

**Ex-ante evaluation of specific priorities of National Strategic Reference Framework  
„2.2 Research and Development“ and  
„2.3 Infrastructure of Higher Education Institutions“**

**FINAL REPORT**

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Ex-ante evaluation of specific priorities of National Strategic Reference Framework  
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Final Report

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## LIST OF ABBREVIATIONS

CCB	- Central co-ordination body
CF	- Cohesion fund
CSG	- Community Strategic Guidelines
EC	- European Commission
EES	- European employment strategy
EPO	- European Patent Office
ERA	- European Research Area
ERDF	- European Regional Development Fund
EU	- European Union
EU-15	- EU member countries till 31.4.2004
EU-25	- EU member countries from 1.5.2004 till 31.12.2006
FTE	- Full Time Equivalent
EUROSTAT	- Statistical Office of the European Communities
GDP	- Gross Domestic Product
IB	- Intermediate body
ITMS	- IT Monitoring System
MA	- Managing authority
MC	- Monitoring committee
MF SR	- Ministry of Finance of the Slovak Republic
ME SR	- Ministry of Education of the Slovak Republic
NMC	- National monitoring committee
NSRF	- National Strategic Reference Framework 2007 – 2013
NUTS	- Nomenclature des Unités Territoriales Statistiques
OP R&D	- Operational Programme Research and Development
RPP	- Relative number of publications
SF	- Structural funds
SEA	- Strategic Environmental Assessment
SR	- Slovak Republic
SWOT	- SWOT analysis (Strengths/Weaknesses/ Opportunities/Threats)
USPTO	- United States Patent and Trademark Office

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## INTRODUCTION AND SUMMARY

The Operational Programme Research and Development (OP R&D) represents a programme document of the SR, based on which the support for knowledge economy development will be provided in the years 2007 – 2013. The document defines the global objective, priority axes, measures and activities that will be supported under the Convergence and Regional Competitiveness and Employment objectives in the period 2007 – 2013 using the financial support of the European Regional Development Fund (ERDF). From the regional point of view the OP R&D covers the whole territory of the Slovak Republic.

The OP R&D is linked to the objectives and priorities of the National Strategic Reference Framework 2007 – 2013 (NSRF), which is the basic strategic programme document of the Slovak Republic. The OP R&D implements and closely elaborates the strategic priority “Knowledge Economy” of the NSRF.

Ex-ante evaluator took part in the process of OP R&D elaboration. The task of ex-ante evaluator was in cooperation with the programme authors and according to the terms of reference for ex-ante evaluation to submit continuously evaluation attitudes and notions to the particular document chapters. The project of ex-ante evaluation was divided into phases, the results of which represented evaluations and recommendations aimed mainly at the assessment of:

- a) analysis of particular area of the specific priority including SWOT,
- b) justification and consistency of the strategy including the proposed priorities, objectives, amount and structure of investments for these priorities,
- c) expected results and impacts of the planned interventions; contributing to quantification of objectives of the planned interventions,
- d) coherence with policies and strategic national and regional documents of the SR and policies and strategic documents of the Community,
- e) proposed system of implementation of priorities – management, monitoring, evaluation and financial management procedures.

Final report is divided into chapters, which evaluates individual parts of the Operational Programme Research and Development. Methodology of evaluation is not presented in a separated chapter as the methods used for evaluation are included directly in the text.

The chapter “General characteristic of the situation in the research, development and infrastructure of higher education institutions” analyses the present situation and defines significant changes, which the Slovak Republic passed through and which have a fundamental impact on the present situation as well as on the future tendency of the country. Transformation from centrally planned to market economy, full integration into the European Union and implementation of profound structural reforms belong among the three most essential changes. A long-term competitiveness of a country can be achieved only by creating suitable conditions for knowledge economy. Research, development and technological innovations are irreplaceable and biggest source of high quality knowledge. They are the principal pillar of each knowledge economy. The analysis emphasises correctly that the Slovak Republic has currently a unique opportunity to build an effective national innovation system with the support of the structural funds, of which the driving force should be the Operational Programme Research and Development.

The analysis defines the basic problems of the Slovak research and development. The most essentials are:

- insufficient technical equipment of Slovak R&D institutions,
- fragmentation and incoordination of Slovak R&D institutions,
- insufficient connection and use of the R&D results in practice.

The analytical part of the Operational Programme Research and Development refers to the existing disproportions between the research and development level in the SR and other countries of EU-15. The analysis consists of a number of comparative information, some outputs, however, do not correspond with the proposed OP R&D indicators. It is therefore recommended to add to these analysis chapters that would be directly linked to the identified indicators so that better links between the analytical part of the document's strategy and the control mechanisms would be ensured.

As for territorial point of view, Slovakia is divided into the region of Bratislava (objective Regional Competitiveness and Employment) and the rest of Slovakia (objective Convergence). As for the thematic aspect the priority axis Research and Development in Bratislava Region is identical with the analysis of priority axis Research and Development and it also deals identically with the necessary measures through which the whole territory of the Slovak Republic in the area of research and development will be financed.

The Operational Programme Research and Development states that a majority of facilities of higher education institutions infrastructure are in bad technical conditions resulting in high

level of operational costs. The most of buildings was constructed in the years 1951-1983. The quality and level of education relate to the state of buildings and premises used by higher education institutions and their interior equipment. Unsatisfactory technical conditions of a big number of buildings, morally and physically worn technical facilities, high operational costs and a lack of modern technologies used in education process is a consequence of low infrastructure investments. As it follows from ex-ante evaluation, information related to the infrastructure of higher education institutions are not considered to be sufficient as their significance is not relevant for the determination of higher education institutions state. It is recommended to provide precise information on the age structure of higher education buildings according to regional distribution in order to assist the more effective allocation of the financial support in this field.

A SWOT analysis follows the analysis of the research and development in the SR. As the OP did not determine any needs, a list of needs was identified and recommendations to revise the initially proposed SWOT analysis were suggested by evaluators in the first phase of evaluation. On the basis of suggested changes in SWOT analysis the evaluators recommended to revise the formulation of initially proposed development factors. The revised definitions of development factors express more exactly the cohesion of the strengths with the opportunities and respond more directly to the particular needs.

The strategy of the Operational Programme Research and Development is based on the SWOT analysis and the identified disparities and development factors. The proposed strategy is aimed at creating conditions of the Slovak Republic for transition to the knowledge oriented economy. It supports the effort to minimize unequal development of regions considering mutually interlinked new or existing growth poles as positive stimulus. The strategy defines the EU structural funds interventions, divided into the themes and the territories, through which the strategic objective of the National Strategic Reference Framework of the Slovak Republic in programme period 2007 – 2013 will be achieved more effectively and efficiently.

The Operational Programme Research and Development has been elaborated jointly for both objectives of the cohesion policy, in particular because of the expected impacts of projects realised on the territory of Bratislava region on the research and development potential of the whole Slovak Republic. Priority axes of the Operational Programme aim at the enhancement of regional research and development capacities which are consequently linked to innovations through the support to expert centres focused on a particular industry or technology (e.g. present development of the car industry), support to the networks of



cooperation between companies and/or relevant institutions of tertiary education and research and technology transfer.

As it follows from the results of ex-ante evaluation the individual components of the strategy create a logically linked chain with existing mutual relations between the proposed steps, starting with the needs identification, analysis, setting up strategic objectives to the proposal of particular framework activities for meeting the stated objectives through their implementation.

Meeting the Convergence and Regional Competitiveness and Employment objectives is provided through territorial allocation of individual priority axes. Priority axis 1 Research and Development and priority axis 2 Research and Development in Bratislava Region are properly complemented in order to meet the Convergence and Regional Competitiveness and Employment objectives. Priority axes 1 and 2 are proposed complementary in regard of priority axis 3 Infrastructure of Higher Education Institutions. While the aim of the priority axis 1 (measure 1.1) is to support research and development activities, the aim of the priority axis 3 is modernisation of facilities used also for other activities of higher education institutions. The objective of the priority axis 4 Technical Support is to support the effective implementation of the proposed strategy including monitoring, evaluation and control. The proposed framework activities of the Operational Programme Research and Development are full consistent with the determined objectives of measures.

The Operational Programme Research and Development thematically meets the basic directions of the SR in realisation of the national science and technology policy in the field of basic research, applied research and experimental development, which will finally lead to fulfilling the objectives of the Lisbon Strategy of the EU. The strategy of the priority axis Research and Development thematically incorporates the following areas:

1. Renovation and building of research and development technical infrastructure
2. Support to networks of excellent research and development sites as pillars of regional development and support to transregional cooperation
3. Transfer of knowledge and technologies obtained through research and development into practice

The territorial concentration of measures takes into account the regional differences. The regions eligible for funding from the ERDF under the Convergence objective will be regions corresponding to NUTS level II whose gross domestic product per capita, measured in purchasing power parities and calculated on the basis of figures for the period of the last three prior to regulation came into power, is less than 75 % of the average of the enhanced

EU. This objective covers the whole territory of the SR except of Bratislava region. The Convergence objective is covered by the measures of priority axes 1 and 3.

Implementation risks of measures of priority axes 1 and 2 of the OP R&D relates mainly to the insufficient influence of framework actives on strengthening research and development potential and optimisation its structure, insufficient elimination of barriers between the science and the society resulting from insufficient motivation of the relevant entities, and to the risk of weak cooperation between the R&D institutions and the entrepreneurial entities. The risks identified refer mainly to qualitative objectives of the OP R&D. Risk rate associated with the implementation of priority axis 3 is considered to be low.

With regard to the evaluation of financial framework of strategy, it is possible to accept the financial resources and the rate of co-financing proposed in the OP R&D. It can be assumed that allocation of resources to individual axes was determined on an indicative basis as OP R&D does not include a detail analysis of financial requirements for each axis. OP R&D states correctly that as far as research, development, and, consequently, innovations should be one of the development pillars of the Slovak society, it is necessary during the first phase to invest to technical equipment, which is reflected in measures of priority axes 1 and 2. It is also possible to accept the proposed amount of financial means for priority axis 3 and 4.

The aim of ex-ante evaluation was to consider whether the set of indicators proposed in OP R&D creates an integrated complex and complies with the requirements for a real and transparent quantification of expected results and impacts at individual programme levels. As it follows from the evaluation the originally proposed structure of indicators is not in conformity with these requirements. The originally proposed indicators were revised and divided into categories of context and programme indicators for individual levels of OP R&D. Quantification was based on mutual cooperation between the evaluators and authors of OP R&D and the final values represent results of this cooperation and mutual consultations. Determination of expected values of indicators was carried out using quantitative and qualitative estimation methods considering the relevant programme level to which indicators refer.

When considering the evaluation of impacts on specific priorities, it can be stated that the principle of equality of opportunities is ensured in all activities of priority axes of the OP R&D. The proposed priority axes prevent any discrimination and equality between genders is ensured with the aim to improve position of women. Public institution, which will make use of the ERDF financial means, will support gender equality in all areas of society. This horizontal

priority will be considered within evaluation procedures. Priority axis aimed at infrastructure of higher education institutions supports equality of opportunities within all measures through activities that create conditions for equal access for all students to modernised education infrastructure. Equality of opportunities is also ensured through a variety of beneficiaries from public and private sector. A separate document – Strategic Environmental Assessment (SEA) has been elaborated in order to evaluate potential impacts on the environment. Implementation of the OP R&D should facilitate the development of small and medium enterprises and increase competitiveness mainly in industries with a high proportion of added value. Potential impacts on the area of small and medium enterprises and competitiveness can be monitored through selected indicators. Implementation of the OP R&D should contribute to the positive trend in employment in the areas requiring highly qualified labour as well as to prevent leaving of highly qualified labour to better conditions abroad and more developed regions of the SR.

Transnational proposals of documents adopted by the EU in the context of strategic planning of the EU structural funds and the national documentation influencing functionality of the support system of this specific area within the state were the basic assumptions for developing the strategy of the OP R&D. The evaluation was aimed at assessing coherence of the OP R&D with policies and strategic documents of the Community and national and regional documents of the SR with the emphasis on coherence of priority axes 1 and 2. The analyses confirmed that the proposed strategy of OP R&D is directly linked to and meets the main priorities and strategic objectives of the Community, which will be implemented through financial tools of the EU during the years 2007-2013. For all evaluated documents it is possible to state that the objectives of OP R&D are linked to and comply with politics and strategic national and regional documents of the SR. The more generally the coherence was evaluated (general programme level) the stronger compliance was proven between the OP R&D and the relevant documents. Selected legislative and strategic frameworks of the EU regarding the infrastructure of higher education institutions, which were evaluated individually, are in full or sufficient compliance with the priority axis 3. The evaluation was also aimed at coherence with horizontal priorities, in particular in the area of EC legislation in the field of regulations for protection and improvement of environment and in the area of regulations for equality of opportunities, equality of genders and non-discrimination. It can be stated that all horizontal priorities are coherent with national legislation. These legislation frameworks create a basis for implementation of measures of the OP R&D.

According to the terms of reference, the ex ante evaluation has dealt with the proposed implementation system of priorities. It deals with the evaluation of functionality and

effectiveness of system of management procedures, monitoring and evaluation as well as financial management. The object of evaluation is a compliance with the requirements of the Council Regulation (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund and the Cohesion Fund and repealing Regulation (EC) 1260/1999. To achieve effective implementation of the OP R&D, the adequate measures should be adopted and, moreover, the system of management and control of the operation programme should be provided. Such system should determine functions of managing and controlling authorities, securing processes, monitoring system, evaluation system, and audit mechanism.

OP R&D defines bodies and authorities involved in the process of management and programme implementation according to the following structure:

- Central co-ordination body (CCB),
- Managing authority (MA),
- Intermediate body (IB),
- Monitoring committee (MC),
- Certifying authorities,
- Audit authority.

Ministry of Construction and Regional Development of the Slovak Republic as the Central co-ordination body for operational programmes within the National Strategic Reference Framework of the Slovak Republic for 2007 – 2013 provides strategic level of the NSRF management system. The managing authority of the operational programme - Ministry of Education of the Slovak Republic (ME SR) is responsible for management and performance of the OP R&D in accordance with regulations of the EU and the Slovak Republic. The document defines major responsibilities of the MA in the process of management and performance of the OP R&D that are in a full accordance with the requirements of Article 60 of general regulation. On the basis of the resolution of the Government of the Slovak Republic No. 832 as of October 8, 2006, the intermediate body for all priorities and measures of the OP R&D is Agency of the Ministry of Education of the Slovak Republic. The OP R&D assigns the extent of delegated tasks for the Agency that is in harmony with the requirements requested from IB.

The OP R&D strictly defines the functions and roles of the MC members while the principle of partnership is being observed. Monitoring and assessment are provided by all subjects participating in management of SF and CF in the extent of defined tasks and responsibilities and by subjects, which withdraw finances from funds. The OP R&D defines roles of the CCB,

MC for the OP R&D and IB in the area of monitoring. The roles of individual monitoring bodies are clearly defined in the programme and, by means of them, their mutual connection for purposes of effective co-ordination, methodological regulation, collection, processing and interpretation of data needed for evaluation and control of managing processes at the individual monitoring levels is provided. Proposed ways are sufficient for the proper monitoring process of implementation of the OP R&D and they may lead to fulfilment of the objectives. The OP R&D defines roles of the CCB, MAS, IB in the area of evaluation – they are clearly defined at the individual levels of evaluation authorities. Using these roles, the mutual connection between them is provided for the purposes of effective analysis of efficiency of realisation processes, quality improvement, and formulation of recommendation for the increase in measures effectiveness.

Besides the managing authority of the OP and delegation of competences to the IB, the member states are obliged, according to Article 59, to set the certifying authority and audit authority. Function of the certifying authority is set by Article 61 of general regulation. Functions of the certifying authority for the OP R&D are performed by Ministry of Finance of the Slovak Republic (MF SR) and functions of the payment unit are provided by the Ministry of Education of the Slovak Republic. Function of the audit authority is set by Article 62 of general regulation. Functions of the audit authority for the OP R&D are provided by the MF SR. The OP R&D defines concrete roles and responsibilities for individual bodies of financial management and control that are in accordance with the provisions of Article 61 and 62 of general regulation. Given functions of individual control authorities lead to the proper functioning of system of financial management and control of financial payments.

The last chapter of Final report presents an overview of proposed recommendations by ex-ante evaluators and their utilisation in the process of OP elaboration.

## **1. EVALUATION OF ANALYSIS OF RESEARCH, DEVELOPMENT AND INFRASTRUCTURE OF HIGHER EDUCATION INSTITUTIONS**

### **1.1. Present situation in the area of research, development and infrastructure of higher education institutions**

The EU member states should utilise the tools of the EU cohesion policy in a broad extent in the years 2007-2013 so that less developed regions of the EU would get to the level enabling them, from the perspective of knowledge society, to integrate into the European Research Area (ERA). In case of the SR all regions are eligible, including Bratislava region. At the present time, none of the Slovak regions dispose of such research and development potential so that research, development and innovations could become one of the pillars of social and economic development. It is the absolute political priority of the Slovak Government to change this situation fundamentally.

The Government of the Slovak Republic has defined the area of science and research as one of the development priorities fully in compliance with the principles of mid-term evaluation of the Lisbon Strategy. In terms of the Strategy of Competitiveness of Slovakia till 2010, the area of science, research and innovations is one of the four core development priorities. In this context, the Slovak Government has decided that the area of research and development will be also one of the basic priority areas financially supported from the structural funds of the European Union in the years 2007 – 2013.

The chapter “General characteristic of the situation in the research, development and infrastructure of higher education institutions” analyses the present situation in this area. It defines significant changes, which the Slovak Republic passed through and which have a fundamental impact on the present situation as well as on the future tendency of the country. Transformation from centrally planned to market economy, full integration into the European Union and implementation of profound structural reforms belong among the three most essential changes. The analysis emphasizes correctly that the Slovak Republic as a EU member state has to fulfil all requirements as well as that the SR has to convert from the areas of low added value industries, which presently represent a driving force of the Slovak economy, to the areas with the advanced exploitation of the research and development knowledge and thus with a higher rate of added value.

A long-term competitiveness of a country can be achieved only by creating suitable conditions for knowledge economy. However, it is necessary to notice that it is not sufficient to produce new knowledge only but also to use them in practice. Research, development and

technological innovations are irreplaceable and biggest source of high quality knowledge. They are the principal pillar of each knowledge economy. The analysis emphasises correctly that the Slovak Republic has currently a unique opportunity to build an effective national innovation system with the support of the structural funds, of which the driving force should be the Operational Programme Research and Development.

The analysis defines the basic problems of the Slovak research and development. The most essentials are:

- insufficient technical equipment of Slovak R&D institutions,
- fragmentation and incoordination of Slovak R&D institutions,
- insufficient connection and use of the R&D results in practice.

It is recommended to add to this analysis reasons which led to the defined basic problems and which caused the present situation in the field of research and development in the Slovak Republic in order to learn from these defects and avoid situations in which the current research and development occurs.

## **1.2. Analysis of priority axes Research and Development and Research and development in Bratislava Region**

This chapter of the Operational Programme Research and Development defines context indicators and analyses chosen areas under the priority axes Research and Development. The following areas were analysed: financing of research and development, human resources, technical infrastructure facilities of research and development institutions, publication outputs, patents, participation of the Slovak Republic in the 6<sup>th</sup> Framework Programme and cohesion of projects with the needs of society and economy.

The volume of financial means for research and development in the Slovak Republic is insufficient. The SR allocates a lower volume of expenditures for research and development in comparison with the EU-15 and EU-25, and even in comparison with the particular EU member states, expenditures for research and development in the Slovak Republic are one of the lowest showing a declining trend in the latest years. The objective defined at the EU Barcelona Summit in 2002 to reach a 3 % share of expenditures for research and development on GDP in 2010 will be met by several EU countries only. The Slovak Republic has modified the Barcelona objective to the level of 1.8 % of GDP in 2010.

Researchers are specialists participating on conceptions and development of new knowledge, products, processes, methods and systems and also on management of relevant projects. The total number of research and development employees was 22,217 physical persons in 2004. Business sector employees account for 20.9 % of total number of employees, state sector for 18.2 % and non-profit sector employees for 0.4 %. The highest number of research and development employees out of the total number of research and development employees is situated in the sector of higher education institutions (13,442) – 60.5 %.

Conditions of research and development technical infrastructure, its modernisation and approaches to its utilisation represent serious problems of science and technology in the Slovak Republic. Also as a consequence of a long-term low share of expenditures for research and development on GDP, research and development technical infrastructure became outdated. The average age of devices and equipment of excess-limit value used in research and development in the Slovak Republic is 11.7 years.

To assess the research results it is possible to use a “Relative number of publications” indicator (RPP). Comparing to the EU average value (0.77) the Slovak Republic is placed on the last but one place with the value of 0.34. Similarly, it shows a low number of the EPO patent applications and the UPSTO granted patents in comparison with the average of the EU countries.

As for territorial point of view, Slovakia is divided into the region of Bratislava (objective Regional Competitiveness and Employment) and the rest of Slovakia (objective Convergence). As for the thematic aspect the priority axis Research and Development in Bratislava Region is identical with the analysis of priority axis Research and Development and it also deals identically with the necessary measures through which the whole territory of the Slovak Republic in the area of research and development will be financed. The reason for this is that from quantitative perspective, Bratislava disposes of approx. 50 % of research and development potential of the Slovak Republic – it possesses approx. 50 % of instrumental equipment, and approx. 50 % of researchers work in Bratislava, but at the same time, the region of Bratislava has the same structural problems in the area of research and development as the rest of Slovakia – i.e. outdated instrumental equipment, insufficient research and development infrastructure, weak interconnection of research institutions to social and economic practice, etc.



The analytical part of the Operational Programme Research and Development refers to the existing disproportions between the research and development level in the SR and other countries of EU-15. The analysis consists of a number of comparative information, some outputs, however, do not correspond with the proposed OP R&D indicators. It is therefore recommended to add to this analysis chapters that would be directly linked to the identified indicators so that better links between the analytical part of the document's strategy and the control mechanisms would be ensured.

### **1.3. Analysis of priority axis Infrastructure of Higher Education Institutions**

Another area the OP Research and Development deals with is infrastructure of higher education institutions. This area differs thematically from research and development and its analysis requires an extra space.

The Operational Programme Research and Development states that a majority of facilities of higher education institutions infrastructure are in bad technical conditions resulting in high level of operational costs. The most of buildings was constructed in the years 1951-1983, i.e. in the period of relatively low requirements for thermal and insulation characteristics of building constructions. The OP R&D also states that the quality and level of education relate to the state of buildings and premises used by higher education institutions and their interior equipment. Unsatisfactory technical conditions of a big number of buildings, morally and physically worn technical facilities, high operational costs and a lack of modern technologies used in education process is a consequence of low infrastructure investments.

As it follows from ex-ante evaluation, information related to the infrastructure of higher education institutions are not considered to be sufficient as their significance is not relevant for the determination of higher education institutions state. It is recommended to provide precise information on the age structure of higher education buildings according to regional distribution in order to assist the more effective allocation of the financial support in this field.

### **1.4. Needs identification and SWOT analysis**

A SWOT analysis follows the analysis of the research and development in the SR. As the OP R&D did not determine any needs, a list of needs was identified and recommendations to revise the initially proposed SWOT analysis were suggested by evaluators in the first phase of evaluation. On the basis of suggested changes in SWOT analysis the evaluators recommended to revise the formulation of initially proposed development factors. The

revised definitions of development factors express more exactly the cohesion of the strengths with the opportunities and respond more directly to the particular needs. A list of proposed needs, disparities and development factors is shown in table 1.

Tab. 1 Interconnection between needs (N), disparities (D) and development factors (DF)

<b>Priority axis 1 – Research and Development</b> <b>and</b> <b>Priority axis 2 – Research and Development in Bratislava Region</b>		
Needs	Disparities	Development factors
N1.1, N2.1 To intensify cooperation and concentration of the R&D capacities	D3 Insufficient research and development potential from qualitative perspective in the area of technical and human infrastructure and its unsuitable structure	DF1 Networking of the research and development capacities through the intensive cooperation and concentration by using available e-services
N1.2, N2.2 To increase the public and private expenses for R&D and innovation	D3 Insufficient research and development potential from qualitative perspective in the area of technical and human infrastructure and its unsuitable structure	DF2 Intensive support of research, development and innovation through effective public and private expenses for R&D and innovation
N1.3, N2.3 To increase the efficiency of R&D potential and cooperation of the Slovak R&D institutions with foreign institutions	D2 Insufficient ability of research and development institutions to react to demand of society/business sector due to old technical infrastructure and fragmentation of research	DF3 Efficient research and development potential and intensive cooperation of the Slovak R&D institutions with foreign countries
N1.4, N2.4 To increase qualitative and quantitative infrastructure level of R&D (technical as well as human) and its structure	D3 Insufficient research and development potential from qualitative perspective in the area of technical and human infrastructure and its unsuitable structure	DF4 Support to renovation and modernisation of technical infrastructure of R&D and highly qualified workforce for research and development progress
N1.5, N2.5 To intensify cooperation between R&D and business sphere	D1 Insufficient demand for innovations in business sector, weak motivation of enterprises to implement innovations / absence of layer	DF5 Intensive cooperation of experts from practice and R&D staff and motivation of entrepreneurially practice for cooperation
N1.6, N2.6 To eliminate regional disparities in the field of R&D	D3 Insufficient research and development potential from qualitative perspective in the area of technical and human infrastructure and its unsuitable structure	DF6 Cooperation of regions with lower concentration of support with R&D capacities in Bratislava region
N1.7, N2.7 Improvement of innovation culture among small and middle enterprises	D4 Barrier between science and society	DF5 Intensive cooperation of experts from practice and R&D staff and motivation of entrepreneurially practice for cooperation
N1.8, N2.8 Implementation of innovation culture in academic sphere environment	D4 Barrier between science and society	DF7 Cooperation of R&D centres, universities and business sphere
N1.9, N2.9 Increase of sources concentration for big projects of R&D solving the whole society problems	D4 Barrier between science and society	DF8 Support to R&D teams (with experts from practice, universities and R&D institutions) in solving of big R&D projects aimed at the issues of the whole society
N3 To improve technical conditions of buildings of higher education institutions	D5 Low quality of interior equipment of higher education institutions D6 Wear of education buildings	DF9 Modernisation of tangible infrastructure of the higher education institutions

Note: needs P1.1-P1.9 refer to priority axis 1, P2.1-P2.9 to priority axis 2 and P3 to priority axis 3

## **2. STRATEGY JUSTIFICATION AND ITS CONSISTENCY**

### **2.1. Logical framework and justification of strategy**

The global objective of the Operational Programme Research and Development is: Modernisation and improvement of research and development support system and infrastructure of higher education institutions in order to contribute to the enhancement of competitiveness of economy, reduction of regional disparities, establishment of new innovative (high-tech) small and medium enterprises, creation of new job opportunities and improvement of educational process at higher education institutions

The strategy of the Operational Programme Research and Development is based on the SWOT analysis and the identified disparities and development factors. In general, a strategy can be defined as an organised procedure aimed at meeting the defined objectives. It comprises four basic elements: analyses, planning, implementation and control. The process of implementation shall be supported by relevant sources. The logical framework of the proposed strategy was evaluated in this context.

The proposed strategy is aimed at creating conditions of the Slovak Republic for transition to the knowledge oriented economy. It supports the effort to minimize unequal development of regions considering mutually interlinked new or existing growth poles as positive stimulus. Individual regions do not fully utilise their research, development and innovation potential, which could become one of the core pillars of their development. An increase in research and development potential depends mainly on the creative use of knowledge and intelligence. In this connection, the strategy defines the EU structural funds interventions, divided into the themes and the territories, through which the strategic objective of the National Strategic Reference Framework of the Slovak Republic in programme period 2007 – 2013 will be achieved more effectively and efficiently.

The Operational Programme Research and Development has been elaborated jointly for both objectives of the cohesion policy, in particular because of the expected impacts of projects realised on the territory of Bratislava region on the research and development potential of the whole Slovak Republic. Justification of this statement is based also on the approval of the EC and the Council of June 2006 of the transfer of funds under the Convergence objective to Research and Development in Bratislava region. In compliance with Article 5 of the Council Regulation (EC) No. 1083/2006, the support from the ERDF under the Regional Competitiveness and Employment objective of the Operational Programme Research and Development is aimed at the three priority areas in the context of

simultaneous support of sustainable development strategies and employment. The Operational Programme Research and Development defines the following priority axes:

- Priority axis 1 Research and Development
- Priority axis 2 Research and Development in Bratislava region
- Priority axis 3 Infrastructure of higher education institutions
- Priority axis 4 Technical support

A specific objective, priority axis indicators and justification of each axis is defined in the programme. Proposed measures, their specific objective, framework activities and description of measures realisation is described within each axis.

As it follows from the results of ex-ante evaluation the individual components of the strategy create a logically linked chain with existing mutual relations between the proposed steps, starting with the needs identification, analysis, setting up strategic objectives to the proposal of particular framework activities for meeting the stated objectives through their implementation.

Priority axes of the Operational Programme aim at the enhancement of regional research and development capacities which are consequently linked to innovations through the support to expert centres focused on a particular industry or technology (e.g. present development of the car industry), support to the networks of cooperation between companies and/or relevant institutions of tertiary education and research and technology transfer. A support to the establishment of new companies through relevant tertiary education and research institutions will be one of the Operational Programme activities supporting spin-off effect.

The priority axis Research and Development in Bratislava Region under the Regional Competitiveness and Employment objective faces the identical structural problems as the other regions of the SR under the Convergence objective. Bratislava region represents approximately a half of the research and development potential in the SR. Based on these reasons, the Slovak Republic has been granted an exception to transfer a part of financial means under the Convergence objective to the Regional Competitiveness and Employment objective as, owing to the identical problems in the area of research and development under both objectives, it is not possible to separate geographically research and development under the Convergence and Regional Competitiveness and Employment objectives.

### **2.1.1. Thematic focus of the Operational Programme**

The Operational Programme Research and Development thematically meets the basic directions of the SR in realisation of the national science and technology policy in the field of basic research, applied research and experimental development, which will finally lead to fulfilling the objectives of the Lisbon Strategy of the EU. The strategy of the priority axis Research and Development thematically incorporates the following areas:

#### **1. Renovation and building of research and development technical infrastructure**

The existence of quality human resources and technical equipment, as one of the core pillars of knowledge economy, is inevitable for research, development and technological innovations. In this connection, it is desired to direct investments to this area in first phase so that research and development and, subsequently, technological innovations would become one of the core development pillars of the Slovak society. This measure includes activities, which are linked to the existence of quality research projects and tasks carried out in the organizations applying for support. It links modernisation and improvement of research and development technical infrastructure in 2007 – 2013, deals with building of top quality equipped laboratories in the areas that are perspective for the further development of the Slovak Republic, and focuses on building and modernization of research and development supporting infrastructure, particularly in the area of information technologies.

#### **2. Support to networks of excellent research and development sites as pillars of regional development and support to transregional cooperation**

The aim of the measure is to integrate research and development, technological and innovation potential of the SR in conformity with the development priorities of a given region. It is necessary to concentrate on the creation of functional relations of cooperation between research and development sites in the Slovak Republic having the potential to accomplish top performance and thus contributing to solve the development issues of the related region. It is necessary to support building of networks of research and development in connection to the development priorities of a particular region, support incorporation of research and development sites into transregional and international networks for research, development and innovation cooperation and to facilitate establishing of national and regional technology platforms.

### 3. Transfer of knowledge and technologies obtained through research and development into practice

The proposed measure refers and supplements the above mentioned measures so that the research team results could be implemented to business sphere, which represents the driving force of economic development of the country.

It defines a wide range of activities leading to support of joint projects with industry and complemented by support of scientific and technological parks, technological centres and incubators. The research and development potential can be increased as long as the supporting programmes for mobilisation and activities aiming at cooperation and partnership building start to be created and implemented.

The strategy of the priority axis Research and Development in Bratislava region relates to the areas of renovation and building research and development technical infrastructure, support to networks of excellent sites, which represent the pillars of regional development and to the transfer of knowledge and technologies obtained through research and development into practice. Taking into account the fact that Bratislava region faces the same structural problems in the area of research and development as the rest of Slovakia, the aim of the axis is identical to the measured of the priority axis Research and Development.

Meeting the strategic objective of the NSRF for programme period 2007 – 2013: “to increase the competitiveness and performance of regions and Slovak economy while respecting sustainable development” requires increased investments to education including investments to infrastructure. Priority axis 3 Infrastructure of Higher Education Institutions defines objectives and examples of specific activities that will be co-financed from the sources of the European Regional Development Fund on the territory under the Convergence objective during the period 2007 – 2013.

#### **2.1.2. Territorial focus of the Operational Programme**

The territorial concentration of measures takes into account the regional differences. The regions eligible for funding from the ERDF under the Convergence objective will be regions corresponding to NUTS level II whose gross domestic product per capita, measured in purchasing power parities and calculated on the basis of figures for the period of the last three prior to regulation came into power, is less than 75 % of the average of the enhanced EU. This objective covers the whole territory of the SR except of Bratislava region. The Convergence objective is covered by the measures of priority axes 1 and 3.

According to the Council Regulation (EC) No. 1083/2006, Bratislava region is covered by the *Regional Competitiveness and Employment* objective. Bratislava region represents a specific problem covering almost 50 % of the research and development potential of the SR and dealing with the same structural problems in the area of research, development and innovations as the other NUTS level II regions of Slovakia. In order to overcome this obstacle the government of the SR passed the Resolution No. 201 of March 1, 2006 on the proposal of procedure for ensuring a balanced financial support to research and development from European Regional Development Fund in 2007 – 2013 within the whole territory of the SR. In accordance with the Council Regulation (EC) No. 1083/2006, the EU granted an exception to transfer a part of the allocated funds from the objective 1 to the objective 2 under the condition that each supported project within Bratislava region shall clearly declare that the project results will have impact on the whole territory of Slovakia or on some of the regions out of Bratislava. The Regional Competitiveness and Employment objective is covered by the priority axis 2 Research and Development in Bratislava Region.

Territorial and thematic concentration of measures is transferred into specific priorities (priority axis) of the Operational Programme Research and Development. The particular objectives, priorities, measures and framework activities are summarised in table 2.

Tab. 2 Global objective, priorities, measures and framework activities of OP R&D

Global programme objective	
Modernisation and improvement of research and development support system and infrastructure of higher education institutions in order to contribute to the enhancement of competitiveness of economy, reduction of regional disparities, establishment of new innovative (high-tech) small and medium enterprises, creation of new job opportunities and improvement of educational process at higher education institutions	
Objective Convergence	
Priority	1 Research and development
Specific objective	<i>1 Modernisation and improvement of research and development support system in order to contribute to the enhancement of competitiveness of economy, reduction of regional disparities, establishment of new innovative (high-tech) small and medium enterprises and creation of new job opportunities.</i>
Measure	1.1 Renovation and building of research and development technical infrastructure
Specific objective	<i>1.1 Modernization and improvement of research and development technical infrastructure in 2007 - 2013 aimed at the improvement of educational process and increase of capabilities of research and development institutions to effectively cooperate with quality research institution in the EU and in foreign countries as well as with entities of social and economic practice through transfer of knowledge and technologies.</i>
Framework activity	1.1.1 Renovation of research and development infrastructure and instrument equipment of higher education institutions, research institutions, research centres and other research and development organisations
	1.1.2 Support to research infrastructure of world quality in the areas of strategic importance for further development of economy and society (needs of core industry sectors of the SR, increasing quality of life, and needs of sustainable development of economy) with the emphasis on significant interdisciplinary projects with participation of several educational or research institutions and on joint research centres with participation of academic and business sectors.
	1.1.3 Renovation, building and sustainable development of ICT infrastructure of research and development at R&D institutions, including support to broadband networks among top research and development sites



Tab. 2 - cont

<b>Measure</b>	<b>1.2 Support to networks of excellent research and development sites as pillars of regional development and support to transregional cooperation</b>
<i>Specific objective</i>	<i>1.2 Increase of quality of research sites and support to excellent research with the emphasis on higher educational institutions, areas of strategic importance for further development of economy and society.</i>
<b>Framework activity</b>	1.2.1 Support to exchange and joint research programmes of Slovak R&D and educational institutions internationally cooperating with quality foreign research and development institutions
	1.2.2 Support to important research and development projects in the areas of strategic importance for further development of economy and society (needs of core industrial sectors of the SR, increasing quality of life, and needs of sustainable development of economy)
	1.2.3 Support to cooperation between regional structures and R&D sites, including cooperation between R&D institutions and secondary schools
	1.2.4 Support to international cooperation in the area of research and development
	1.2.5 Support to professional return of Slovak researchers working abroad to Slovakia (including doctoral and post-doctoral)
	1.2.6 Support to top world quality human resources in the areas of strategic importance for further development of economy and society
<b>Measure</b>	<b>1.3 Transfer of knowledge and technologies obtained through research and development into practice</b>
<i>Specific objective</i>	<i>1.3 Increase of degree of cooperation of R&amp;D institutions with social and economic practice through transfer of knowledge and technologies and thus contributing to the enhancement of regional and Slovak economic growth</i>
<b>Framework activity</b>	1.3.1 Increase of innovation culture in academic sphere through virtual incubators
	1.3.2 Support to applied research and development
	1.3.3 Increase of quality of internal management of transfer of knowledge and technologies from academic sphere to practice including activities eliminating barriers between research and development on one side and society and economy on the other.
	1.3.4 Increase of rate of usage of intellectual property institutes by quality research and development sites in academic sphere

Tab. 2 - cont

Objective Regional Competitiveness and Employment	
<b>Priority</b>	<b>2 Research and development in Bratislava region</b>
<i>Specific objective</i>	<i>2 Modernisation and improvement of research and development support system in order to contribute to the enhancement of competitiveness of economy, reduction of regional disparities, establishment of new innovative (high-tech) small and medium enterprises and creation of new job opportunities in Bratislava region</i>
<b>Measure</b>	<b>2.1 Renovation and building of research and development technical infrastructure in Bratislava region</b>
<i>Specific objective</i>	<i>2.1 Modernization and improvement of research and development technical infrastructure in 2007 - 2013 aimed at the improvement of educational process and increase of capabilities of research and development institutions to effectively cooperate with quality research institution in the EU and in foreign countries as well as with entities of social and economic practice through transfer of knowledge and technologies.</i>
<b>Framework activity</b>	2.1.1 Renovation of research and development infrastructure and instrument equipment of higher education institutions, research institutions, research centres and other research and development organisations
	2.1.2 Support to research infrastructure of world quality in the areas of strategic importance for further development of economy and society (needs of core industry sectors of the SR, increasing quality of life, and needs of sustainable development of economy) with the emphasis on significant interdisciplinary projects with participation of several educational or research institutions and on joint research centres with participation of academic and business sectors.
	2.1.3 Renovation, building and sustainable development of ICT infrastructure of research and development at R&D institutions, including support to broadband networks among top research and development sites
<b>Measure</b>	<b>2.2 Support to networks of excellent research and development sites as pillars of development of Bratislava region</b>
<i>Specific objective</i>	<i>2.2 Increase of quality of research sites and support to excellent research with the emphasis on higher educational institutions, areas of strategic importance for further development of economy and society.</i>
<b>Framework activity</b>	2.2.1 Support to exchange and joint research programmes of Slovak R&D and educational institutions internationally cooperating with quality foreign research and development institutions
	2.2.2 Support to important research and development projects in the areas of strategic importance for further development of economy and society (needs of core industrial sectors of the SR, increasing quality of life, and needs of sustainable development of economy)
	2.2.3 Support to cooperation between regional structures and R&D sites, including cooperation between R&D institutions and secondary schools
	2.2.4 Support to international cooperation in the area of research and development
	2.2.5 Support to professional return of Slovak researchers working abroad to Slovakia (including doctoral and post-doctoral)
	2.2.6 Support to top world quality human resources in the areas of strategic importance for further development of economy and society

Tab. 2 – cont

<b>Measure</b>	<b>2.3 Transfer of knowledge and technologies obtained through research and development into practice in Bratislava region</b>
<i>Specific objective</i>	<i>2.3 Increase of degree of cooperation of R&amp;D institutions with social and economic practice through transfer of knowledge and technologies and thus contributing to the enhancement of regional and Slovak economic growth</i>
<b>Framework activity</b>	2.3.1 Increase of innovation culture in academic sphere through virtual incubators
	2.3.2 Support to applied research and development
	2.3.3 Increase of quality of internal management of transfer of knowledge and technologies from academic sphere to practice including activities eliminating barriers between research and development on one side and society and economy on the other.
	2.3.4 Increase of rate of usage of intellectual property institutes by quality research and development sites in academic sphere
<b>Objective Convergence</b>	
<b>Priority</b>	<b>3 Infrastructure of higher education institutions</b>
<i>Specific objective</i>	<i>3 Increase of quality of education at higher education institutions through investments in material infrastructure</i>
<b>Measure</b>	<b>3.1 Building of infrastructure and modernisation of internal facilities of higher education institutions in order to improve conditions for education process</b>
<i>Specific objective</i>	<i>Increase of quality of education at higher education institutions through investments in material infrastructure</i>
<b>Framework activity</b>	Investment activities aimed at reconstruction of higher education institutions (e.g. thermal insulation of buildings, replacement of windows or repair of roof, replacement of central heating system, repair of building walls, stabilisation of buildings, repair of building plasters, repair of building exterior, modification of building interior, ensuring disabled facilities, ensuring fire safety, reconstruction of sanitary facilities and WC, reconstruction of heating, water, sewage and power supply distribution networks)
	Construction of new buildings for higher education institutions
	Enlargement of buildings of higher education institutions (e.g. additional buildings, building superstructures, academic libraries, complementary services within school premises - modification of school premises surroundings).
	Modernisation and reconstruction of accommodation capacities, gyms, canteens and sport fields of higher education institutions
	Modernization of those interior facilities of higher education institutions, which are used for education process in order to improve conditions for new forms of education and learning process (in particular for support to new technologies in building language classrooms, workshops, chemistry, biology and physics classrooms, building information and communication technologies classrooms, furnishing academic libraries with computers).
<b>Objective Convergence and Regional Competitiveness and Employment</b>	
<b>Priority</b>	<b>4 Technical support</b>
<i>Specific objective</i>	<i>4 Ensure implementation of the OP R&amp;D in accordance with the requirements for management, implementation, control, audit, monitoring and evaluation of operational programme and for administrative structures responsible for realisation of operational programme, provision of support for projects preparation as well as for public information, promotion and exchange of experience.</i>

## 2.2. Strategy consistency

A strategy can be considered as consistent on condition that the strategic objectives, priorities and measures are set up in conformity with the needs identified. Using supporting analyses of compliance of needs with objectives of the Operational Programme the evaluation of strategy consistency clearly confirms that the identified needs fully comply with the proposed strategic objectives. A qualitative assessment of compliance of needs with the particular objectives of measures of priority axes and the global objective is shown in table 3.

Tab. 3 Compliance of needs with objectives of priority axes and global objective of OP R&D

Priority axis 1 – Research and Development and Priority axis 2 – Research and Development in Bratislava Region				
Needs*	Measure 1.1 (2.1)	Measure 1.2 (2.2)	Measure 1.3 (2.3)	Global objective of OP R&D
	Significance of compliance			Order of needs compliance
N1.1, N2.1	2	1	1	2
N1.2, N2.2	1	1	1	1
N1.3, N2.3	2	1	1	1
N1.4, N2.4	1	1	1	1
N1.5, N2.5	2	2	1	3
N1.6, N2.6	1	2	1	2
N1.7, N2.7	3	2	1	3
N1.8, N2.8	2	1	1	2
N1.9, N2.9	3	1	1	2
Priority axis 3 – Infrastructure of Higher Education Institutions				
Needs	Measure 3.1			Global objective of OP R&D
N3	1			1

\* needs identification is identical to that described in chapter 2.4

\*\* 1-most significant rate of compliance, 3-least significant rate of compliance

## 2.3. Dependences between the proposed strategy components

In accordance with the terms of reference the evaluation was aimed at the assessment of mutual dependencies between the proposed strategy components, i.e. whether the proposed framework activities are sufficient to cover completely the defined objectives and whether there is no mutual overlapping.

Meeting the Convergence and Regional Competitiveness and Employment objectives is provided through territorial allocation of individual priority axes. Priority axis 1 Research and Development and priority axis 2 Research and Development in Bratislava Region are properly complemented in order to meet the Convergence and Regional Competitiveness and Employment objectives. Priority axes 1 and 2 are proposed complementary in regard of priority axis 3 Infrastructure of Higher Education Institutions. While the aim of the priority axis 1 (measure 1.1) is to support research and development activities, the aim of the priority axis 3 is modernisation of facilities used also for other activities of higher education institutions.

The objective of the priority axis 4 Technical Support is to support the effective implementation of the proposed strategy including monitoring, evaluation and control.

The proposed framework activities of the Operational Programme Research and Development are full consistent with the determined objectives of measures. Some partial dependencies identified between the framework activities can be considered in a positive way in terms of interconnection of outputs of supported projects. These dependencies can take place in cases when outputs of projects supported under one measure will have a similar impact as project outputs supported under other measure. Any partial dependencies between the activities can be eliminated by clearly defined support to actions in the following documents (e.g. Operational Programme Manual).

## 2.4. Risk rate for proposed strategic priorities and measures

Determination of risks for implementation of programme measures is directly linked to the defined disparities, weaknesses and threats of which express the main barriers of internal and external environment for meeting the objectives of the OP R&D. Ex-ante evaluation was primarily aimed at the determination of risk rate following from the possible threats of the environment when measures are being implemented. Table 4 shows the order of significance of threats for implementation of measures of priority axes 1 and 2.

Tab. 4 Significance order of threats for implementation of measures of priority axes 1 and 2

Order	Threats
1	Leaving of highly qualified research staff abroad or to regions offering higher financial recognition of work or job promotion
2	Transfer of global capital investments to territories with a higher price competitiveness than in the SR and not substituting them by investments based on knowledge
3	Low motivation of research and development sites to get familiar with foreign projects Insufficient interest of young generation in carrier in priority research and development areas
4	Low GDP rate spent on research and development Persistence of rigidity and growth of distance between the education system and the needs of economy
5	Low effective and efficient support to research and development with respect to the growth of competitiveness of industry and services due to the disintegration and low flexible forms of support
6	Lack of interest of business sphere in outputs of research and development of Slovak institutions
7	Inadequate structure of labour qualification and higher education institutions with respect to the needs of labour market Insufficient financing and care of development of human and technical resources of research and development sites
8	Deficiently developed culture of using analytical and evaluation tools indecision-making processes of research and development institutions

Implementation risks of measures of priority axes 1 and 2 of the OP R&D relates mainly to the insufficient influence of framework activities on strengthening research and development potential and optimisation its structure, insufficient elimination of barriers between the science and the society resulting from insufficient motivation of the relevant entities, and to the risk of weak cooperation between the R&D institutions and the entrepreneurial entities. The risks identified refer mainly to qualitative objectives of the OP R&D. Risk rate associated with the implementation of priority axis 3 is considered to be low. Based on the results of supporting analyses it is suggested to pay higher attention to the implementation of measures and framework activities relating to the needs that are associated with higher risk rate and whose evaluation criteria are of qualitative nature (e.g. improvement of cooperation, increase of research and development potential, etc.).

## **2.5. Financial framework of strategy**

With regard to the evaluation of financial framework of strategy, it is possible to accept the financial resources and the rate of co-financing proposed in the OP R&D. It can be assumed that allocation of resources to individual axes was determined on an indicative basis as OP R&D does not include a detail analysis of financial requirements for each axis. OP R&D states correctly that as far as research, development, and, consequently, innovations should be one of the development pillars of the Slovak society, it is necessary during the first phase to invest to technical equipment, which is reflected in measures of priority axes 1 and 2. It is also possible to accept the proposed amount of financial means for priority axis 3 and 4.

A proposal of allocation of determined funds to realisation of measures of priority axes 1 and 2 is based on results of supporting analyses. It is proposed to allocate the available finances as follows:

- measure 1.1 and 2.1      40 – 50 % of total funds allocated to the respective axis
- measure 1.2 and 2.2      15 – 25 % of total funds allocated to the respective axis
- measure 1.3 and 2.3      35 – 42 % of total funds allocated to the respective axis

Taking into account the defined intervals, it is possible to determine specific financial frames for allocation of available funds to implementation of individual activities of measures of priority axis 1 and 2 (table 5).

Tab. 5 Allocation of funds to priority axes of OP R&D (EUR)

		OP R&D total	EU	ŠR
<b>Priority axis 1</b>		<b>777 406 040</b>	<b>660 795 134</b>	<b>116 610 906</b>
Measure 1.1	L*	310 962 416	264 318 054	46 644 362
	H*	388 703 020	330 397 567	58 305 453
Measure 1.2	L	116 610 906	99 119 270	17 491 636
	H	194 351 510	165 198 784	29 152 727
Measure 1.3	L	272 092 114	231 278 297	40 813 817
	H	349 832 718	297 357 810	52 474 908
<b>Priority axis 2</b>		<b>371 724 735</b>	<b>315 966 024</b>	<b>55 758 711</b>
Measure 2.1	L	148 689 894	126 386 410	22 303 484
	H	185 862 368	157 983 012	27 879 356
Measure 2.2	L	55 758 710	47 394 904	8 363 807
	H	92 931 184	78 991 506	13 939 678
Measure 2.3	L	130 103 657	110 588 108	19 515 549
	H	167 276 131	142 184 711	25 091 420
<b>Priority axis 3</b>		<b>235 294 118</b>	<b>200 000 000</b>	<b>35 294 118</b>
<b>Priority axis 4</b>		<b>38 416 724</b>	<b>32 654 215</b>	<b>5 762 509</b>
<b>Total</b>		<b>1 422 841 617</b>	<b>1 209 415 373</b>	<b>213 426 244</b>

\* L – low, H – high

### **3. EVALUATION OF EXPECTED RESULTS AND IMPACTS**

#### **3.1. Nature and structure of proposed set of indicators**

The aim of ex-ante evaluation was to consider whether the set of indicators proposed in OP R&D creates an integrated complex and complies with the requirements for a real and transparent quantification of expected results and impacts at individual programme levels. As it follows from the evaluation the originally proposed structure of indicators is not in conformity with these requirements. In cooperation with the authors of OP R&D the originally proposed indicators were revised and divided into categories of context and programme indicators. The revised set of context and programme indicators is shown in table 2 and 3. Adopted OP R&D indicators are balanced and relevant for measuring achieved results and impacts of implemented activities.

#### **3.2. Quantification of indicators**

The aim of indicators quantification was to estimate their expected values, which can be achieved after the objectives determined at individual levels of OP R&D have been met. Quantification was based on mutual cooperation between the evaluators and authors of OP R&D and the final values represent results of this cooperation and mutual consultations. Determination of expected values of indicators was carried out using quantitative and qualitative estimation methods considering the relevant programme level to which indicators refer. According to the EC recommendations indicator values were determined so that direct effects of interventions can be measured at the programme, priority axis or measure level.<sup>1</sup> To determine the expected values it was necessary to consider the nature of indicators, i.e. whether the particular indicator relates to quantitative or qualitative objective and whether it measures the result or impact of interventions. Expert estimates were based on the results of analyses of OP R&D and present situation in a given area. Quantitative estimates made use of available numerical data of statistical databases, state sources (Ministry of Education of the SR) and official EU sources (EUROSTAT). A part of estimated values is determined on the assumption of meeting the objectives of OP R&D (reduction of regional disparities, convergence to EU 15). Some values were determined taking into account the target budget and the expected financial contributions to individual measures within priority axes. The quantified values of the initial and expected values of context indicators are in table 6 and programme indicators in table 7.

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<sup>1</sup> [http://ec.europa.eu/regional\\_policy/sources/docoffic/working/doc/indic\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docoffic/working/doc/indic_en.pdf)



Tab. 6 Quantifies values of context indicators

<b>The Operational Programme Research and Development</b>				
Indicator	Unit	Initial value		Expected value
		Year	Value	Year 2013
Number of EPO patent applications per 1 million citizens	Number	2003	3,4	10
Total number of research and development staff (out of which researchers)	FTE	2004	14 329 (10 717)	16 700 (12 150)
Number of granted USPTO patents per 1 million citizens	Number	2003	0,093	1
Number of research and development staff in relation to total labour force	Persons per 1000 manpower	2003	4	8
<b>Priority axis 1 Research and Development</b>				
Number of EPO patent applications per 1 million citizens	Number	2003	3,4	10
Total number of research and development staff (out of which researchers)	FTE	2004	6302 (4848)	7144 (5496)
Number of granted USPTO patents per 1 million citizens	Number	2003	0,093	1
Number of research and development staff in relation to total labour force	Persons per 1000 manpower	2003	5,1	10
<b>Measure 1.1 Renovation and building of research and development technical infrastructure</b>				
Number of EPO patent applications per 1 million citizens	Number	2003	3,4	10
Total number of research and development staff (out of which researchers)	FTE	2004	2520 (1939)	2857 (2198)
Number of granted USPTO patents per 1 million citizens	Number	2003	0,093	1
Number of research and development staff in relation to total labour force	Persons per 1000 manpower	2003	5,1	10
<b>Measure 1.2 Support to networks of excellent research and development sites as pillars of regional development and support to transregional cooperation</b>				
Number of EPO patent applications per 1 million citizens	Number	2003	3,4	10
Total number of research and development staff (out of which researchers)	FTE	2004	1262 (970)	1430 (1100)
Number of granted USPTO patents per 1 million citizens	Number	2003	0,093	1
Number of research and development staff in relation to total labour force	Persons per 1000 manpower	2003	5,1	10
<b>Measure 1.3 Transfer of knowledge and technologies obtained through research and development into practice</b>				
Number of EPO patent applications per 1 million citizens	Number	2003	3,4	10
Total number of research and development staff (out of which researchers)	FTE	2004	2520 (1939)	2857 (2198)
Number of granted USPTO patents per 1 million citizens	Number	2003	0,093	1
Number of research and development staff in relation to total labour force	Persons per 1000 manpower	2003	5,1	10

Tab. 6 - cont

Indicator	Unit	Initial value		Expected value
		Year	Value	Year 2013
Priority axis 2 Research and Development in Bratislava Region				
Number of EPO patent applications per 1 million citizens	Number	2003	3,4	10
Total number of research and development staff (out of which researchers)	FTE	2004	8027 (5869)	9556 (6654)
Number of granted USPTO patents per 1 million citizens	Number	2003	0,093	1
Number of research and development staff in relation to total labour force	Persons per 1000 manpower	2003	5,1	10
Measure 2.1 Renovation and building of research and development technical infrastructure in Bratislava region				
Number of EPO patent applications per 1 million citizens	Number	2003	3,4	10
Total number of research and development staff (out of which researchers)	FTE	2004	3210 (2347)	3822 (2661)
Number of granted USPTO patents per 1 million citizens	Number	2003	0,093	1
Number of research and development staff in relation to total labour force	Persons per 1000 manpower	2003	5,1	10
Measure 2.2 Support to networks of excellent research and development sites as pillars of regional development and support to transregional cooperation in Bratislava region				
Number of EPO patent applications per 1 million citizens	Number	2003	3,4	10
Total number of research and development staff (out of which researchers)	FTE	2004	1607 (1175)	1912 (1332)
Number of granted USPTO patents per 1 million citizens	Number	2003	0,093	1
Number of research and development staff in relation to total labour force	Persons per 1000 manpower	2003	5,1	10
Measure 2.3 Transfer of knowledge and technologies obtained through research and development into practice in Bratislava region				
Number of EPO patent applications per 1 million citizens	Number	2003	3,4	10
Total number of research and development staff (out of which researchers)	FTE	2004	3210 (2347)	3822 (2661)
Number of granted USPTO patents per 1 million citizens	Number	2003	0,093	1
Number of research and development staff in relation to total labour force	Persons per 1000 manpower	2003	5,1	10
Priority axis 3 Infrastructure of Higher Education Institutions				
Number of students benefiting from better quality infrastructure of higher education institutions	Number	2007	0	300 000
Measure 3.1 Building of infrastructure and modernisation of internal facilities of higher education institutions in order to improve conditions for education process				
Number of students benefiting from better quality infrastructure of higher education institutions	Number	2007	0	300 000

Tab. 6 - cont

Indicator	Unit	Initial value		Expected value
		Year	Value	Year 2013
Priority axis 4 Technical Support				
Rate of contracted funds	%	2007	0	100
Rate of used funds	%	2007	0	100

Tab. 7 Quantified values of programme indicators

<b>The Operational Programme Research and Development</b>					
Indicator	Type	Unit	Initial value		Expected value
			Year	Value	Year 2013
Relative number of publications (publishing activities)	Result	Number	2000/2004	0,34	0,7
Number of researchers professionally benefiting from granted support	Output	Number	2007	0	17000
Number of institutions with supported technical infrastructure of research and development	Output	Number	2007	0	200
Number of projects of cooperation of research and development institutions with social and economic practice	Output	Number	2007	0	800
Number of projects supporting networks of excellent research and development sites	Output	Number	2007	0	400
Number of patents, trade marks and other expressions of intellectual property	Result	Number	2007	0	60
Number of new and reconstructed buildings and facilities of higher education institutions	Output	Number	2007	0	40
Number of higher education institutions with modernised facilities relating to educational; process	Output	Number	2007	0	20
Number of students benefiting from better quality infrastructure of higher education institutions	Result	Number	2007	0	300000
Number of projects for development of research and technologies	Core	Number	2007	0	1600
<b>Priority axis 1 Research and Development</b>					
Relative number of publications (publishing activities)	Result	Number	2000/2004	0,34	0,7
Number of researchers professionally benefiting from granted support	Output	Number	2007	0	8500
Number of institutions with supported technical infrastructure of research and development	Output	Number	2007	0	100
Number of projects of cooperation of research and development institutions with social and economic practice	Output	Number	2007	0	500
Number of projects supporting networks of excellent research and development sites	Output	Number	2007	0	250
Number of patents, trade marks and other expressions of intellectual property	Result	Number	2007	0	30
Concluded licence contracts - sale	Result	Number	2007	0	300
<b>Measure 1.1 Renovation and building of research and development technical infrastructure</b>					
Relative number of publications	Result	Number	2007	0	375
Number of researchers professionally benefiting from granted support	Output	Number	2007	0	4250
Number of institutions with supported technical infrastructure of research and development	Output	Number	2007	0	100

Tab. 7 - cont

Tab. 7 - Cont.

Indicator	Type	Unit	Initial value		Expected value
			Year	Value	Year 2013
Measure 1.2 Support to networks of excellent research and development sites as pillars of regional development and support to transregional cooperation					
Relative number of publications	Result	Number	2007	0	375
Number of researchers professionally benefiting from granted support	Output	Number	2007	0	2125
Number of institutions with supported technical infrastructure of research and development	Output	Number	2007	0	250
Measure 1.3 Transfer of knowledge and technologies obtained through research and development into practice					
Relative number of publications	Result	Number	2007	0	750
Number of researchers professionally benefiting from granted support	Output	Number	2007	0	2125
Number of projects of cooperation of research and development institutions with social and economic practice	Output	Number	2007	0	500
Number of patents, trade marks and other expressions of intellectual property	Result	Number	2007	0	30
Concluded licence contracts - sale	Result	Number	2007	0	200
Priority axis 2 Research and Development in Bratislava Region					
Relative number of publications (publishing activities)	Result	Number	2000/2004	0,34	0,7
Number of researchers professionally benefiting from granted support	Output	Number	2007	0	8500
Number of institutions with supported technical infrastructure of research and development	Output	Number	2007	0	100
Number of projects of cooperation of research and development institutions with social and economic practice	Output	Number	2007	0	300
Number of projects supporting networks of excellent research and development sites	Output	Number	2007	0	150
Number of patents, trade marks and other expressions of intellectual property	Result	Number	2007	0	30
Concluded licence contracts - sale	Result	Number	2007	0	300
Measure 2.1 Renovation and building of research and development technical infrastructure in Bratislava region					
Relative number of publications	Result	Number	2007	0	225
Number of researchers professionally benefiting from granted support	Output	Number	2007	0	4250
Number of institutions with supported technical infrastructure of research and development	Output	Number	2007	0	100

Tab. 7 - cont

Tab. 1 - Cont.

Indicator	Type	Unit	Initial value		Expected value
			Year	Value	Year 2013
Measure 2.2 Support to networks of excellent research and development sites as pillars of regional development and support to transregional cooperation in Bratislava region					
Relative number of publications	Result	Number	2007	0	225
Number of researchers professionally benefiting from granted support	Output	Number	2007	0	2125
Number of institutions with supported technical infrastructure of research and development	Output	Number	2007	0	150
Measure 2.3 Transfer of knowledge and technologies obtained through research and development into practice in Bratislava region					
Relative number of publications	Result	Number	2007	0	450
Number of researchers professionally benefiting from granted support	Output	Number	2007	0	2125
Number of projects of cooperation of research and development institutions with social and economic practice	Output	Number	2007	0	300
Number of patents, trade marks and other expressions of intellectual property	Result	Number	2007	0	30
Concluded licence contracts - sale	Result	Number	2007	0	300
Priority axis 3 Infrastructure of Higher Education Institutions					
Number of new and reconstructed buildings and facilities of higher education institutions	Output	Number	2007	0	40
Number of higher education institutions with modernised facilities relating to educational; process	Output	Number	2007	0	20
Number of students benefiting from better quality infrastructure of higher education institutions	Result	Number	2007	0	300 000
Measure 3.1 Building of infrastructure and modernisation of internal facilities of higher education institutions in order to improve conditions for education process					
Number of new buildings and facilities of higher education institutions	Output	Number	2007	0	5
Number of reconstructed buildings and facilities of higher education institutions	Output	Number	2007	0	35
Number of higher education institutions with modernised facilities relating to educational; process	Output	Number	2007	0	400
Number of students benefiting from better quality infrastructure of higher education institutions	Result	Number	2007	0	300000
Priority axis 4 Technical Support					
Number of handled applications for contributions/grants	Result	Number	2007	0	6000
Number of signed contracts for contributions/grants	Result	Number	2007	0	2100
Number of handled applications for payment/advance payment	Result	Number	2007	0	15000
Cumulative number of supported employees of managing authority	Output	Number	2007	0	29
Cumulative number of supported employees of intermediate bodies	Output	Number	2007	0	105
Cumulative number of supported external employees	Output	Number	2007	0	10

### **3.3. Expected impacts on specific priority areas**

#### **3.3.1. *Equality of opportunities***

The principle of equality of opportunities is ensured in all activities of priority axes of the OP R&D. The proposed priority axes prevent any discrimination and equality between genders is ensured with the aim to improve position of women. Public institution, which will make use of the ERDF financial means, will support gender equality in all areas of society. This horizontal priority will be considered within evaluation procedures. Men and women have equal opportunities for education, employment, cultural and carrier advancement. It is expected that new working opportunities for inactive and unemployed women will be created and their integration in the research areas will be facilitated by the program implementation. Priority axis aimed at infrastructure of higher education institutions supports equality of opportunities within all measures through activities that create conditions for equal access for all students to modernised education infrastructure. Equality of opportunities is also ensured through a variety of beneficiaries from public and private sector.

#### **3.3.2. *Environment***

A separate document – Strategic Environmental Assessment (SEA) has been elaborated in order to evaluate potential impacts on the environment.

#### **3.3.3. *Small and medium entrepreneurship and competitiveness***

Implementation of the OP R&D should facilitate the development of small and medium enterprises and increase competitiveness mainly in industries with a high proportion of added value. Potential impacts on the area of small and medium enterprises and competitiveness can be monitored through selected indicators.

#### **3.3.4. *Innovations***

One of the main ideas of the OP R&D is its orientation on the utilisation of innovations for development of the whole society and its implementation should logically facilitate the creation and development of innovations and innovative thoughts. Potential impacts on the area of innovations can be determined through the values of all context indicators of priority axes 1 and 2 as these indicators directly or indirectly relate to innovations.

### **3.3.5. *Employment and labour market***

Implementation of the OP R&D should contribute to the positive trend in employment in the areas requiring highly qualified labour, i.e. higher education in sectors with high proportion of added value and doctoral studies. Implementation of the OP R&D should also facilitate to prevent leaving of highly qualified labour to better conditions abroad and more developed regions of the SR, and to create motivating conditions for return of this target group to Slovakia or less developed regions of Slovakia. Potential impacts on the area of employment and labour market can be evaluated through selected indicators.

## **4. EVALUATION OF COHERENCE WITH POLICES AND STARTEGIC DOCUMENTS OF THE COMMUNITY AND THE SR**

### **4.1. Coherence with policies and strategic documents of the Community**

Transnational proposals of documents adopted by the EU in the context of strategic planning of the EU structural funds and the national documentation influencing functionality of the support system of this specific area within the state were the basic assumptions for developing the strategy of the OP R&D.

The aim of evaluation was to assess the coherence of the OP R&D with policies and strategic documents of the Community and the Slovak Republic. According to the level of documents scope, the evaluation was oriented on assessing conformity with the global objectives, specific objectives and particular priorities, respectively.

Community Strategic Guidelines (CSG) provides indicative priorities of the Community in the area of cohesion policy for new program period of the EU funds implementation in 2007 – 2013. These guidelines aim to approach to the goal of the European Union vision till 2010 emphasising sustainable developments and competitiveness of economy and considering the Lisbon Strategy. Based on the evaluation of CSG conformity with the OP R&D strategy, it is possible to observe full conformity for both objectives of the OP R&D (the Convergence objective and the Regional Competitiveness and Employment objective). The strategy of the Operational Programme Research and Development reflects the intentions of the “Improvement of knowledge and innovation for growth” priority of Community Strategic Guidelines.

European Parliament resolution on preparing for the assent procedure for the Community's strategic guidelines for the period 2007-2013 (Cohesion Policy in Support of Growth and Jobs) in particular the aim: “Promoting knowledge and innovation for growth” is completely in compliance with the measures 1.2, 1.3, 2.2 and 2.3. The other measures of the OP R&D take into account all other substantial areas. The proposed measures will support activities aimed at the increase and improvement of investments into research and technological development.

In the framework of Lisbon strategy one of the main items for meeting the strategic objective is the transition of countries to knowledge oriented economy and community through supporting information society, research and development, as well as through accelerating the process of structural reforms for competitiveness and innovations and completion of the



common market. Priority axis of the OP R&D directly implements the proposed idea in order to support the effort of the EU to become the most dynamic and the most competitive economic based on knowledge worldwide.

Gothenburg strategy of sustainable development likewise Lisbon strategy will be fulfilled through priority axes aimed at the basic idea of the establishment of real European research area, which will be able to achieve the objectives of permanent competitiveness and growth. A statement of the OP R&D that the Programme is set up in compliance with Lisbon and Gothenburg strategy of sustainable development can be accepted. There is a full conformity with the measures of priority axes 1 and 2.

Except above mentioned key strategies, the following transnational strategies, regulations and directives were evaluated:

1. European employment strategy (EES),
2. Financial perspective 2007 – 2013,
3. EU Directive No. 2001/42/EC on assessment of impacts of certain plans and programs on environment,
4. Council Regulation (EC) on the European Regional Development Fund, the European Social Fund and the Cohesion Fund
5. The Report of the European Commission “More research for Europe: increase to 3 % of GDP”

Out of the listed documents, the European Employment Strategy plays a leading role in implementation of Lisbon strategy objectives in the area of employment. Evaluation shows full compliance of EES with priority axes 1 and 2 of OP R&D. In case of the full employment objective in Bratislava region the compliance is satisfactory.

Council regulation (EC) No 1083/2006 from 11 July 2006 establishes general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund. During the program period 2007 – 2013 the structural funds will be aimed at meeting the Convergence, Regional Competitiveness and Employment, and European Territorial Cooperation objectives. There is a full conformity between the OP R&D and above mention regulation.

The Report of the European Commission “More research for Europe: increase to 3 % of GDP” includes recommendations for member countries, business environment and other stakeholders with a request on particular action plans to reach 3 % margin of investment and

reinforcement of the European area of research and innovation. Priority axes 1 and 2 of OP R&D are in full compliance with the objective of increasing investments to science, research and improvement of their coordination. The given objectives fully comply also with the priority axis 3.

The proposed strategy takes completely into account the horizontal priorities (legislation of the EC in the area of economic competition regulations, public procurement, protection and improvement of environment, equality of opportunities, gender equality and non-discrimination).

Compliance of priority axis 3 with additional documents relating to the infrastructure of higher education institutions was evaluated. The following documents were considered:

1. Working programme of the European Commission "Education and Vocational Preparation 2010",
2. Memorandum on life-long education,
3. Bologna Declaration,
4. Recommendation of the European Parliament and the Council on core competencies for life-long education,
5. White book of the European Commission on youth policy "New Impulse for European Youth",
6. Common initiative eEurope+ of the EU candidate countries.

#### **4.2. Coherence with policies and strategic documents of the SR**

The basic policies and strategic documents at the national level are as follows:

1. The National Strategy of Sustainable Development (The Action Plan of Sustainable Development for 2005 – 2010),
2. The Concept of Territorial Development of Slovakia 2001,
3. The National programme of Reforms of the Slovak Republic / Strategy of Competitiveness Development of Slovakia 2010 (National Lisbon strategy),
4. The Action Plan for Science, Research and Innovation,
5. The NSRF Strategy and Vision of the SR 2007 – 2013,
6. Update of the Convergence Programme of Slovakia 2007 -2013

The implementation of the system that assumes the fulfilment of the objectives of Lisbon strategy and the National Economic Strategy of the Slovak Republic will be ensured by mutual interconnection between the National Strategy of Sustainable Development and the

Action Plan of Sustainable Development for 2005 – 2010. This will have a positive synergic effect on the objectives achievement. The action plan defined objectives for particular sector policies of the Slovak Republic. The main task in the area of research and development was to determine basic directions for implementation of the state science and technology policy in basic research, applied research and experimental development. Based on coherence evaluation, the OP R&D priority axes 1 and 2 fully comply with the National Strategy of Sustainable Development.

The Concept of Territorial Development of Slovakia 2001 does not solve problems of research and development in Slovakia directly. The only proposed measure “to accelerate quick Internet and on-line connections for researchers and students” is stated in chapter 6. The OP R&D covers these issues within the framework activities 1.1.3 a 2.1.3.

Within evaluation of coherence of Lisbon strategy for Slovakia, it is possible to state that OP R&D fully complies with the strategic area of the National Programme of Reforms „Science, Research and Innovations” through measures 1.1, 1.2, 1.3 and 2.1, 2.2 a 2.3.

The Action plan for Science, Research and Innovations links to the National Programme of Reforms. Its priority “Education and support of high quality scientists” is fully harmonized with measures 1.1 and 1.2 of the priority axis 1 and with measures 2.1 and 2.2 of the priority axis 2.

Similarly, the OP R&D fully complies with the National Strategic Reference Framework 2007 – 2013. The OP R&D is assigned under the strategic priority of the NSRF “Knowledge Economy”, and fully reflects the basic vision and objectives of the National Strategic Reference Framework 2007 – 2013 through the proposed measures.

The global objective of the evaluated documents is to establish economy with sustainable development accompanied by quantitative and qualitative enhancement of employment and greater social cohesion of sustainable development. The strategy of the Operational Programme Research and Development is harmonized with above mentioned aspects. The results of evaluation confirm that the proposed strategy of the OP R&D directly refers and meets the main priorities and strategic objectives of the Community, which will implemented through financial tools of the EU during the years 2007-2013, as well as by the national and the regional policies.

## **5. EVALUATION OF THE IMPLEMENTATION SYSTEM OF PRIORITIES**

### **5.1. Management and control system**

According to the terms of reference, the ex ante evaluation has dealt with the proposed implementation system of priorities. It deals with the evaluation of functionality and effectiveness of system of management procedures, monitoring and evaluation as well as financial management. The object of evaluation is a compliance with the requirements of the Council Regulation (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund and the Cohesion Fund and repealing Regulation (EC) 1260/1999.

To achieve effective implementation of the OP R&D, the adequate measures should be adopted and, moreover, the system of management and control of the operation programme should be provided. Such system should determine functions of managing and controlling authorities, securing processes, monitoring system, evaluation system, and audit mechanism.

OP R&D defines bodies and authorities involved in the process of management and programme implementation according to the following structure:

- Central co-ordination body (CCB),
- Managing authority (MA),
- Intermediate body (IB),
- Monitoring committee (MC),
- Certifying authorities,
- Audit authority.

Ministry of Construction and Regional Development of the Slovak Republic as the Central co-ordination body for operational programmes within the National Strategic Reference Framework of the Slovak Republic for 2007 – 2013 provides strategic level of the NSRF management system. The managing authority of the operational programme is responsible for management and performance of the OP R&D in accordance with regulations of the EU and the Slovak Republic. On the basis of the resolution of the Government of the Slovak Republic No. 832 as of October 8, 2006, managing authority in OP R&D is Ministry of Education of the Slovak Republic. The document defines major responsibilities of the MA in the process of management and performance of the OP R&D that are in a full accordance with the requirements of Article 60 of general regulation. In accordance with Article 71 of the

general regulation, internal structure and division (delegation) of MA responsibility for OP R&D will be described in the description of management and inspection systems, which will be submitted by a member country to the EC before submission of the first application of payment withdrawal or at latest up to 12 months from approval of OP.

Article 59(2) of the general regulation enables to appoint one or more intermediate bodies (IB) for fulfilment of several or all tasks of the managing authority. On the basis of the resolution of the Government of the Slovak Republic No. 832 as of October 8, 2006, the intermediate body for all priorities and measures of the OP R&D is Agency of the Ministry of Education of the Slovak Republic. The OP R&D assigns the extent of delegated tasks for the Agency that is in harmony with the requirements requested from IB. Moreover, the OP R&D document defines the participation of bodies of regional and local self-government in the process of the OP R&D implementation as supported receivers, respectively as partners. The OP R&D document enables these bodies to delegate their representatives for members of evaluation committees for selection of projects and members of the monitoring committee for OP R&D.

## **5.2. Monitoring and evaluation system**

It is necessary to monitor operational programmes in order to secure the quality of their performance. For this purpose, it is necessary to constitute monitoring committees. In accordance with Article 63 of the general regulation a monitoring committee shall be established for each OP within three months from its approval by the European Committee. The aim of the monitoring committee is to supervise the efficiency and quality of the programme implementation. The OP R&D strictly defines the functions and roles of the MC members while the principle of partnership is being observed. Competences and activities of the MC are regulated by the statute and rule of procedure approved by the MC during its first session. Constitution of the MC for OP R&D, its structure and defined responsibilities and roles are in a full accordance with the requirements of Article 63 and 65 of general regulation.

At the same time, the OP R&D determines functions and roles of the National monitoring committee for NSRF (NMC), which is chaired by the Minister of Construction and Regional Development of the Slovak Republic as the representative of the CCB for NSRF. The main activities of the NMC are defined as well as its relations to the MC of the OP R&D.

Monitoring is an activity systematically engaged in collection, classification, aggregation and storing of relevant information for the needs of assessment and inspection of controlled

processes. Outputs from monitoring provide inputs for decision-making with the aim to improve implementation of the Operational Programme, preparation of annual reports and closing reports on performance of OP and basic data for making decisions in monitoring committees. As it is presented in the OP R&D document, monitoring process comes out from structural management model at the NSRF level, OP level and projects level. Monitoring and assessment are provided by all subjects participating in management of SF and CF in the extent of defined tasks and responsibilities and by subjects, which withdraw finances from funds. The OP R&D defines roles of the CCB, MC for the OP R&D and IB in the area of monitoring. The roles of individual monitoring bodies are clearly defined in the programme and, by means of them, their mutual connection for purposes of effective co-ordination, methodological regulation, collection, processing and interpretation of data needed for evaluation and control of managing processes at the individual monitoring levels is provided. The OP R&D proposes two particular ways of monitoring - on the basis of the system of indicators and on the basis of categories of assistance from SF. Proposed ways are sufficient for the proper monitoring process of implementation of the OP R&D and they may lead to fulfilment of the objectives. Monitoring system of collection, processing, interpretation and use of data will be effective if the quality input data are provided. We recommend to responsible bodies to provide not only quantity of data but, from time to time, also to carry out the control of data quality (justification, reality).

Evaluation represents a process, which systematically investigates contribution from realisation of programs and their agreement with aims determined in the OP and NSRF. The aim of the evaluation is to improve quality, efficiency and harmonisation of support from the funds as well as the performance of operational programmes with respect to the specific structural problems. The assessment will be done before the start of the programme period (preliminary evaluation), in the course of it (permanent evaluation), and after termination of the programme period (closing evaluation). In accordance with Article 47 (3) of the general regulation and according to the OP R&D the evaluation is performed under the control of responsibility of the member state (CCB, MA) or the Commission, in harmony with the proportionality principle. The OP R&D defines roles of the CCB, MAS, IB in the area of evaluation – they are clearly defined at the individual levels of evaluation authorities. Using these roles, the mutual connection between them is provided for the purposes of effective analysis of efficiency of realisation processes, quality improvement, and formulation of recommendation for the increase in measures effectiveness.

To provide record keeping, processing, export and monitoring of data on programming, project and financial management, inspection and audit SF and CF as well as to improve

exchange of information on operational programmes performance using electronic means, the central IT monitoring system for SF and CF is used. The OP R&D defines structure of the ITMS, the forms of electronic communication between ITMS and the EC database, as well as the roles of CCB, MA and IB in relation to the ITMS. These roles at specific levels of managing authorities together with the provision of collection, evidence and processing of monitoring data and evaluation reports represent a sufficient system for provision of required management and control of implementation activities. Moreover, they fulfil standards for secure transmission of information using electronic communication between the SR and the EC database.

During the preparation of manual for receivers for utilisation of public part of the ITMS we recommend to run pilot testing in order to obtain feedback from users of the manual.

### **5.3. System of financial management and control**

In the area of the proposal of financial management and control system the OP R&D states that the system of financial management of structural funds and the Cohesion fund involves a complex of related and mutually interconnected subsystems and activities, which provides efficient financial planning, budgeting, accounting, reporting, payments to receivers, monitoring of financial flows, and financial inspection and audit at the implementation of the assistance from ES.

Besides the managing authority of the OP and delegation of competences to the IB, the member states are obliged, according to Article 59, to set the certifying authority and audit authority. The certifying authority is responsible for certification of statements of expenditures in payment claims before they are submitted to the Commission. The audit authority is functionally independent from the managing or certifying authorities – it is responsible for verification of results of management and control systems. For the OP R&D, the financial management of the Operational Programme involves the following subjects: managing authority, certifying authority, payment unit, and audit authority.

Function of the certifying authority is set by Article 61 of general regulation. Functions of the certifying authority for the OP R&D are performed by Ministry of Finance of the Slovak Republic (MF SR) and functions of the payment unit are provided by the Ministry of Education of the Slovak Republic. Function of the audit authority is set by Article 62 of general regulation. Functions of the audit authority for the OP R&D are provided by the MF SR.

The OP R&D defines concrete roles and responsibilities for individual bodies of financial management and control that are in accordance with the provisions of Article 61 and 62 of general regulation. Given functions of individual control authorities lead to the proper functioning of system of financial management and control of financial payments. They provide assumptions for fulfilment of provisions of Article 70 of general regulation dealing with responsibility of the member state to the EC in the area of efficient functioning of management and control system, prevention, detection and improvement of discrepancies, or exaction of illegitimately received payments together with delay charge.



## 6. USE OF RECOMMENDATIONS OF EX-ANTE EVALUATORS IN THE PROCESS OF OP ELABORATION

Recommendation of ex-ante evaluators		
Recommendation	Evaluation phase	Acceptation rate*
Incorporation of reasons which led to the creation of problems and which caused the present state in the area of research and development in the SR into analytical chapter of document.	1	1
Incorporation of additional region specific information and data relating that could be used for identification and evaluation of possible indicators into analytical chapter of document.	1	1
Revision of data relating to the conditions of higher education institutions.	1	2
Revision of factors of SWOT analysis	1	3
Revision of defined development factors	1	3
Revision of the set of context and programme indicators	3	3
Quantification of values of proposed indicators	3	3

\* 3 – fully accepted, 2 – partially accepted, 1 – not accepted

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