ensure elaboration of other reports, including the NPR, related to the completion of financing of the Lisbon Strategy from the SF and CF;

h) submit strategic reports on progress in terms of Article 29 of the Council Regulation (EC) No. 1083/2006;

i) establish an integrated monitoring information system and ensure its functioning;

j) fulfil all tasks connected with providing general public with information on fulfilling policies of economic and social cohesion and ensure corresponding promotion; it shall ensure planning, realization and coordination of activities supporting general awareness in this area and shall coordinate activities of managing bodies in this area;

k) form the communication strategy at the national level to guarantee transparency and full awareness of granting aid from the SF and the CF with respect to the Lisbon Strategy;

l) ensure activity of the working group for evaluation, whose members, in addition to the national coordinator, are also representatives of managing bodies of operational programmes;

m) guarantee the information flow from the Commission to all managing bodies and back;

n) create conditions for evaluating the efficiency of controlling mechanisms;

o) supervise adherence to the rules for public support (and regional support) governed by relevant European and national regulations;

p) elaborate methodology for stipulation of indicators and for observing fulfillment thereof;

q) observe fulfilling of commitments on additionality and provide the Commission with information allowing verification as stated in Article 15 of the Council Regulation (EC) No. 1083/2006;

r) participate in annual proceedings of operational programmes managing bodies and the Commission as stated in Article 68 of the Council Regulation (EC) No. 1083/2006;

s) ensure that priorities in Par. 3 of Article 9 in the Council Regulation (EC) No. 1083/2006 will be taken into account in realising the NSRF operational programmes, and observe the progress in fulfilment thereof.

At the national level, the NCA is a mechanism for ensuring the broadest coordination with participation of bodies included in the implementation as well as of economic and social partners of Managing and Coordinating Committee (MCC.)

In accordance with its status, the MCC shall primarily:

- discuss and recommend financial and factual changes in approved operational programmes;
- discuss and approve suggestions and changes of procedural practices and rules for realization of the economic and social cohesion policy;
- approve and submit to the Government measures for improving the efficiency of the Czech Republic 2007-2013 NSRF and the OPs;
- discuss and approve suggestions for financial and factual changes in the Czech Republic 2007-2013 NSRF ensuing from decisions issued by the European Commission.

With regard to ensuring the programming coordination and the realization of operational programmes and related policies, the programming and the realization of co-financed actions and other financial instruments, the NCA organises regular proceedings of representatives of managing bodies during the programming and the realization of operational programmes.

Therefore, the following coordination committees (CC) were established under the MCC:

- Competitive Czech economy;
- Open, flexible and cohesive society;
- Attractive environment;
- Balanced territorial development.

The Competitive Czech Economy Coordination Commitee will be a platform for mutual consultations on selection criteria, perfecting interfaces, preparing calls and informing the OP R&DI, the OP EI and the OP PC applicants.

4.1.7 Project Selection

The Managing Authority shall be responsible for setting up the system for selecting projects in accordance with the OP R&DI objectives, or with objectives in single priority axes and support domains. For the purpose of project selection, the Managing Authority shall arrange for the elaboration of binding methodological guidelines.

The selection of projects to be financed shall proceed on the basis of selection criteria approved by the Monitoring Committee according to single support domains, or single OP R&DI Calls. Selection criteria shall be published in the Call along with other information and references to related documents for applicants aimed at making the subsequent project selection process transparent, objective and non-discriminating.

The submitted documents shall be first assessed in terms of formalities, then in terms of the project's feasibility (accordance with objectives of the support domain and the given Call), then in terms of sustainability and quality criteria that shall also include horizontal criteria.

For the purpose of project selection, the Managing Authority may appoint evaluation commiteeswith independent experts participating, who, in accordance with the methodical guidelines, shall evaluate the most suitable projects and recommend them for financing. It shall also be possible to use external evaluators for assessment. Final decision on granting the support shall be made by the body responsible for approving Decision/Agreement on granting the support, the MA of the OP R&DI.

Approving major projects to be realized within the R&DI shall be the responsibility of the European Commission (hereinafter referred also to as "Commission"). The Managing Authority shall be

responsible for submitting major project applications, including all information specified in Article 40 of the Coucil Regulation (EC) No. 1083/2006. Major projects the Managing Authority submits to the Commission shall be subject to a transparent system of selection on the basis of published selection criteria. In making decisions on major projects submitted, the Commission shall proceed in accordance with Article 41 of the Council Regulation (EC) No. 1083/2006. Prior to launching the programme implementation, the Managing Authority shall arrange for elaborating detailed guidelines for applicants submitting major projects where it shall specify information necessary for submitting a major project.

Approving an operational programme and approving financial support for individual projects are two separate processes, therefore a decision made by the European Commission on approving a programme shall not anticipate approving a co-financing for any single project.

Within the OP R&DI implementation preparation, as well as within the course of its realization (project selection, monitoring), the necessity for synergy between the OP R&DI and the OP EI shall be taken into account. Mechanisms for ensuring synergies are described in Chapter 2.12.2.

4.1.8 Financial flows

The main principle of using funds from the EU budget is a strict separation of management, payment and control line.

The system of financial flows is described in the Methodology of Financial Flows and Control of Programmes Co-financed from the SF/CF/EFF for the 2007-2013 Programming Period issued by the Ministry of Finance. The Ministry of Finance manages the funds provided by the European Commission for financing programmes of the Structural Funds and the European Union Cohesion Fund.

The European Commission will send the resources from the Structural Funds and the Cohesion Fund to the PCA account.

Within the PCA, the "Methodology of Financial Management and Payments" Department shall methodically manage financial resources of the Structural Funds and the Cohesion Fund and also realize transfers of the Structural Funds and the Cohesion Fund resources to the State Budget.

The system of financial flows of resources for the operational programmes shall be ensured through a financial flow via the State Budget. Pre-financing of OP R&DI expenditure eligible for financing from the EU budget and co-financing of projects from the State Budget may be done from the MEYS budget chapter. The resources from the Structural Funds and the Cohesion Fund shall be pre-financed for the beneficiaries on the basis of submitted applications from the State Budget. The beneficiaries' applications shall only be submitted in the CZK currency. After receiving the summary application, the PCA shall remit the resources from the Structural Funds and the Cohesion Fund to the State Budget chapter that provided the pre-financing of the resources from the Structural Funds and the Cohesion Fund.

Description of financial flows of structural funds and the Cohesion Fund

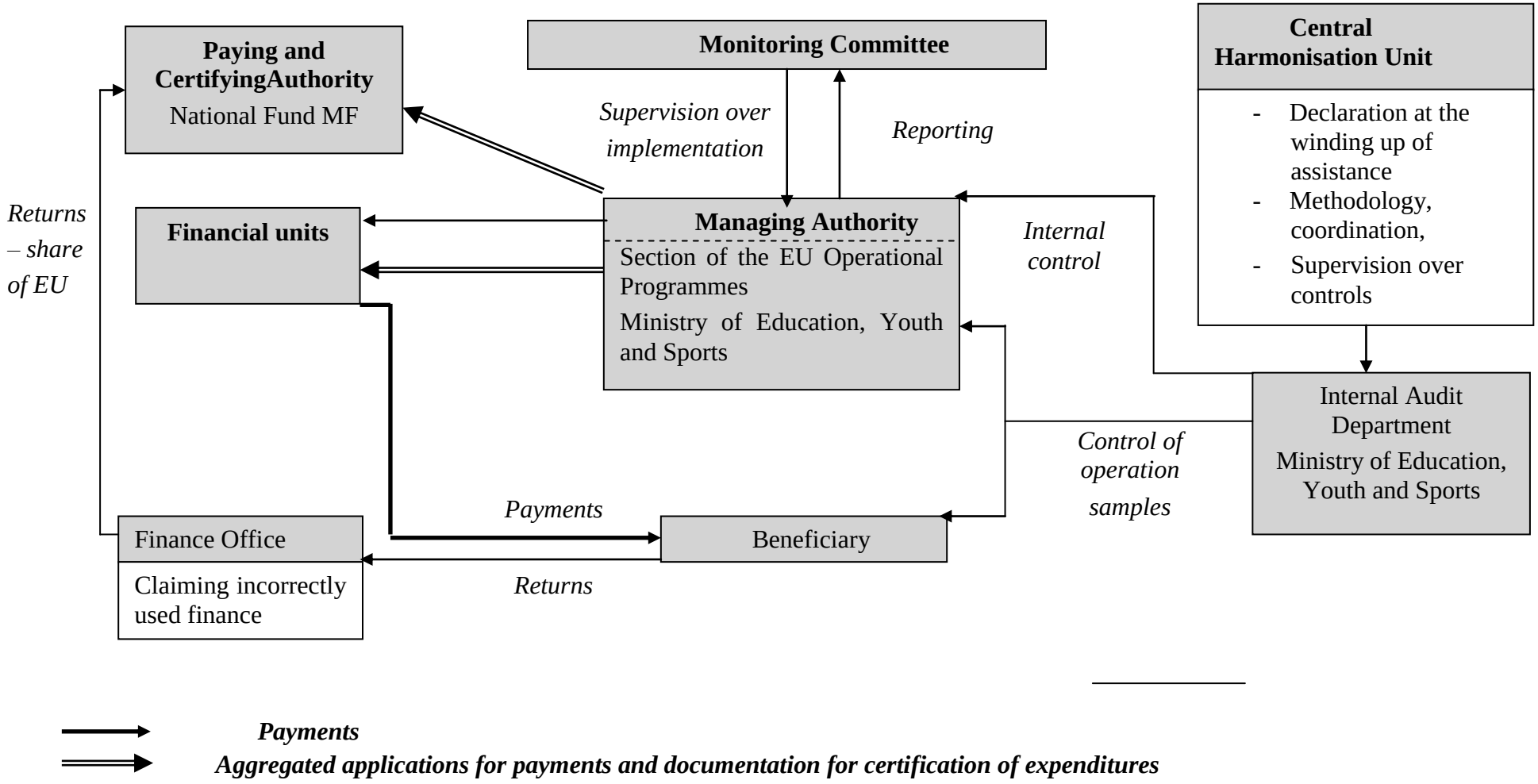
Payments to beneficiaries shall proceed as ex-post payments (reimbursement to beneficiaries of already made expenditures) or as ex-ante payments. Decision on the form of payments to the beneficiary within individual programmes is full responsibility of the Managing Authority upon the agreement with the State Budget chapter administrator.

1) Based on expenditures made or expected (ex-ante payments) [89], the beneficiary shall submit the application for reimbursement from the State Budget (corresponding to the

European and national shares); the application shall be submitted for control and approval to the Managing Authority

2) The Managing Authority shall approve the beneficiary's application and instruct the Financial Department (Department of General Accountant and Accounting Methodology) as to remit the payment to the beneficiary's account;
3) The Financial Department of the relevant budget chapter remits the payment form the State Budget to the beneficiary's account.
4) Based on funds provided from the State Budget, the Managing Authority shall issue a summary application for payment of finance from the structural funds and Cohesions Fund from the PCA account to the applicable chapter of the State Budget;
5) The PCA shall check the submitted summary application, place it on account (the decisive date for determination of the exchange rate for the CZK-EUR calculation shall be the date the accounting is performed by the PCA) and also transfer finance from the structural funds and the Cohesion Funds to the applicable chapter of the State Budget;
6) After the certification has been done, the PCA shall request the European Commission to credit due finance to the PCA account;
7) The Commission shall approve the application and credit the finance to the PCA account.

Scheme of financial flows of the Operational Programme Research and Development for Innovation



Payments

Aggregated applications for payments and documentation for certification of expenditures

This scheme (above) is only indicative; detailed characteristics of the relations between all the subjects is described in the text and will be further specified in the Operational Manual of the OP R&DI

4.2 Control and audit system

The Ministry of Finance, as the central administrative authority for financial control in accordance with relevant provisions of Act No. 2/1969 Coll., on establishment of ministries and other central public service bodies in the Czech Republic, as amended, methodologically manages, coordinates and ensures the execution of control and audit within the operational programme. Community and Czech legislation are the basis for issuing methodical guidelines consulted with applicable European Commission bodies.

4.2.1 Internal control system

All bodies involved in the implementation of the operational programme shall introduce a necessary managing and control system, in accordance with the national legislative, capable of timely identifying administrative, system or intentional faults and create conditions for preventing errors from occurring. It is necessary to separate distinctly the managing controls from the internal audit.

Managing control

The managing control is ensured by responsible senior managers and it forms a part of the internal management of all subjects involved in the implementation of the operational programme, in preparation of operations before their approval, in continuous observing the operations performed as far as to their final settlement and accounting, and subsequent verification of selected operations within evaluation of the results reached and the accuracy and correctness of the economy.

With respect to the principles of the effective management and control system during the programme implementation, it shall be ensured that:

a) all subjects involved in the management and control of the programme have clearly set specific functions both in the scope of the whole implementation system and in the scope of each subject separately;
b) the principle of separating payment, managing and control functions from each other among single subjects involved in the programme implementation as well as in the subjects themselves is adhered to;
c) unambiguous procedures are set for ensuring the expenditures reported within the programme are correct and eligible;
d) reliable accounting systems, monitoring systems, and financial reporting systems are implemented;
e) a system is implemented for reporting on the programme and project implementation, and monitoring;
f) measures are adopted for performing audits of functioning of the managing and control systems for all subjects participating in implementation of the OP R&DI;
g) systems are established and procedures set to ensure background data needed for audit (audit trail);
h) procedures are set for reporting on and monitoring of discrepancies and for enforcing unduly paid amounts;

For each level of programme management and implementation, an internal control system manual shall be elaborated in the form of controlled documentation, which shall contain a detailed description of workflow procedures for activities performed.

Control within responsibility of the Managing Authority (primary system)

Pursuant to Article 60 of Council Regulation (EC) No. 1083/2006 and the Article 13 of the Commission Regulation (EC) No. 1828/2006, the **Managing Authority** is responsible for management and implementation of the operational programme in accordance with the principle of duly financing management.

Detailed list of responsibilities of the Managing Authority is given in chapter 4.1.1.

Within twelve months from approval of the OP R&DI or before submission of the first application for continuous payment the Managing authority shall submit to the European Commission a description of management and control system related to organisation and procedures of the Managing Authority, PCA, AA and AAS.

Internal audit

The Internal Audit Department shall be functionally independent of and organisationally separate from managing and executive structures of the Managing Authority and shall be directly subordinated to public administration body head.

Internal audit shall assess and evaluate the reasonability and efficiency of management control, including checking for correctness of selected operations, which is to be performed within the public administration body by a functionally independent body or by a specifically authorised staff organisationally separate from management executive structures. Proposing recommendations for improvement of the internal audit system, for prevention or reduction of risks, for adopting measures for correction of insufficiencies found, and consulting activity shall also play a significant part.

Reports from internal audits regularly performed at all implementation levels shall be submitted to the relevant head of the public administration body, AA and the Managing Authority. Results of these audits shall be taken into account when performing audits pursuant to Article 62 of the Council Regulation (EC) No. 1083/2006.

The results of audits of control and internal systems in compliance with Article 73 of Council Regulation (EC) No. 1083/2006 shall be sent to the Commission via AA. The unified approach to audits at all the implementation levels and reporting the audit findings shall be the basis for risk management at the Managing Authority level.

Audit within the Audit Authority's responsibility (secondary and central system)

The **Audit Authority** is responsible for performing the audit in accordance with Article 62 of Coucil Regulation No. 1083/2006 at all levels of the realization of financial resources from the OP R&DI.

Within the responsibility for duly administration, management and control of the OP R&DI shared by the Czech Republic and the Commission, the AA primarily shall:

a) ensure performing audits for purposes of verifying efficient functioning of the managing and controlling system of the OP R&DI (hereinafter referred to as "audit system");

b) ensure performing audits of operations for a suitable sample for verifying reported data within the OP R&DI (hereinafter referred to as “audit of operations”);

c) submit to the Commission within 9 months from the OP R&DI approval an audit strategy including:

- determination of the subject authorised to perform audits of the system and audits of operations for the OP R&DI;
- method of taking samples for audits of operations;
- orientation planning of performing audits of the system and audits of operations ensuring performing these audits for major subjects and their even distribution in the entire programming period;

d) in order to describe management and control system pursuant to Article 71 of Council Regulation (EC) No. 1083/2006, the AA shall elaborate a report showing results of evaluation of implemented systems and presenting the standpoint on compliance thereof with Article 58 to 62 of Council Regulation (EC) No. 1083/2006;

e) by December 31 of every year from 2008 to 2015:

- submit to the Commission the annual control report presenting the results of performing audits of the system and audits of operations performed during the previous period of 12 months ending on June 30 in the given year, in accordance with the OP R&DI audit strategy, as well as all insufficiencies found in the OP R&DI managing and controlling systems. The first report shall be submitted by December 31, 2008; it shall include the period from January 1, 2007 to June 30, 2008. Information related to audits performed after June 1, 2015 shall be included in the final control report as the basis for the statement on the OP R&DI closure;
- issue, based on controls and audits whose performing it is responsible for, a standpoint as to whether the OP managing and controlling system functions efficiently and thus provides a reasonable affirmation that the statements on expenditures submitted to the Commission are correct and, therefore, the related transactions are legal and proper;
- submit, in cases when Article 88 of Council Regulation (EC) No. 1083/2006 is used, the statement on partial closure in which it evaluates legality and rightness of the said expenditures;
- submit by March 31, 2017 the statement on closure in which it evaluates validity of the request for the final balance payment and legality and rightness of the related transactions included in the final statement on expenditures that is based on the final control report;

f) entrust the AAS, forming a secondary audit system, with performing audits of the systems and audits of operations on suitable sample to verify the reported expenditure. The AA shall then:

- ensure that this subject has the proper functional independence;
- ensure that auditing standards are adhered to in performing audits;
- receive reports from audits of the system and audits of operations performed by the AAS and ensure integrated access to these reports at the relevant implementation level; audit findings of the AA and the AAS are the basis for risk management on the level of the Managing Authority and the Authorised Certification Authority.

Submitting recommendations for enhancing the quality of the OP R&DI managing and controlling system, preventing or reducing risks, taking measures for correcting insufficiencies found, and consulting activity, also constitute a significant part of the AA and AAS tasks.

As stated above the **Authorised Audit Subject (AAS**) for the OP R&DI shall be the MEYS Control and Internal Audit Department.

The AAS is directly responsible to the Minister of Education, Youth and Sports. In terms of the activity performed the AAS is responsible to the AA. The AAS shall perform audits at all levels of the OP implementation structure.

The organisational structure of the Internal Audit and Control Department with regard to securing IA and AAS activities, including the organigram, are detailed in the Internal Audit Manual. The Internal Audit activity is separated from that of the AAS within the Control and Internal Audit Department.

In course of audits of systems and operations the AAS shall proceed in compliance with:

- Council Regulation (EC) No. 1083/2006, of July 11, 2006 laying down general provisions on the European Regional Development Fund,
- Commission Regulation (EC) No 1828/2006 of 8 December 2006 setting out rules for the implementation of Council Regulation (EC) No 1083/2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and of Coucil Regulation (EC) No 1080/2006 of the European Parliament and of the Council on the European Regional Development Fund
- Czech Republic Government Resolution No. 760 of July 11,2007 on securing performance of functions of AA and AA authorised subjects,
- Order No. 31 of the Minister of Education, Youth and Sports of August 31, 2007
- Internationally recognised auditor standards in compliance with Article 62 of Council Regulation (EC) No. 1083/2006,
- Manual for Audit of Management and Control Systems of Operational Programmes issued by the Ministry of Finance,Recommended methodological instructions/documents of the AA,
- AA authorised subject status.

In compliance with the aforementioned documents the AAS shall perform the following main activities:

- audits of system in order to perform an independent and objective verification (assessment and evaluation) of efficient functioning of the OP R&DI Management and Control System,
- audit of operations performed on a suitable sample to verify the reported expenditure.

In compliance with the aforementioned documents, the Authorised Audit Subject shall be entitled to:

- provide consultancy in order to assist in implementation of an efficient management and control system of the OP R&DI,

- request from the OP R&DI MA any information, statements/records, including control logs and audit reports from external subjects performing audit for the OP R&DI MA, which the AAS may use for audit examination,
- take part (AAS authorised auditors and/or AA auditors) in audits performed by the European Commission, which checking the management and control systems of OP R&DI for efficient functioning throughout realisation of this OP financed from the EU funds.

The AAS' elementary duties are defined in the Annex to the Government Resolution No. 760 of 11 July 2007 (Principles of activities of AA and the Audit Authorities AAS). The duties are as follows:

- co-operate in audit of conformity of the OP R&DI management and control system;
- deliver to the AA reports from the audits performed within ten workdays from termination thereof;
- quarterly checking fulfilment of a part of the consolidated plan of audits within its competence;
- plan the audits in order that audits are evenly distributed throughout the programme period, performed based on risk analysis and on a suitable sample of operations;
- adhere to internationally recognised auditor standards while performing audits;
- **acquaint** the AA with audit findings which may affect elaboration and updating of methodological instructions for audit performance;
- inform the AA on organisational, material and personnel ensurance of audit, no later than on 1 January 2008;
- inform the AA on all relevant facts (including organisational, material and personnel ensurance), which might affect performance of audit;
- enable the AA staff to perform supervision over the performance of audit by an AAS;
- upon the AA's request provide the AA with data if so required by a relevant body of the EU.

The AAS' shall submit to the AA documents defined in the Annex to the Government Resolution No. 760of 11 July 2007 (Principles of activities of AA and the Audit Authorities AAS) in the form terms defined therein.

Further details and recommendations to secure functioning of the OP management and control system in competence of the MA, PCA, AA and AAC are referred to in:

- Commission Regulation (EC) No 1828/2006;
- Recommendations included in the Commission instructions;
- Methodology of Financial Flows and Control of Programmes Co-financed from the Structural Funds, the Cohesion Fund and the European Fishery Fund for the 2007-2013 Programming Period, issued by the Ministry of Finance;
- Manual for audit of management and control systems for operational programmes financed within the 2007–2013 from the European Regional Development Fund, European Social Fund, the Cohesion Fund and the European Fishery Fund in compliance with Regulation of the European Parliament and of the Council (EC) No. 1080/2006 and 1081/2006, Council Regulation (EC) No. 1084/2006 and No. 1198/2006 and No. 498/2007, Commission Regulation (EC) No. 1828/2006 ,

4.2.2 Controls by Supreme Audit Office

The Supreme Audit Office is authorised to carry out independent inspections in accordance with relevant provisions of Act No. 166/1993 Coll., on the Supreme Audit Office, as amended.

4.2.3 Audits performed by European Commission bodies and European Court of Auditors

In accordance with Article 72, Par. 1 of Council Regulation (EC) No. 1083/2006, the European Commission shall ascertain that managing and controlling systems were introduced within the given operational programme and that these systems function efficiently. The European Commission shall receive the information based on annual reports and the AA standpoint to these reports and on the basis of its own audits.

The European Court of Auditors performs independent and separate audits and controls within the sphere of its competence.

4.2.4 The European Anti-Fraud Office (hereinafter referred to as OLAF)

In order to fight with fraud, corruption and any other illegal activities damaging financial interests of the European Community, OLAF, based on its competence, (in compliance with Regulation of the European Parliament and of the Council (EC) no. 1073/1999 of May 25 1999 and other general regulations meant to protect EC financial interests) can perform administrative investigation within the OP R&DI implementation structure. This administrative investigation shall be understood as inspections, checks and other measures taken by the OLAF staff.

4.3 Irregularities

All bodies involved in the OP R&DI implementation shall report to the MA all the suspicious discrepancies found. The MA shall check up these discrepancies and pass those that, on the basis of control/audit findings, prove to be substantiated to subject-relevant bodies for administrative action or court proceedings to be started. Reporting from control bodies, the Audit Authority and authorised audit subjects must always be considered substantiated. At the same time, the MA shall report, by the fifteenth day of the next month after the end of a quarter, these substantiated suspicious discrepancies to AFCOS contact point and other subjects in compliance with Methodology of Financial Flows and Control of Programmes and methodological instructions issued by the Ministry of Finance.

4.4 Administrative Capacity

The necessity of valid administrative structures to guarantee efficient use of the Structural Funds resources has been acknowledged and stipulated in the text of the National Strategic

Reference Framework of the Czech Republic.

Sufficient administrative capacity is necessary in order to ensure not only the absorption capacity and application of formal procedures but also to spend financial resources in line with sound financial management principles.
According to the NSRF, the basis of this approach to guarantee sufficient administrative capacity is the following:

- Analysis of the MA's needs for operational programmes implementation
- Definition of functions and procedures
- Formulation of employees' profiles, jobs description
- Quality of the selection and recruitment of new employees.

Further, in line with the NSRF: "*the quality output of all functions within the implementation system of EU resources is closely related to the profile and stabilization of employees, who participate on preparation and functioning of this system. Employees of public administration have to be systematically prepared several years for correct and quality execution of these activities, including learning of languages. Quality of the selection and recruitment of new employees that takes into account the best practice is an essential condition for quality human resources management. This system will be used at all implementation levels. The main objective of the improvement of the human resources management is to minimize the undesirable outflow of these well-educated and skilled employees into the private sector. This can be achieved primarily through the setting of such conditions that create the work in public administration competitive to the private sector*".

These NSRF provisions are more specified in the letter sent by Czech authorities in view of approval of the NSRF decision to the European Commission on 29 June 2007 (reference number 24 449/2007-62) in the following way:

"*Attention will be paid to systemic strengthening of the absorption capacity, including also the analysis of needs, definition of requirements, description of work posts, independent recruitment procedures, motivation system, training of the staff and the stabilisation of the staff.*
A document called "Procedures to solve the administrative capacity to use the Structural Funds and Cohesion Fund resources during 2007-2013" was submitted to the Czech government.”

Government Resolution No. 818 of July 18, 2007 approving the above mentioned document is to be applied to the whole public administration and its implementation will be monitored by the Prime minister of the Czech Republic.

Subsequently, the above mentioned commitments have to be implemented at the level of each operational programme. A more detailed report should specify how these commitments are to be addressed (e.g. analysis of the MAs needs, definition of functions and procedures, formulation of employees' profile, jobs description, quality of the selection and recruitment of new employees). Further, it should describe the way in which the priority axis of the technical assistance of the OP R&DI will be used for this objective. Other very important issue is the support of absorption capacity of the beneficiaries and helpful approach of relevant authorities to the beneficiaries.

This implementing report has to be finalised and presented during the constitutive monitoring committee after the adoption of the OP R&DI by the Commission.

Absorption capacity

The parallel step is the absorption capacity support for the beneficiaries and the correct approach of the OP R&DI administration to them. Analysis of the absorption capacity will be elaborated at the level of the MA and activity plans will be prepared to strengthen or maintain the absorption capacity. Actions will be taken up to the level of individual activities (operations) of intervention areas.

Projects (covered by the OP R&DI Technical Assistance) will be realised in order to ensure the absorption capacity of applicants or beneficiaries. Suitable activities to achieve the objectives in the area of the absorption capacity strengthening may be, for instance:

- Strengthening of the MA capacity for work with potential applicants and beneficiaries, and the related strengthening of the methodical assistance to applicants/beneficiaries,
- Exchange of experience ("best practises"),
- OP and its supported activities promotion

4.5 Eligibility of expenditures

General rules for the eligibility of the expenditures are specified particularly in Art. 56 of the Council Regulation (EC) No.1083/2006. The expenditures are eligible for contribution from the funds, if they were effectively paid between the 1st January 2008 and 31st December 2015. In compliance with Art. 54 par. 4 of the Council Regulation (EC) No.1083/2006 the "Rules of eligibility of expenditures for programs co-financed from the Structural Funds and Cohesion fund for the programming period 2007-2013" were prepared on the level of the CR. The Rules were approved by the Government Resolution No. 61 of January 24, 2007. The Rules incl. its amendments form basic framework for the eligibility of expenditures of the operational programmes financed from the EU funds.

The eligible expenditures from OP R&DI must be spent in compliance with the programme objectives, must be linked to the project realisation, must be in compliance with Community and national legislative, must be spent in compliance with the principle of economy, purposefulness and effectiveness, and properly documented by the accounting documents.

4.6 Monitoring

Monitoring is a basic tool for the attainment of the effective setup and subsequent implementation of the OP R&DI and projects executed within this program. Monitoring ensures the collection of data and provides summarized information about the actual status of the implementation process.

The monitoring of the OP R&DI implementation will take place on three levels:

- financial monitoring, the task of which will be the collection of data and information related to the incurred expenditure;
- material monitoring, which will monitor the material focus of the project from the technical, physical, and analytical perspectives;
- procedural monitoring that will enable the real time monitoring of the progress in the implementation of the projects.

The overall responsibility for the monitoring of OP R&DI is held by the Managing Authority of the program. The MA is responsible for the proper, effective, systematic and timely monitoring.

4.6.1 Monitoring Committee

The Monitoring Committee (MC) was formed in accordance with article 63 of the Council Regulation (EC) no.1083/2006. The goal of the MC is to secure the supervision of the effectiveness and quality of the support provided.

The composition of the MC is based on the principles of partnership and equal opportunities. The members of the MC are mainly the representatives of the MA, OP EI , OP EC, OP PC, NCA, PCA, representatives of other central administration bodies, e.g., the Council for Research and Development, also the delegated representatives of regions, representatives of economic and social partners, including non-profit organizations, and a representative of the European Commission in the role of an advisor. The MC meetings may also be attended by the representatives of the EIB and EIF[90] as advisors. The members of the MC are appointed by the Minister of Education, Youth and Sports on the basis of the proposals of the relevant institutions. The composition of the MC can also be further examined and expanded, so that sufficient representation and partnership is ensured.

In accordance with article 65 of the Council Regulation (EC) no.1083/2006, the Monitoring Committee mainly secures the following tasks related to OP R&DI:

a) assessment and approval of the criteria for the selection of projects and approval of all changes to the criteria;
b) evaluation of the progress in the attainment of specific program goals on the basis of documents submitted to the MA;
c) analysis of the program execution results;
d) assessment and approval of the annual and final reports of the program before their sending to the European Commission;
e) review of the program for the purpose of the attainment of its goals or the improvement of its management, including financial management, and if necessary proposal of changes to the program;
f) assessment and approval of all proposals for the modification of the content of the Commission decisions on contributions from the ERDF.

The Monitoring Committee was formed on the proposal of the OP R&DI MA. Meetings of the Monitoring Committee will take place on the basis of a code of procedure accepted after agreement with the OP R&DI MA .

4.6.2 Monitoring indicators

The monitoring indicators are based on the needs of the monitoring and evaluation of the effectiveness of defined priority axes, areas of support and projects within the scope of the strategic goals of the NSRF “Competitive Czech Economy” and the OP R&DI.

The system for the measuring of the fulfillment of the overall OP R&DI goals is created on the principle of the setting of measurable indicators that make it possible to monitor the execution of the program and evaluate its performance in relation to the set goals. The indicators are set at four levels:

a) at the level of context (see chapter 3.8.1) – the purpose of context indicators is to provide measurable information about the socio-economic situation of the areas where support is provided;
b) at the level of the overall program (see chapter 3.8.2) – indicators of the impacts that quantify the effects of the OP R&DI above the scope of immediate effects;
c) for individual priority axes (see chapter 3.8.3) – include (i) outcome indicators, which express the quantification of the direct and immediate impact of the support on the user, (ii) output indicators, which provide information about the effects of the individual areas of support within the scope of the program and (iii) impact indicators;

4.6.3 Monitoring systém

Electronic monitoring system and electronic data exchange

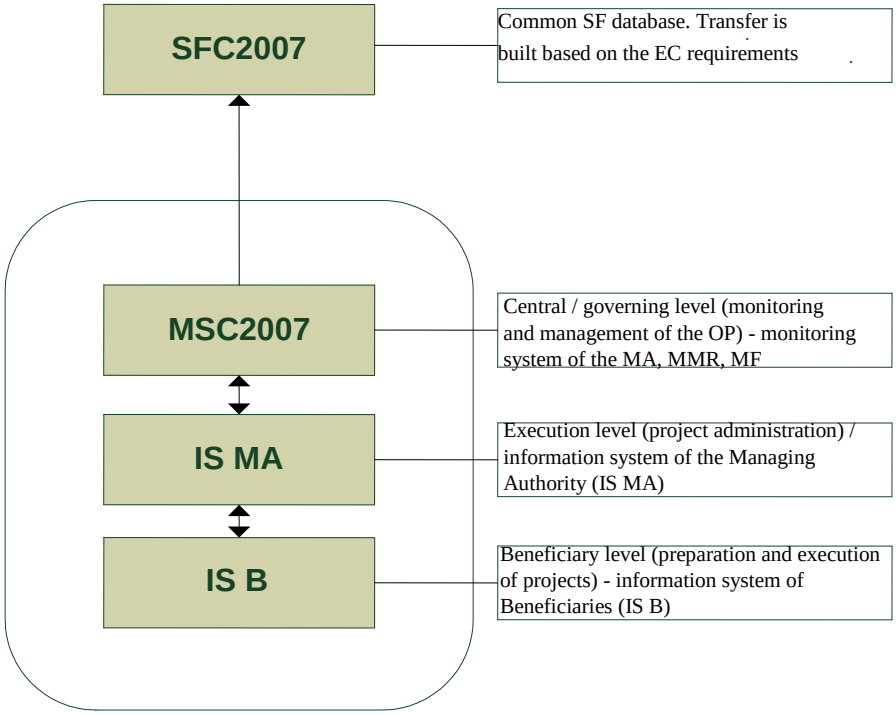
On the basis of Council Regulation (EC) no. 1083/2006, requirements of the European Commision for the monitoring of programs co-financed throught EU funds, requirements of the NCA, requirements of the PCA, and based on Government Resolution No. 198 of February 22, 2006, the monitoring system Central (MSC2007) was prepared as of January 1, 2007. MSC2007 serves the Managing Authority for the effective monitoring of the course of the execution of projects within the OP R&DI, and as a tool for the management of the program. This system also serves the Paying and Certifying Authority, Audit Authority, and other subjects of the implementation structure.

The MSC2007 information technology solution follows the solution applied for the 2004 - 2006 program period. On the basis of the experience from the course of the execution, the system is modified and relevant tools for monitoring, management, and evaluation are added.

The Monitoring system will provide the monitoring of these activities:

- drawing of funds from relevant European funds;
- drawing of funds of national co-financing;
- monitoring, evaluation and control activities;
- communication with the Commission - SFC dbf., other dbf.;
- provision of information into the standard Commission monitoring table;
- monitoring of information at the level of the recipient;
- linkage to the relevant systems of state and public administration;
- fulfillment of monitored indicators (performance of the set goals).

Levels of the monitoring system of structural funds and the Cohesion Fund



MSC2007

MSC2007 is operated on the technical facilities of the Ministry for Regional Development. The development, operation, maintenance and user support is secured by the Department of the Administration of the Monitoring System of the Ministry for Regional Development (OSMS). The system enables the central material and financial monitoring of programs and projects, the execution of financial flows according to the Methodology of Financial Flows and the electronic exchange of data with subordinated levels of the information monitoring system, the information systems of the Ministry of Finance (especially with the Viola accounting system) and the European Commission SFC2007 database.

Information system of Managing Authority

The Managing Authority will use a special level of the information system for the management of the program and administration of the projects. The Managing Authority has the responsibility for the administration of the relevant part of this monitoring system. Furthermore, the Managing Authority provides the actual information about the status of the program and project, i.e., it informs the National Coordination Authority and the European Commission about the individual execution steps for the entire duration of the program and individual projects.

Information system of the Recipient

IS of the Beneficiary (IS B) is designed for the support of the executive functions of the monitoring system of structural funds and the Cohesion Fund implemented on the level of individual beneficiaries, after the creation of a web form for the support request for all data communication

between the Managing AuthorityManaging Authority and the beneficiaries. The IS B will be operated as a web request, respectively as the recipient's web account..

Users of all levels of the monitoring system of structural funds and the Cohesion Fund will access the system via the Internet. Data will be regularly transferred between all levels of the monitoring system of structural funds and the Cohesion Fund.

Interconnection of the MSC2007 with external IS

Within the scope of the modifications of the MSC2007, it is necessary to thoroughly reflect the safe linkages of the MSC2007 to other IS and European Commission systems so that the full functionality of data transmissions and interfaces is constantly maintained. In addition to other functions, the MSC2007 also plays a transmission role. It provides the data that it collects from individual operational programs to other (external) IS. Conversely, it gets certain information from some information systems.

MSC2007 communicates with the Ministry of Finance IS – CEDR, VIOLA, ISPROFIN, etc.

The interconnection of the IS MA with the accounting system of the MEYS (based on the Methodology of Financial Flows for the period of 2007-2013) is the subject of the "Study of the Feasibility of the Interconnection of Selected Information Systems of the MEYS", on the basis of which will follow the physical interconnection of the JASU accounting system and the IS MA The security of the MEYS accounting system is ensured on the basis of the internal regulations of the MEYS, for which the independent unit of MEYS information and communication technologies is responsible.

Data transfer to SFC

The Czech Republic selected the option to transfer data into the European Commission system SFC2007 through the means of an interface and Web services. This involves preparation of data requested for transfer to European Commission in the environment of MSC2007, with which is the MA used to work within the process of project monitoring on the programme level. A new module - "Data for SFC 2007" has been created within IS MSC2007, which serves for authorization of new output sets by entities responsible for management and coordination of EU funds, i.e. ensures creating of new export files to be sent to the SFC2007 database of European Commission in Brussels. And through this enables the MA/PCA and NCA representatives to generate, modify, validate and send specific outputs into the SFC2007 database. For NCA the advantage is an overview representation and verification of data being prepared for transfer into European Commission for all operational programmes implemented in the CR. MSC2007 also enables the Paying and Certifying Authority to view and work with data during the certification process, and comparison to the control set. Detailed procedures including the position of subjects involved in the process of data transfer are described in the Methodical instruction for data transfer to Commission database SFC2007.

4.6.4 Annual and final report on implementation

In accordance with article 67 of Council Regulation (EC) no.1083/2006, the Managing Authority will (after approval by the Monitoring Committee) send to the European Commission the annual report and final report about the implementation of the OP R&DI. The annual reports are submitted by the Managing Authority always by June 30th of each year, beginning with the year 2008. The final report on the implementation of the OP R&DI will be forwarded to the Commission by March 31, 2017.

All annual reports, as well as the final report, on the implementation of the OP R&DI will contain the following information about:

- progress that has been achieved during the implementation of the OP R&DI and its priority axes in relation to specific, verifiable goals, quantifiably expressed via indicators on the level of the priority axis;
- financial implementation of the OP R&DI specifying the expenditures included in the requests for payment sent to the Managing Authority, the corresponding contribution from public sources, total payments received from the Commission and a quantitative expression of financial indicators;
- rough breakdown of allocated funds according to categories in accordance with the legislation;
- information about serious problems related to the compliance with the Community legislation, which arose during the implementation of the OP R&DI, and measures taken towards their resolution;
- if applicable, progress achieved in the implementation of major projects and their financing.

The information stated below will be included in all reports if there was a change in their content since the last submitted report:

- steps that the Managing Authority or Monitoring Committee took to secure the quality and effectiveness of the implementation of the OP R&DI, especially measures for the monitoring and evaluation of the program, an overview of all serious problems that have arisen during the implementation of the program, including the measures taken and the use of technological help;
- measures taken for the purpose of providing information about the OP R&DI and the assurance of its publicity;
- use of the support freed up after the cancellation of the total contribution to the OP R&DI according to article 98 par. 2 of Council Regulation (EC) no.1083/2006 and made available to the Managing Authority or another public body during the period of the implementation of OP R&DI.

Every year, after the annual report has been submitted to the Commission, the Commission will review, together with the Managing Authority, the progress that has been attained during the implementation of the OP R&DI. The evaluation of the state will cover the most important results attained during the previous year, financial implementation and other factors (reviewed may be, for example, all aspects of the functioning of the managing and controlling system stated in the annual control report submitted by the Audit Authority of the OP R&DI). After this evaluation, the Commission may voice comments to the Managing Authority, which will then subsequently inform the Commission about measures that have been taken on the basis of these comments.

4.7 Evaluation

The evaluation may be defined as a process that examines the handling of funds from public budgets and helps with their efficient use. The OP R&DI evaluation is performed in accordance with the obligations stipulated in articles 47 to 49 of Council Regulation (EC) no. 1083/2006, in accordance with the methodology instructions of the European Commission and in accordance with

the instruction of the National Coordination Authority. The OP R&DI Managing Authority is responsible for making sure that the evaluation is performed.

Pursuant to article 47 of par. 1 of Council Regulation (EC) no. 1083/2006, the goals of the evaluation are:

-increasing of the quality and effectiveness of the co-financing provided from the structural funds and the Cohesion Fund, and its consistency with the goals of the European Union and the Czech Republic;

-perfecting of the strategy and increasing the effectiveness of the implementation of the operational programme, i.e., improving of the outputs, outcomes and impacts;

-examination of the specific structural problems of the Czech Republic and sustainable development in relation to the subject of the OP R&DI

4.7.1 Evaluation mandatories

The mandatory items of the OP R&DI evaluation are especially the following:

- preparation, execution, updating, and evaluation of the evaluation plan (with linkage to the evaluation plan for the Czech Republic created by the National Coordination Authority);
- ensuring of all main evaluations as per the specification stated in the text below (ex-ante, ad-hoc, mid-term, ex-post)
- provision of resources for the performance of the evaluation and the use of data and information from the monitoring system (according to the specification for the specific evaluation executed by the National Coordination Authority);
- active mutual cooperation with the evaluators and evaluation employees at the national level (National Coordination Authority) and at various levels of implementation of the OP Research and Development for Innovation, and at various levels of the implementation of structural funds and the Cohesion Fund in the Czech Republic;
- obligation to make the evaluation results public.
-

4.7.2 Evaluation plan

The first step towards the performance of the evaluation is the preparation of an evaluation plan. The evaluation plan is prepared for the entire programme period, is updated annually, and is elaborated in detail for the closest next calendar year. The evaluation plan will contain:

- specification of the managing structure responsible for the evaluation;
- indicative time plan of the evaluation activities;
- planned financial resources;
- mechanism of a possible revision of the evaluation plan.

The yearly specification of the operational programme evaluation plan will contain especially the following material revisions:

- clarification of the content of individual activities and their detailed elaboration at the level of projects;

- planned financial resources (with a reserve for ad hoc evaluations, etc.);
- indicative (monthly) schedule of evaluation activities.

The OP R&DI evaluation plan, including all related annual updates and the evaluation of its fulfilment, will be duly discussed by the Working Group for the evaluation of the OP R&DI, Working Group for the evaluation of the National Coordination Authority, and will be further approved by the OP R&DI Monitoring Committee.

4.7.3 Types of Evaluations

In accordance with article 47 par. 2 of Council Regulation (EC) no. 1083/2006, the evaluation plan differentiates between the following two types of evaluations:

- **strategic** (conceptual) type, for the purpose of the assessment of the program development in relation to EC and Czech Republic priorities;
- **operational** type, for the purpose of the support of the operational programme monitoring.

According to article 48 paragraphs. 2 and 3 and article 49 par 3 of Council Regulation (EC) no. 1083/2006, evaluations during the period prior to implementation, during its course, and after its completion are differentiated.

Preliminary (ex-ante) evaluation was performed during the course of the preparations of OP R&DI. Its goals were the increasing of the quality of the program documents being prepared and the optimization of the allocation of resources. The results of the OP R&DI ex-ante evaluation are included in chapter 2.13.

During the course of the implementation period, **ongoing evaluations** will take place, which will be focused on various topics that will be planned in advance in the evaluation plan. One of the types of the ongoing evaluations are also annual evaluations of the OP implementation, including the assessment of the OP contribution to the National Reform Program and the Lisbon Strategy. The annual evaluation of the implementation of the program is a part of the Annual Report on the performance of the OP, which is submitted to the MC and Commission. Also included in the category of ongoing evaluations are **strategic evaluations,** which provide the fundamental information for strategic reports that will be submitted by EU member states in the years 2009 and 2012 (pursuant to article 29 par. 2 of the Council Regulation (EC) no.1083/2006).

Besides ongoing evaluations, **evaluations based on immediate need (ad hoc)** will also take place during the implementation period. These will be requested, based on the findings from the monitoring or based on the conclusions of the annual problem evaluation, for the purpose of improvement of the implementation process; these are studies performed outside of the planned scope stipulated by the OP R&DI evaluation plan. An independent item will be created only for ad-hoc evaluations within the scope of the evaluation plan, which will be necessary for the reservation of allocated resources.

After the end of the implementation period, an ***ex-post*** evaluation will be prepared. It will be carried out by the European Commission in close cooperation with EU member states and the governing bodies (article 49 par. 3 of Council Regulation (EC) no. 1083/2006). The OP R&DI ex-post evaluation will be completed by December 31, 2015.

Specific aspects of individual evaluations are further elaborated in the subsequent programme documentation.

Besides the listed activities, parts of the OP R&DI will be evaluated within the scope of evaluations performed by the national coordinator (in accordance with the evaluation plan of the National Coordination Authority) and the European Commission (in accordance with the evaluation plan of the European Commission and in accordance with article 49 of Council Regulation (EC) no. 1083/2006). The OP R&DI will provide full cooperation during the performance of these evaluations.

4.7.4 Organizational structure

The OP R&DI Managing Authority is responsible for proper and effective evaluation. For this purpose, within the scope of the implementation structure of the operational programme, it manages a specialized evaluation working unit, which is formed by one or several of its employees. Individual partial **tasks of the Managing Authority** evaluation unit are as follows:

- preparation of the specification for the selection of an external contractor;
- initiation of tenders for the execution of evaluation projects;
- creation of optimal conditions for the execution of evaluation projects; their coordination with the use of expert groups;
- evaluation of the fulfilment of the evaluation plan;
- submission of the results of the fulfilment of the evaluation plan to the Monitoring Committee and the NDP/NSRF Monitoring Committee (via the NSRF evaluation unit);
- development of the evaluation capacity for the operational programme;
- timely presentation of the results of the evaluation activities to the subjects with decision-making authorities in the implementation of the OP R&DI support;
- wide publicity of the evaluation activities results and the dissemination of the acquired experiences from the evaluations;
- commentary to the materials submitted within the scope of the cooperation with other evaluation units, including the NSRF.
- coordination of the Working Group for evaluation of the OP R&DI and the Expert opponency group for evaluation of the OP R&DI

Working Group for the evaluation of the OP Research and Development for Innovation

The task of the advisory and coordination body for the general evaluation activities of the operational programme, such as the preparation of the evaluation plan, for the activities of the development of evaluation capacity, for the utilization of the results of the evaluations and their submission to the operational programme monitoring committee will be performed by the Working Group for the evaluation of the OP R&DI.

The Working Group for the evaluation of the OP R&DI will **discuss:**

- preparation of the evaluation plan;
- updating of the evaluation plan for the next year;
- (formal) procedure for the execution of the evaluation plan;
- development of the evaluation capacity;
- (material) preparation of the execution of the evaluation plan
- evaluation of the fulfilment of the plan;
- proposals of reports for the OP R&DI Monitoring Committee.

Expert opponency group for the evaluation of OP Research and Development for Innovation

The expert opponency group plays the role of expert supervision of the execution of the evaluation project. The members of the expert group are appointed by the Managing Authority of OP R&DI; during their selection it makes sure that various opinion standpoints are represented. The expert group is composed especially by the representatives of these subjects:

- MA OP R&DI,
- MA of those OPs, where there are material synergies between them and the OP R&DI,
- economic and social partners,
- NSRF evaluation unit,
- independent experts.

Among the main activities of the expert opponent group are:

- approval of the methodology of the evaluation project proposed by the executor,
- participation in the preparation of the calls,
- commenting on the activities and outputs of the evaluators,
- provision of information that enriches the project execution,
- supervision of the work of the evaluators (their expertise and independence),
- opponency of the results of the evaluation and recommendations for the Working Group for the OP R&DI,
- delivery for the utilization of the results of the project execution.

4.8 Publicity

Information and publicity

The Managing Authority is responsible for the fulfilment of the requirements stipulated in article 69 of the Council Regulation (EC) no. 1083/2006, out of which arises to the governing bodies of operational programmes the responsibility to secure publicity for the co-financed programs, in accordance with the Commission Regulation (EC) 1828/2006 (Chapter II, Section 1 Information and Publicity,), which is related to promotion and publicity.

The Managing Authority is responsible for the securing of the promotion of the support, and especially for making sure that potential beneficiaries, economic and social partners, and relevant non-government organizations are informed about the possibilities that are offered by the support, and that the public is informed about the role played by the European Union in the respective support and about its results. The purpose of the communication strategy provided by the MA of the OP R&DI is the fulfilment of these fundamental objectives:

- transparency (awareness of the potential support beneficiaries of the available possibilities of the support system and of the support request procedure),
- inform all target groups about the conditions of the OP R&DI, with the goal of ensuring the widest possible dissemination of information and increasing the readiness of the social partners to cooperate with the potential support beneficiaries in the preparation of projects,
- increasing awareness (awareness of the general public about projects that have been executed within the scope of the aid, and the results achieved; of the role of the structural funds and operational programme and also the financial support by the EU).

The execution of the promotional and informational measures of the operational programme must be executed primarily at two levels:

- securing the awareness and publicity of potential beneficiaries of support and the general public
- securing publicity from the side of the aid beneficiaries during the execution itself of the projects

The target groups of the communication strategy can be divided into three categories:

- potential beneficiaries (or end users) of support
- economic and social partners
- general public - media

The MA of the OP R&DI prepares the Communication Plan (CoP) for the OP R&DI, which elaborates the communication strategy for support from the European Fund for Regional Development (ERDF) and which is based on the communication strategy of the management of the National Strategic Reference Framework and is consistent with it. The CoP will be submitted to the European Commission as an independent document.

The MA of the OP R&DI must delegate a person responsible for the fulfilment of the publicity requirements at the programme level. For the needs of the OP R&DI, this person is a

communications officer, who is also the head of the publicity Working Group, which coordinates the promotional and informational measures at the level of the OP R&DI implementation structure.

The MA of the OP R&DI submits to the Monitoring Committee of the operational programme an annual as well as a final report, which also contains the chapter "fulfilment of informational and promotional measures", including an overview of monitoring indicators, which will monitor the fulfilment of the Communication Plan.

4.9 Compliance with State-aid rules

Funds provided from the structural funds will be considered as public funds. Provision of these funds is considered as support from public funds and therefore is regulated by all corresponding Community state-aid rules .

Support within the scope of an operational programme will be granted in accordance with the Community's Framework for state aid of Research and Development for Innovation (2006/C 323/01).

The Managing Authority ensures that any state aid granted under this programme will comply with the procedural and material state aid rules applicable at the point of time when the support is granted.

4.10 Public Procurement

Contracts for goods, services and work, which will be co-financed out of EU structural funds, will be performed in accordance with valid community and national public procurement legislation . The Managing Authority will monitor whether the beneficiaries act in accordance with valid procurement rules (including internal OP R&DI Rules for procurement.)

5 Financial provisions

Financial plan of the OP R&DI is based on the financial plan of the Czech Republic allocation for the goal Convergence in years 2007-2013. 8% i.e. 2 070, 68 mil. EUR of the total financial plan is allocated to the OP R&DI. The implementation will be supported by ERDF. Subsidy from ERDF to the OP R&DI is determined in NSRF as long term liability for the programming period 2007 – 2013. Within the priority axes 1 to 4 flexibility of provisions falling in the sector of ESF help (so called cross financing), if these provisions are necessary for successful execution of the operation and is directly related to it (for example increase in adaptability and provision of mobility of workers for these capacities, determination of future work and qualification request and development of specific services for these capacities, etc.) in a way that the provisions of the article 34(2) EC Council Regulation (EC) No. 1083/2006. The application of cross financing will be proceeded according to the "Instructions for the cross financing for the program period 2007 – 2013" issued on the national level in a way that the corresponding provisions of the Community legislation.

Due to the specialization of the OP R&DI, the supposed beneficiary and character of the provided support further use of other financial tools is not expected (for example loans)like via EIB (European Investment Bank) or EIF (European Investment Fund). Nevertheless, in terms of further operation of the created infrastructure, it is proposed that one of the project sources serving for financing of the sustainability of infrastructures can be among others CIP (General Program for Competitiveness and Innovation) of which the implementation subject is the EIF.

Co-financing from the public finance of the Czech Republic is provided in according to the law no. 218/2000 Sb., on budgeting rules as amended by subsequent laws, together with the law no. 130/2002 Sb., of the support of the research and development from the public finance and of the change of some of the related laws, as amended by subsequent laws and with the law no. 250/2000 Sb., of the budget rules of the regional budgets as amended by subsequent laws.

Detailed financial planning of the OP R&DI is stated in the following tables:

1. table 5. – 1, which contains the total annual expected financial allocations of the OP R&DI demanded from the individual EU funds;
2. table 5. - 2, containing the financial plan for the entire the OP R&DI as well as individual priority axes divided to individual sources of financing, i.e. financial subsidy of EU, national financing and other sources.

Table 5. – 1 Total annual expected finacial allocations to the OP R&DI (subvention of the EU) according to the EU funds (amonts in EUR, regular prices)

	Structural funds (ERDF)	Cohesion Fund	Total
	1	2	3=1+2
2007	0	0	0
2008	526 469 181	0	526 469 181
2009	282 245 851	0	282 245 851
2010	295 531 959	0	295 531 959
2011	308 824 129	0	308 824 129
2012	322 067 985	0	322 067 985
2013	335 541 779	0	335 541 779
Total 2007-2013	**2 070 680 884**	**0**	**2 070 680 884**

Table 5. –2 Financial plan for the entire the OP R&DI and for individual priority axes sorted according to the individual financing sources (amounts in EUR, regular prices)

Priority axis no.	Name of the priority axis	Fund	Subsidy of the community	National sources	Approximate distribution of national sources		Total sources	Rate of co-financing	Informative	
					National public sources	National private sources				Financing from other sources
			a	b(=c+d)	c	d	E = a+b	F = a/e	Subsidy of the EIB	
1	European Centres of Excellence	ERDF	685 395373	120 952 125	120 952 125	0	806 347 498	0.85	0	0
2	Regional R&D centres	ERDF	685 395 373	120 952 125	120 952 125	0	806 347 498	0.85	0	0
3	Commercialization, an popularization of R&D	ERDF	213 280 131	37 637 671	37 637 671	0	250 917 802	0.85	0	0
4	Infrastructure for university education related to the research	ERDF	414 136 177	73 082 855	73 082 855		487 219 032	0.85		
5	Technical assistance	ERDF	72 473 830	12 789 500	12 789 500	0	85 263 330	0.85	0	0
Total			**2 070 680 884**	**365 414 276**	**365 414 276**	**0**	**2 436 095 160**	**0.85**	**0**	**0**

Table 5. –3: Informatice distribution of Union subsidy according to the category in the OP

Topic 1 **Priority topic**	
Code	Amount in EUR **
01	318 840 696
02	1 310 093 166
03	265 851 873
04	9 694 551
07	9 694 551
12	84 032 217
85	50 248 522
86	22 225 308

Topic 2 **Form of financing**	
Code	Amount in EUR **
1	2 070 680 884

Topic 3 **Locality**	
Code	Amount in EUR **
1	1 760 078 751
5	310 602 133

*** Estimated subsidy amount of the Union for each cathegory.*

6 List of Annexes

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Annex 1 – List of Abbreviations

AAS	Authorized Audit Subject (authorized subject of the Audit Authority)
AA	Audit Authority
AS CR	Academy of Sciences of the CR
BERD	Business Expenditure on R&D
Call	Call to submit projects within the particular area of support publicly issued by the MA on the web pages of MEYS
c.p.	Current prices
CF	Cohesion Fund
CNB	Czech National Bank
Conditions	Conditions of granting subsidy (an integral part of the Decision)
Contract	Contract on granting subsidy issued by the MA pursuant to the Act No. 130/2002 Coll., as amended
CoP	Communication Plan OP R&DI
CR	Czech Republic
CSG	Strategic General Principles of the Community
CSO	Czech Statistical Office
Decision	Decision on granting subsidy issued by the MA pursuant to the Act No. 130/2002 Coll., as amended and Act No.218/2000 Coll., as amended
EGS	Economic Growth Strategy
EIB	European Investment Bank
EIF	European Investment Fund
EIS	European Innovation Scoreboard
EPO	European Patent Office
ERA	European Research Area
ERDF	European Regional Development Fund
EC	European Communities
ESF	European Social Fund
EU	European Union
EUR	Euro
FP	Framework Programme
FTE	Full time employment dedicated to research and development activities (FTE – Full Time Equivalent)
GACR	Grant Agency of the Czech Republic
MA	Managing Authority
GDP	Gross Domestic Product
IPO	Industrial Property Office
IS OP EI	Information System OP EI
IS OP R&DI	Information System OP R&DI
IS R&D	Information System of Research and Development
IS VIOLA	Information System VIOLA
JPO	Japanese Patent Office
LBDR	Long-term Basic Directions of Research (priority of VaIN of the CR)
MIT	Ministry of Industry and Trade
MSC2007	Monitoring System Central 2007
MEYS	Ministry of Education, Youth and Sports
ME	Ministry of the Environment

NIP	National Innovation Policy of the CR for years 2005–2010
NCA	National Coordination Authority
NPR	National Lisbon Programme 2005–2008 (National Programme of Reforms of the CR)
NRP	National Research Programme
NR&DP	National Policy of Research and Development of the CR for years 2004–2008
NDP	National Development Plan of the Czech Republic 2007–2013
NSRF	National Strategic Reference Framework of the Czech Republic 2007–2013
NUTS	Nomenclature of Units for Territorial Statistics; Classification of Regional Statistic Units
OP	Operational Programme
OP EI	Operational Programme Enterprise and Innovation
OP DHR	Operational Programme Development of Human Resources
OP EC	Operational Programme Education for Competitiveness
OP R&DI	Operational Programme Research and Development for Innovation
OP PC	Operational Programme Prague Competitivness
PCA	Paying and Certification Authority
PRI	Public Research Institutions
R&D	Research and Development
R&DI	Research and Development for Innovation
RPP	Relative Publication Production
SEA	Strategic Environmental Assessment
SF EU	Structural Funds of the EU
SFC2007	System for Fund Management in the European Community 2007-2013
SII	Summary Innovation Index
SME	Small and Medium Enterpises
USPTO	United States Patent and Trademark Office
WG	Work group

Annex 2 – Interpretation of the applied terms

The aim of this survey is not to create definitions of the terms (a series of terms does not have only one generally accepted definition), but rather to explain their content as to understand OP R&Dpl.

:

(a) **„basic research“** shall mean experimental or technical work realized primarily with the aim of acquiring new knowledge on relevant base of observed phenomena without intending to make any direct application or the use.

(b) **„applied research“** shall mean planned research or critical analysis focused on being aimed at the acquisition of new knowledge and skills at developing new products, procedures or services or obtaining a considerable improvement of the existing products, procedures or services. It shall include creation of components of more complex systems, being necessary for the applied research with the exception to the prototypes

(c) **„experimental research“** shall mean acquisition, combination, modification and application of the existing scientific, technologic, business and other appropriate knowledge and skills with the aim to create plans and measures or projects for new, modified or improved products, procedures or services. This sphere could include, for example, other activities focused on conceptual definitions, planning and documentation of new products, procedures and services. These activities may include creation of drafts, drawings, plans and other documentation, provided that they are not intended for commercial use[91].

Centres of Excellence – units or organizational bodies involved in basic research and development of first-rate world´s level procedures based on the quantifiable scientific phenomena (there are included training activities as well). In the field of physical, social and economic sciences the Centres of Excellence are supposed to combine theoretical and applied research and concurrently to apply the multi discipline approaches to the maximum possible extent.

Pre-seed Capital – a grant which enables financing, supplementing the research, and which is necessary for launching the product on the market, or for the manufacturing of a prototype, model etc. The firm alone has not been set up yet.

Innovation – renewal and extension of the range of products and services and related markets, creation of new methods of production, deliveries and distribution, introduction of a change of management, organization of work, working conditions and labour force qualification. (Definition being applied by European Commission and assumed NIP.)

Spin-off firm – a firm utilizing tangible or intangible assets of another legal person with the aim to start its business. This term is often applied in relation to universities, when the spin-off firms are established by students and young scientific workers with the support of universities and within long-term cooperation with them.

Technology transfer – a process, within which the technology, knowledge and/or information created in one organization, one field, or for one purpose, is applied or used in another organization, another field or for a different purpose.

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[95] purpose of which is to realize basic research, applied research or experimental development and spread their results by means of education, publication or transfer of technologies; the whole profit shall be reinvested into such activities or spreading of their results or transfer of technologies; the enterprises that can influence such a subject as partners or members shall have no preferential access to research capacities

Specific research at universities – pursuant to Act No. 130/2002 Coll., as amended, refers to a part of a research at universities, which is immediately connected to education, in which the students participate.

Science and Technologic Park – in the Czech Republic this term has been used since 1990 in summary for all types of the parks (centres). The science and technologic parks are profiled particularly into three main types: (i) Scientific park (centre), (ii) Technologic park (centre), (iii) Business and innovation centre.

Research organization – an entity, e.g. a university or a research institute, regardless of its legal form (an entity established by public or private law) or of method of financing, whose main purpose is to carry out the basic research, applied research or experimental development and to disseminate their results by via education, publishing or technology transfer; all profit is invested back into these activities or a dissemination of their results or into education; the enterprises, which may exert influence on such entity, e.g. as the partners or members do not have any preferential access to research capacities of such an entity or to the research results created by this entity. (according to art.2.2/d of Community's Framework for state aid of Research and Development for Innovation (2006/C 323/01).

Human resources sphere in research and development

R&D employees – the R&D employees shall be meant the researchers involved directly in R&D and further the ancillary, technical, administrative and other employees in R&D centres. Among the R&D employees there also belong those employees, who procure direct services related to research and development activities, e.g. R&D managers, administrative officers, secretaries etc.

Researchers – researchers form the most significant group of R&D employees and they deal with concepts or creation of new knowledge, products, processes, methods and systems, or they manage such projects.

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Annex 4 – List of documents

The concept of OP R&DI proceeds from a series of documents of legislative, strategic, methodical and analytic character. The list of the most significant documents is stated below in the text.

EU legislative documents

- Council Regulation (EC) No. 1083/2006, of 31 July 2006 laying down general provisions on the European Regional Development Fund, European Social Fund and the Cohesion Fund and repealing Regulation (EC) No. 1260/1990, Brussels (in the text of the OP R&DI pI it is referred to as „Council Regulation (EC) No.1083/2006“).
- Regulation (EC) No. 1080/2006 of the European Parliament and of the Council of 5 July 2006 on the European Regional Development Fund and repealing Regulation (EC) No. 1783/1999, European Council 9059/06, Brussels.
- Commission Regulation (EC) No. 1828/2006 of 8 December 2006, setting out rules for the implementation of Council Regulation (EC) No. 1083/2006 on general provisions on the European Regional Development Fund, European Social Fund and the Cohesion Fund and of Regulation (EC) No. 1080/2006 of the European Parliament and of the Council on the European Regional Development Fund, Brussels, (in the text of the OP R&DI pI it is referred to as „Implementation Regulation“ or to as „Commission Regulation (EC) No.1828/2006“).
- Draft of the Community Framework of Support of Research, Development and Innovation from Public Funds:
- Directive 2001/42/ES of the European Parliament and of the Council of 27 June 2001 on the Assessment of the Effects of Certain Plans and Programmes on the Environment.

Legislative and methodical documents of the Czech Republic

- Act No. 130/2002 Coll., on the support of research and development from public funds and on amendment to some related acts, as amended by subsequent regulation (in the text of the OP R&DI pI it is referred to as „Act on support of research and development“).
- Act No. 137/2006 Coll., on public procurements, as amended by subsequent regulations.
- Act No. 341/2005 Coll., on public research institutions, as amended by subsequent regulations.
- Act No. 320/2001 Coll., on financial control in public administration and on amendment to some Acts, as amended by subsequent regulations (in the text of OP R&DI it is referred to as „Act on financial control“).
- Order of the Ministry of Finance No. 416/2004 Coll., by which there is implemented Act No. 320/2001 Coll., on financial control.
- Act No. 552/1991 Coll., on state control, as amended by subsequent regulations.
- Act No. 218/2000 Coll., on budgeting rules and on the amendment to some related acts, as amended by subsequent regulations.
- Act No. 250/2000 Coll., on the budgeting rules of regional budgets, as amended by subsequent regulations.

- Act No. 563/1991 Coll., on accounting, as amended by subsequent regulations.
- Order of the Ministry of Finance No. 560/2006 Coll., on participation of the state budget in financing of the reproduction of assets.
- Act No. 100/2001 Coll., on assessment of impacts on the environment and on the amendment of some related acts, as amended in the wording of Act No. 93/2004 Coll. (in the text of OP R&DI it is referred to as „Act on assessment of impacts on the environment “).
- Regulation of the Government No. 462/2002 Coll., on institutional support of research and development covered from public funds and on the amendment of research objectives, as amended by the Regulation of the Government No. 28/2003 Coll.
- Resolution of the Government of the Czech Republic No. 822 of June 29, 2005 on the draft of state budget for research and development for the year 2006 with prospective for the years 2007 and 2008.
- Resolution of the Government of the Czech Republic No. 644 of June 23, 2004 on assessment of research and development and its results.
- Resolution of the Government of the Czech Republic No. 760of July 11, 2007 on provision of the functions of Audit Authority and authorized subjects of the Audit Authority Resolution of the Government of the Czech Republic No. 198of February 22, 2006 on coordination of preparation of the Czech Republic on drawing on financial resources from the Structural Funds and the Cohesion Fund of the EU in the years 2007 - 2013
- Methodology for preparation of program documents for the period 2007–2013, Ministry of Regional Development, February 2006.
- National products of indicators for the program period of 2007–2013, Ministry of Regional development, March 2006.
- Methodology of financial flows and controls of programs being co-financed from the Structural Funds, the Cohesion Fund and the European Fishing Fund for the program period of 2007 - 2013, consolidated wording at 1 January 2007 issued by the Ministry of Finance (in the text of OP R&DI it is referred to as „Methodology of financial flows“).

<u>Strategic documents of the European Union</u>

- Commission Communication – Cohesion Policy in Support of Growth and Employment: Community General Strategic Guidelines, 2007–2013, COM (2005) 0299, Brussels, 5 July 2005 (in the text of OP R&DI it is referred to as „CSG“).
- Conclusions of the European Council session revising the Lisbon Strategy, 7619/1/05, Brussels, 22 and 23 March 2005.
- Commission Communication „More Research for Europe: Towards 3 % of GNP“, COM (2002) 499, Brussels
- Commission Communication „Invest into Research: Action Plan for Europe“, COM (2003) 226, Brussels, 22 September 2003 (in the text of OP R&DI it is referred to as „Action Plan for Europe“).
- Commission Communication „It is the Time to Engage a Higher Gear: New Partnership for Growth and Employment “, COM (2006) 30, Brussels, 25 January 2006.
- Working together for New Growth and Employment: New Growth for Lisbon Strategy, COM (2005) 24, Brussels, 2 February 2005.

- Joint Action for Growth and Employment: Lisbon Programme of the Community, COM (2005) 330, Brussels, 20 July 2005.
- Appraisal report by Wim Kok on implementation of the Lisbon Strategy, November 2004.

Strategic documents of the Czech Republic

- National Development Plan of the Czech Republic for the years 2007–2013
- National Strategic Reference Framework 2007-2013 (in the text of OP R&DI it is referred to as „NSRF“)
- National Lisbon Programme 2005–2008 (National Reform Program of the Czech Republic) – (in the text of OP R&DI it is referred to as „NLP-National Lisbon Programme“)
- Economic Growth Strategy; approved by the Resolution of the Government No. 1500 of October 16, 2005 (in the text of OP R&DI it is referred to as „SHR“).
- National Innovation Policy of the Czech Republic for the years 2005–2010; approved by the Resolution of the Government No. 851of July 7, 2005 (in the text of OP R&DI it is referred to as „NIP“).
- National Policy of Research and Development of the Czech Republic for the years 2004–2008; approved by the Resolution of the Government No. 5of January 7, 2004 (in the text of OP R&DI it is referred to as „NP R&D “).
- Strategy of Sustainable Development of the Czech Republic; approved by the Resolution of the Government No. 1242 of December 8, 2004.
- Harmonization of the National Policy of Research and Development of the Czech Republic for the years 2004–2008 with the National Innovation Policy and other relevant documents of the Czech Republic and European Union; approved by the Resolution of the Government No. 178 of February 22, 2006.
- National Research Program I; approved by the Resolution of the Government of the Czech Republic No. 417 of 28 April 2003 (in the text of OP R&DI it is referred to as „NRP I“)
- National Research Program II; approved by the Resolution of the Government of the Czech Republic No. 272 of March 9, 2005 (in the text of OP R&DI it is referred to as „ NRP II“)

Analytic documents of the European Union and the Czech Republic

- Analysis of the state of research and development in the Czech Republic and their comparison with abroad in 2005; The Research and Development Council; taken notice by the Government of the Czech Republic by the Resolution No. 1518 of November 23, 2005.
- Barriers of competitiveness growth of the Czech Republic, Technologic Centre of the Academy of Sciences of the Czech Republic, 2005.
- Study – Application of research and development for support of knowledge economy in the Czech Republic, Technologic Centre of the Academy of Science of the Czech Republic, December 2005.
- Evaluating and Comparing the innovation performance of the United States and the European Union, Expert report prepared for the TrendChart Policy Workshop 2005, Giovanni Dosi, Patrick Llerena, Mauro Sylos Labini, 29 June 2005.

- Creating an Innovative Europe, Report of the Independent Expert Group on R&D and Innovation appointed following the Hampton Court Summit (so called the. Aho´s report), January 2006.
- Information of the Research and Development Council of the Government, www.vyzkum.cz.
- Commission Recommendation on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (EU, 2005).
- Materials of the Eurostat focused on R&D pI , http://europa.eu.int/comm/eurostat/.
- Materials of the Czech Statistical Office focused on R&D pI, www.czso.cz.

Annex 5 - System mechanisms for achieving synergic effects between the Operational Programme Research and Development for Innovation and the Operational Programme Enterprise and Innovation

System mechanisms for achieving synergic effects between the OP R&DI and the OP EI

When formulating the National Development Plan and National Strategic Reference Framework, and in the subsequent preparation of the individual operational programmes, consideration was made for the fact that the Ministry of Education, Youth and Sports is responsible for the supply side of the innovation process and the Ministry of Industry and Trade is responsible for the demand side, because it represents the business community.

The synergies of interventions which inter-penetrate and were identified in the preparation of the OP EI and OP R&DI are addressed in an Agreement between the Minister for Education, Youth and Sports and the Minister for Industry and Trade **concerning coordination mechanisms in the management and implementation of the Operational Programme Research and Development for Innovation and Operational Programme Enterprise and Innovation.**

One of the principal aims of the two operational programmes, the OP EI and the OP R&DI, is to provide for the creation of new advanced know-how in science and research and to transfer it to the commercial sphere. In order to maximize the use of these opportunities, the measures described below have been adopted.

1. **Main areas of system interaction between the OPs and measures in support of the development of synergies**

Object of synergies:

The OP R&DI is a system of aid programmes channelled to the academic sphere, universities, research institutes and other corporate bodies.

The OP EI will support measures for establishment to the aid programmes for establishment of new innovative firms (Priority Axes 1 and 5 OP EI – link to Intervention Area 3.1 OP R&DI), development of R&D capacities for firms and commercialization of outputs from R&D through individual firms (Priority Axis 4 OP EI – link to Intervention Areas 1.1 and 2.1 OP R&DI).

There is a close linkage between the two operational programmes. Therefore it is necessary to focus the cooperation between the two operational programmes also on creation of a suitable environment for establishment and development of an innovative enterprise, cooperation platforms and support of infrastructure for industrial research, development, and innovation (Priority Axis 5 OP EI – link to Intervention Area 1.1, 2.1 and 3.1 OP R&DI).

Synergies:

Two types of synergies are taken into account in the operational programmes. The vertical and the horizontal synergy.

The vertical synergy within the individual operational programme will be generated through the identification and use of the measures by the commercial sphere. This type of synergy means that:

a) the definition of measures, programmes, projects and individual calls for project proposals is created by the way of consultation with the commercial sphere and their representatives - the Chamber of Commerce and Confederation of Industry, Branch of Industry Associations;

b) this effect is maximized via necessary condition for approval of projects supported by the OP R&DI. The projects must prove sustainable financial backing for the operational phase through cooperation with the private sector. This condition will be implemented in Priority Axes 1 and 2 of the OP R&DI. As for the OP EI, this condition is automatically assured by the co-financing of all projects from the private sector.

The horizontal synergies between the two individual operational programmes will be particularly generated through the projects planned in parallel and the follow up projects. The horizontal synergies are specified in detail in tables under the point 3. of this chapter.

The horizontal synergies will be implemented within the two basic levels:

a) ***"projects planned in parallel"*** established in the same period and referring to each other. The applicants are using the OP R&DI and the OP EI at the same time, e.g. jointly prepared projects within the planned joint calls for proposals (i.a. 5.1 and 3.1);

b) ***"follow up projects"*** planned in a different period, i.e. projects submitted to the OP EI are linked to outputs from the OP R&DI projects, in particular Priority Axes 1. European Centres of Excellence, 2. Regional R&D Centres, and 3. Commercialization and Popularization of R&D.

The horizontal synergy effects will be set, planned and monitored within the so called synergic projects.

Key measures for achieving e horizontal and vertical synergies:

The following key measures will be used in order to achieve horizontal and vertical synergies:

- **Synergic projects fitting the definition will be supported by bonus points** awarded in the assessment of project proposals within the OP EI or the OP R&DI.

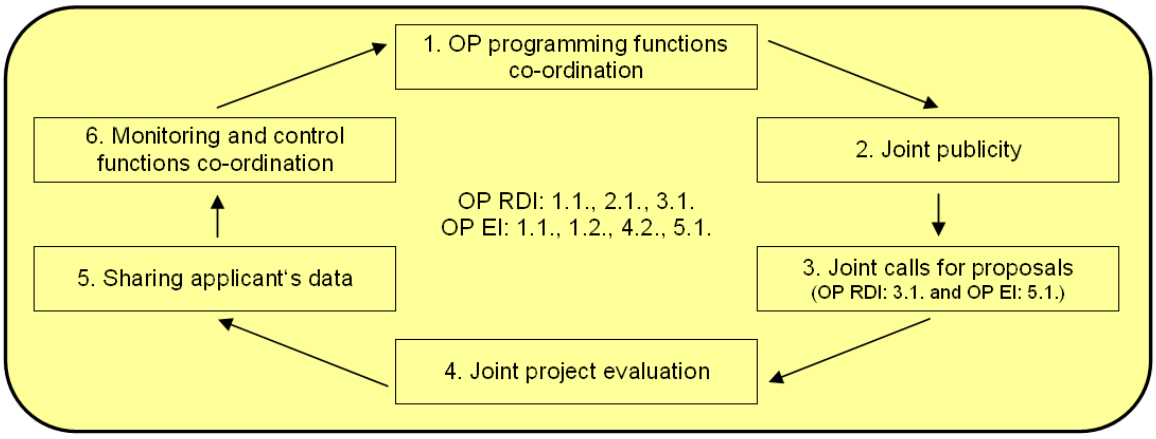
- A specific qualification criterion is introduced at the level of the OP R&DI for Intervention Areas 1.1 European Centres of Excellence and 2.1 Regional R&D Centres. **With regard to the assessment of sustainability of the project outputs, the only projects and beneficiaries that qualify must prove that they have sustainable financial backing for the operational phase of a research institution through cooperation with the private sector** to an extent defined in the call for project proposals (for ex. partnership agreement, agreement on future agreement). This condition will be implemented in Priority Axes 1 and 2 of the OP R&DI. Projects envisaging financing of the operational phase from national resources only, will be disqualified.

- Calls for proposals contributing to the achievement of specific targets of Priority Axes 1 and 2 and Intervention Area 3.1 of the OP R&DI will be specified on the basis of proven interest of trade associations (Chamber of Commerce of the Czech Republic, Confederation of Industry of the Czech Republic, Key Entrepreneurs representatives, etc.).

- Implementation of the two operational programmes will be carried out by the CzechInvest agency which will assure joint presentation and administration of both programmes.

2. Institutional coordination between OP EI and OP R&DI

The joint programme coordination of projects will be essential in order to ensure the synergies. The scheme below shows the programme coordination in the key Priority Axes and Intervention Areas of the OP R&DI and the OP EI within the 6 joint activities at the level of the Managing Authorities and both ministries (the MIT and the MEYS).



The institutional coordination proceeds from the mandate given by the National Strategic Reference Framework (NSRF) of the Czech Republic (Chapter 11 "Management and Coordination of the Economic and Social Cohesion Policy") which establishes the Coordination Committee Competitive Czech Economy. This Committee will report to the Monitoring Committee of the NSRF (i.e. Management and Coordination Committee). The Research and Development Council of the Czech Republic's Government will be also represented in the Committee.

The Committee will, in particular, monitor and evaluate the process of achievement of the horizontal and vertical synergies agreed in accordance with the NSRF and this document. The Committee will also coordinate the national co-financing of the OP R&DI part and the fulfilment of following obligations:

a) Coordination at the level of Monitoring Committees

According to the obligation at the level of the NSRF calls, project qualification criteria and indicators of the OP EI and the OP R&DI in the Intervention Areas between which synergy arises will be approved by both Monitoring Committees. The private sector will be represented in the Monitoring Committees. In order to manage and monitor the synergies, the "synergic projects" will be monitored at the level of output indicator. In order to better follow the synergic projects, specific reporting will be provided at the level of the Monitoring Committees and annual reports.

b) Coordination at the level of Evaluation Committees

According to the obligation at the level of the NSRF members of the Evaluation Committees evaluating the OP EI and the OP R&DI projects in the Intervention Areas between which synergy arises will be approved by the two Managing Authorities. The

chairperson of the Evaluation Committee will be appointed by the Managing Authority within whose purview the relevant Intervention Area falls.

c) Coordination at the level of external evaluators of projects

The evaluation of the OP EI and the OP R&DI projects in the Intervention Areas between which synergy arises will use a joint database of external evaluators approved by both Managing Authorities.

d) Coordination of calls for project proposals, joint call for project proposals

A call for project proposal made at the level of the OP R&DI will be preceded by discussion of relevant partners (Chamber of Commerce of the Czech Republic, Confederation of Industry of the Czech Republic, representatives of enterprises, universities, R&D institutes, etc.) led by the Coordination Committee Competitive Czech Economy. The output from this discussion will be a definition of the calls so that they meet as much as possible long-term directions in research in technical and natural disciplines which are an input qualification criterion in the OP R&DI, taking into account demands from representatives of the private sector.

Joint calls for project proposals will be made in the Intervention Areas 5.1 OP EI and 3.1 OP R&DI in the field of R&D and private sector cooperation. Projects in joint calls for project proposals will be evaluated by external evaluators from a common database by a common Evaluation Committee, whose members, including the chairperson, will be approved by both Managing Authorities.

e) Supportive measures

- Projects of technical assistance providing information on support for synergic projects and creation of analytical data for synergic projects;
- Sharing of data on applicants and projects.

3. Intervention areas producing the horizontal synergies between the OP EI and the OP R&DI[92]

Intervention Area of the OP EI	Intervention Area of the OP R&DI
Support for establishment of innovation start-ups	
1.1 – Support of starting entrepreneurs **1.2 – Use of new financial instruments** **5.1 – Cooperation platforms**	**3.1 – Commercialization of results of research organizations and protection of their intellectual rights**
Intervention Area: 1.1 **Objective:** encourage and support the activities of first time and returning entrepreneurs **Form of support:** interest-free loan, preferential guarantee with financial subsidy **Type of projects:** purchase of machines and facilities into the leased real estates and start-up purchase of stock; reconstruction of premises, machines and facilities refilling **Beneficiaries:** SMEs **Bonification points:** given only in case of proven synergy with OP R&DI projects. *Intervention Area: 1.2* **Objective:** stimulate and facilitate the formation of new innovation-oriented firms by the use of appropriate financial instruments **Form of support:** risk capital investment, micro-credits (JEREMIE) **Type of projects:** innovative activities particularly in the starting period of firm development (seed, start-up and spin-off) **Beneficiaries:** SMEs **Bonification points:** given only in case of proven synergy with OP R&DI projects. *Part of the Intervention Area: 5.1* **Objective:** increase quality and extend of infrastructure for innovative business **Form of support:** subsidy	*Part of the Intervention Area: 3.1* **Objective:** support of new ideas, resp. R&D results which have proven potential for being brought to the phase of commercialization in areas previously approved by the Coordination Committee Competitive Czech Economy. The areas will be specified in the relevant call for proposals. **Form of support:** subsidy **Type of projects:** pre-seed fund set up for researchers and students to finance completion of development of a product or service before a firm is set up. This will comprise costs of consulting (patent, legal, accounting, economic) costs of protection of intellectual property, costs of services to complete R&D, wage costs of project **Beneficiaries:** universities and R&D institutes, non-profit organizations, corporate bodies that fall within the Community Framework for the state support of research, development and innovations established by these institutions **Note:** OP R&DI focuses on the phase before a firm is established. The selection of ideas will take into account demands from the business sphere, and representatives of the Chamber of Commerce and Confederation of Industry.

- **Bonification points for OP EI projects**
- **Identification of call for proposals aims**
- **Implementation through the CzechInvest agency (5.1 OP EI a 3.1 OPRDI)**
- **Approval of calls, selecting criteria and indicators by the both MCs**
- **Joint Evaluation Committees (5.1 OP EI a 3.1 OPRDI)**
- **Joint database of external evaluators (5.1 OP EI a 3.1 OPRDI)**
- **Joint publicity and analysis**
- **Sharing of data on applicants and projects (5.1 OP EI a 3.1 OPRDI)**

[92] Applicable to the OP RDI version of 17/9/2007.

Intervention Area of the OP EI	Intervention Area of the OP R&DI
Type of projects: establishment and development of business incubators, business innovation centres (BIC), scientific and technological parks and Business Angels networks **Beneficiaries:** SMEs, large companies, non-profit organizations, universities and R&D institutes – not as independent entities but as joint applicants in case of establishment of a new legal entity, regions, towns and municipalities **Bonification points:** given only in case of proven synergy with OP R&DI projects. **Note:** OP EI focuses on the phase after a firm is established	
Support for development of R&D capacities	
4.2 – Capacities for industrial research and development	**1.1 – European Centres of Excellence** **2.1 – Regional R&D Centres**
• **Bonification points for OP EI projects** • **Identification of call for proposals aims** • **Implementation through the CzechInvest agency** • **Approval of calls, selecting criteria and indicators by the both MCs** • **Joint Evaluation Committees** • **Joint database of external evaluators** • **Joint publicity and analysis** • **Sharing of data on applicants and projects**	
Intervention Area: 4.2 **Objective:** increase research and development capacities of enterprises **Form of support:** subsidy **Type of projects:** purchase of land, buildings, machines, facilities and equipment necessary to run industrial research centres **Beneficiaries:** SMEs, large companies **Bonification points:** given only in case of proven synergy with OP R&DI projects.	***Part of the Intervention Area: 1.1*** **Objective:** build a limited number of centres of excellence with state-of-the-art equipment (in material and personnel terms), so that they can produce a significant quantity of know-how that can be used in enterprises and their groupings **Form of support:** subsidy **Type of projects:** reconstruction and expansion of R&D capacities and economically justified construction of new capacities, acquisition of laboratory and information equipment, and training in the use of new equipment and methods **Beneficiaries:** universities and R&D institutes, non-profit organizations, corporate bodies that fall within the Community Framework for the state support of research, development and innovations established by these institutions **Eligibility criterion:** contractual agreement

Intervention Area of the OP EI	Intervention Area of the OP R&DI
	between the applicant and the commercial sphere on co-financing operational project costs ***Part of the Intervention Area: 2.1*** **Objective:** building a network of advanced regional R&D establishments concentrating on applied and industrial research and strengthening their collaboration with the application sphere (enterprises, hospitals) **Form of support:** subsidy **Type of projects:** dtto Intervention Area 1.1 **Beneficiaries:** dtto Intervention Area 1.1 **Eligibility criterion:** contractual agreement between the applicant and the commercial sphere on co-financing operational project costs **Note:** The selection of ideas will take into account demands from the business sphere, and representatives of the Chamber of Commerce and Confederation of Industry. This condition will be implemented in Priority Axes 1 and 2 of the OP R&DI.
Cooperation of enterprises with science and research sphere	
5.1 – Cooperation platforms	**1.1 – European Centres of Excellence** **2.1 – Regional R&D centres** **3.1 – Commercialization of results of research organizations and protection of their intellectual rights**
• **Bonification points for OP EI projects** • **Identification of call for proposals aims** • **Joint call for project proposals (5.1 OP EI a 3.1 OPRDI)** • **Implementation through the CzechInvest agency** • **Approval of calls, selecting criteria and indicators by the both MCs** • **Joint Evaluation Committees** • **Joint database of external evaluators** • **Joint publicity and analysis** • **Sharing of data on applicants and projects**	
Part of the Intervention Area: 5.1 **Objective:** create infrastructure for cooperation of enterprises, research and educational institutes and the community sphere at the regional and supra-regional level and international cooperation of new and existing groupings **Form of support:** subsidy **Type of projects:** identification, establishment and development of clusters (for ex.: joint purchase and use of facilities, joint workshops, seminars or marketing presentations) **Beneficiaries:** SMEs, non-profit organizations, universities and R&D institutes – not as	***Part of the Intervention Area: 1.1*** **Objective:** building of Centres of Excellence will serve as knowledge bases for clusters or other groupings **Form of support:** subsidy **Type of projects:** participation of clusters or other groupings through contract research purchased by firms on market terms **Beneficiaries:** universities and R&D institutes, non-profit organizations, corporate bodies that fall within the Community Framework for the state support of research, development and innovations established by these institutions

Intervention Area of the OP EI	Intervention Area of the OP R&DI
independent entities but as joint applicants in case of establishment of a new legal entity, regions, towns and municipalities **Bonification points:** given only in case of proven synergy with OP R&DI projects.	**Eligibility criterion:** contractual agreement between the applicant and the commercial sphere on co-financing operational project costs ***Part of the Intervention Area: 2.1*** **Objective:** building of R&D capacities in relevant disciplines and regions **Form of support:** subsidy **Type of projects:** primary goal of the project in this intervention area is not a participation in technological platform or cluster, but participation in cooperation with the industrial sector **Beneficiaries:** dtto Intervention Area 1.1 **Eligibility criterion:** contractual agreement between the applicant and the commercial sphere on co-financing operational project costs ***Part of the Intervention Area: 3.1*** **Objective:** support of new ideas, resp. R&D results which have proven potential for being brought to the phase of commercialization in areas previously approved by the Coordination Committee Competitive Czech Economy. The areas will be specified in the relevant call for proposals. **Form of support:** subsidy **Type of projects:** supplementary activities to achieve the operational goals of this intervention area, such as costs of networking with the application sphere **Beneficiaries:** dtto Intervention Area 1.1
Transfer of know-how and technologies	
5.1 – Cooperation platforms	**3.1 – Commercialization of results of research organizations and protection of their intellectual rights**
• **Bonification points for OP EI projects** • **Identification of call for proposals aims** • **Implementation through the CzechInvest agency** • **Approval of calls, selecting criteria and indicators by the both MCs** • **Joint Evaluation Committees** • **Joint database of external evaluators** • **Joint publicity and analysis**	
Part of the Intervention Area: 5.1 **Objective:** increase quality and extend of infrastructure for innovative business with emphasis on transfer of know-how and technologies and support of direct links between research institutes and the business sphere **Form of support:** subsidy **Type of projects:** establishment and development of technology transfer centres, business incubators, business innovation centres (BIC), scientific and technological parks and Business Angels	***Part of the Intervention Area: 3.1*** **Objective:** support of new ideas, resp. R&D results which have proven potential for being brought to the phase of commercialization in areas previously approved by the Coordination Committee Competitive Czech Economy, with emphasis on technological transfers on the national and international level. The areas will be specified in the relevant call for proposals. **Form of support:** subsidy **Type of projects:** advisory work in protection

Intervention Area of the OP EI	Intervention Area of the OP R&DI
networks - The aid will be mainly directed at activities linked to the manufacturing industry **Beneficiaries:** SMEs, large companies, non-profit organizations, universities and R&D institutes – not as independent entities but as joint applicants in case of establishment of a new legal entity, regions, towns and municipalities **Bonification points:** given only in case of proven synergy with OP R&DI projects.	of intellectual property, technological audit, cooperation exchanges, technological exchanges, technology watch, databases of partners for technological development, participation in trade fairs, conferences and seminars, and assistance with raising funds for establishment and development of new technological firms - the aid will be directed at activities that do not come under the definition of OP EI, such as health care, transport, telecommunications, energy sector, etc. **Beneficiaries:** universities and R&D institutes as independent entities
Implementation of corporate innovation projects	
4.1 – Increasing the innovative performance of firms	**1.2 – European Centres of Excellence** **2.1 – Regional R&D centres**
Intervention Area: 4.1 **Objective:** stimulate inovative activities of enterprises **Form of support:** subsidy **Type of projects:** product and process innovation, organizational and marketing innovation **Beneficiaries:** SMEs, large companies **Bonification points:** given only in case of proven synergy with OP R&DI projects.	Project OP EI from Intervention Area 4.1 will be linked to different Intervention Areas OP R&DI, and results of activities of European Centres of Excellence and Regional R&D centres. **Eligibility criterion:** contractual agreement between the applicant and the commercial sphere on co-financing operational project costs

- **Bonification points for OP EI projects**
- **Identification of call for proposals aims**
- **Implementation through the CzechInvest agency**

Annex 6 – Indicative summary of major projects

Indicative summary of major projects within the priority axes of OP R&DI

Priority axis 1 – European Centres of Excellence			
Project	**Location NUTS II / NUTS III**	**DZSV**	**Costs [th. EUR]**
BIOCEV - Biotechnological and biomedical centre of the academy of Sciences and Charles University	Střední Čechy / Central Bohemia Středočeský Region	molecular biology	95 000
IT4Innovation	Moravskoslezský / Moravskoslezský Region	material research competitive engineering information society security research	105 000
Centre for Material Research Pardubice (CMV)	North-east / Pardubický Region	material research	200 427
ELITPALS: Extreme Light Infrastructure ELI	Central Bohemia / Středočeský Region	material research (unique laser infrastructure for research in the material field)	260 000
Středoevropská synchrotronová laboratoř (Central European Synchrotron Laboratory (CESLAB)	South-east / Jihomoravský Region	molecular biology, material research (unique accelerator for research in the field of living nature and materials)	264 458
CEITEC (Central European Institute of Technology, Středoevropský technologický institut) Brno	South-east/ Jihomoravský Region	molecular biology material research information society	416 000

Priority axis 2 - Regional R&D Centres			
Project	**Location NUTS II / NUTS III**	**Specialization / DZSV**	**Costs [th. EUR]**
Centrum pro výzkum energetického využití litosféry (Centre for Research of Energy Use of Lithosphere)	North-east / Liberecký Region	sustainable development energy sources	70 000
Centrum translační biomedicíny Terezín – Litoměřice (Centre of Translation Biomedicine Terezin – Litoměřice)	North-west / Ústecký Region	sustainable development molecular biology material research security research	100 000
Centrum pro nanomateriály, pokročilé technolgie a inovace (Centre for Nano materials, Advanced Technologies and Innovation)	Noth-west / Liberecký Region	material research competitive engineering	102 000
Biomedicine for regional development a human resources	Central Morava / Olomoucký Region	sustainable development molecular biology energy sources	161 600
Sustainable power engineering	Central Bohemia, South-west / Středočeský, Plzeňský Region	energy sources competitive engineering	174 000
Moravskoslezské výzkumné a technologické centrum, MVTC Moravian Silesian Research and Technologic Centres	Moravskoslezský / Moravskoslezský Region	sustainable development molecular biology energy sources competitive engineering material research information society security research	312 500

In this annex the list of project is shown only as to be indicative. Inclusion of whatever of the projects into this list does not mean that the project has been approved, nor does it anticipate the selection proceedings or the assessment alone. Furthermore, in advance this summary of major projects does not exclude alternative or additional major projects. Approval of co-financing of whichever project mentioned in OP R&DI is subject to assessment of the Managing Authority and evaluation of Commission in accordance with the letter and meaning of the appropriate Community legislation. Importantly, the fact that the accumulated allocation of the projecs on the long list exceeds the total allocation per priority axis does not imply that the entire financial allocation for any of the priority axes (i.e. either priority axis 1 or priority axis 2) would be fully consumed by major projects only. The list is expected to be shortened during the year 2008. Moreover, the managing authority is actively working with the potential applicants in order to ascertain the degree of preparedness of these projects and to provide them with the necessary guidance and assistance in order to assure their proper implementation.

The assessment shall be performed based on the relevance of the amount of the applied funds with respect to the plan and, furthermore, on the basis of three principal levels: assessment of the project relevance with respect to OP R&DI, assessment of the application potential and assessment of the international scientific quality. The relevance assessment shall be carried out by means of evaluation by experts based on the submitted project plans. The application of potential assessment will be performed on the basis of mapping of the existing history and

experience of the applicant in cooperation with the application sphere. The international scientific quality assessment shall be carried out by external experts, who will evaluate the applicants´ workplace in terms of publications and citation impact, from the viewpoint of the participation in international grants and in view of the acquisition of the national grants. Overall, it is expected that the proposers will have to demonstrate their scientific track record and that the existing regional specialisation will be partly reflected in the outcome of evaluation.

It is necessary to mention that approval for the operational program and financial support for the respective projects are two separate processes and, therefore, the resolution of the European Commission on approval of the program does not anticipate the approval of co-financing for whatever separate project.