



**Ministry of Education of the Slovak Republic**



## **Operational Programme Research and Development** (support to research, development and infrastructure of higher schools)



*Bratislava, October 2007*

# Contents

<b>CONTENTS</b>	<b>2</b>
<b>1. EXECUTIVE SUMMARY</b>	<b>5</b>
<b>2. PREPARATION OF OPERATIONAL PROGRAMME RESEARCH AND DEVELOPMENT</b>	<b>6</b>
2.1 PROCESS OF OPERATIONAL PROGRAMME PREPARATION - APPLICATION OF THE PARTNERSHIP PRINCIPLE	6
2.2 EX ANTE EVALUATION	10
2.3 STRATEGIC ENVIRONMENTAL ASSESSMENT	11
<b>3. CURRENT SITUATION IN RESEARCH AND DEVELOPMENT AND HIGHER SCHOOLS INFRASTRUCTURE</b>	<b>13</b>
3.1 SITUATION IN THE AREA OF RESEARCH AND DEVELOPMENT	13
3.1.1 FINANCING OF RESEARCH AND DEVELOPMENT IN THE SLOVAK REPUBLIC	15
3.1.2 HUMAN RESOURCES IN RESEARCH AND DEVELOPMENT	19
3.1.3 LEVEL OF TECHNICAL INFRASTRUCTURE OF RESEARCH AND DEVELOPMENT INSTITUTIONS	22
3.1.4 RESEARCH OUTPUTS MEASURED BY PUBLICATION OUTPUTS	25
3.1.5 PATENTS	29
3.1.6 INTERNATIONAL COMPETITIVENESS OF SLOVAKIA: INTERNATIONAL COMPETITION UNDER THE 6 <sup>TH</sup> EU FRAMEWORK PROGRAMME FOR RESEARCH AND DEVELOPMENT	33
3.1.7 LINKS BETWEEN R&D ACTIVITY FINANCED FROM THE NATIONAL BUDGET AND THE NEEDS OF THE SOCIETY AND OF THE ECONOMY	35
3.1.8 RESULTS OF THE ANALYSIS OF RESEARCH AND DEVELOPMENT IN SLOVAKIA	37
3.2 ANALYSIS OF INFRASTRUCTURE OF HIGHER SCHOOLS	40
3.3 RESULTS OF IMPLEMENTATION OF PROGRAMMING PERIOD 2004-2006	42
3.4 SWOT ANALYSIS	42
3.5 MAIN DISPARITIES AND DEVELOPMENT FACTORS	44
<b>4. STRATEGY OF OPERATIONAL PROGRAMME RESEARCH AND DEVELOPMENT</b>	<b>45</b>
4.1 STRATEGY BASELINE	45
4.1.1 VISION AND STRATEGY OF THE NSRF	55
4.1.2 FUNDAMENTAL STRATEGIC DOCUMENTS	57
4.1.2.1 EU Strategic Documents	57
4.1.2.2 National Strategic Documents	59
4.1.2.3 Innovative financial tools	61
4.2 GLOBAL OBJECTIVE OF OPERATIONAL PROGRAMME RESEARCH AND DEVELOPMENT	63
4.3 STRATEGY FOR ATTAINING THE GLOBAL OBJECTIVE AS THE RESULT OF TOPICAL AND TERRITORIAL CONCENTRATION	63
4.3.1 TOPICAL CONCENTRATION OF CONTRIBUTIONS	65
4.3.1.1 Research and development	65
4.3.1.2 Infrastructure of higher schools	71
4.3.2 TERRITORIAL CONCENTRATION OF CONTRIBUTIONS	72
4.3.2.1 Research and Development	72
4.3.2.2 Research and development in the Bratislava region	73
4.3.2.3 Infrastructure of higher schools	74

<b>5. PRIORITY AXES OF OPERATIONAL PROGRAMME RESEARCH AND DEVELOPMENT</b>	<b>74</b>
5.1 PRIORITY AXIS 1 <i>INFRASTRUCTURE OF RESEARCH AND DEVELOPMENT</i>	75
5.1.1 MEASURE 1.1 <i>MODERNISATION AND BUILDING OF TECHNICAL INFRASTRUCTURE FOR RESEARCH AND DEVELOPMENT</i>	75
5.1.2 JUSTIFICATION OF PRIORITY AXIS 1 <i>INFRASTRUCTURE OF RESEARCH AND DEVELOPMENT</i>	77
<b>5.2 PRIORITY AXIS 2 <i>SUPPORT TO RESEARCH AND DEVELOPMENT</i></b>	<b>78</b>
5.2.1 MEASURE 2.1 <i>SUPPORT OF NETWORKS OF EXCELLENCE IN RESEARCH AND DEVELOPMENT AS THE PILLARS OF REGIONAL DEVELOPMENT AND SUPPORT TO INTERNATIONAL COOPERATION</i>	78
5.2.2 MEASURE 2.2 <i>TRANSFER OF KNOWLEDGE AND TECHNOLOGY FROM RESEARCH AND DEVELOPMENT INTO PRACTICE</i>	81
5.2.3 JUSTIFICATION OF PRIORITY AXIS 2 <i>SUPPORT TO RESEARCH AND DEVELOPMENT</i>	84
5.3 PRIORITY AXIS 3 <i>INFRASTRUCTURE OF RESEARCH AND DEVELOPMENT IN THE BRATISLAVA REGION</i>	86
5.3.1 MEASURE 3.1 <i>MODERNISATION AND BUILDING OF TECHNICAL INFRASTRUCTURE FOR RESEARCH AND DEVELOPMENT IN THE BRATISLAVA REGION</i>	86
5.3.2 JUSTIFICATION OF PRIORITY AXIS 3 <i>INFRASTRUCTURE OF RESEARCH AND DEVELOPMENT IN THE BRATISLAVA REGION</i>	88
<b>5.4 PRIORITY AXIS 4 <i>SUPPORT TO RESEARCH AND DEVELOPMENT IN THE BRATISLAVA REGION</i></b>	<b>89</b>
5.4.1 MEASURE 4.1 <i>SUPPORT OF NETWORKS OF EXCELLENCE IN RESEARCH AND DEVELOPMENT AS THE PILLARS OF REGIONAL DEVELOPMENT AND SUPPORT TO INTERNATIONAL COOPERATION IN THE BRATISLAVA REGION</i>	90
5.4.2 MEASURE 4.2 <i>TRANSFER OF KNOWLEDGE AND TECHNOLOGY FROM RESEARCH AND DEVELOPMENT INTO PRACTICE IN THE BRATISLAVA REGION</i>	93
5.4.3 JUSTIFICATION OF PRIORITY AXIS 4 <i>SUPPORT TO RESEARCH AND DEVELOPMENT IN THE BRATISLAVA REGION</i>	96
<b>5.5 PRIORITY AXIS 5 <i>INFRASTRUCTURE OF HIGHER SCHOOLS</i></b>	<b>98</b>
5.5.1 OBJECTIVE AND FOCUS OF THE PRIORITY AXIS	98
5.5.2 MEASURE 5.1 <i>BUILDING OF INFRASTRUCTURE OF HIGHER SCHOOLS AND MODERNISATION OF THEIR INTERIOR EQUIPMENT WITH A VIEW TO IMPROVE THE CONDITIONS OF THE EDUCATION PROCESS</i>	99
5.5.3 JUSTIFICATION OF PRIORITY AXIS 5 <i>INFRASTRUCTURE OF HIGHER SCHOOLS</i>	100
<b>5.6 PRIORITY AXIS 6 <i>TECHNICAL ASSISTANCE FOR THE CONVERGENCE OBJECTIVE</i></b>	<b>101</b>
5.6.1 OBJECTIVE AND FOCUS OF THE PRIORITY AXIS	102
5.6.2 JUSTIFICATION OF PRIORITY AXIS 6 <i>TECHNICAL ASSISTANCE FOR THE CONVERGENCE OBJECTIVE</i>	102
<b>5.7 PRIORITY AXIS 7 <i>TECHNICAL ASSISTANCE FOR THE REGIONAL COMPETITIVENESS AND EMPLOYMENT OBJECTIVE</i></b>	<b>102</b>
5.7.1 OBJECTIVE AND FOCUS OF PRIORITY AXIS	102
5.7.2 JUSTIFICATION OF PRIORITY AXIS 7 <i>TECHNICAL ASSISTANCE FOR THE REGIONAL COMPETITIVENESS AND EMPLOYMENT OBJECTIVE</i>	103
<b>6. HORIZONTAL PRIORITIES</b>	<b>104</b>
6.1. MARGINALISED ROMA COMMUNITIES	104
6.2 EQUALITY OF OPPORTUNITIES	106
6.3 SUSTAINABLE DEVELOPMENT	108
6.4 INFORMATION SOCIETY	112
<b>7. ALIGNMENT OF STRATEGY WITH POLICIES, DOCUMENTS AND OBJECTIVES</b>	<b>116</b>
7.1 ALIGNMENT WITH EU STRATEGIC DOCUMENTS AND POLICIES	116
7.1.1 COMMUNITY STRATEGIC GUIDELINES;	116
7.1.2 LISBON AND GOTHENBURG STRATEGY	118

7.1.3 EC LEGISLATION RELATING TO COHESION POLICY	118
7.1.4 EC LEGISLATION RELATING TO COMPETITION RULES	119
7.1.5 EC LEGISLATION CONCERNING PUBLIC PROCUREMENT	119
7.1.6 EC LEGISLATION CONCERNING PROTECTION AND IMPROVEMENT OF THE ENVIRONMENT	119
7.1.7 EC LEGISLATION CONCERNING EQUALITY OF OPPORTUNITIES, GENDER EQUALITY AND NON-DISCRIMINATION	120
7.1.8 INNOVATIVE FINANCIAL TOOLS	120
7.1.9 REGIONS FOR ECONOMIC CHANGE	121
<b>7.2 ALIGNMENT WITH STRATEGIC DOCUMENTS AND POLICIES OF THE SLOVAK REPUBLIC</b>	<b>121</b>
7.2.1 NATIONAL STRATEGIC REFERENCE FRAMEWORK AND OPERATIONAL PROGRAMME RESEARCH AND DEVELOPMENT	121
7.2.1.1 Alignment with NSRF strategy and vision	121
7.2.1.2 Complementarity/synergies with other operational programmes	121
7.2.1.3 Interfaces – borderlines between priority axes covering similar topics	124
7.2.2 OPERATIONAL PROGRAMME RESEARCH AND DEVELOPMENT UNDER THE EUROPEAN TERRITORIAL COOPERATION OBJECTIVE	125
7.2.3 NATIONAL REFORM PROGRAMME / ACTION PLANS OF THE STRATEGY OF COMPETITIVENESS OF SLOVAKIA TILL 2010	126
7.2.4 NATIONAL STRATEGY FOR SUSTAINABLE DEVELOPMENT / ACTION PLAN OF SUSTAINABLE DEVELOPMENT	127
7.2.5 SPATIAL DEVELOPMENT PERSPECTIVE OF THE SLOVAK REPUBLIC	127
7.2.6 REGIONAL STRATEGIC DOCUMENTS	127
<b>7.3 LINKS TO OTHER FINANCIAL TOOLS</b>	<b>128</b>
7.3.1 SYNERGIES AND COMPLEMENTARITY WITH OTHER EC FINANCIAL TOOLS	128
7.3.2 INNOVATIVE FINANCIAL TOOLS	128
7.3.3 SYNERGIES AND COMPLEMENTARITY WITH PROGRAMMES FINANCED FROM EAFRD AND EFF	129
 <b><u>8. FINANCIAL PLAN OF OPERATIONAL PROGRAMME RESEARCH AND DEVELOPMENT</u></b>	 <b><u>130</u></b>
<b>8.1 FINANCIAL PLAN</b>	<b>130</b>
<b>8.2 FINANCIAL PLAN FOR THE WHOLE PROGRAMMING PERIOD BROKEN DOWN ACCORDING TO PRIORITY AXES AND SOURCES OF FUNDING</b>	<b>131</b>
<b>8.3 BREAKDOWN OF CONTRIBUTIONS FROM THE ERDF BY CATEGORY OF PROGRAMMED USE OF THE FUNDS IN 2007-2013</b>	<b>133</b>
 <b><u>9. IMPLEMENTATION SYSTEM</u></b>	 <b><u>136</u></b>
<b>9.1 BODIES INVOLVED IN PROGRAMME MANAGEMENT AND IMPLEMENTATION</b>	<b>136</b>
9.1.1 CENTRAL COORDINATING BODY	136
9.1.2 MANAGING AUTHORITY	137
9.1.3 INTERMEDIATE BODY UNDER THE MANAGING AUTHORITY	138
9.1.4 INVOLVEMENT OF REGIONAL AND LOCAL SELF-GOVERNMENT AUTHORITIES	138
9.1.5 MONITORING COMMITTEES	139
9.1.6 COMMITTEE FOR THE KNOWLEDGE SOCIETY	140
<b>9.2 MONITORING</b>	<b>141</b>
<b>9.3 EVALUATION</b>	<b>143</b>
<b>9.4 IT MONITORING SYSTEM FOR SF AND CF</b>	<b>143</b>
<b>9.5 ELECTRONIC EXCHANGE OF DATA WITH THE COMMISSION</b>	<b>145</b>
<b>9.6 INFORMATION AND PUBLICITY</b>	<b>146</b>
<b>9.7 FINANCIAL MANAGEMENT, CONTROL AND AUDIT</b>	<b>147</b>
 <b><u>10. ANNEXES</u></b>	 <b><u>151</u></b>

## 1. Executive Summary

Operational Programme Research and Development (OP R&D) is a programme document of the Slovak Republic, based on which assistance will be provided for the development of the knowledge economy in 2007-2013. The document defines the global objectives, the priority axes, measures and activities that will be supported on territories covered by the Convergence and Regional competitiveness and employment objectives in 2007 - 2013, using financial assistance from the European Regional Development Fund (ERDF). From geographical point of view, OP R&D covers the entire territory of Slovakia.

OP R&D follows on the objectives and priorities of the National Strategic Reference Framework for 2007—2013 (NSRF), which is the main strategic programming document of Slovakia. OP R&D implements and further elaborates the strategic priority of the NSRF "knowledge economy".

The key sections of the OP R&D document include the analysis of the current situation in research and development, the strategy of the operational programme, the division into priority axes of the operational programme and the financing of the programme.

The analysis of the current situation with respect to the knowledge economy is based on the situation prevailing in the main areas, which should create the preconditions for successful convergence of Slovakia to EU 15. The information obtained is presented also in the form of a SWOT analysis and is used for the identification of the main disparities and development factors in the field of research and development.

OP R&D is based on the vision of the long-term economic and social development of Slovakia, formulated as the "Overall convergence of the Slovak economy to the EU-15 average by means of sustainable development" on the one hand and on the key disparities and main development factors identified in the analysis of the current situation in research and development on the other. The ambition of OP R&D is to contribute to the attainment of the above vision in the programming period of 2007 - 2013 by addressing the key disparities and exploiting the main development factors of Slovakia. The implementation of this intention is based on the need for significant increase of competitiveness and performance of the regions and of the entire Slovak economy by the end of the programming period, while respecting the principles of sustainable development.

OP R&D covers two objectives - the Convergence objective, which applies to the whole territory of Slovakia except for the Bratislava region and the Regional competitiveness and employment objective, which applies exclusively to the Bratislava region. The document does not define any special measures or activities for these two objectives due to the similarity of the problems faced by all regions of Slovakia in the field of research and development. The specific objectives and framework activities are therefore similar and the rationale behind the solution proposals is analogical to the reasoning applicable to the priority axes. The reason for integrating both objectives into a single programming document is the ambition to unify and increase transparency of activities, which should produce synergic effects between the individual programme activities in the regions of Slovakia. As the territory of Bratislava and its surroundings concentrate about 50% of the research and development potential of the Slovak Republic, it is not possible to guarantee efficient and even attainment of the Lisbon strategy objectives and vision without providing the same support to all regions, for Bratislava and the surrounding territories face the same structural problems in the area of research and development as the other regions of Slovakia. That means, the region is affected by structural problems, which are common to the entire territory of Slovakia: insufficient equipment and instrumentation and lacking technical infrastructure for research and development, both of which are needed for

research activities and linking them with the business sector. Adding to the complexity of the situation is the fact that about 50% of the research and development potential of Slovakia is concentrated in the Bratislava region. Based on the above arguments, the Slovak Republic was granted an exception to re-allocate a part of the financial resources from the Convergence objective to the Regional competitiveness and employment objective.

## **2. Preparation of Operational Programme Research and Development**

### **2.1 Process of operational programme preparation - application of the partnership principle**

In accordance with Article 11 of Council Regulation (EC) No. 1083/2006, the partnership principle was a key element in preparing Operational Programme Research and Development. All relevant partners from the appropriate institutions and regions were involved in the process of operational programme preparation. The following contributed to the preparation of OP R&D: representatives of the Ministry of Economy of the Slovak Republic, the Slovak Rectors' Conference, the Universities Council, the Slovak Academy of Sciences, the Federation of Employers' Associations, the National Union of Employers, the Association of Industrial Research and Development Organisations, the Industry Union, higher territorial units and the Slovak Academic Information Agency (NGO), representing the non-profit sector.

The partnership principle was applied in the form of working meetings, bilateral meetings, presentations by the Ministry of Education of the Slovak Republic and consultations concerning the contents of the operational programme by means of electronic communication.

Presentations and follow-up discussions was the form of partnership principle application by the Ministry of Education in the meetings with the Slovak Rectors' Conference - 2 meetings, the Council of Universities (represented by pro-rectors for research - the so-called Council for Science and Technology) - 1 meeting, the Club of Deans - 1 meeting and the Presidency of the Slovak Academy of Sciences - 2 meetings.

In the first stage, the content of the priority axes was defined with active participation of the representatives of all research and development sectors (academic and private sector). On 30 June 2005, a meeting with the representatives of research and development institutions took place at the Ministry of Education, with a view to define the first working version of the priority axes.

On 9 November 2005, another meeting with the representatives of the Ministry of Economy of the Slovak Republic, universities, the Slovak Academy of Sciences, the Association of Industrial Research and Development Organisations and the Industry Union was held at the Ministry of Education in order to define more precisely the content of the programme. Another objective of the meeting was to define the borderlines between the support to research and development (provided by the Education Ministry) and the support to innovation (provided by the Economy Ministry).

In addition to the above forms of partnership, the Ministry of Education organised a working seminar with the participation of more than 100 representatives of the relevant institutions, in which the Minister of Education presented the ideas of the Ministry concerning the content of the priority axis research and development. The meeting was also an opportunity for the representatives of the Slovak Rectors' Conference and the Slovak

Academy of Sciences to present their opinions. In the technical part, experts of the European Commission and the relevant institutions providing financial support to research and development from the Structural Funds in Finland, Portugal and Austria took the floor. A guest to the seminar was also the Commissionaire for Regional Policy. The seminar called "Possibilities for using the structural funds to support research and development in Slovakia in the context of experience of other EU member states" took place on 17 October 2005.

In the next stages of the works on OP R&D and also when creating the project pipeline for this area, bilateral meetings with the representatives of the Ministry of Economy of the Slovak Republic, the higher territorial units, the Association of Towns and Municipalities of Slovakia, universities, the Slovak Academy of Sciences and the business sector took place at the Ministry of Education on 26 and 27 January 2006.

The Ministry of Education also cooperated with the Ministry of Construction and Regional Development in the process of preparation of the National Reference Strategic Framework, by means of bilateral and multilateral meetings.

On 9 September 2005, the Ministry of Construction and Regional Development of the Slovak Republic hosted a meeting of the inter-departmental working group of general directors and section directors and subsequently a meeting of the expert working group 'Partnership for the National Framework', in which the representatives of the individual ministries, higher territorial units, towns and municipalities, non-governmental organisations and other social and economic partners and external collaborators of the MCRD from the academic sector discussed the document "Draft National Strategic Reference Framework 2007 – 2013" (version 1). The representatives of the Education Ministry presented conceptual comments concerning the operational part and the part describing the financing of the National Strategic Reference Framework. On 12 September 2005, the document was discussed in the meeting of the Government Council of the Slovak Republic for Regional Policy and Supervision over Structural Operations, and was then approved for the full inter-departmental consultation process. On 6 October 2006, the document was presented to the meeting of the Government Council for Regional Policy and Supervision over Structural Operations and on 10 October to the working group of ministers for the coordination of works on the National Strategic Reference Framework. On 19 October 2005, the first version of the National Strategic Reference Framework was approved in a meeting of the Government of the Slovak Republic.

On 12 December 2005, a meeting between the representatives of the Ministry of Education, the individual regions, the Association of Towns and Communities and the Towns Union took place at the Ministry of Construction and Regional Development. The meeting focused on the comments and proposals presented by the regions, ZMOS and UMS and also on the preparation of the project pipeline.

On 13 December 2005, a joint meeting between non-governmental organisations and representatives of government departments took place at the Ministry of Construction and Regional Development. In the meeting, the comments and proposals made by non-governmental organisations concerning the draft National Strategic Reference Framework were discussed.

In the next stage, the relevant parts of the future OP R&D were submitted to the Minister of Construction and Regional Development to be integrated into the National Strategic Reference Framework, which was approved by the Slovak Government on 17 May 2006 by Government Resolution No. 457/2006.

On 23 May 2006, the content of the future OP R&D was discussed in a meeting of the working group of the VIII Convent of EU "Science, Education and Culture". Support to research and development in the programming period 2007-2013 was one of the main topics of the international conference "Economic development of the regions in the context of the National Strategic Reference Framework of the Slovak Republic, which took place on 24 May 2006 in Trenčianske Teplice. The conference was organised by the Trenčín self-governing region.

In the month of October 2006, the intra-departmental consultation process on OP R&D within the Education Ministry took place, with the participation of the individual sections and departments of the Ministry. All but just one comment were accepted and incorporated into the text of the OP. The comments were mostly technical and related to the correction of inaccurate data, provision of additional data or re-phrasing of some sections of the OP. The most important accepted comment was adding the possibility of setting up new buildings of higher schools among the examples of eligible activities for priority axis "Infrastructure of higher schools".

An important factor in the process of finalising the text of the OP was the comments by the members of the working group for the preparation of OP R&D (Annex 4) received between 24 and 30 October 2006. From November 6 to 20, 2006, the document went through the standard interdepartmental consultation process, involving in addition to the mandatory participants 25 other organisations (e.g. self-governing regions, various professional and interest groups and associations, the Slovak Academy of Sciences, representatives of universities and other). All material comments were either directly accepted, or accepted or rejected based on consensus reached in the process of subsequent discussions with the entities raising the comments. The process of subsequent discussions took place at bilateral level with the Ministry of Construction and Regional Development, the Ministry of Economy, the Ministry of Transport, Posts and Telecommunications and the Ministry of Finance. The most important comments raised by the consulted institutions, which were accepted by the Education Ministry either directly or based on subsequent negotiations and which were then incorporated into the text of the OP, related to the exact definition of demarcation lines between OP Research and Development and OP Bratislava Region and between OP Research and Development and OP Competitiveness and Economic Growth, to the definition of complementarity and demarcation lines at priority axis level, justification of topical, territorial and financial concentration on priorities under Regional competitiveness and employment objective, adding of most recent data into the analytical part, provision of additional data on SEA and ex-ante evaluation, addition and re-definition of individual activities, financial plan adjustments and provision of data on financial resources that will be used in the form of indirect assistance (innovative financial tools ).

On 23 November 2006, the Ministry of Education organised a meeting with the rectors and deans of universities and the representatives of other partners with a view to present to them the OP. The meeting was initiated and led by the Minister of Education. The participants were presented the then-current form of the OP, with particular emphasis on the planned priority axes and measures. The representatives of universities raised several comments and proposals to the wording of the OP, many of which were then formulated as written comments and sent to the Ministry of Education. These were incorporated into the OP in parallel with the comments received as part of the cross-departmental consultation process. The comments concerned simplified formulation of framework activities, broader definition of potential beneficiaries and improvements in the analytical part of the document.



Looking back at the partnership meetings and discussions, it can be concluded that they were particularly beneficial in the process of data gathering and analysing the situation in research and development and the condition of infrastructure owned by universities. This, in principle, served as the basis for defining the strategy of the OP. The most discussed area was the proposed priority axes and measures of the OP. This was quite natural, seen the fact that most of the partners will also receive funding for their projects as beneficiaries.

The list of partner organisations involved into the preparation of OP Research and Development is provided in Annex 4b to the OP.

The results of communication between the Education Ministry and all involved partners, which took place in the form of partner meetings, bilateral negotiations, presentations by the Education Ministry and consultations concerning the content of the operational programme (by electronic means) affected almost all parts of OP R&D. Based on the accepted comments by the Ministry of Construction and Regional Development of the Slovak Republic, the part on SEA and ex-ante evaluation was reworked and extended, the analytical part was updated and extended, followed by the strategy part. Based on the comments received from the Ministry of Economy, the Ministry of Construction and Regional Development and the Higher Schools Section of the Ministry of Education, several measures and framework activities were added and redefined; a more precise definition of the borderlines and complementarity with OP Bratislava region and OP Competitiveness and economic growth was provided. The financial plan was updated and a new part on implementation system was modified based on the comments by the Ministry of Finance and the Control Department of the Ministry of Education.

Slovak organisations only were involved in the consultations, communication and cooperation in the preparation of OP R&D; no direct international cooperation was initiated for this purpose. Links to international partners existed on informal basis, for example by studying the process of preparation and the content of similar OPs (e.g. in the Czech Republic).

It can be said that the approach of the partner organisations was highly professional and beneficial and their input was reflected in the numerous changes to the wording of the OP and its gradual development to its current form.

The above process of elaborating this specific priority respected one of the fundamental principles of EU structural policy - that of partnership, which places the greatest emphasis on the involvement of the partners into the process of drafting of programmes.

The Education Ministry applies this principle also in the process of preparing the evaluation and selection criteria, which will require the approval of the monitoring committee. The working group established for this purpose comprises in addition to the representatives of the Education Ministry also partners from three higher schools (Slovak University of Technology in Bratislava, University of Technology in Zvolen and University of Žilina), a professional association (Association of Industrial, Research and Development Organisations) and employers' representatives (Entrepreneurs Association of Slovakia, National Union of Employers). The working group commenced its work in May 2007.

MoEdu will apply the partnership principle also in the process of implementation of OP R&D, through the Monitoring committee for OP R&D, whose task will be to monitor the efficiency and quality of programme implementation. The composition of the monitoring committee is based on the partnership principle in line with Article 11 of the General Regulation: monitoring committee members are, in addition to the representatives of the relevant ministries also regional and local authorities, representatives of the third sector and other economic and social partners (including non-governmental organisations) affected by

the content of the operational programme. Particular attention needs to be paid to balanced representation of the partners. Monitoring committee members also include representatives of the CCB, certifying authority and audit body, and a representative of the Commission shall participate in the work of the monitoring committee in the role of an advisor and observer.

Another important partner of the Education Ministry in the process of implementation and monitoring/evaluation of OP R&D will be the Agency of MoEdu for EU Structural Funds as the intermediate body under the managing authority.

## **2.2 Ex ante evaluation**

The ex-ante evaluation of OP R&D was carried out by an external evaluator, Doc. Ing. Hubert Paluš, PhD. For the purposes of the selection procedure, the Education Ministry prepared general terms of reference for the ex-ante evaluation of OP R&D for 2007-2013, defining the targets and relevant evaluation questions. The evaluator worked on the basis of a signed service agreement.

The ex-ante evaluation of OP R&D for the years of 2007-2013 took place in six phases:

- Phase 1: Evaluation of the analysis of the area concerned in light of the specific priorities of Slovakia (including SWOT analysis), of the regional transposition of this analysis, of the ranking of the main identified disparities according to their severity and of the development potential in this area, including recommendations.
- Phase 2: Evaluation of the substantiation and consistency of the strategy, including the proposed priorities, objectives and the proposed scope and structure of investments into these priorities, i.e. the proposed financial framework, including recommendations.
- Phase 3: Evaluation of the expected results and impacts of the planned interventions, quantification of objectives of the proposed interventions.
- Phase 4: Evaluation of alignment with policies and national and regional strategic documents of Slovakia and with Community policies and strategic documents.
- Phase 5: Evaluation of the proposed implementation system (management procedures, monitoring and evaluation and financial management) from the viewpoint of their functionality and efficiency, including recommendations.
- Phase 6: Evaluation of and recommendations concerning the overall document describing the specific priorities - the Final Report.

The results and recommendations of the ex-ante evaluation were incorporated into the text of OP R&D. This included additions to the analytical part of the document (additional information from individual regions, modification of data describing the infrastructure of higher schools, revised factors in the SWOT analysis, revision of the development factors, revision of context and programme indicators) and quantification of the proposed indicators. However, it was not possible to add the required data with regional statistics to the analytical part of the document, because these types of data are not monitored at the regional level in Slovakia. Based on the report from the first phase of the ex-ante evaluation, regional allocations at NUTS-2 level for the Convergence objective were prepared for the needs of the NSRF.

The ex-ante evaluator stated in his final report that the individual components of OP R&D strategy formed a logically linked chain, in which the proposed steps starting from needs

definition, through analysis up to the definition of strategic objectives and proposal of activities helping to achieve the defined objectives were inter-related.

## **2.3 Strategic Environmental Assessment**

With the aim of ensuring the protection of the environment and integrating environmental aspects into the preparation and approval of strategic documents, taking into account the principles of sustainable development, OP R&D was subject to assessment according to Act No. 24/2006 Coll. concerning the assessment of impacts onto the environment and amending certain laws. As part of this process, the direct and indirect impacts of the proposed strategy were established and evaluated.

The objective of the strategic environmental assessment (SEA) is to establish, describe and assess the expected (direct and indirect) impacts of OP R&D and of the proposed activities onto the environment, including comparison with the current condition of the environment in the place, where these activities are carried out and in the area of their expected impacts, including preparation of the assessment report, consultations, etc.

The Environmental Impacts Assessment Report of OP R&D (the "Report") was prepared by an external contractor (PROEKO - Environmentálne služby Poprad, responsible assessor RNDr. Helena Barošová) selected in a public procurement procedure in line with Act No. 25/2006 Coll. on public procurement. The report was submitted to the Ministry of Environment (MoEnv SR).

One of the key outputs of this report is the identification of the most important positive and negative impacts on the individual components of the environment in the form of a non-technical summary of these findings:

### **Negative impacts - Infrastructure of higher schools**

- temporary short-time increase of noise emissions around buildings being reconstructed;
- temporary short-time increase of dust emissions around buildings being reconstructed;
- temporary short-time deterioration of the comfort of inhabitants living near buildings being reconstructed;
- production of WEEE and other hazardous / special waste;

### **Positive impacts – whole operational programme:**

- increase of employment directly in research and development centres;
- improved ambient air quality due to energy savings and replacement of the fuel base;
- reduction of water consumption after the reconstruction of water lines and sewage networks;
- improved health condition due to the use of new medicinal drugs and other patents;
- economic growth, increase of competitiveness;
- reduction of unemployment, creation of new jobs, also by small and medium-sized enterprises, due to the use of new technology;
- redressing of regional disparities;
- improved conditions for the education process on higher schools;
- improved working environment on higher schools, but also in small and medium-sized enterprises;
- increased level of ICT use;
- increased awareness of the population;
- increased quality and value of reconstructed historical buildings;
- positive impacts on cultural intangible values.

The identification of all impacts onto the individual components of the environment is provided in section IV.1 of the report. The whole report is available on Education Ministry's web site.

In line with the applicable regulations, the general public was given the opportunity to submit their written comments to the final report and to the text of OP R&D and, on 22 January 2007, a public discussion of the report and OP R&D took place.. Anybody interested in the topic, including non-governmental organisations, was able to take part in both processes. The results were subsequently evaluated and included in the expert opinion on the report.

The MoEnv appointed a professionally qualified person, RNDr. Zita Izakovičová - Enviroplán, who prepared an expert opinion on this report. Based on this expert opinion, the MoEnv SR issued, on 8 February 2007, its final position concerning environmental impact assessment of OP R&D (the "Position"), which recommended approving the OP. Considering the results of the environmental impact assessment of OP R&D, it is not necessary to rework, expand or modify the draft strategic document. It is, however, necessary to include monitoring of environmental indicators and subsequent measures into the programme, with the aim of ensuring optimum implementation of this strategic document with nationwide coverage in terms of environmental performance.

1. Ensure comprehensive environmental impact assessment at project level in line with the Act in order to select the best solution and location of its implementation, promote selection of environmental technologies, ensure linking of implementation steps in time and content and achieve a balance between environmental, social and economic aspects of the projects carried out.
2. When deciding on projects selection, consider the aspect of sustainability of the supported activity after the completion of the co-financed project and the balance between short-term and long-term impacts.
3. When deciding on projects selection, consider the balance of local, regional and national impacts of projects.
4. Ensure transparency, including access to information, in the whole process of issuing calls for project submission, project selection and allocation of assistance, as well as monitoring and evaluation of projects, individual priority axes and the whole programme, while respecting the competition rules.
5. Incorporate environmental criteria into the overall system of projects evaluation and selection.
6. Incorporate into the overall system of projects evaluation and selection criteria respecting protected territories and species according to Act No. 543/2002 Coll. on nature and landscape protection, as amended.
7. Monitor and evaluate the impacts of OP R&D onto the environment and public health.
8. Ensure that applicants are sufficiently aware of environmental aspects and of possible links between their projects and the environment.
9. Increase the efficiency and simplify the preparation and implementation of projects so that they are accessible to a broader group of beneficiaries from various regions and municipalities without any special requirements concerning their financial, technical and personal capacities, while ensuring objectivity of selection and consistency of control.

These recommendations of SEA relate mostly to implementation processes and the implementation of projects and not to the text of OP R&D as such. The Education Ministry, will fully respect the above recommendations in the implementation of OP R&D. The text of OP R&D was changed due to a change of the list of indicators (new indicators to monitor impacts of projects onto the environment and public health were added, as required by the position document of the Environment Ministry).

### **3. Current situation in research and development and higher schools infrastructure**

#### **3.1 Situation in the area of research and development**

The Slovak economy has undergone far-reaching changes over the last fifteen years, fundamentally changing its character. The most fundamental changes include transformation from a centrally planned to a market economy, full integration into the European Union (EU) and far-reaching structural reforms. Thanks to these changes, the Slovak economy has entered a new stage of its development with new opportunities, challenges and problems.

Slovakia currently is one of the most successful members of the EU in fulfilling the most important part of the Lisbon Strategy – implementation of structural changes. The main structural reforms implemented include in particular tax reform, reform of the social system, reform of the labour market, pension reform and public finances reform. High economic growth, growth of employment and high inflow of foreign investments are the proofs that the reform steps were taken in the right direction. The current competitiveness of the Slovak economy, however, is largely based on the advantage of cheap workforce, which is related to the focus of the industry on sectors with low value added and insufficient use of research and innovation. The further growth of GDP<sup>1</sup> and of the standard of living can only be ensured in the ongoing process of world economy globalisation by carrying out structural changes increasing the share of value added in the production sector and improving the competitiveness on domestic and foreign markets. Adding to the importance of these reforms are the high openness of the Slovak economy<sup>2</sup> and the high materials and energy consumption in the production sector.

Two years ago, in response to the current problems and challenges of Slovakia, the document Strategy of Competitiveness of Slovakia till 2010 (the so-called Lisbon Strategy for Slovakia) was prepared, presenting the economic strategy for Slovakia for the coming years, which became the basis for the government programme Minerva, which aims to transform Slovakia to a competitive knowledge economy. Long-term competitiveness of a country can only be ensured by creating favourable conditions for the development of the knowledge economy. Slovakia must fully exploit the talents and the skills of its people and develop their capability to work with new information, to produce new knowledge and to apply that knowledge in practice. The key areas identified in the Strategy of Competitiveness of Slovakia till 2010 are therefore as follows: science, research and innovation; information society; business environment and education and employment. In these areas, Slovakia still significantly lags behind the EU 15 average, even though they are of key importance for the development of the knowledge economy.

<sup>1</sup> GDP per capita measure in purchasing power parities in 2004: 51.9% of the EU 25 average (21st in the ranking of the Member States). EU25 average: 108.6%. Forecast for 2005 – 54.2%, EUROSTAT 2006

<sup>2</sup> According to EUROSTAT figures, the openness of the Slovak economy, measured as the average value of imports and exports relative to GDP, 69.4% in 2004 (the average of EU-15 is around 11%).

Over the last two years, also helped by the government programme Minerva aiming to transform Slovakia to a competitive knowledge economy, numerous positive changes have been implemented in the areas of innovation, science and research, business environment and informatisation of society. It is, however, necessary to keep the focus on the development of the knowledge economy, which is often prevented by the lack of finance. Slovakia today has a unique opportunity, with the assistance from the Structural Funds, to build an efficient national system of innovation. Innovation requires transfer of knowledge, i.e. the flow of information into the commercial and non-commercial sectors. This flow, however, is neither sufficient nor efficient in Slovakia. One of the goals of the new programming period therefore is to change the structures and to develop new tools in the field of innovation.

Slovakia today has a fully functional market economy, developed industry and service sectors and favourable business environment. It is therefore not necessary to support specific economic sectors, which are in private hands and which operate on the basis of competitiveness. OP R&D therefore aims to intervene only if the market is unable to provide an efficient solution.

In its last study on Slovakia, OECD points out that "... Slovakia significantly increased its productivity in sectors, which were influenced by the inflow of foreign direct investments, as well as in sectors, in which the level of competition increased, such as retail. In the other sectors, however, the Slovak Republic lags behind the international level of knowledge - both in the field of new products, as well as processes".

Research and development and technological innovation are irreplaceable and the biggest source of high quality knowledge. They are the pillars of any knowledge economy.

Research and development were analysed using standardised statistical data. This included impact of the research and development tasks and projects onto the society and economy and statistical data on human resources and the level of technical infrastructure in research and development centres. Some data have a regional dimension and provide an overview of the situation down to the NUTS III (higher territorial units) level.

The system of research and development in the Slovak Republic was analysed both on the input side (i.e. the amount of finances invested) and the output side (i.e. the impacts onto the society and economy currently produced by research and development in Slovakia). Where possible and relevant, statistical data are compared to selected foreign countries. When selecting the statistical indicators, the considerations and conclusions of the document titled "2005 Annual Report on Research and Development in the Slovak Republic and Comparison to Foreign Countries" were used. This document, approved by the Slovak Government on 6 December 2006, outlines the biggest problems of research and development in Slovakia, which are statistically described in the following sections of the analysis.

### 3.1.1 Financing of research and development in the Slovak Republic

#### Overall research and development expenditures

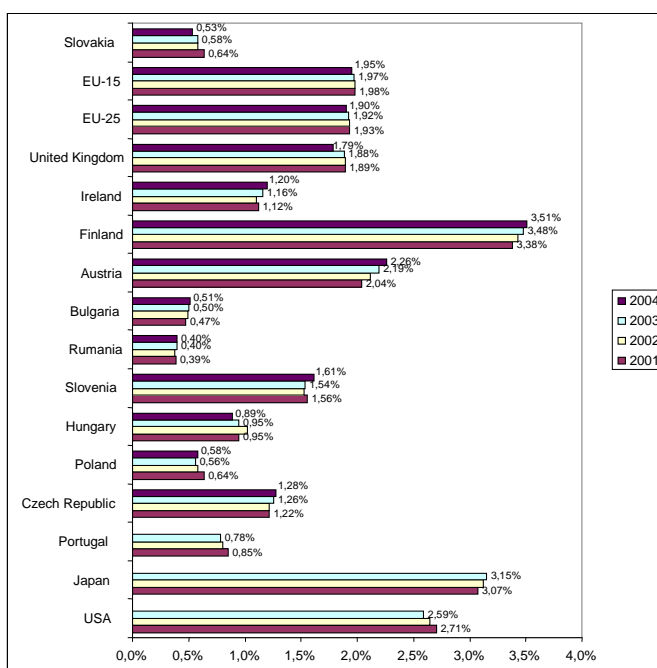
The overall research and development expenditures include expenditures covered by the national budget, private sources and foreign sources.

Slovak research and development suffers under a lack of finance; R&D in Slovakia receives less money compared to EU 15 and even EU 25. In comparison to the individual member states of the EU, research and development expenditures in the Slovak Republic are among the lowest and, in the last years, have shown a downward trend. The objective specified by the EU summit in Barcelona in 2002 to achieve, by 2010, a share of research and development expenditures of 3% of GDP, will be attained by several EU countries only. The Slovak Republic downgraded the Barcelona objective to a level of 1.8% of GDP in 2010. In 2004, the total research and development expenditure represented 0.53% of GDP. This share has been stagnating or even declining over the last years (in 2001, the share of R&D expenditure was 0.64% of GDP).

In addition to the share and development of total R&D expenditure relative to GDP, the indicator of total R&D expenditure is used, which better shows the growth of R&D expenditure in time.

The per capita research and development expenditure in the EU-15 countries increased from 494.1 USD in 2001 to 531.8 USD 2003; in the EU 25 countries, the per capita expenditure went up from 429.4 USD in 2001 to USD 462.6 in 2003. The highest per capita research and development expenditures were reported by Finland (USD 994.9 in 2003), the U.S. (USD 977.7 in 2003) and Japan (USD 893.4 in 2003).

As to the new member states of the EU, this indicator compares worse to the EU-15 and EU-25 average than the 'total R&D expenditure as percentage of GDP' indicator. This is caused by the lower level of GDP in these countries. The Slovak Republic significantly lags behind the EU average; in 2003, the total per capita research and development expenditure in Slovakia represented only USD 76.6. This indicator has been stagnating or slightly increasing during the period of time under review.



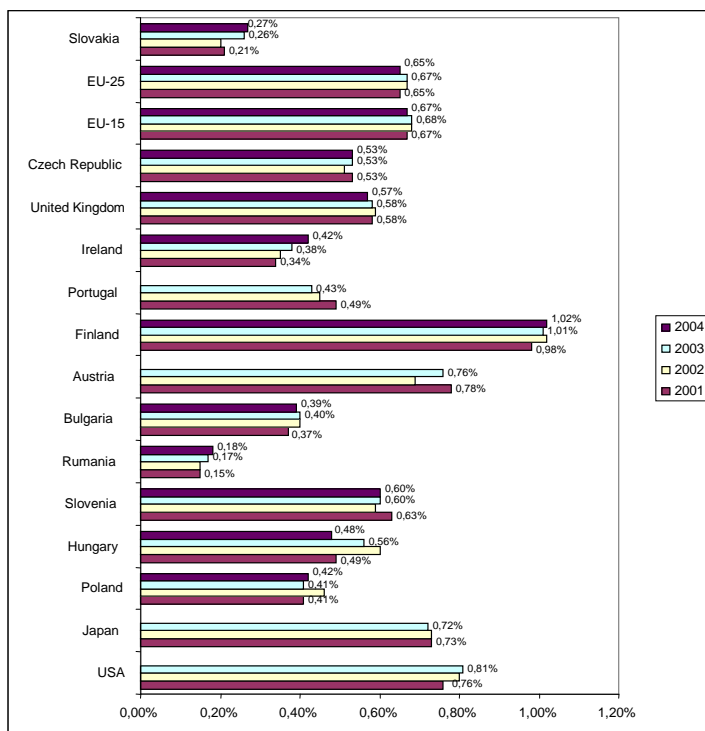
**Total R&D expenditure (% of GDP)**

Source: Eurostat, 2005 and Slovak Statistical Office



## Public research and development expenditure

Public expenditure is expenditure covered by the national budget of a member state or the budgets of lower administrative units of that member state (provinces, regions, districts, etc.). Public research and development expenditures in the EU-15 and EU-25 countries represent 0.67% of GDP (in 2004) and 0.65% of GDP (2004), respectively. Public research and development expenditures have been slightly increasing in Slovakia in recent years. The growth of public research and development expenditures, however, has been developing similarly to the GDP growth. As a result, the value of this indicator has been stagnating or has increased just slightly, despite the growth of public research and development expenditures in absolute terms.



**Public R&D expenditure (% GDP)**

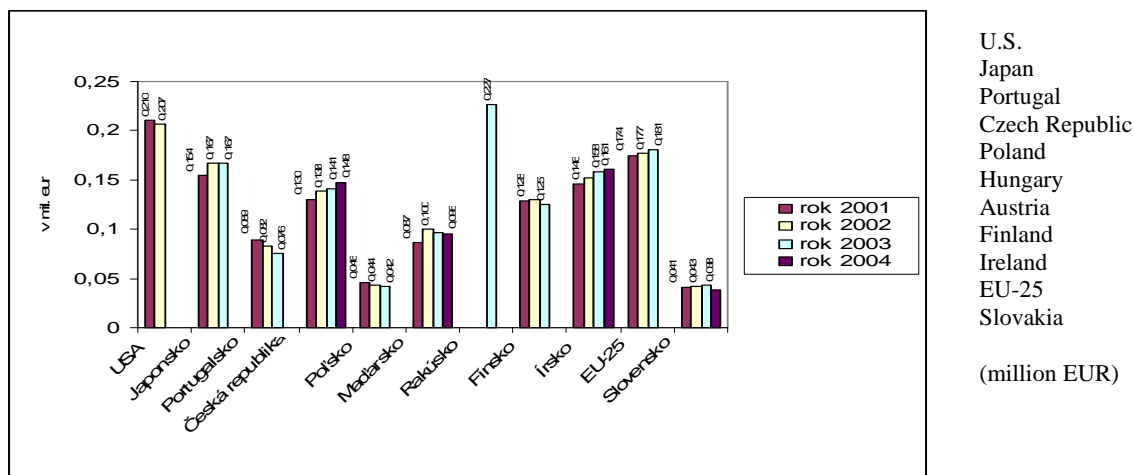
Source: Eurostat, 2005 and Slovak Statistical Office

In the EU-15 and EU-25, the share of research and development expenditure covered by the national budget was about 34% in the individual years. This corresponds to the specified optimum share of national budget expenditure on total research and development expenditure. In the Slovak Republic, expenditure from the national budget represented 41.3% of the total R&D expenditure in 2001 and increased to 57% in 2004. This was caused by the decreasing R&D investments by the businesses (the private sector).

## Research and development expenditure per one researcher

The indicator "Research and development expenditure per one researcher" represents the amount of R&D investments (in million EUR) relative to the number of researchers (FTE) of the country concerned. The highest value was reported by Austria and the U.S. The volume of research and development expenditure (EUR 5,477.6 million in 2003) and the number of researchers (24,124 researchers in 2003) in Austria is lower than in the U.S. (EUR 276,260.2 million in 2002; 1,334,628 researchers in 2002). The lowest value of this indicator from all countries included in the overview was reported by Slovakia (0.038 in 2004) and Poland (0.042 in 2003)



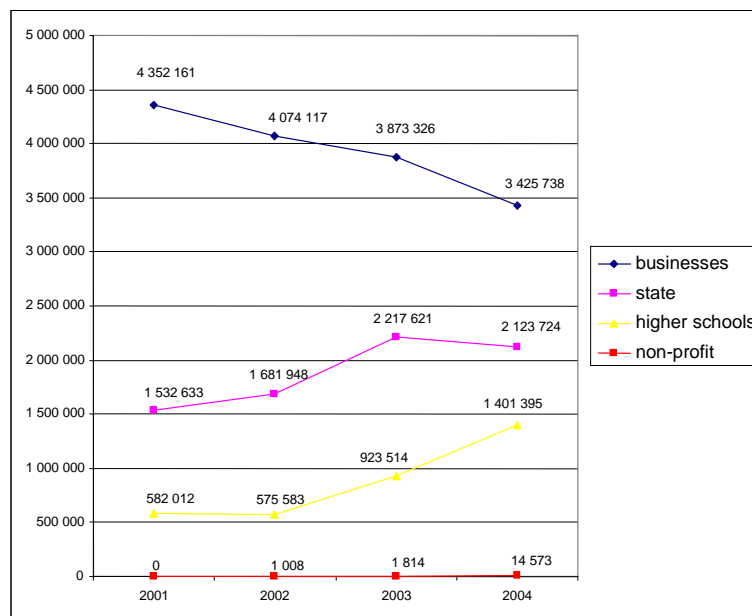


### R&D expenditure per one researcher (FTE) (million EUR)

Source: OECD, Main Science and Technology Indicators, 2005/2

### Breakdown of total research and development expenditures according to sectors

The indicator 'Breakdown of total research and development expenditures according to sectors' describes the volume of funds that were used in the year concerned by the relevant research and development sector; i.e. it provides an answer to the question how much did the relevant R&D sector consume out of the total investment into science and technology.



**Breakdown of total R&D expenditures according to sectors (thousand SKK)** Source: Statistical Office of SR – Selected Indicators of R&D Organisations, licences in the Slovak Republic in 2001, 2002, 2003 and 2004

From all the years under review, the total R&D expenditure of Slovakia increased significantly in 2003 only. This increase was caused by a changed methodology for calculating research and development expenditure. Despite the growth of research and development expenditure in 2003, the average year-on-year growth of total research and development expenditure in 2003 compared to 2001 was only 5.3%.

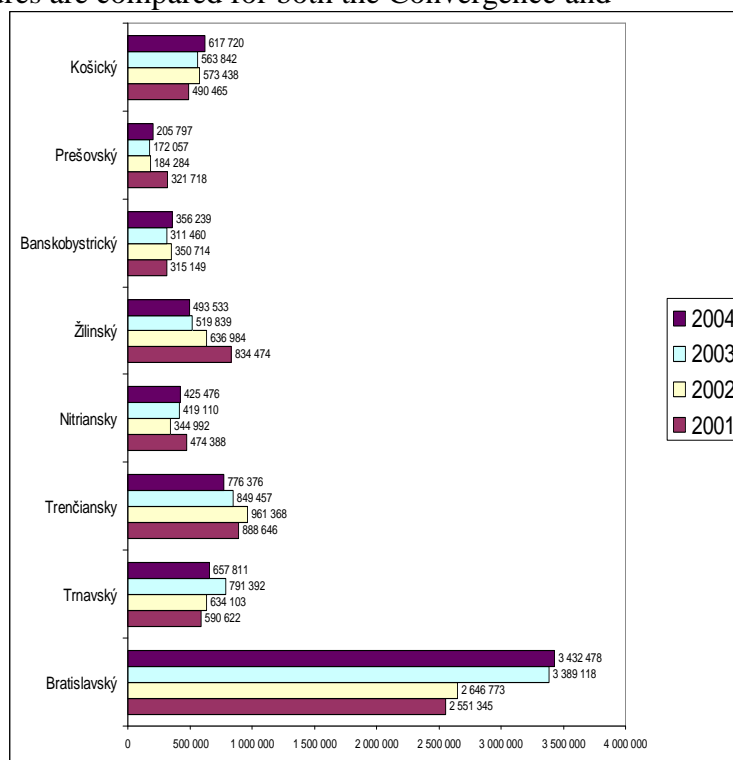
Looking at the development of R&D expenditure broken down according to individual sectors, R&D expenditure went down particularly in the business sector, mainly due to a change of the tax legislation. Under the new legislation, there are no tax incentives supporting business investments into research and development. Equally important was the lack of finance within the industry caused by undercapitalisation and insufficient inflow of foreign investments. These facts led to low interest to invest into technological transfer and research and development, as these activities require higher investments. In the following

years, research and development expenditures have been increasing. The most significant growth was recorded in 2003 by higher schools and state organisations.

### Breakdown of research and development expenditure according to regions

Research and development expenditures are compared for both the Convergence and

Regional competitiveness and employment objectives, as there is a close relationship between the total R&D expenditure and regional R&D potentials. Every year, the highest expenditures are reported by the Bratislava region (about 50% of the total research and development expenditures of the Slovak Republic). Between 2001 and 2004, research and development expenditure in the Bratislava region increased by SKK 881,133 thousand in absolute terms. The growth in 2004 represented 34% compared to 2001.



### Breakdown of R&D expenditures according to regions (thousand SKK)

Source: Statistical Office of SR – Selected Indicators of R&D Organisations, licences in the Slovak Republic in 2001, 2002, 2003 and 2004

The second highest research and development expenditures in 2004 were reported by the higher territorial unit of Trenčín (SKK 776,376 thousand). This region has been reporting a decrease of R&D expenditure every year, except for 2002, when the expenditure increased by SKK 72,722 thousand, compared to 2001. Research and development expenditure in the region of Trenčín decreased by SKK 112,270 thousand in 2004, compared to 2001. Compared to 2002, R&D expenditures went down by SKK 184,992 thousand.

The third highest research and development expenditure figure in 2004 was reported by the region of Trnava (SKK 657,811 thousand). In this region, R&D expenditures increased by SKK 67,189 thousand compared to 2001. A significant increase of R&D expenditures in the region was reported in 2003, with R&D expenditures growing by SKK 157,289 thousand compared to 2002, i.e. the year-on-year growth was 24.8%.

The region of Košice reported the fourth highest research and development expenditure figure in 2004 (SKK 617,720 thousand). Compared to 2003 and 2001, R&D expenditure in this region increased by SKK 53,878 thousand and SKK 127,255 thousand, respectively. The lower ranks according to total research and development expenditure in 2004 were taken by the following regions (higher territorial units): Žilina, Nitra, Banská Bystrica and Prešov. In 2003, the ranking of the regions did not change. In 2002, the ranking looked like as follows: Bratislava, Trenčín, Žilina, Trnava, Košice, Banská Bystrica, Nitra and Prešov. The region of Žilina slipped from the third place in 2002 to the fifth rank in 2003 and the region of Banská Bystrica worsened from the sixth place in 2002 to the seventh place in 2003. In 2001, the region of Banská Bystrica was closing the ranking (ranked 8<sup>th</sup>).

The distribution of financial resources among the individual regions is directly related to the capacities and the potential of the individual regions. As R&D funding in Slovakia is provided mostly based on a competition for grants/financial support, it is clear that regions with higher number of R&D organisations and better quality of equipment and instrumentation (for example number of over-the-limit value equipment, see chart in section 3.1.3) have better chances to get this support. This is an example of the relationship between the number of over-the-limit value equipment and R&D expenditures by the regions and an explanation of the regional differences between R&D expenditures. Another factor influencing the redistribution of expenses is the ability of the main stakeholders in the region (higher schools, large enterprises) to activate and exploit the existing potential to raise funds for research and development activities.

### 3.1.2 Human resources in research and development

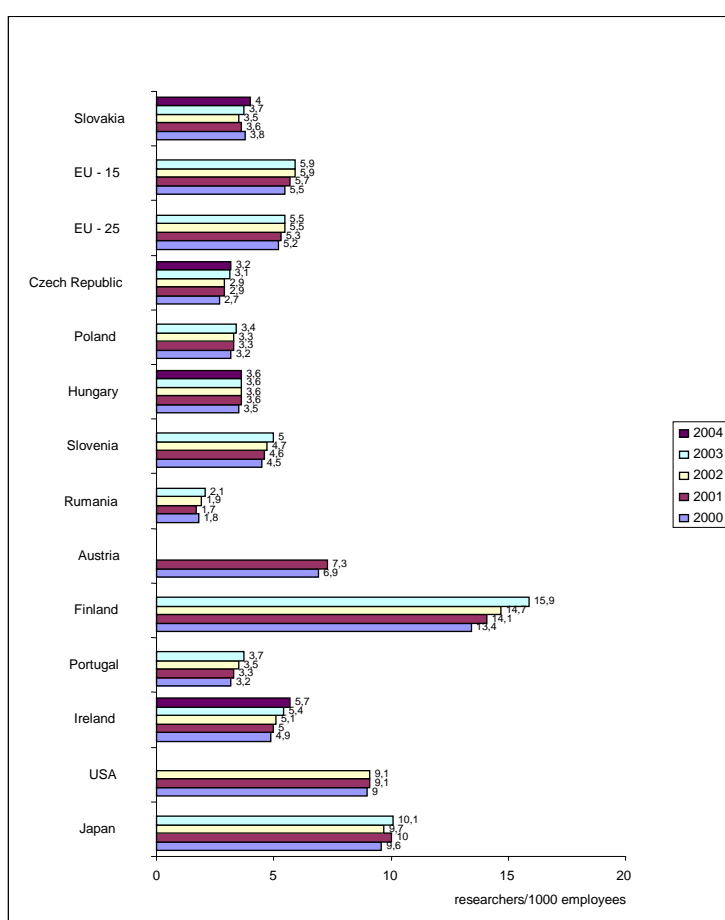
#### Number of researchers

This indicator is internationally the most widely used indicator of human resources active in research and development.

Researchers are experts, who are involved in designing and creating new knowledge, products, processes, methods and systems and in the management of the relevant projects. It is the most important group of research and development personnel. Most researchers belong to main group 2 (scientific and professional intellectual employees) and sub-group 1237 (managing employees of research and development units) of the KZAM Classification of Occupations.

In the report of the High Level Group on Increasing Human Resources for Science and Technology in Europe set up by the EC, which was published in January 2005, it was stated, that attaining the target of 3% share of R&D expenditure on GDP by 2010 requires increasing the number of researchers by 0.5 million (or 1.2 million, including auxiliary and technical personnel) within the EU. This number is needed to reach the minimum level of 8 researchers per 1,000 employees.

Since 1989, there has been a huge decline of the number of R&D personnel and researchers in Slovakia. This decrease was caused by two main factors: internal and external migration of scientific workers. Internal migration was related to a number of academic and university researchers changing to the commercial sector (banks, IT



**Number of (FTE) researchers (per 1,000 employees)**

Source: OECD, Main Science and Technology Indicators, 2005/2

companies). The result of external migration (with some researchers working for foreign research teams or in foreign institutions) was that the outputs of research projects are reported by other countries. In 2003, there were 3.7 researchers per 1,000 employees in Slovakia. (For the purposes of comparisons, using the year of 2003 appears the most appropriate, as many states have not included their data for 2004 into the "Main Science and Technology Indicators" (MSTI) report, which was the source of information for this indicator). The value is higher than that reported by the neighbouring countries (Czech Republic 3.1, Hungary 3.6, Poland 3.4). Looking at the other countries included in the comparison, it is also higher than that of Romania and equal with Portugal. Even though Slovenia and Ireland reported higher values than Slovakia, they still stayed below the EU average. For comparison, the number of researchers per 1,000 employees in the EU-15 was 5.9. In EU-25, this value was lower (5.5), worsened by the values of countries that joined the EU in 2004. Above the EU average were the U.S. (9.1 in 2002), Japan (10.1) and Finland with the highest value (15.9). Despite this abysmal difference between the EU and U.S. and Japan, the number of researchers per 1,000 employees in the EU has been increasing by 2.8% annually in recent years, outpacing the growth of intensity of research and development.

According to the most recent statistics for 2004, the number of researchers per 1,000 employees increased to 4.0 in the Slovak Republic. Achieving the EU target of increasing the number of researchers per 1,000 employees by 2010, however, appears problematic.

### **Structure of research and development personnel.**

The total number of research and development personnel in 2004 was 22,217 (natural persons). 78.1% of all research and development personnel are researchers (17,354); the rest are technicians and equivalent personnel (3,108) and auxiliary staff (1,755). Employees of the business sector represent about 20.9% of the total number; 18.2% of research personnel are employed by the state sector and 0.4% by the non-profit sector. Most research and development personnel out of the total number are employed by post-secondary education institutions (13,442) or 60.5%. Out of the total number of researchers, researchers from higher schools (12,414) represent as much as 71.5%.

The sector of higher schools has the highest share of researchers relative to the total number of employees within the sector (92.4%), compared to the entire state sector (66.9%); the non-profit sector (60.9%) and the business sector, in which the share of researchers on the total number of employees is less than one half (47%).

### **Age structure of researchers**

The highest number of researchers in the Slovak Republic (year of 2004) are from the age group of 25-34 years (29%), followed by researchers aged 45 – 54 years (24.8%), 55-64 years (18.5%), 35-44 years (17.4%), over 65 years (5.2%) and less than 25 years (5.1%). Interestingly, there are 2,000 researchers less in the age group of 35-44 than in the age group of 25-34. This is caused by the fact that the latter category of researchers (already experienced researchers) are also active abroad, i.e. there exists brain-drain or the drain or highly qualified research personnel abroad (particularly young researchers). OP responds to this development with the proposal of activities aimed at keeping qualified researchers in Slovakia or attracting them back home by creating better conditions for their work in Slovak research and development organisations. This can be achieved through the complementarity of support to infrastructure from OP R&D and through training/education activities targeted at human resources and financed under OP Education.

Compared to the previous year (2003), the number of researchers in the age group of 35-44 increased by 3.6% only, whereas the age groups of 25-34 and 55-64 reported an increase by

7.2% and 8.8%, respectively. The younger and older generation of researchers are both growing at a faster pace; the middle generation is in a moderate depression.

The highest percentage of women out of the total number of researchers belongs to the age group of 35-44 (48%). Women hold a high share also in the age groups below 35 years (44-45%), whereas women represent only 33% in the age category of 55-64 years and 15% in the age category above 65 years. With the increasing age, the share of women decreases.

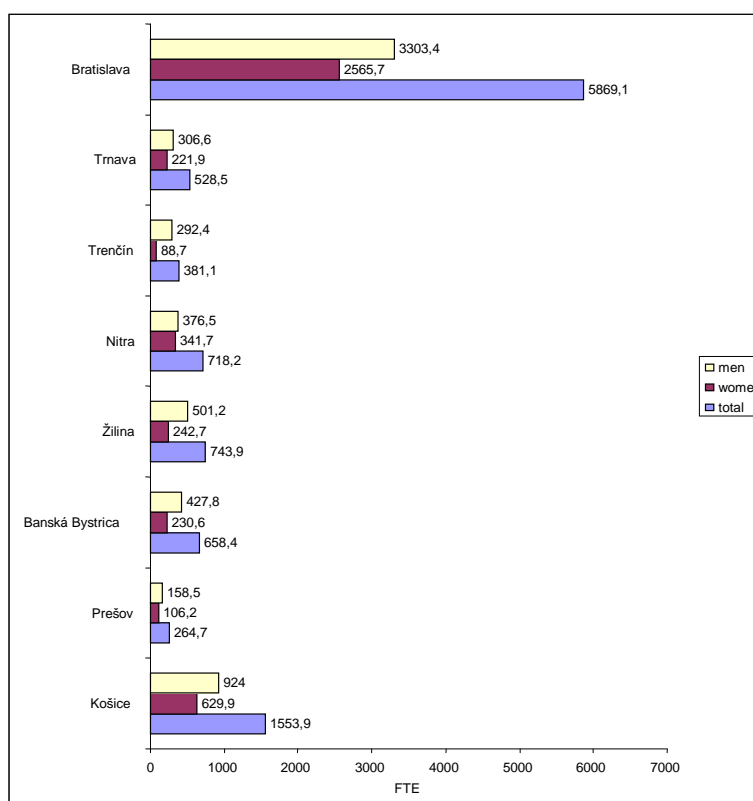
### (FTE) Researchers according to sciences and fields of technology

Most researchers work in natural sciences (3,185.4 FTE), which is as much as 30%, closely followed by technical sciences (2,993.7) or 27.9% of researchers, social sciences, medicine, agricultural and humanitarian sciences (527.6). There are 6 times more researches in natural sciences (expressed as FTE) than in the humanitarian sciences. It is generally known that technical sciences attract less women (29.4%) than men; in natural sciences the share of women is 36.7%, in agricultural sciences 45.6%, humanitarian sciences 49.7% and social sciences 50.6%. In Slovakia, the share of women is biggest in the medicinal sciences (59.7%).

### Regional differences

Regional differences in the numbers of researchers are compared for both the Convergence and regional competitiveness and the Employment objectives, as there exists a close relationship between the regions in relation to the R&D potential.

From regional point of view, the highest number of researchers work in the self-governing region of Bratislava (54.8%), which is more than one half of the total number of researchers. The self-governing region of Košice (14.5%) follows, beaten by a huge margin. The lowest value was reported by the region of Prešov (2.5%). The number of researchers is closely linked to the number of research and development organisations, most of which operate in the Bratislava region and the least number in Prešov.



**Number of researchers according to regions (FTE) in 2004**

Source: SO SR, selected indicators of R&D organisations, licences in Slovakia, 2004

The lowest share of female researchers from all the self-governing regions was reported by the region of Trenčín (23.3% of women) and the highest by the Nitra region (almost one half or 47.6%). Following after the Nitra is the self-governing region of Bratislava with a share of female researchers of 43.7%.

The differences in the number of R&D personnel in the individual regions are closely linked to the availability of employment opportunities to research and development

personnel. These opportunities are best in regions with traditionally strong economy and in the regional centres in particular, as they concentrate large enterprises, universities and institutes of the Slovak Academy of Sciences. Most important concentrations exist in the regions of Bratislava, Kosice and Zilina, which concentrate most research and development activities. These facts will be considered in the process of strategy drafting and will then be incorporated into the priority axes of OP R&D (area of assistance focusing on the creation of favourable conditions for the work of researchers, by providing the support to smaller R&D organisations, which would otherwise not be able to create such conditions). This will avoid concentrating human resources for R&D in the traditional centres, but allow their spreading out to other regions as well.

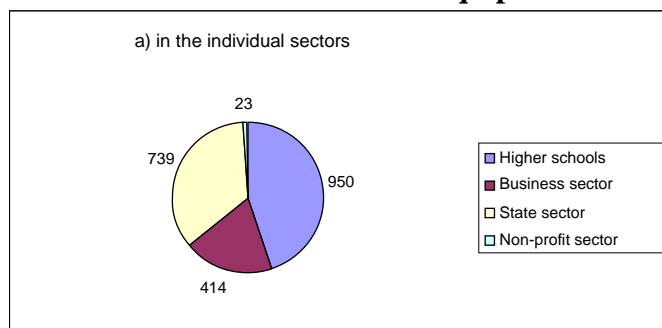
Strengthening of research and development activities by universities and other R&D institutions through good quality technical equipment (instrumentation, laboratories, etc.) will contribute to the professional growth of human resources in research and development and will create the conditions for the creation of new researcher jobs. As a complementary measure, development of human resources for research and development is supported by training/education and support to the mobility of research and development personnel carried out under OP Education financed from the ESF.

### 3.1.3 Level of technical infrastructure of research and development institutions

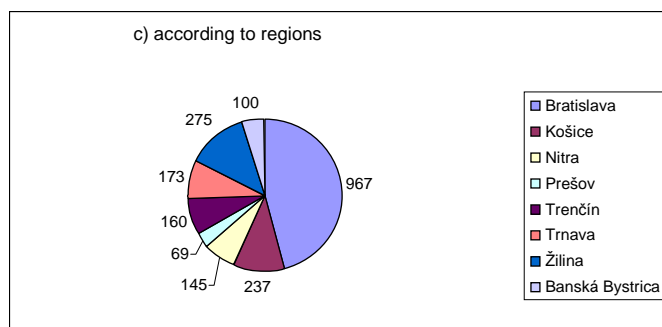
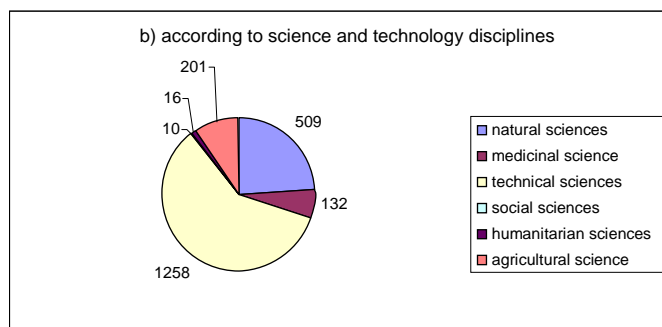
Research and development activities meeting international standards require qualified human resources and availability of an optimum level of technical and information infrastructure. In general, the Slovak Republic has R&D personnel of relatively high quality. This, however, does not apply to the technical infrastructure of research and development. The quality of technical infrastructure is at a much lower level than the quality of human resources, which does not mean that it is not necessary to support and improve the quality of human resources.

The condition of technical infrastructure for research and development, its modernisation and accessibility are serious problems of the science and technology sector in Slovakia. The obsolescence of the technical infrastructure for research and development results also from the low share of R&D expenditures on GDP. With inadequate infrastructure, it is not always possible to use the most advanced methods and procedures, which would speed up the research work and improve its quality. Very often, it is necessary to use alternative methods and procedures, which sometimes prolong the research work or necessitate the involvement of higher number of research personnel.

#### Number of over-the-limit value equipment <sup>3</sup>

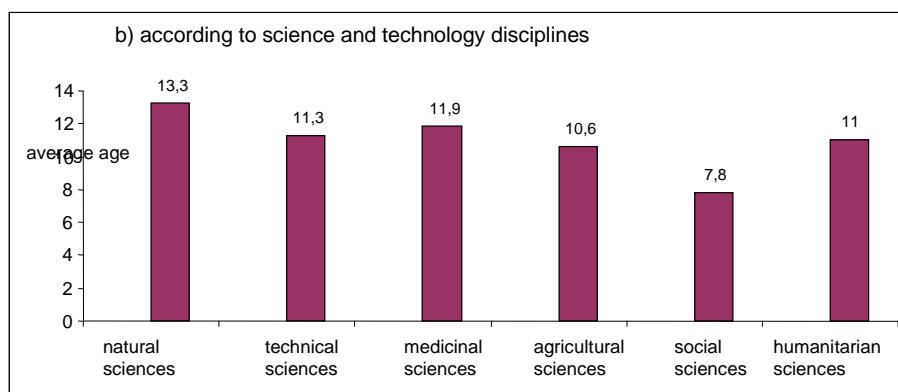
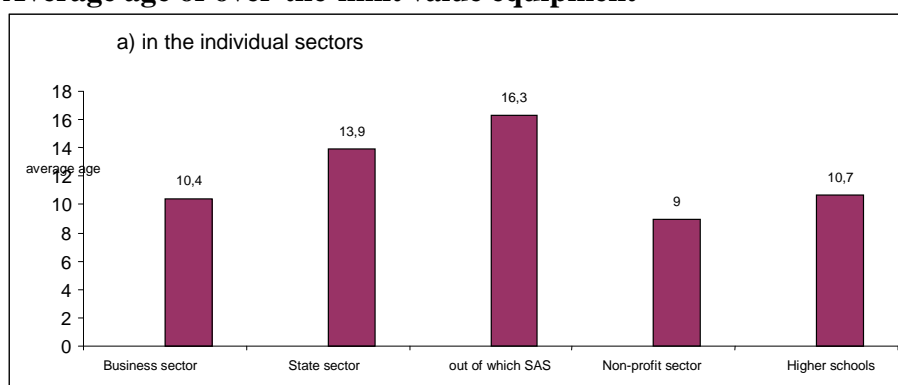


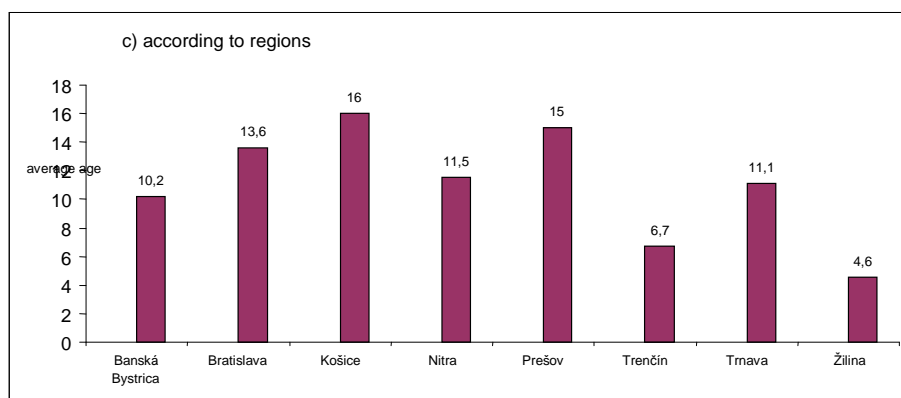
<sup>3</sup> This is that part of instrumentation used for R&D purposes, the procurement value of which exceeds SKK 1 million (laboratory and technological equipment) or SKK 750 thousand (information technology).



Source Statistical survey of MoEdu SR, December 2005

### Average age of over-the-limit value equipment





Source Statistical survey of MoEdu SR, December 2005

The average age of over-the-limit value equipment and instrumentation used in Slovakia in R&D is 11.7 years. Similarly to 2001, the Slovak Academy of Sciences is using R&D equipment with the highest average age (16.3 years). For comparison, in 2001, the average age of equipment was 11.0 years and the age of equipment used by SAS was 12.7 years. The average age of equipment decreased in the business sector (from 11.2 to 10.4 years) and the sector of higher schools (from 11.1 to 10.7 years).

As to the individual fields of science and technology, natural sciences use equipment and instrumentation with the highest average age (13.3 years). On the other hand, social and agricultural sciences use equipment and instrumentation with the lowest average age (7.8 and 10.6 years, respectively).

The average age of over-the-limit value equipment in the region of Bratislava is 13.6 years, which is higher than the average age of equipment used in the other regions in total (10.2 years). The highest average age from among the individual self-governing regions was recorded in the region of Košice (16) and Prešov (15). On the other hand, the newest equipment is in use in the Žilina region (4.6 years) and in the region of Trenčín (6.7 years).

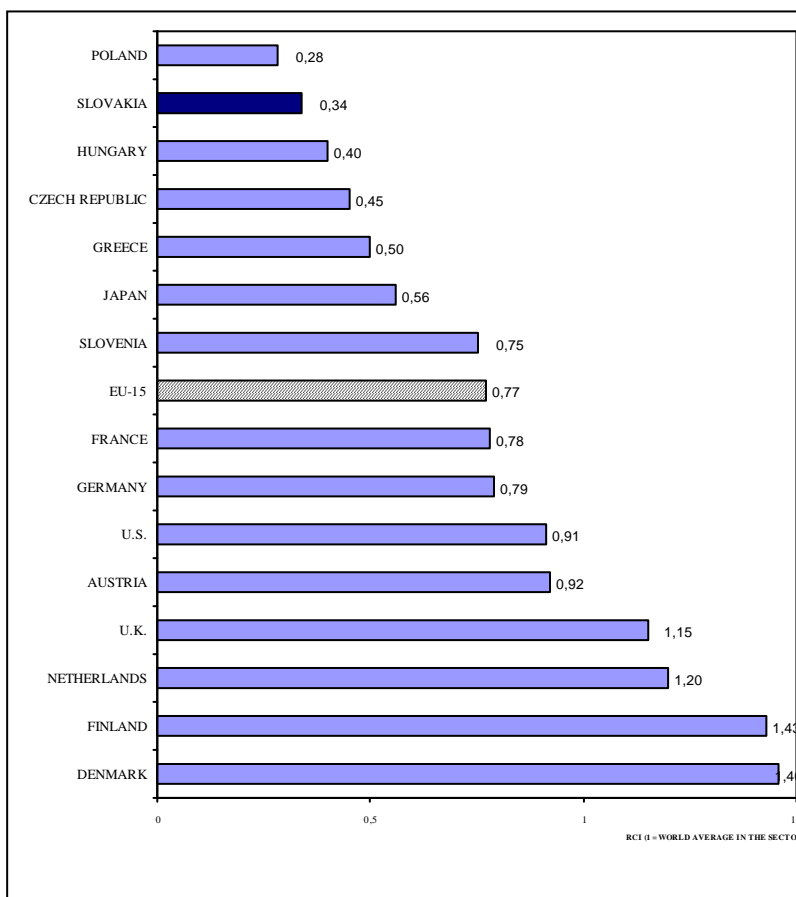
Support to the development of technical infrastructure for research and development institutions (through purchases of high-quality new equipment) would increase the number of over-the-limit value equipment and decrease its average age. This should help to achieve an optimum level of technical and information infrastructure for research and development, which, in turn, would allow using most modern methods and procedures speeding up the research work and improving the quality of outputs of research and development.



### 3.1.4 Research outputs measured by publication outputs

#### Comparison of selected countries and Slovakia according to the relative number of publications

The indicator ‘number of scientific publications’ allows comparing bibliographic outputs of that part of the research sector of a country, whose main deliverable is new knowledge distributed through scientific publications. These are in particular those research sectors, which are classified as fundamental research and part of the applied research by the Frascati manual (Assessment of Scientific and Technical Activities, OECD, Paris 2002). The indicator of the exact number of publications places smaller countries at a disadvantage, because the scope of research activities is smaller than that in the large countries. For comparisons between countries, it is therefore more appropriate to use the *Relative Number of Publications* as an indicator, which takes into account the size of the country (recalculation to 1,000 inhabitants). The number of publications is a quantitative indicator and does not refer to the quality of publications.



**Relative number of publications (yearly average between 2000–2004)**

Source: Thomson ISI® National Science Indicators (NSI), 1981–2004

Analysis of Research and Development in the Czech Republic and Comparison with Other Countries in 2005

Definition: RNP is the acronym of the Relative number of publication indicator measuring the number of publications produced by the research sector of a country, per 1,000 inhabitants of that country.

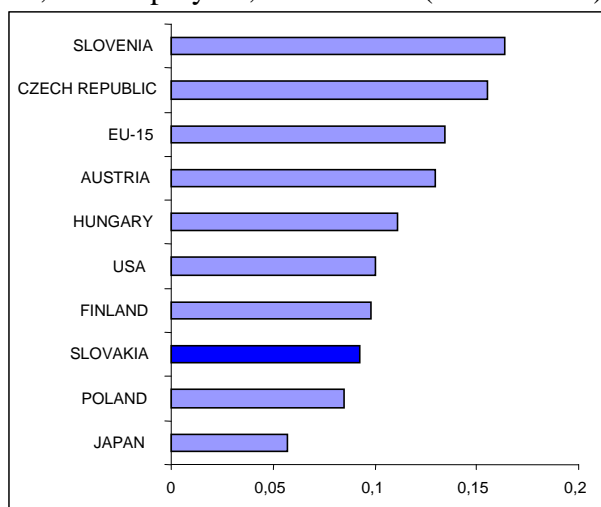
In this case, the Slovak Republic is compared to a group of 15 selected countries and the EU, using the RNP indicator. The selected countries include great powers, technologically advanced European countries, countries with highly efficient science, technology and innovation sectors, neighbouring countries and Greece. As a standard for comparison, the average value of this indicator in the EU may be used.

From the countries included in the assessment, all member states of the EU-15 are above the EU-15 average (0.77); all new member states of the EU are below that average. More than one publication per 1,000 inhabitants and year is produced in Denmark (1.46 publication per 1,000 inhabitants per year), Finland, Netherlands and the United Kingdom.

In the time period under review, Slovakia was last but one in the ranking prepared according to the value of the RNP indicator of the 15 selected countries and one region, with the value of the RNP of 0.34. This is slightly less than one half of the EU average (RNP=0.74). Only Poland reported a significantly lower value of the RNP indicator.

Considering the number of researchers per 1,000 employees, Slovakia's (SK – 0.093) efficiency in the number of publications is comparable to Finland (FIN: 0.098). The best values of this indicator (according to the available data) were reported by the Czech Republic (CZ: 0.155) and Slovenia (SL: 0.164).

The quality of Slovak R&D personnel becomes more apparent if we consider the amount of finances available to researchers on average per employee (see chart on page 17: Research and development expenditures per one (FTE) researcher (EUR million ). It follows from the above that Slovak R&D employees produce one publication at an unbeatable price in the EU. These data indicate that Slovak researchers are, despite the difficult conditions, able to produce results comparable to the rest of Europe and that the money invested into research and development in Slovakia will be a good investment.

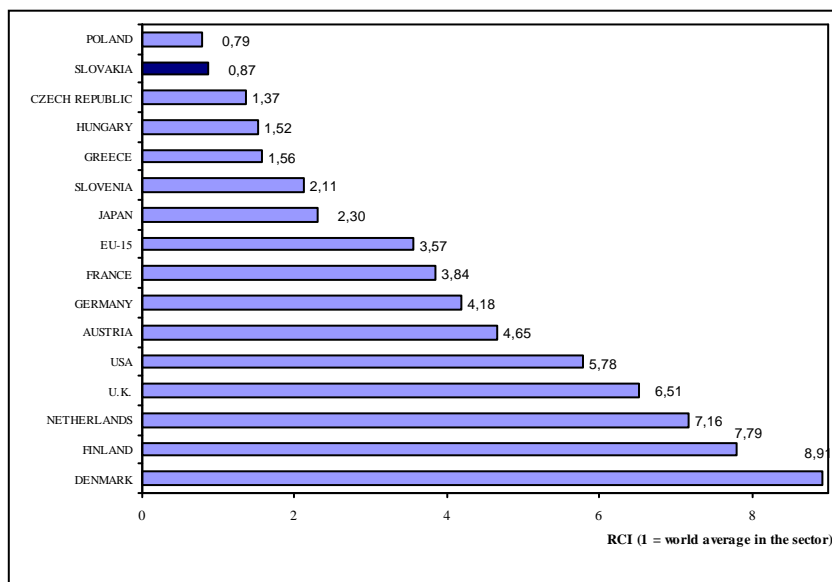


**Number of publications (yearly average for 2000–2004 per 1 researcher/1,000 employees)**

Source: Thomson ISI® National Science Indicators (NSI), 1981–2004; Analysis of Research and Development in the Czech Republic and Comparison with Other Countries in 2005; OECD, Main Science and Technology Indicators, 2005/2

### Comparison of selected countries and Slovakia according to the relative number of quotations

To assess the quality of a publication, the number of its quotations is used. With certain limitations (it is for example not possible to compare the number of quotations between different fields of science), this figure indicates the interest of the world scientific community in the piece of work concerned. As was the case with the number of publications, the indicator of the total number of quotations would discriminate smaller countries and therefore, the indicator 'Relative Number of



**Relative number of quotations (yearly average for 2000–2004)**

Source: Thomson ISI® National Science Indicators (NSI), 1981–2004  
Analysis of Research and Development in the Czech Republic and Comparison with Other Countries in 2005

Definition: RNQ is an acronym of the Relative number of quotations indicator measuring the number of quotations of publications produced by the research sector of a country per 1,000 inhabitants of that country.

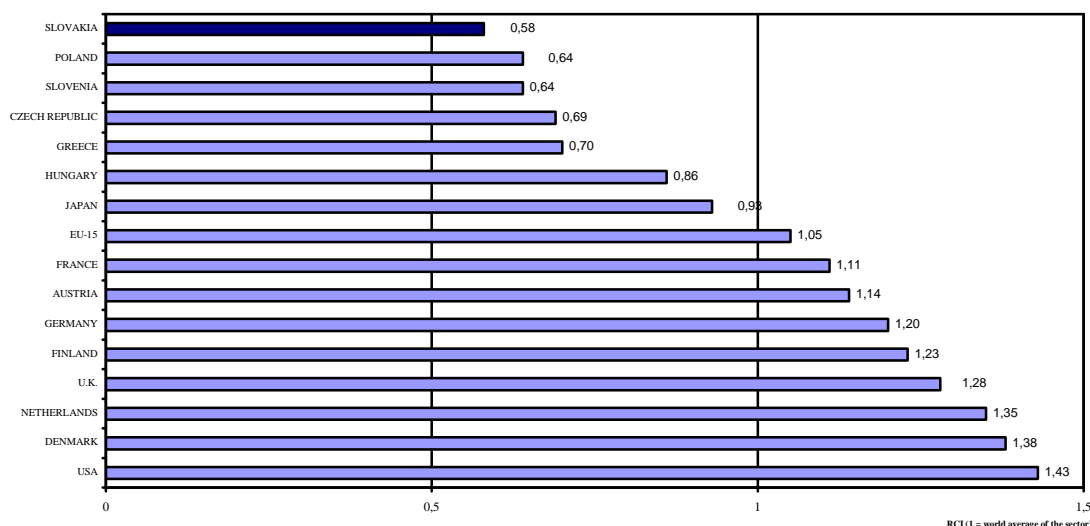
Quotations' is used.

As with the relative number of publications, all new member states of the EU, but also Greece and Japan are significantly below the EU-15 average of this indicator. The differences between the three best and the three worst countries included in the comparison are significantly higher than the differences in the relative number of publications. Put in other words, the gap between the new member states and the best countries of the EU-15 is significantly wider. Czech Republic, Slovakia and Poland (in the order indicated) close the ranking of 15 selected EU countries according to the RNQ indicator.

### Comparison of selected countries and Slovakia according to the country's relative quotation index

In order to be able to directly compare bibliometric quality of publications without the recalculation to the number of inhabitants (which causes certain distortion, due to the different share of scientists in the individual countries), the most widely used indicator, the Relative Quotation Index was introduced.

The following chart shows the relative quotation index of selected countries (see the definition).



### Relative quotation index (2000-2004)

Source: Thomson ISI® National Science Indicators (NSI), 1981–2004

Analysis of Research and Development in the Czech Republic and Comparison with Other Countries in 2005

Definition: RQI is the acronym of relative quotation index of a country (region) defined as the ratio of the quotation index of the country (region) and the quotation index of the world database (quotation register) of Thomson ISI. The quotation index of a country (region) shows the average number of quotations per one publication produced by the research sector of the country (region) concerned between 2000-2004 without regard to the sector. The RQI compares the bibliometric quality of publications of the country (region) with the average quality of publications included in the world database of Thomson ISI in 1999–2003.

If  $RQI = 1$ , this means that the country (region) concerned has the same bibliometric quality of publications as the average quality of publications included in the database of Thomson ISI. If  $RQI > 1$ , then the quality is higher and if  $RQI < 1$ , the quality is lower.

The results of the countries included into the comparison are comparable to the previous indicators. The new member states of the EU, Greece and Japan reported RQI below the value valid for the global database as a whole. In the case of the EU-15 member states and the U.S., they reported a higher value of this indicator.

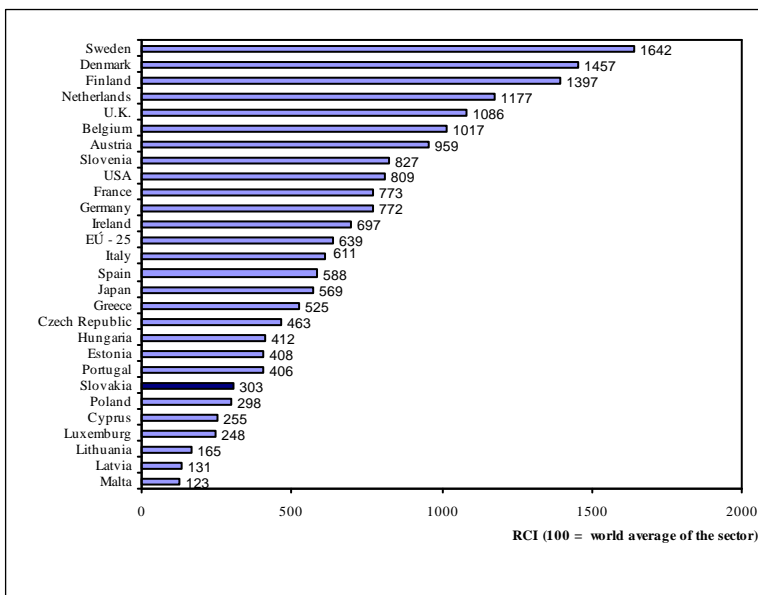
Slovakia closes the ranking of 15 selected countries and the EU, according to the value of the RQI indicator. Top of the rankings with the RQI value highly above the average are the U.S., followed by Denmark and Netherlands. Although the countries in the second and

third place are different in terms of their geography and population, they have one thing in common - in many fields of research, they are world leaders.

The bibliometric quality of publications and in particular of those of the fundamental research for the EU-15 countries as a whole (1.05) is very close to the average bibliometric quality of all publications included in the world database without differentiating between individual fields of science (global standard) in the period of 2000-2004. Slovakia reaches only 55% of this value. Denmark and the U.S., on the other hand, reported 138% and 143% of the world standard, respectively.

### Number of scientific publications per million inhabitants in 2003

When comparing Europe, the U.S. and Japan in the number of scientific publications per million inhabitants, the U.S. lead the ranking (809), followed by Europe (639) and Japan (569). Within Europe, the number of publications per million inhabitants is high in the three Nordic countries (in each of those countries, the number of publications per million inhabitants is more than double of the figure valid for Europe as a whole). The new member states (including Slovakia) sit in the lower half of the ranking. The only exception is Slovenia (827), whose number of scientific publications per million inhabitants was higher than the EU average and even higher than the figure reported by the U.S.



### Number of scientific publications per million inhabitants in 2003

Source: Directorate-General for Research  
Thomson ISI® Scientific/CVTS, Leiden University, OECD, Eurostat, European Commission, Key Figures 2005

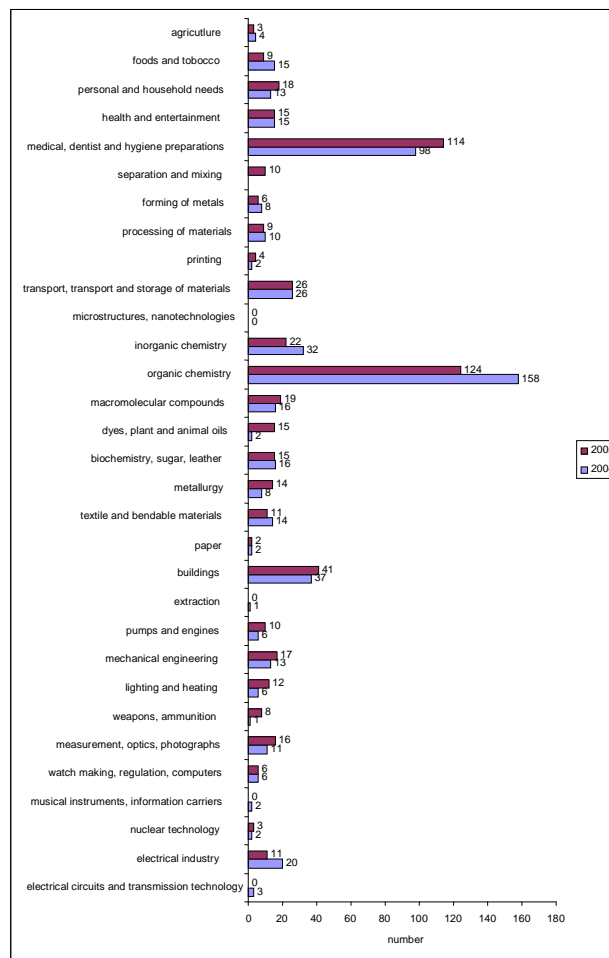
The above statistics, which are quite negative for Slovakia, are the clear consequence of the quality of country's research and development, affected primarily by the amount of R&D expenditures, quality of infrastructure and lack of highly qualified scientific personnel. Without improving these factors, any improvement of bibliometric R&D statistics can hardly be expected in Slovakia. This will be taken into account when drafting the strategy and the priority axes of OP R&D, with the aim of improving the conditions for Slovak R&D sector so that it creates more new knowledge and technology. This improvement would also be reflected in the increased number of publications.

### 3.1.5 Patents

#### Patent applications in 2004 and 2005 according to international classification of patents

Creative potential, innovation and good ideas are increasingly becoming the key weapons in the global competition. The European Commission urges the member states to pay more attention to innovation, new technology and their links to education. It is necessary to support innovation activity of small and medium-sized enterprises and entrepreneurs and technical universities in particular and to spread information on the possibilities of industrial rights protection, an area still underestimated in Slovakia.

Patents and the related patent applications are considered to be among the most important outputs of research, development and innovation activity. Patent statistics are a unique source of information for analysing the process of technological changes.



#### Patent applications in 2004 and 2005 according to international patent categorisation

Source: Industrial Property Office of the Slovak Republic, Annual Report 2004, 2005

#### Patents granted in 2004 and 2005 according to international classification of patents

International patents classification is the means for uniform international classification of patent documents and its primary task is to create an efficient procedure for the retrieval of patent documents by patent offices and other users in order to establish the novelty of an invention. It should also serve as a basis for determining the state-of-the-art in a particular area of technology and for preparing statistics on industrial property, which allow forecasting technical development in different fields. The Strasbourg Agreement concerning International Patent Classification entered into force on 7 October 1975. In 2005, the reform of the international patent classification carried out since 1999 by the World Organisation of Intellectual Property was completed. The revised, eight edition of the international patent classification entered into force on 1 January 2006.

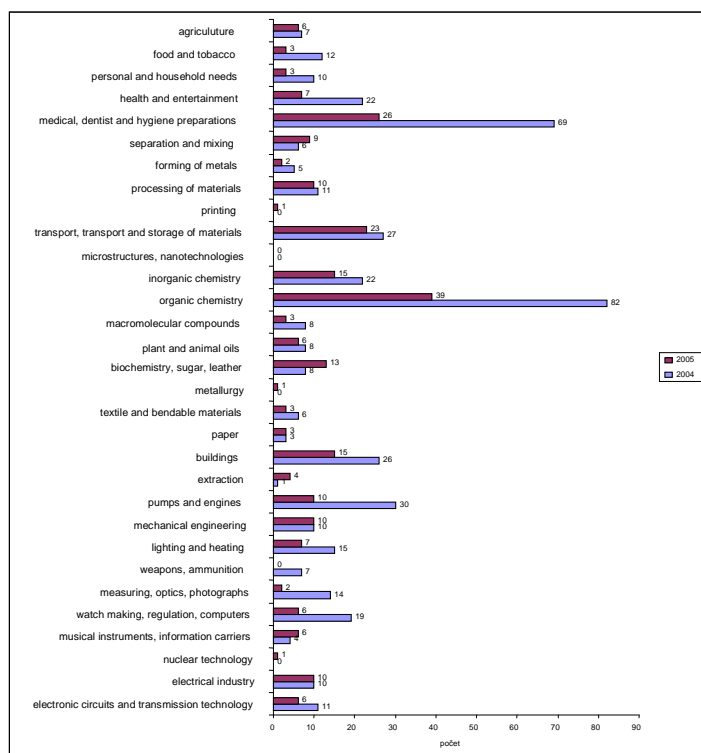
According to the international patent classification, the highest number of patent applications in 2004 were received in organic chemistry (18.1%) and medical or dentist science and hygiene (15.2%), followed by engines and pumps with 6.6%, transport and

transport/storage of materials with 6% and buildings with 5.7%. In printing industry, metallurgy, microstructures, nanotechnologies and nuclear technology, no patent applications were received. In 2005, no patent applications were submitted in the fields of weapons and ammunition and microstructures and nanotechnologies. The highest number of patent applications in 2005 related to organic chemistry (15.6%) and medical science, dentistry and hygiene (10.4%).

Solutions proposed in most patent applications filed by Slovak applicants in 2004 related to engines and pumps. In 2005, it was transport and transport/storage of materials. Patent applications filed by foreign applicants and PCT were related mostly to organic chemistry and medical science, dentistry and hygiene.

In 2004, as much as 28.5% of patents were granted in the field of organic chemistry (from the 36 domestic patents granted, 6 were granted in this field), followed by medical science, dentistry and hygiene (11.7%), buildings (6.7%) and inorganic chemistry (5.8%). The share of the other areas was relatively low.

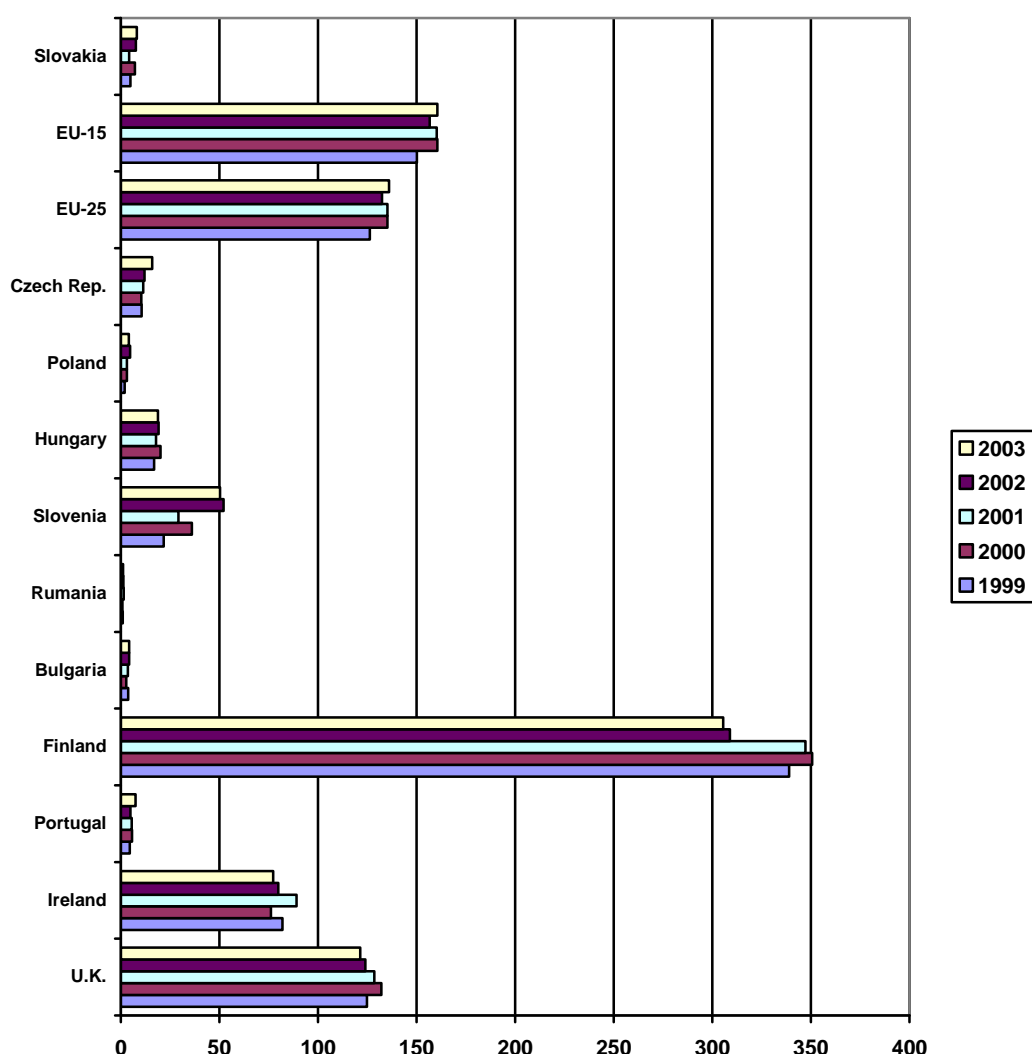
In 2005, the percentage of patents granted in organic chemistry was lower (22.14%) and in medical science, dentistry and hygiene (20.36%) higher, compared to the previous year. Most of the 51 domestic patents granted related to organic chemistry and measurement, optics and photographs.



**Patents granted in 2004 and 2005 according to international patents classification**

Source: Industrial Property Office of SR, Annual report 2004, 2005

## Number of EPO (European Patent Office) patent applications per million inhabitants



### Number of EPO patent applications per million inhabitants

Source: Eurostat 2006

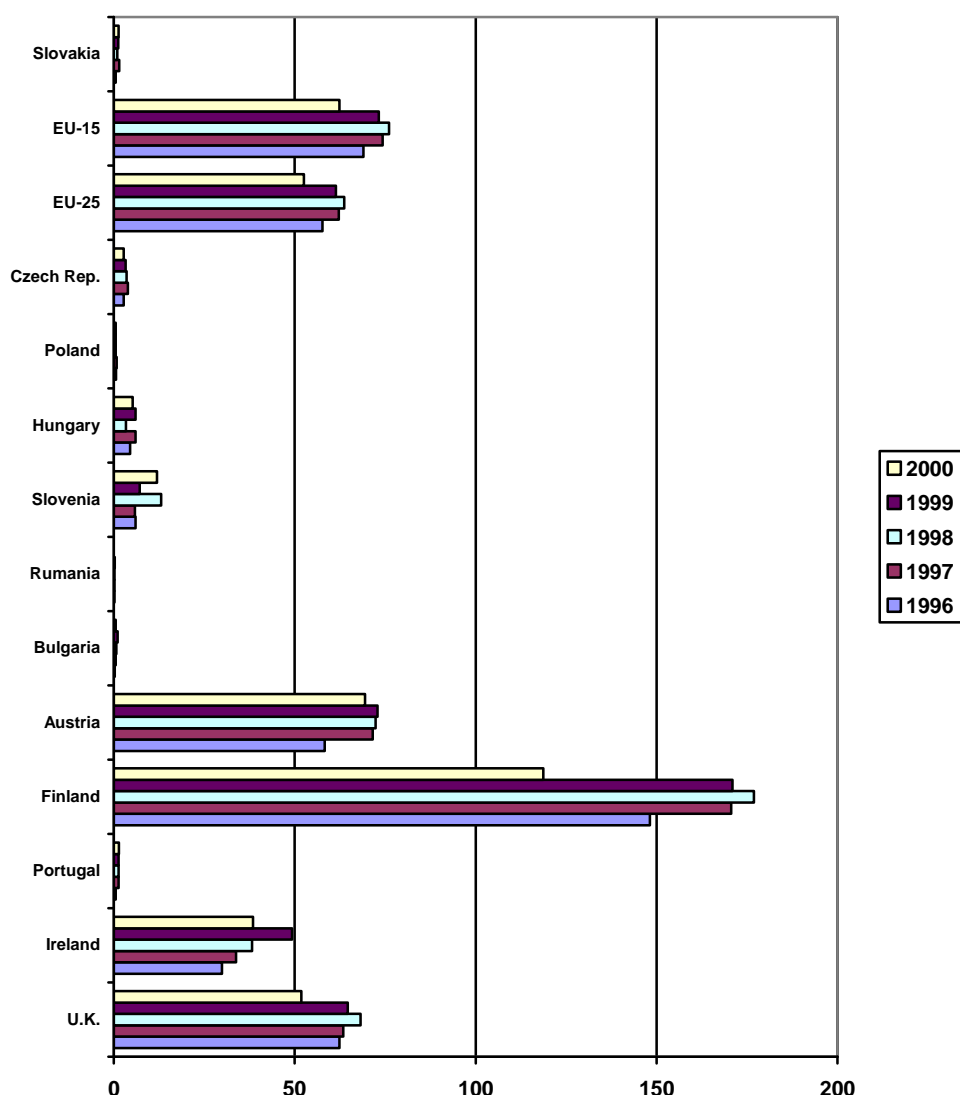
The data are related to applications filed according to the European Patents Treaty or applications according to the Agreement concerning patent cooperation, which were submitted to EPO (European Patent Office) (Euro-PCT).

This indicator is one of the basic structural indicators of the EU for assessing the level of research and development.

The number of patent applications to EPO was growing rapidly in the 2<sup>nd</sup> half of the 1980s and stagnated in the 1<sup>st</sup> half of the 1990s. The most recent generally available data indicate a decline in 2001 and a moderate increase in 2002.

New EU member states significantly lag behind the other countries. Most patent applications were reported by Slovenia (in 2003 as much as 51.7 applications/million inhabitants). The ranking on the next places looks like as follows : Hungary, Czech Republic, Slovakia and Poland. The lowest numbers of applications per million inhabitants were reported by Bulgaria and Rumania. The previously unmentioned Portugal reported, with some deviations, values similar to Slovakia.

## Number of patents granted by USPTO (US Patent Office) per million inhabitants



Number of patents granted by USPTO per million inhabitants

Source: Eurostat 2006

The data are related to patents granted by USPTO (U.S. Patent and Trademark Office) (unlike EPO data, which are related to patent applications). This indicator is one of the basic structural indicators of the EU for assessing the level of research and development. All data stated are preliminary. The same conclusions as from the previous chart apply - the ranking of the countries is very similar.

Countries with more developed economies report higher values of this indicator, with Finland dominating, even though an obvious decline between 1999 and 2003 can be seen. As to the new member states, the ranking is as follows: Slovenia, Hungary, Czech Republic, Slovakia and Poland.

Number of patent applications and number patents granted are important indicators for assessing the outputs of research and development activities. They are a measure for the ability of producing meaningful R&D outputs fit for commercial use and for linking research and development with the society and economy. This issue is also related to the



low level of knowledge and ability of academic/research institutions personnel and employees of private enterprises to efficiently administer and protect intellectual property. These facts will be taken into account and incorporated into the priority axes of OP R&D in areas of assistance supporting networks of excellent research and development centres and transfer of knowledge and technology produced by R&D into practice, combined with the protection of intellectual property. Statistics from section 3.1.7 providing information on the links between research and development tasks and projects and the needs of the society and economy will also be used to intensify the transfer of knowledge and technology produced by R&D into practice.

Through OP R&D, Slovakia wants to improve these basic structural indicators used in the EU for assessing the level of research and development. This improvement would help to increase the competitiveness of Slovakia in the field of research and development and, subsequently, of the national economy as a whole, in line with the Lisbon strategy.

### **3.1.6 International competitiveness of Slovakia: international competition under the 6<sup>th</sup> EU Framework Programme for Research and Development**

Table 1

Country	Number of projects	Amount raised (Euro)	Amount per project (Euro)
Germany (DE)	3,030	2,263,820,199	747,135
France (FR)	2,598	1,568,529,560	603,745
Sweden (SE)	1,190	509,899,394	428,487
Greece (GR)	1,064	289,006,652	271,623
Austria (AT)	900	302,937,764	336,598
Denmark (DK)	794	276,230,626	347,898
Finland (FI)	735	257,890,380	350,871
Poland (PL)	1006	154,431,397	153,510
Hungary (HU)	656	101,481,900	154,698
Czech Republic (CZ)	608	88,814,627	146,077
Slovenia (SI)	360	56,482,250	156,895
<b>Slovakia (SK)</b>	<b>270</b>	<b>25,694,673</b>	<b>95,165</b>
Estonia (EE)	223	23,112,334	103,643
Cyprus (CY)	146	19,114,436	130,921
Latvia (LV)	143	13,826,083	96,686
Malta (MT)	77	7,336,249	95,276

Source: database of the European Commission, September 2006

The amount of finances raised per project is an indication of the quality of the project or of the share of supporting and coordinating projects, which receive less subsidies from the European Commission. Slovakia was not particularly successful in this comparison, with just EUR 95,156 raised per project. From among the 9 new member states, Slovakia ranked last (9<sup>th</sup>). Looking at the success rate of Slovakia after recalculating the amount raised to the number of inhabitants, the situation is even worse. One of the causes of the above-described situation is the lack of instrumentation and laboratory equipment in research and development institutions across Slovakia. Without the proper R&D equipment, Slovak research teams have little to offer in the international competition. They are not able to produce R&D outputs of European/world class and this stands in the way of their full integration into the European Research Area and cooperation with leading-edge European research and development institutions.

Another important aspect is the involvement of the business sphere in international cooperation in science and technology. The involvement of the industry in research was very low already in FP 5 in Slovakia. The available data indicate that this unfavourable situation has hardly changed. This is clearly evidenced by the current situation in Slovakia and the comparison with EU-15 countries. Even though we contribute to new knowledge in the European context, this knowledge is used in practice in other countries. Subjecting the involvement of the industry to a more thorough analysis, we can see that it is mostly small and medium-sized enterprises that are involved. Out of them, only few innovative businesses operate in the production sector. Leaving out those small and medium-sized enterprises, which only organise activities without being actively engaged in production or research, the picture portraying the positive impacts of new knowledge gathered under the 6<sup>th</sup> framework programme on the economy of Slovakia would be even worse.

### Comparison of the involvement of research and industry

Table 2

	Average of EU-15 countries (5 <sup>th</sup> Framework Programme) *	SR	
		FP 5 *	FP 6
Research institutes, universities	44 %	62,5 %	62,3 %
Industry total	48 %	15,6 %	25,3 %
Other organisations	8 %	21,9 %	12,4 %
Total	100 %	100 %	100 %

Source: Slovak Research and Development Agency, 2006

### Involvement of Slovak research and development institutions in projects under the 6<sup>th</sup> Framework Programme of the EU for research and technical development and breakdown according to regions

Table 3

Region	Number of Slovak participants in projects
Banská Bystrica	9
Bratislava	78
Košice	18
Nitra	6
Prešov	4
Trenčín	4
Trnava	16
Žilina	9

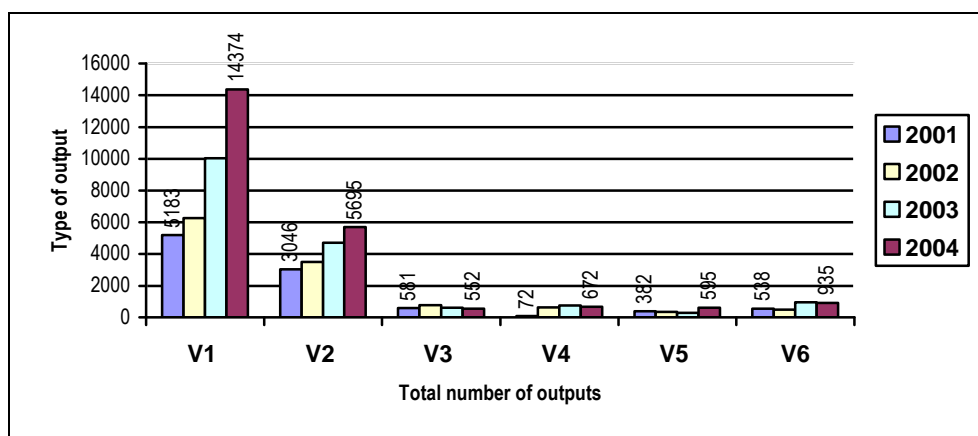
Source: Slovak Research and Development Agency, 2006

The position of Slovakia in FP 6 is quite bad. The above ranking provides summary indicators describing the current situation, but fails to describe the current or future research potential. There are several reasons for Slovakia's current position among the EU countries. The first reason is, only 30% of the current research meet the highest quality criteria (a precondition for receiving funding under framework programmes). The next reason is, the focus of many research institutions does not correspond to the current research priorities of the EU. The result of insufficient financing and support by the state is lack of technical and human resources. Nevertheless, we think the potential of Slovak R&D capacities to participate in FPs has not been exploited fully and there is still room for improvement. This, however, will not happen without efficient support by the state and the Structural Funds (to be provided under OP R&D in Slovakia). These facts will be taken into account

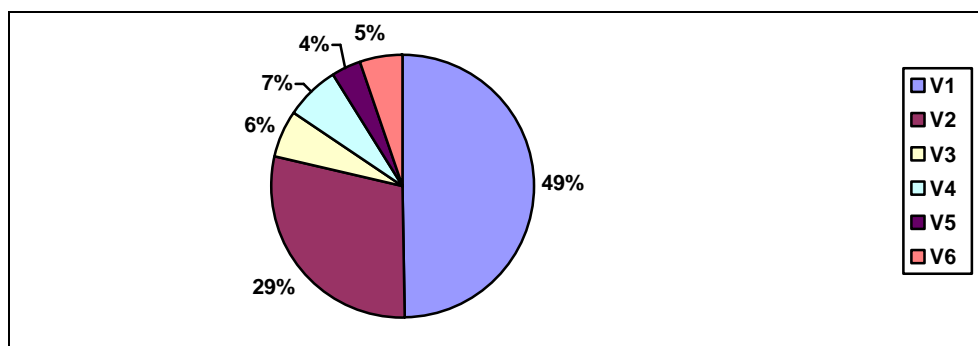
when drafting the strategy and incorporated into the priority axes of OP R&D into areas of assistance concentrating on the removal of the above factors causing the current situation of Slovak R&D.

### 3.1.7 Links between R&D activity financed from the national budget and the needs of the society and of the economy

#### Number of implementation outputs, broken down according to output type and year of implementation



#### Number of implementation outputs, broken down according to output type in 2004



Source: Overview of the main statistical indicators of research and development potential in the relevant years

#### Chart captions

**V1** – new knowledge on the substance of phenomena and similar facts with no concrete application

**V2** – new knowledge orientated on a specific target or practical task, developed into a subsequently applicable or functional form

**V3** – creation of new materials, products and equipment or substantial improvement (innovation) of those that are already in use

**V4** – creation of new processes, technological procedures, systems and services (including software) or substantial improvement (innovation) of those that are already in use

**V5** – projects for the implementation of (technological) innovation of products or of a production process

**V6** – projects for the implementation of society-related (non-technological) innovation in the area of social, economic or cultural development of the society

It follows from the charts above that the most outputs produced during the time period under review had the form of "new knowledge on the substance of phenomena and similar facts with no concrete application". In 2004, 14,374 outputs were registered in this

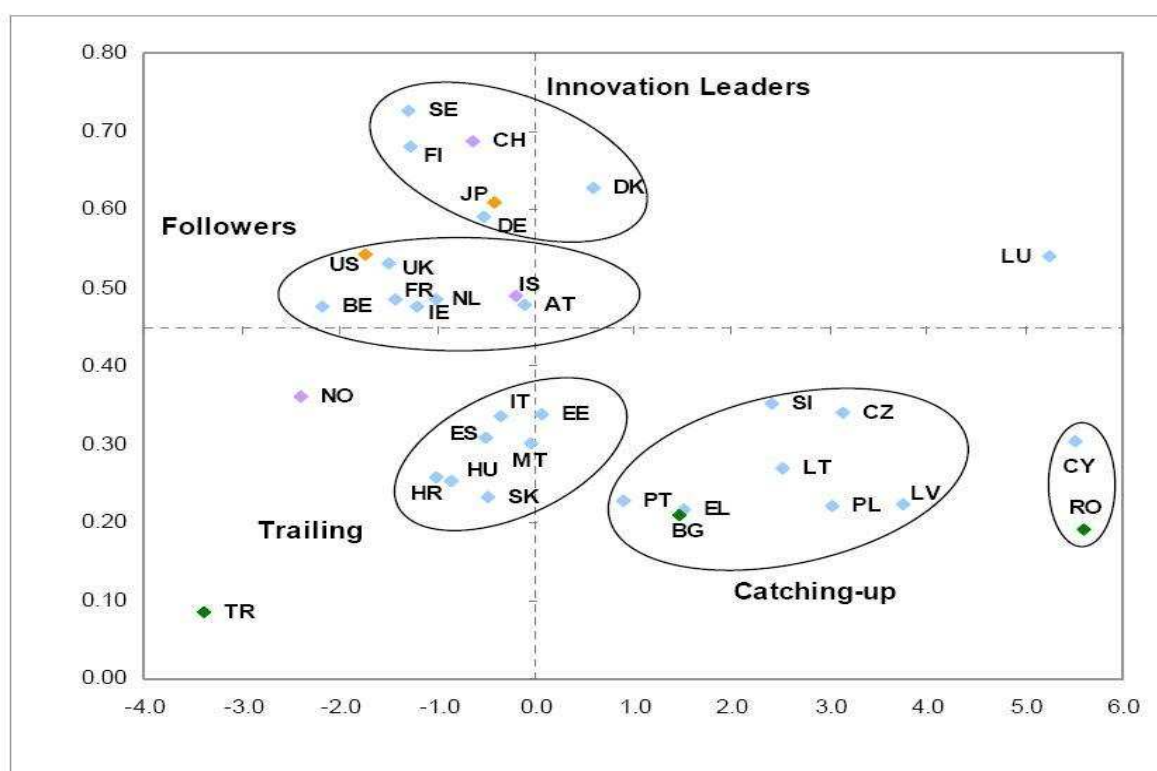
category, representing 49% of all the outputs in that year. In 2004, 5,695 outputs (29%) were registered in the category "new knowledge orientated on a specific target or practical task, developed into a subsequently applicable or functional form".

On the other hand, the least number of outputs were from the category "creation of new materials, products and equipment or substantial improvement (innovation) of those that are already in use". In 2004, 552 outputs were registered in this category. The number of outputs in the other categories is not very different either.

It follows from the above that almost one half of R&D outputs does not have a concrete application.

The low level of practical application of research and development outputs is reflected in Slovakia's position among EU-25 countries (Figure 1) measured by Summary Index of Innovativeness (SII). Slovakia belongs to the group of *trailing* countries with SII significantly below the EU-25 average and with the growth of innovation performance that is also below or just slightly above the EU-25 average.

**Figure 1:** Summary index of innovativeness 2006



Note: Vertical axis represents SII, horizontal axis the average growth of SII; dotted lines represent EU-25 average.

These facts will be taken into account when drafting the strategy of OP R&D and incorporated into its priority axes into areas of assistance concentrating on the transfer of knowledge and technology produced by research and development into practice with the intention to reinforce the links between R&D and the business practice. The statistics from chapter 3.1.5 providing an international comparison of patent applications and patents granted emphasize the need for intensifying the transfer of knowledge and technology produced by R&D into practice.

### **3.1.8 Results of the analysis of research and development in Slovakia**

Globally, at NUTS 1 level, as well as at NUTS 2 and NUTS 3 levels, the following conclusions on research and development can be drawn based on the analysis:

- low level of public and private expenditure into science, research and innovation; financial support to research and development in the Slovak Republic has been long among the lowest in the European Union. As to the dynamics of the development, Slovakia has even reported a year-to-year decline of expenditure in recent years.
- insufficient performance of the research and development potential, fragmentation and relative isolation of R&D from other countries – one of the main priorities of support to research and development from the European Regional Development Fund must be internationalisation of research and development in Slovakia. Experience from other countries and from other areas prove that an isolated and fragmented system gradually loses its quality and becomes less and less competitive compared to others.
- insufficient quality and lack of research and development infrastructure (both technical and personal infrastructure); research, development and technological innovation are unthinkable without good quality human resources and without appropriate technical equipment (instrumentation, laboratories....) - both conditions have to be fulfilled at the same time. As to technical equipment, situation is most likely worst from all EU countries (or Slovakia ranks among the worst). Under these circumstances, it is not possible for Slovak organisations from the research, development and innovation sectors to succeed in the competition for money under framework programmes, which give money to the best and technically most advanced European research teams selected in a competition.
- insufficient cooperation between research and development and the business sphere; this is a problem common to the whole European Union, which is particularly striking in Slovakia (this applies both to the Slovak Academy of Sciences, higher schools and departmental research institutes (as conventional research and development institutions) and the business sphere as the customer for the results of research and development).
- compared to other countries, insufficient number of highly qualified scientists and their imbalanced structure (in terms of scientific disciplines and regional disparities);
- limited impacts of research and development projects financed from the public sources onto the society and economy;
- compared to other countries, lower quality of outputs in the area of fundamental research (measured by bibliometric analysis);
- absolutely insufficient use of industrial rights protection (patents, licences, etc.);
- regional disparities in the area of research and development with the majority of research and development activities concentrated in the Bratislava region. With the exception of Žilina and Košice, the other regions do not at all exploit their R&D and innovation potentials, which could be one of the main pillars of their development;
- insufficient culture of “innovation” among small and medium-sized enterprises - according to the data of the Statistical Office of the Slovak Republic, virtually no “innovative” or “high-tech” small and medium-sized enterprises have been set up in recent years, which would be able to cooperate with the research institutions of the SAS / higher schools / departmental research institutes and other institutions carrying out research and development activities. That means the problem is caused by insufficient

activity of research and development organisations (SAS, universities, etc.) on the one hand and by the lack of demand from the business sector with high level of high tech and innovation activity on the other;

- non-existence (or low level) of innovation culture among research and development institutions.

Research and development and technological innovation are an irreplaceable source of high quality knowledge. Research, development and innovation are among those areas, which play a key role in the process of structural and overall convergence of Slovakia to EU-15. Their development significantly influences the speed and the quality of the restructuring processes aimed at transforming the existing production structure and economy to a knowledge economy.

From territorial aspect, Slovakia is divided into the Bratislava region (Regional competitiveness and employment objective) and the rest of Slovakia (Convergence objective). The analysis of the situation in research and development in the Bratislava region is identical with the analysis of the priority axis Research and Development. It outlines the same measures needed for the support of research and development in the whole of Slovakia. The reason for this is the fact that **Bratislava concentrates about 50%** of the research and development potential of Slovakia, owns about 50% of all equipment and about 50% of all scientific workers work in Bratislava. At the same time, however, the Bratislava region faces the same structural problems in the area of research and development as the rest of Slovakia, i.e. obsolete equipment, underdeveloped research and development infrastructure, weak links between research institutions and the society and economy, etc. Support to research and development in the Bratislava region creates better preconditions for strengthening the synergies with the other components of the social and economic life for the overall growth of competitiveness of the region and of the whole country. The Bratislava region concentrates not only research and development capacities, but also about one third of Slovak universities, a number of large, but also small and medium-sized enterprises, etc. As a result, there are good chances that support from the Structural Funds of the EU will produce the greatest benefits in this region in particular.

The main purpose of supporting research and development in the Bratislava region is to involve its capacities (representing almost 50% of the research and development potential of the whole Slovakia, measured by the number of researchers), into the development of the other regions of Slovakia, including the growth of the R&D potential of these regions. If this issue was not addressed, it would present an important barrier for the attainment of the objective contained in the Strategy of Competitiveness of Slovakia till 2010, according to which research, development and innovation should become one of the fundamental development pillars of Slovakia. In line with the above, the Slovak Republic was granted an exception at the end of the talks on the Financial Perspective for 2007-2013, which enables to support research and development institutions based in Bratislava also with a part of the allocation for the support of research and development under the Convergence objective (covering the rest of Slovakia) in an amount of EUR 326.4 million. The rationale behind this exception is that it is unthinkable to leave 50% of the research and development potential of Slovakia underfinanced. On the other hand, there are various reasons, for which Slovakia does not use its research and development potential sufficiently and these reasons are the subject of this analysis.

Solution to this issue will create good chances that the outputs of research and development become the drivers of the development of Slovakia, also in regional dimension.

One of the problems of the Slovak research and development is its high level of fragmentation and lack of coordination between various research and development

organisations. At present, it is not possible to produce top results in this area without the existence of the so-called critical mass of human and material resources. In Slovakia, there exists quite a number of small research and development teams, which operate practically on the same field, but without mutual cooperation. The goal is to integrate the research and development potential and the potential of technological innovation of Slovakia, respecting the development priorities of the regions, with the aim of ensuring mutually beneficial cooperation between R&D organisations and the production sector in the long term. If we want to make research and development and technological innovation one of the main development pillars of the Slovak society, it is necessary to invest into technical equipment as a priority in the first stage. Subsequently, it is possible to re-focus the support onto the outputs of the research and development and innovation system. The above activities will focus on the so-called spin-off effects from research and development towards social and economic practice.

One of the most problematic areas of the Lisbon Strategy in the EU is the use of the results of research and development in practice. Where these results are used at an increased level, research and development form the basic pillars of the development of the society and help to increase the standard of living.

It is therefore necessary to support these activities systematically, with a view to exploit scientific and research knowledge and create a number of positive effects, which will not be limited to the research and development sector (generation of own revenues, improving the reputation of a university and its researchers in the international context), but would also extend to the business sector and, eventually, to the whole society and would support the development of the whole region. Measures supporting commercial use of research and science also create the conditions for the growth of competitiveness of the regions and for the growth of employment and attract investors into economic sectors with higher value added.

The above problems and needs of the Slovak research and development sector, such as underdeveloped technical infrastructure for research and development, lack of cooperation and networking of research and development organisations and weak links between research and development and the economy and society were taken into account when designing OP R&D and became the main challenges in the area of support to research and development from the Structural Funds in the programming period of 2007-2013.

As to the regional needs of research and development, it can be stated that these needs are similar in all regions of Slovakia. This fact was also pointed out in the "Annual Report on Research and Development in the Slovak Republic and Comparison with Foreign Countries for 2005" and in the "2006 Report on Research and Development in Slovakia, including Evaluation of Success and Efficiency of Grant Schemes for the Support of Research and Development Financed from Public Sources". In the text of the OP, the regional statistics indicate certain quantitative differences between the regions; qualitative differences between regional outputs of research and development (e.g. publication activity, quotations, patents) cannot be identified, as similar statistics are not recorded by anybody and exist at the national level only. The same is true for the identification of research and development potential at regional level. Regional data may be used for conclusions resulting from quantitative regional indicators (such as number of researchers, age of above-the-limit value equipment, total R&D expenditures broken down according to regions, expenditures per 1 researcher).

### 3.2 Analysis of infrastructure of higher schools

Another area addressed by OP Research and Development is the infrastructure of higher schools. This area is different from research and development and requires a separate analysis.

The area of higher schools infrastructure of OP Research and development falls under the Convergence objective. The number of higher schools (broken down by years and NUTS regions) eligible for financing from the ERDF is shown in the following Table 4.

Number of higher schools  #	NUTS region		2002		2003		2004		2005		2006	
	2	3	3	2	3	2	3	2	3	2	3	2
	WS	TT	2	6	2	6	2	7	3	8	4	10
		TN	2		2		2		3			
		NR	2		2		3		3			
	CS	ZA	3	6	3	6	3	6	3	6	3	6
		BB	3		3		3		3			
	ES	PO	1	5	1	5	1	4	2	5	2	6
		KE	4		4		3		3		4	
	SR		17		17		17		19		22	

Source: ISIP

Legend: WS – Western Slovakia

CS – Central Slovakia

ES – Eastern Slovakia

TT – Trnava Self-Governing Region

TN – Trenčín Self-Governing Region

NR – Nitra Self-Governing Region

ZA – Žilina Self-Governing Region

BB – Banská Bystrica Self-Governing Region

PO – Prešov Self-Governing Region

KE – Košice Self-Governing Region

Currently, there are 22 higher schools covered by the Convergence objective (eligible under OP R&D for this area) in Slovakia, of which 15 are public schools, 6 are private schools and 1 is a state school. The majority of higher schools are located in the territory of Western Slovakia (10), with Eastern and central part of the country each having 6 higher schools. As to the self-governing regions, the differences in the numbers of higher schools are not striking. Most institutions of the higher education are located in self-governing regions of Trnava and Košice (4).

Most facilities of the higher schools' infrastructure are in a bad technical condition, which is accompanied with high operating cost.

University buildings can be broken down into several categories, according to the time, when they were built. Each of those categories has different heat insulation characteristics of building structures, involved the use of different materials and different designs of structures:

- buildings built before 1950: brick buildings with sloped roof (with wooden roof frame);
- buildings built between 1951 and 1970: beginnings and development of prefabricated buildings; use of concrete with lightweight fillers and of lightweight concrete (porous concrete), almost exclusive use of flat roofs, installation of double windows;
- buildings built between 1971 and 1983: beginnings of the use of layered perimeter walls, installation of double windows (made of aluminium, not wood), flat roofs;
- buildings built after 1983 – improved heat insulation properties of structures in line with the requirements of revised heat insulation standard (with mandatory proof of



fulfilment of calculation values); the calculation methods did not consider the impact of construction details, which resulted into higher heat losses on perimeter walls in contact areas.

Most facilities of the higher schools' infrastructure are in a bad technical condition, which increases their operating cost. Most buildings (with the greatest building volume) were built between 1951 and 1983, i.e. in a time period of relatively low requirements on heat insulation characteristics of buildings. As much as 40% of the size of school buildings was built between 1951 and 1970. These are mostly buildings with high heat energy consumption and uneconomical operation. This fact was not influenced by the establishment of new higher schools in recent years, as most of the new schools reside in older buildings.

Due to a lack of finance, the necessary maintenance works and repairs on existing buildings have not been carried out for several years. The technical condition of buildings is deteriorating, the scope of the necessary maintenance works has grown to large investments and the number of buildings in a condition requiring urgent repairs is increasing. This was caused by the following problems:

- defects of hydro-insulating layers of single-layer flat roofs and attic masonry. These defects need to be removed by replacing the whole roof covering;
- static defects of buildings resulting from their natural ageing;
- desolate condition of sanitary facilities;
- morally and physically worn boilers and other technical installations not meeting the current energy efficiency requirements, with high consumption and low efficiency;
- inadequate or damaged hydro and heat insulation of buildings;
- desolate condition of windows (falling out or temporarily attached to the frame; often, they are attached in such a way that they cannot be opened, wooden windows damaged by climatic conditions and not sealing);
- desolate condition of the sewage system (prevailing corroded alloy pipes, with cracks forming on them or breaking completely), temporary seals on sewage pipes;
- facades of buildings often received a paint, which does not conduct away internal humidity.

The situation is similar when it comes to the interior equipment of higher schools, which often fails to meet the current standards and does not respond to the changing trends and challenges of the modern society. Interior equipment of higher schools (similarly to buildings) has been suffering under a long-lasting lack of capital investments. The result is moral and physical obsolescence of interior equipment of most buildings.

The quality and the level of the education also depend on the condition of the buildings and facilities used by higher schools and the equipment of such buildings. The consequences of low infrastructure investments include unsatisfactory condition of a high number of buildings, moral and physical obsolescence of technical equipment, high operating cost and lack of modern technologies used in the learning process.

Considering these facts and the clear relationship between the quality of education and the conditions, in which the education process at higher schools takes place, this area will, linked to education and vocational training system reform under OP Education, increase the competitiveness of higher schools and eventually of the regions, which will benefit from

these synergies. The complementarity of activities of OP R&D and OP Education is described in detail in section 7.2.1.2 of this OP.

The above facts will be considered when designing the strategy of OP R&D and incorporated into its priority axes into areas of assistance concentrating on the development of higher schools infrastructure and modernisation of higher schools interior equipment with the aim of improving the conditions for the education process. Priority shall be given to older buildings, which require reconstruction more urgently than the newer ones. This will, of course be reflected in the projects evaluation process (through evaluation criteria).

### 3.3 Results of implementation of programming period 2004-2006

In the programming period of 2004-2006, no individual measures for the support of research and development or higher schools' infrastructure from the European Regional Development Fund were defined, which could be compared to the proposed measures of OP R&D. Measure 1.3 of Sectoral operational programme Industry and services is comparable to the contents of OP Competitiveness and economic growth

### 3.4 SWOT analysis

Table 5: Part of SWOT analysis with regional projection at NUTS 2 level

Strengths	Regional projection			
Research and Development	W est	Cen tral	East	BA
Existing scientific and research institutions	x	x	x	x
Qualified workforce suitable for the development of R&D	x	x	x	x
Existing research and development capacities at universities linked to economic practice, compared to other regions of Slovakia		x	x	x
Relatively high number of over-the-limit value equipment, compared to other regions of Slovakia	x			x
Relatively high number of researchers, compared to other regions of Slovakia				x
Infrastructure of higher schools	W est	Cen tral	East	BA
Sufficient number of buildings of the higher education	x	x	x	

Weaknesses	Regional projection			
Research and Development	W est	Cen tral	East	BA
Isolation and low level of coordination and concentration of research and development capacities, compared to other regions of Slovakia	x	x	x	
Low level of public and private expenditures on science and research	x	x	x	x
Low level of public and private expenditures on science and research, compared to other regions of Slovakia	x	x	x	
Insufficient performance of the research and development potential, its relative isolation from foreign countries and high fragmentation due to insufficient personal and technical level of infrastructure	x	x	x	x
Inadequate level of infrastructure of research and development institutions (buildings, furnishing, equipment)	x	x	x	x
Under-dimensioned staffing of research and development institutions	x	x	x	x
Insufficient financing of and attention paid to the development of human and technical resources of R&D institutions	x	x	x	x
Low motivation of organisations from the business sphere	x	x	x	x
Insufficient qualitative and quantitative level of R&D infrastructure and its inadequate structure	x	x	x	x
Insufficient cooperation between research and development and the business sector	x	x	x	x
Insufficient innovation culture among small and medium-sized enterprises	x	x	x	x
Non-existence of the innovation culture in the academic sphere	x	x	x	x

Low concentration of resources on large research and development projects addressing problems of the whole society	x	x	x	x
Obsolescence of over-the-limit value facilities			x	
Relatively low number of over-the-limit value equipment, compared to other regions of Slovakia		x	x	
<b>Infrastructure of higher schools</b>	<b>W est</b>	<b>Cen tral</b>	<b>East</b>	<b>BA</b>
Bad technical condition of education infrastructure of higher schools	x	x	x	

<b>Opportunities</b>	<b>Regional projection</b>			
<b>Research and Development</b>	<b>W est</b>	<b>Cen tral</b>	<b>East</b>	<b>BA</b>
Creation of an environment supporting the inflow of direct investments into knowledge-intensive sectors, concentrated in particular into the automotive cluster, with opportunities in the area of new materials development, testing systems, etc.	x	x		x
Concentration of science and research centres near universities		x	x	x
Extensive backbone optical network with available capacities, in which the state owns a majority interest, development of e-services	x	x	x	x
Prioritisation of support to research, development and innovation at the level of regions	x	x	x	x
Increased R&D potential in machine engineering and materials technologies, due to the presence of a major enterprise from this industry (automotive industry) in the region	x	x		x
Increased R&D potential in metallurgy, due to the presence of a major enterprise from this industry in the region		x	x	
Increased R&D potential in medicine, due to the presence of medical school and research institutes in the region		x		x
Increased R&D potential in wood processing and forestry due to the presence of a higher school and major enterprises from this industrial branch in the region		x		
<b>Infrastructure of higher schools</b>	<b>W est</b>	<b>Cen tral</b>	<b>East</b>	<b>BA</b>
Improvement of the quality of the education process through modernisation of physical infrastructure of higher schools	x	x	x	

<b>Threats</b>	<b>Regional projection</b>			
<b>Research and Development</b>	<b>W est</b>	<b>Cen tral</b>	<b>East</b>	<b>BA</b>
Movement of global investment capital into territories with higher price competitiveness than the Slovak Republic without being replaced by investments based on knowledge	x	x	x	
Little efficient and effective support to research and development with regard to the growth of competitiveness of industry and services due to fragmentation and little flexible forms of support	x	x	x	
Drain of highly qualified research workers to foreign countries (particularly young researchers)	x	x	x	x
Lack of interest of the business sector in the results of research and development from Slovak institutions	x	x	x	x
Low GDP share spent on research and development	x	x	x	x
Inadequate structure of workforce qualification and of education institutions not responding to the needs of the labour market	x	x	x	x
Low motivation of research and development institutions to learn about foreign projects	x	x	x	x
Insufficient financing of and attention paid to the development of human and technical resources of research and development institutions	x	x	x	x
Underdeveloped culture of the use of analytical and evaluation tools in decision-making processes	x	x	x	x
Insufficient implementation of strategies, concepts and development incentives in the area of research and development	x	x	x	x
<b>Infrastructure of higher schools</b>	<b>W est</b>	<b>Cen tral</b>	<b>East</b>	<b>BA</b>
Failure to provide for complex maintenance of existing higher school buildings	x	x	x	
Worsening of the technical condition of higher school buildings and increased operating cost of higher schools infrastructure	x	x	x	

The above table identifies the strengths, the weaknesses, the opportunities and the threats common to all NUTS II regions and those, which are specific to individual regions. Despite this, a general conclusion can be made that regional needs in research and development are similar for all regions of Slovakia. This fact was pointed out also in the "Annual Report on Research and Development in the Slovak Republic and Comparison with Other Countries for 2005". This conclusion was also supported by the partner organisations and future beneficiaries when formulating the basis for OP strategy and drafting its activities.

The conclusions of the "2006 Report on Research and Development in Slovakia, including Evaluation of Success and Efficiency of Grant Schemes for the Support of Research and Development Financed from Public Sources", which was approved by the Slovak Government on 6 June 2007 also support the results of this analysis of OP.

### 3.5 Main disparities and development factors

Table 6: Overview of key disparities and development factors

Key disparities	Regional projection				Main development factors	Regional projection			
Research and development	We st	CE NT RA L	EA ST	BA	Research and development	WE ST	CE NT RA L	EAS T	BA
1. Insufficient demand for innovation by the business sector, low motivation of businesses to introduce innovation / absence of layer	x	x	x	x	Intensive cooperation of practitioners and R&D employees and motivation of the business sector to cooperate	x	x	x	x
2. Insufficient ability of research and development institutions to respond to the demand of the society/business sector, due to outdated technical infrastructure and fragmentation of research	x	x	x	x	Highly performing research and development potential and intensive cooperation of Slovak R&D institutions with foreign countries	x	x	x	x
3. Insufficient R&D potential (in terms of quality) in the area of infrastructure and its inadequate structure	x	x	x	x	Strong support to research and development and innovation with efficient public and private expenditure on R&D and innovation	x	x	x	x
					Network-building of scientific and research capacities through intensive cooperation and concentration with the use of available e-services	x	x	x	x
					Support to the renewal and modernisation of technical infrastructure of R&D and of highly qualified workforce for R&D	x	x	x	x
4. Barrier between science and society	x	x	x	x	Intensive cooperation of practitioners and R&D employees and motivation of the business sector to cooperate	x	x	x	x
					Cooperation of R&D centres, universities and the business sector	x	x	x	x

					Support to research teams (including practitioners and personnel of universities and R&D institutions) carrying out large R&D projects addressing the issues of the whole society	x	x	x	x
--	--	--	--	--	---	---	---	---	---

Key disparities	Regional projection				Main development factors	Regional projection			
Infrastructure of higher schools	WE ST	CE NT RA L	EA ST	BA	Infrastructure of higher schools	WE ST	CE NT RA L	EAS T	BA
1.Low quality of interior equipment of schools	x	x	x		Modernisation of the physical infrastructure of higher schools.	x	x	x	
2. Obsolescence of school buildings	x	x	x		Modernisation of the physical infrastructure of higher schools	x	x	x	

## 4. Strategy of Operational programme Research and development

### 4.1 Strategy baseline

Research and development are among the key strategic objectives of a successful economy and form the pillars of a highly developed and competitive society. The importance of science combined with the search for new results through research is the source of intellectual potential of a country and a tool for efficient development of the society. In the past, this area has not received adequate support. As a result of the low investments (in terms of GDP expenditure) into fundamental or applied research, the situation is worst with regard to the condition of infrastructure and technical equipment of laboratories or research units. In this context, another factor played a negative role – the very low number of successful projects on international basis. If a country wants to rank among countries with developing economies, it has to increase its potential in the area of research and, also by means of an operational programme, create better links between national and international research institutions and, last but not least, increase the attractiveness of science among young people, who will be the natural successors in research in the future. Another equally important part of the proposed strategy is the application of the results of research in practice increasing the innovativeness of the business sector and ensuring higher competitiveness of Slovak businesses on international markets.

Closely related to research is patent protection of technical solutions. Patented inventions emphasise the ability of a country to invest into an area, which will eventually bring benefits to the society and will not be limited by national borders. The more successful a country is (in the number of patents granted), the better reputation it has among small, medium-sized and large international companies, which will attract more capital into the country with a view to invest into and develop innovative products and technologies. Situation in the Slovak Republic in this area is not favourable. In a comparison of the number of patents, Slovakia ranked last. This can be regarded as an evidence of insufficient number of good-quality research teams operating in Slovakia. The situation, however, is caused particularly by the limited possibilities to carry out good-quality research due to outdated equipment or drain of young talents abroad.

Also considering the situation in the research sector, the Slovak Republic adopted the Strategy of Competitiveness of the Slovak Republic till 2010 ("Lisbon Strategy for

Slovakia") in February 2005. Based on action plans for the individual priority tasks, a process of national reforms started in July 2005 in various areas, including science and research covered by the 2<sup>nd</sup> Action Plan of Reforms. Based on the adopted strategy, the existing Science and Technology Agency was transformed into the Research and Development Agency in January 2006. This agency is, in line with the new Act concerning state support to research and development No 172/2005 Coll., the main institution responsible for the administration and distribution of public funds in the area of research and development. The strategy further addresses the system of support to the mobility of human resources between the academic and business sectors and supports international mobility of top professionals in this area. An important step towards successful research and development at national level is the existence of national excellence centres, which necessarily need a well developed technical and information infrastructure and human resources. Operational programme Research and development represents a complementary form of the Lisbon Strategy for Slovakia and intends to help a balanced development of research in the individual regions of Slovakia and to improve the conditions for the implementation of national and international projects.

OP R&D further elaborates the Community Strategic Guidelines, whose objective is to improve knowledge and innovation for the growth of the Community and, in particular, improve and increase investments into research and technical development and foster innovation by linking the scientific sphere with the application of R&D results in practice. Operational programme Research and development was prepared in line with the strategy and the priority axes of the National Strategic Reference Framework for 2007 - 2013 (NSRF) and specifies in more detail the strategy through the objectives and priorities of research and development in the Slovak Republic in the next programming period of 2007-2013. The main objective of the operational programme is, in the context of the NSRF, modernisation and increase of efficiency of the system of support to research and development so that it contributes to the growth of competitiveness of the economy, redressing of regional disparities, creation of new innovative (high-tech) small and medium-sized enterprises and jobs creation.

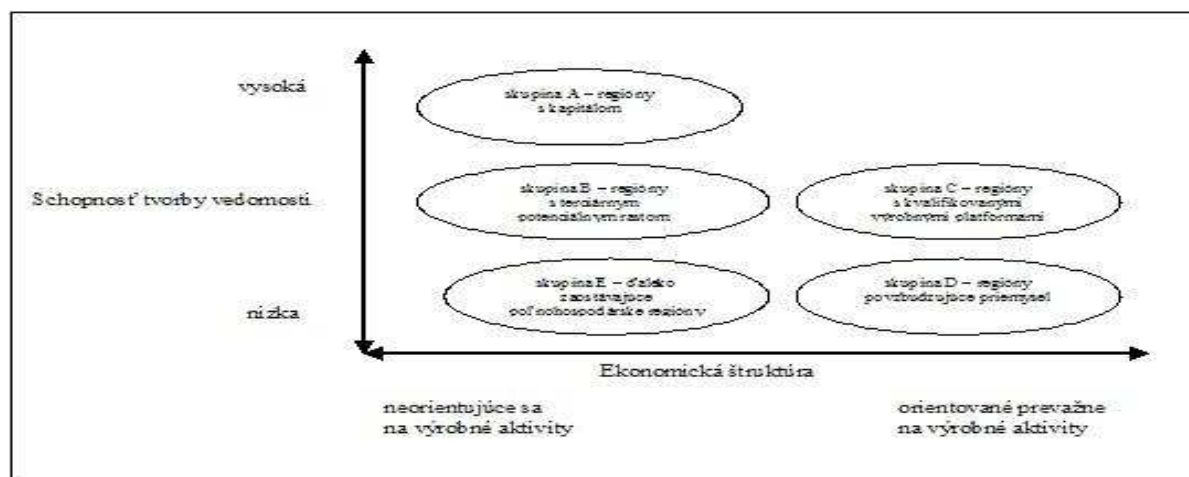
The main strategic intention of Operational Programme Research and Development is to make the R&D potential of the Slovak Republic a driving force of the development of the individual (self-governing) regions between 2007 and 2013. According to a study ordered by the European Commission and based on the analyses of the relevant statistical indicators, the individual regions of the new member states and candidate countries can be classified into 5 basic categories, according to their potential to be integrated into the European Research Area<sup>4</sup>.

---

<sup>4</sup>

Source of data for the text of this section: Towards the European Research Area: Identification of Priorities for Regional Research and Development Policies in new Member States and Candidate Countries, Fraunhofer Institute, May 2005

**Figure 2:** Schematic representation of 5 groups of regions



vysoká = high

schopnosť tvorby vedomostí = Ability to create knowledge

nízka = low

Ekonomická štruktúra = Economic structure

neorientujúca sa na výrobné aktivity = not orientated on production activities

orientovaná prevažne na výrobné aktivity = orientated primarily on production activities

group A: regions with capital

group B: regions with tertiary potential of growth

group C: regions with qualified production platforms

group D: regions encouraging industry

group E: lagging behind agricultural regions

This survey assessed the regions in areas such as creation of knowledge, ability of the region to absorb and apply new knowledge in economic practice, macroeconomic stability of the region and quality of its administration.

Regions of type A have the potential to become the building bricks for the knowledge society in Europe. Type B regions are relatively well developed regions, which are not concentrated around the capitals or centres of excellence. Often, they include secondarily developed parts of the country (areas geographically close to the capital and/or areas with university tradition, etc.). Type C regions are regions, which are lagging behind in terms of economic and sometimes also technological development. Despite this, they can come close to the rest of Europe in all aspects in the long term; their present model of integration, however, is based on "static" relative advantages (for example low cost of all production factors). Type D regions suffer under their external situation and, very often, lack the vision of further development. Their involvement in European regional initiatives, such as Regional Innovation Strategy projects, and their integration into inter-regional networks and structures in general must be heavily supported. Type E regions are regions with underdeveloped economy suffering under structural problems, which are related to the loss of their system integration. These are regions requiring great deal of attention and effort of the Cohesion Policy (both at European and national levels).

Analysis at the level of regions is particularly needed for drafting (specific) strategic measures. In addition to the above indicators, one should ask the following questions:

- Are there intermediaries, such as innovation agencies, chambers of commerce and other institutions that might provide financial support to innovation activities of companies at the level of regions?
- Do research and education structures in the region work efficiently and, to a certain extent at least, in line with its economic profile?
- Is there interaction between research, education and businesses?"

The current starting position of the regions from the new member states and candidate countries is shown in the following table 7:

Group A	Group B	Group C	Group D	Group E
CZ01 Prague	EE00 Estonia	CZ02 Central Czech Rep.	BG01 Severozapaden	PL32 Podkarpackie
HU10 Kozep-Magyarország	LTOO Latvia	CZ03 South-Western Czech Rep.	BG02 Severen tsentralen	PL33 Swietokrzyskie
PL12 Mazowieckie	LV00 Lithuania	CZ05 North-Eastern Czech Rep.	BG03 Severoiztochen	PL34 Podlaskie
SI00 Slovenia	PL11 Lodzkie	CZ06 South-Eastern Czech Rep.	BG05 Yuzhen tsentralen	RO01 Nord-Est
BG04 Yugozapaden	PL21 Malopolskie	CZ07 Central Moravia	BG06 Yugoiztochen	RO02 Sud-Est
RO08 Bucharest	PL31 Lubelskie	PL22 Slaskie	CY00 Cyprus	RO03 Sud
<b>SK01 Bratislava Region</b>	PL41 Wielkopolskie	HU23 Del-Dunsntul	CZ04 North-Western Czech Rep.	RO04 Sud-Vest
	PL51 Dolnosaskie	HU32 Eszak-Alfold	CZ08 Moravskoslezsko	RO05 Vest
	PL63 Pomorskie	HU33 Del-Alfold	HU21 Kozep-Dunantul	RO06 Nord-Vest
		<b>SK04 Eastern Slovakia</b>	HU22 Nyugat-Dunantul	RO07 Centru
			HU31 Eszak-Magyarország	
			MT00 Malta	
			PL42 Zachodnipomorskie	
			PL43 Lubuskie	
			PL52 Opolskie	
			PL61 Kujawsko-Pomorskie	
			PL62 Warminsko-Mazurskie	
			<b>SK02 Western Slovakia</b>	
			<b>SK03 Central Slovakia</b>	

Based on the results of the analysis of the current situation in research and development defining the most significant problems, relevant groups of activities may be defined, which should improve the current situation.

### Technical infrastructure

The basic precondition for the improvement of the situation in research and development is availability of modern technical R&D infrastructure. If we want to make research and development and the subsequent technological innovation one of the main development pillars of the Slovak society, it is necessary to invest primarily into technical equipment in the first phase. Then, it is possible to re-focus assistance to the outputs of the R&D and innovation system. The above activities will focus on the so-called spin-off effects from research and development towards social and economic practice.

### Support to the network of excellence centres

One of the main problems of Slovak research and development is its high fragmentation and lack of coordination. At present, it is not possible to produce top results in this area without the existence of the so-called critical mass of human and material resources. In Slovakia, there exists quite a number of small research and development teams, which operate practically on the same field, but without mutual cooperation. It is therefore necessary to integrate the research and development potential and the potential of technological innovation of Slovakia in line with the development priorities of the region



concerned. Such integration should ensure mutually beneficial cooperation between the research and development base and the production sector in the long term.

It is also necessary to develop a system or regional policies of support to research and development at the level of higher territorial units, to reduce the great regional differences in the area of research and development potential, including a modification of its structure so that it respects the development priorities of the region and increases the quality of research and development in Slovakia by supporting the integration of the Slovak regions into the European Research Area.

### **Transfer of knowledge into practice**

One of the most problematic areas of the Lisbon Strategy in the EU is the use of the results of research and development in practice. Where these results are used at an increased level, research and development form the basic pillars of the development of the society and contribute to the growth of the standard of living. It is therefore necessary to support these activities systematically, with a view to increase the impact of projects onto the society and economy and create a number of positive effects, which will not be limited to the research and development sector (generation of own revenues, improving the reputation of a university and its researchers in the international context), but would also extend to the business sector and, eventually, to the whole society and would support the development of the whole region. Measures supporting commercial use of research and science also create the conditions for the growth of competitiveness of regions and growth of employment and attract investors into economic sectors with higher value added.

The economic base of the Bratislava region has a specific status, for it concentrates the largest part of the scientific and research base. The region has a relatively high density of research and development institutions, out of which most work with outdated technologies, in isolation from the other research and development centres and without being linked to the business sector. The goal of the priority axes under the Regional competitiveness and employment objective therefore is to integrate research and development and technological innovation in line with the development priorities of the regions, to modernise the equipment and infrastructure of research and science centres and to develop a network of research and development institutions, which would be linked to technological innovation and concentrate on the priorities of the region. Priority axis 2 Research and development in the Bratislava region will support the growth of performance and competitiveness of the scientific and research base through the modernisation of technical equipment of R&D organisations, building of laboratories with most modern equipment in the most promising areas for the development of Slovakia and building and modernisation of the supporting R&D infrastructure, particularly in the area of information technologies (building of computer networks, building of high-speed information networks linking research and development organisations). Priority axis 2 will concentrate assistance on building of networks of research and development centres producing excellent results, by supporting their integration into supra-regional and international cooperation networks, while respecting the development priorities of the region.

A precondition for successful implementation of the strategy of OP R&D is the possibility of monitoring and evaluating the proposed measures during their implementation. Indicators, which will be used to monitor the impacts and efficiency of this OP are in line with Community priorities relating to the monitoring of research and development (*"Working document No. 2 – Indicative Guidelines on Evaluation Methods: Monitoring and Evaluation Indicators"*) and they are provided in Annex 5 to OP R&D. This Annex contains a comprehensive set of indicators at OP level. The main indicators look at

cooperation projects between R&D institutions and businesses/society, projects aimed at creating research jobs and number of R&D projects.

Support to research and development in Slovakia (including that provided under OP R&D) will be implemented in line with the strategic document "Long Term Vision of National Science and Technology Policy till 2015" prepared by the Ministry of Education and approved by the Slovak Government. This document defines the following main objectives of the national science and technology policy till 2015:

- **increased contribution of science and technology to the overall development of Slovakia; intensified involvement of science and technology in addressing the problems of the Slovak economy and society;** Increased involvement of science and technology in the development of the country will also be reflected in the increased contribution of Slovakia to the overall growth of competitiveness of the EU.
- In order to increase the contribution of science and technology to the overall development of Slovakia, **it is necessary to create favourable conditions for their development**, which will reflect the specifics of Slovakia on the one hand and take into account the objectives of the European Research Area on the other. Overall, the conditions for the functioning of the system of science and technology must be coordinated and connected in such a way that science and technology flexibly respond both to internal (national) and external (international) requirements.
- **create the conditions for the development and use of science and technology by setting targets in the following areas:**
  - a) coordination of science and technology;
  - b) research and development infrastructure;
  - c) system priorities of research and development;
  - d) topical priorities of research and development;
  - e) support of science and technology;
  - f) framework model for the financing of research and development;
  - g) international scientific and technological cooperation;
  - h) evaluation of research and development;
  - i) popularisation of science and technology;
  - j) monitoring of national science and technology policy.

These objectives were formulated on the basis of the current situation in Slovakia, as defined by available analytical data concerning science, technology, research and development. Such data are reviewed annually in the report on the condition of research and development in Slovakia approved by the Government. The analytical part of OP R&D is also based on these data. In addition to the above-mentioned main objectives of national science and technology policy till 2015, the Long-term Vision of National Science and Technology Policy till 2015 defines system priorities in science and technologies and research and development priorities. Priorities of both types were used in the process of drafting OP R&D and were incorporated into the text of OP R&D.

### **System priorities of science and technology**

The long-term national science and technology policy till 2015 defines certain system priorities of science and technology with the aim of transforming science and technology into a harmonious and stable system, which will act as a driver of economic and social development of the country. System priorities in science and technology (with outlook till 2015) include:

- a) achieving **synergies between the support of research and development from various sources** (national budget, businesses, structural funds, funding under FP 7 for research, technical development and demonstration activities);
- b) ensuring **efficient support of human resources in research and development and of technical infrastructure of research and development**;
- c) ensuring adequate **direct and indirect support to science and technology**;
- d) ensuring **efficient use of public sources** (national budget and structural funds);
- e) concentration of **support from the public sources on research intended for further use**; this will also **improve the interconnection between fundamental and applied research**, following improved cooperation between the public and private R&D sectors and with economic and social partners;
- f) increasing the **responsibility of the ministries and other central authorities for the development of their sectors through research and development**. This will be achieved by creating and implementing "departmental research and development concepts" and by allocating funds from the budgets of the individual ministries and other public administration authorities to targeted support of science and technology;
- g) increasing **economic and social benefits of international** cooperation in science and technology;
- h) contributing with **science and technology to the growth of competitiveness of** domestic production and service sectors.

The priority axes and measures of OP R&D were defined based on the above system priorities. The content of OP R&D as one of the components of support to research and development in Slovakia is fully in line with most of these system priorities (6 of 8), as the text of OP R&D was prepared in parallel with the drafting of Slovakia's strategy till 2015 (both documents were prepared in a coordinated fashion). These system priorities (6 of 8) are supported by OP R&D measures (according to section 5) as follows:

- a) achieve synergies between the support to research and development from various sources (national budget, businesses, structural funds, funding under FP 7 for research, technical development and demonstration activities) (*measures 1.1, 2.1, 2.2, 3.1, 4.1 and 4.2*);
- b) ensure efficient support of human resources in research and development and of technical infrastructure of research and development (*measures 1.1, 2.1, 2.2, 3.1, 4.1 and 4.2*);
- c) ensure adequate direct and indirect support to science and technology (*measures 1.1, 2.1, 2.2, 3.1, 4.1 and 4.2*);
- e) concentrate support from the public sources on research intended for further use; this will also improve the interconnection between fundamental and applied research, following improved cooperation between the public and private R&D sectors and with economic and social partners (*measures 2.1, 2.2, 4.1 and 4.2*);
- g) increase economic and social benefits of international cooperation in science and technology for Slovakia (*measures 2.1 and 4.1*);
- h) contribute with science and technology to the growth of competitiveness of domestic production and service sectors (*measures 1.1, 2.1, 2.2, 3.1, 4.1 and 4.2*).

The possibility of financing the area of research and development from the European Regional Development Fund in 2007-2013 is a unique opportunity to make research and development one of the main pillars of the development of the Slovak regions, in line with the national science and technology policy, using the complementary system of financial support from the national budget/Structural Funds.

The Long-Term Vision of National Science and Technology Policy till 2015 defines support from the structural funds as a tool, which will, in a deciding way, support modernisation and building of technical infrastructure for research and development as the fundamental precondition for the development of research activities orientated on the needs of the society and economy.

Assistance from OP R&D will significantly help to address the key problems in research and development and is a unique opportunity to improve the level of Slovak research.

Equal and broad possibilities for participation of the private sector under OP R&D create the preconditions for meeting the ambition of the Long-Term Vision of National Science and Technology Policy till 2015, which is to increase, by 2015, the share of business resources to 2/3 of total expenditure. Targeted support from OP R&D, if used in a responsible way, may motivate businesses to invest their own resources into research, when they will see that the financing of research and development has positive effects on economic development.

#### **Current model of financing research and development in the Slovak Republic from the national budget as complementary financing to ERDF:**

The Slovak Republic uses, in line with the valid legislation, two forms of financing of research and development from the national budget: institutional financing and competitive financing. Institutional financing covers the operation of the Slovak Academy of Sciences and financing of science and technology on universities.

As to competitive financing, a combination of three types of financial tools is used:

- support with the “top down” system:—these are state research and development programmes, national programmes of R&D infrastructure development and programmes by the Research and Development Agency, defining the topics for the submission of research and development projects;
- support with the “bottom-up” system - this comprises regular open calls for projects submission with open topics, published once per year by the Research and Development Agency;
- competitive support of international scientific and technological (bilateral and multilateral) cooperation, which is provided through special calls for projects submission.

#### **Framework model for financing research and development in Slovakia in line with the Long-Term Vision of National Science and Technology Policy till 2015:**

In the period from 2007 till 2015, research and development in Slovakia will be supported from the following sources (graphical representation in Annex 8):

1. national budget;
2. the Structural Funds;
3. private sources; and
4. international sources of finance.

## **1. Support from the national budget**

The national budget will provide financial support to research and development as follows:

- a) Support to research and development from the budget line of the Ministry of Education
  - *Institutional support to research and development* provided through the Scientific Grant Agency and Cultural-Educational Grant Agency)
  - *Targeted support to research and development activities* (state programmes, state infrastructure development programmes, projects and programmes carried out by the Research and Development Support Agency)
- b) Support to science and technology from the budget lines of other ministries, other central public administration authorities and SAS
  - *Institutional support to research and development*
  - *Targeted support to research and development activities*

## **2. Support to research and development from the Structural Funds**

- a) European Regional Development Fund (OP Research and development)
- b) European Social Fund (OP Education).

## **3. Support to research and development from private sources**

Private sources will be used in:

- a) state programmes;
- b) state infrastructure development programmes;
- c) projects of the Research and Development Support Agency;
- d) programmes of the Research and Development Support Agency.

## **4. Support to research and development from international sources**

- a) EU Framework programme 7 for research, technological development and demonstration activities;
- b) other sources.

The evaluation of the results of research and development projects is performed only in the case of projects under national research and development programmes. It is expected in the near future, that evaluation will be introduced also for projects supported by the Research and Development Agency.

Sustainability of research centres is currently ensured through the national programme for the support of research and development entitled "Comprehensive support to and efficient use of research and development infrastructure". Support to infrastructure through this national programme, however, is not sufficient. In the future, until 2015, sustainability of modern technical infrastructure will be ensured through a new national infrastructure development programme, which is also included in the Long-Term Vision of National Science and Technology Policy till 2015.

EC document containing the mid-term evaluation of the Lisbon strategy states that the Member States should, at an increased level, use the tools of EU Cohesion Policy in 2007-2013 in such a way that the less developed regions (in terms of the knowledge society) reach a level that will enable their integration into the European Research Area (ERA). In the case of the Slovak Republic, this applies to all regions, including the Bratislava region.

None of the regions of Slovakia currently has such a research and development potential, which would be able to make research, development and innovation one of the pillars of its social and economic development. It is an absolute political priority of the Slovak Government to change this situation radically.

The Government of the Slovak Republic, fully respecting the principles of mid-term evaluation of the Lisbon strategy, defined science and research as one of its development priorities. In line with the Strategy of Competitiveness of Slovakia till 2010 and the National Reform Programme, the area of science, research and innovation is among the 4 main development priorities. In this context, the Slovak Government decided that research and development would be also one of the key priority areas, which should receive financial support from the Structural Funds in 2007-2013.

An important element for the efficient use of assistance under OP R&D is the coordination of its implementation with the 7<sup>th</sup> Framework Programme of the EU for research, technical development and demonstration activities (FP7). The need for coordinating these two tools is also recognized by the decision-makers at European level. As a result, the Scientific and Technical Research Committee (CREST) adopted the document entitled "Coordination of the use of the Framework Programme and of the Structural Funds for the Support of Research and Development" on 7 May 2007. To investigate the possibilities and barriers for combining contributions from two such different grant schemes, a working group was established at CREST. The task of this working group was to remove the information gap on how to combine contributions from the structural funds and FP7. A significant output was the formulation of 14 recommendations for improving the coordination between the framework programme and the structural funds in supporting research and development. Slovakia is ready to adopt these outputs and use them in the implementation of OP R&D. One of the tools is preparing such grant schemes/calls, which will allow providing support from both FP7 and the structural funds. This tool is part of the Long-Term Vision of National Science and Technology Policy till 2015, which defines the coordination of these sources of financing as a system priority of Slovak science and technology.

#### Infrastructure of higher schools

The analysis and identification of the disparities and development factors of the higher schools' infrastructure led to the clear conclusion that most infrastructure facilities were in a bad condition and most buildings had low standard of equipment.

The quality and the level of the education also depend on the condition of the buildings and facilities, in which the education process takes place. Quality and availability of education suffers under a long-term lack of investments into the technical and interior equipment of school buildings. The result is an unsatisfactory condition of most buildings, moral and physical obsolescence of technical equipment, high operating cost and lack of modern technologies used in the learning process. The removal of these identified weaknesses forms the basis for formulating the objectives and activities in the area of higher schools infrastructure.

The strategy is further elaborated in chapter 5 Priority axes providing more details on interventions from the ERDF.

#### 4.1.1 Vision and strategy of the NSRF

If the Slovak Republic wants to become a prosperous country, attractive for investments and living of its current and future inhabitants in the long term, it must fully use its chances for further development and the related changes, which will bring it closer to the most developed countries of the EU. If we compare Slovakia to the most developed countries, we will see that it lags behind in many aspects and to a different extent. If we take the EU-15 countries as the most developed countries of the EU, the vision of the Slovak Republic should focus on the approximation to their level and quality of economic development. The vision of economic and social development of the Slovak Republic was therefore formulated as: **Sustainable overall convergence of the Slovak economy to the average of EU-15 by means of sustainable development.**

Despite the significant progress in recent time, the Slovak Republic still significantly lags behind the EU-15 countries both in terms of economic performance and the quality of economic growth. The quality of economic growth significantly influences its permanent sustainability and must therefore play a dominant role in the attainment of the vision in the programming period of 2007-2013. For the above reasons, the NSRF will contribute to the attainment of the vision of the Slovak Republic during the programming period of 2007-2013 by the following strategic goal, which was formulated as: **Increase significantly, by 2013, the competitiveness of the regions and of the Slovak economy and employment, while respecting the principles of sustainable development.**

It follows from the evaluation of economic results for 2005 that the current economic growth is characterised by low level of use of new knowledge and information. Accelerated economic growth allows reaching the level of the developed countries faster, but, for Slovakia, this could mean the loss of its existing competitive advantage of cheap workforce. The solution to this situation should be the focus on the knowledge economy, concentrating on knowledge and its transformation into practice.

The process of transformation of science, technology and research and development has been going on in Slovakia for tens of years. The most visible results were achieved after 2002, the year marking the adoption of a key document influencing the system of financing of this area. Act No. 172/2005 Coll. concerning organisation of state support to research and development strengthened the research sector and defined the forms of financing by the state. At that point of time, this piece of legislation represented a significant shift in financing research activities; it emphasized the importance of support to research teams and stimulated new ways of thinking by saying that development of a country through research activities cannot be seen in isolation from social and economic aspects of development. The two most important strategic medium term documents helping to understand the importance of research and development in Slovakia were the National Reform Programme and the Lisbon Strategy for Slovakia, which defined the measures for strengthening the position of research and development in the country.

The strategy of financing research and development from the Structural Funds under Operational Programme Research and Development will undoubtedly be a positive change helping the Slovak research sector. The strategy of OP R&D helps to fulfil the vision and the strategy of the National Strategic Reference Framework for 2007-2013. The development of this area through activities under specific priority 2.2 of the National Strategic Reference Framework will increase the importance of research and development in the society and ensure higher quality and standard of living in Slovakia; one that will be comparable to the most developed countries in Europe.

The strategy of the operational programme will facilitate measures providing complex support to research and development activities, from equipment procurement and modernisation, through extension of cooperation between research teams and the business sector up to the management of intellectual property rights of research organisations financed from public sources, an area currently receiving little attention. Seen the big potential of good quality researchers, the Slovak Republic will improve its credibility abroad and move upwards in the ranking of patented inventions ready for practical application.

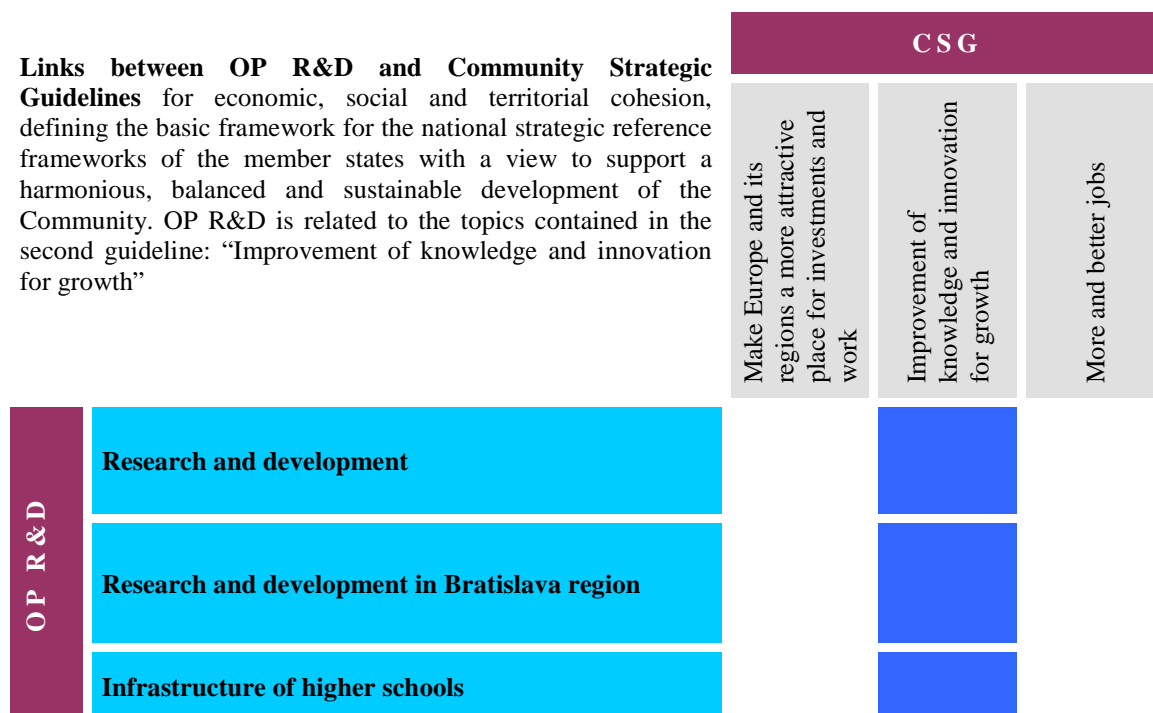
With the increased financing of this area, research teams will more flexibly respond to the needs of the market and the transformation of research results into innovative products and services will strengthen the competitiveness of the economy. Talented young researchers will be more motivated to work on their creative ideas through research activities in Slovakia. Patriotism in finding research results at home will become the trend. Science, research and development will offer more attractive career choices for young people, as the barriers to their mobility (caused by insufficient financing of both mobility and the research activities as such) will be removed. Collaborative research will be strengthened sufficiently and the same will be true for the involvement of the industry in an effort to introduce new trends in the world into the Slovak research sector.

State support to research and development is another area enabling the state to focus on market failures and create the right motivation for industry - to invest more into research and development. In the end, intensified research, development and innovation activity will speed up the process of overall convergence of the social and economic development of Slovakia to the level of the most developed countries, while respecting the principles of sustainable development. In the context of the Lisbon Strategy, the proposed measures will intensify cooperation and strengthen open research and innovation activities increasing the impact of research on competitiveness and globalisation of research.

Building of infrastructure for schools of higher education is fully aligned with the strategic objective of the NSRF **"To increase significantly, by 2013, the competitiveness and the performance of the regions and of the Slovak economy and employment, while respecting the principles of sustainable development"**. This can be said considering the fact that one of the identified tasks for successful convergence of Slovakia is the improvement of education infrastructure (including higher schools) as an important factor for building a modern education system for the knowledge society under NSRF strategic priority "knowledge economy".



**Links between OP R&D and Community Strategic Guidelines** for economic, social and territorial cohesion, defining the basic framework for the national strategic reference frameworks of the member states with a view to support a harmonious, balanced and sustainable development of the Community. OP R&D is related to the topics contained in the second guideline: “Improvement of knowledge and innovation for growth”



## 4.1.2 Fundamental Strategic Documents

The strategy of OP R&D was drafted based on supra-national documents adopted by the EU in the context of strategic planning of the Structural Funds and national documents influencing the system of support of this specific area in Slovakia. A very important step for increasing the importance of research and development was the adoption of framework and action plans, the objectives of which need to be attained by 2010. Support under those programs will be efficient if the programming is made with sufficient time reserve and the proposed measures may be completed within the defined time period. The most important documents forming the basic framework for drafting this strategy are mentioned in the following sub-sections. The further legislative and strategic framework is described in chapter 7.

### 4.1.2.1 EU Strategic Documents

Indicative Community priorities in the area of Cohesion Policy for the new programming period 2007 - 2013 are contained in the **Community Strategic Guidelines**. They define the framework for the operation of EU funds at European level and give the Member States the possibility to concentrate on their national priorities depending on the economic, social, institutional and cultural conditions so as to implement the best practical combination of policies linked to Community priorities on the one hand and the National Reform Programme on the other. Emphasizing the principles of sustainable growth and competitiveness of economy and taking into account the *Lisbon Strategy*, the strategic documents seek to achieve the vision of the European Union by 2010, i.e. to make the EU the most dynamic and competitive knowledge economy in the global context.

*European Employment Strategy* concentrates on building “an economy with sustainable growth, accompanied with quantitative and qualitative improvement of employment with higher level of social cohesion”. The main objective is achieving full employment. These

aspects are taken into account in the strategy of Operational Programme Research and Development, which plans to increase the attractiveness of science also to younger generation as the main driving force of the country's development.

**Financial Perspective 2007 – 2013** represents a very important link defining the structure of EU budget and the binding ceiling on the Union's revenues and expenditures. The document covers the seven-year financial and budget framework of the EU and is reflected in the proposed frameworks of financial perspectives in the individual Member States of the EU for the new programming period (for EU Structural Funds and the Cohesion Fund).

The discussion on the possibilities and means for the attainment of objectives leading to investments into research and development started with the **Commission Report entitled "More Research for Europe: Towards the 3% of GDP"**. The report identifies large policy areas and puts forward the main objectives for each of the areas, which should help to intensify the activities that are already being carried out in the context of the Lisbon Strategy or as part of other initiatives. Taking into account the importance and prosperity of research, the European Commission published a report titled **"Investing into Research: Action Plan for Europe"** identifying three categories of actions in order to improve the fulfilment of the Lisbon Strategy. In the area of research and development, the need to increase significantly the support to research and technological innovation, including fiscal measures, was emphasized. Attention was also paid to the need for better linking the research sector with the industry and for developing the potential of European and national tools of public finance.

**Wim Kok's Assessment Report** reviews the implementation of the policies of EU countries, saying that countries should not pay too much attention to partial objectives, but should rather concentrate on attaining the overall objective of 3% of GDP spent on research and development, in line with the Lisbon Strategy

The above supra-national documents represent an integral part of the process of programming support to R&D in Slovakia in the new programming period and form the basis for the strategy part concentrating on development.

#### **Documents concerning infrastructure of higher schools**

- the Lisbon Strategy
- regulations concerning Structural Funds (General Regulation, Regulation on ERDF, ESF, Implementing Regulation);
- European Employment Strategy
- Financial Perspective 2007-2013;
- EC legislation applicable to protection of competition, public procurement, protection and improvement of the environment, equality of opportunities, gender equality and non-discrimination;
- Working programme of the European Commission "Education and Vocational Training 2010";
- Memorandum on Life-Long Learning;
- Bologna Declaration;
- Recommendation of the European Parliament and of the Council concerning key competences for life-long learning;
- Community Strategic Guidelines;
- White Paper of the European Commission on Youth Policy "A New Impetus for European Youth", 2001
- National Action Plan of Employment 2004-2006
- Joint initiative of EU candidate countries eEurope+

#### 4.1.2.2 National Strategic Documents

An important document supporting the elimination of socio-economic disparities of the regions was the ***Integrated Plan of Regional Development***, adopted by Government Resolution No 923/99, which defined the priority regions for assistance from the PHARE pre-accession fund in 2000 and 2001. As a priority, emphasis was placed on the regions in Eastern Slovakia (regions of Prešov, Košice a Banská Bystrica). ***National Plan of Regional Development*** adopted by Government Resolution No 133/2002 created the basic framework for supporting the regional development of Slovakia, by defining the necessary starting points and development principles, objectives and priorities for preparing regional development programmes. In the next stage of the application of the Funds, the ***National Development Plan 2004-2006*** was prepared at the level of regions. The plan was adopted by Government Resolution No 166/2003 and paved the way for intensifying cooperation between research and development and the education system and for increasing the importance of R&D in life-long learning. These objectives were then implemented through the priorities and measures of the ***Single Programming Document NUTS II - Bratislava Objective 3. Operational Programme Industry and Services***, on the other hand, allowed the financing of innovation, with the aim of increasing value added and GDP. The last two above-mentioned documents form part of the ***Community Support Framework 2004-2006 (CSF) for Slovakia***, which was approved by the Slovak Government and the European Commission in 2004.

***Updated Convergence Programme of Slovakia for 2004 – 2010***, adopted by Government Resolution No 1121/2004 outlined important structural reforms to consolidate public finances and confirmed the intention to concentrate economic policy on the support of the knowledge economy and human capital, as research and development must, in the long term, play a key role in defining the strategy for the national economy.

With the adoption of the ***Strategy of Development of Competitiveness of Slovakia by 2010*** (adopted by Government Resolution No. 140/2005), the Slovak Government confirmed its commitment to the long-term development of high-quality scientific potential through a policy of innovation concentrated on the education and support of scientists, on research activities meeting international quality standards, adequate links to the business sector and efficient public support of business activity in research and innovation. In July 2005, Government Resolution No. 557 concerning Action Plans for the Strategy of Competitiveness of the Slovak Republic by 2010 was adopted. Detailed measures based on this resolution should help to attain the vision of the country to be competitive within the EU.

The combination of the policies of the ***National Strategy for Sustainable Development*** (adopted by Government Resolution No 978/2001) and the ***Action Plan of Sustainable Development for 2005 – 2010*** (Government Resolution No 574/2005) should guarantee the implementation of a system facilitating the attainment of the objectives of the Lisbon Strategy for Slovakia and of the Strategy of the National Economy of Slovakia. This should have a synergic effect on the attainment of the action plan objectives. The Action Plan defined the objectives of the individual sectoral policies of Slovakia. The area of research and development was given the task to determine the direction for the implementation of national science and technology policies in fundamental research, applied research and experimental development, respecting the principles of sustainable development. The results should form part of the Long-Term Plan of Science and Technology Policy till 2015. The proposed strategy should also help to increase the efficiency of the R&D potential of higher schools, by stimulating the interest of universities to compete for money for research and development activities from the Research and Development Agency or under other

national programs so that the share of competitive financing reaches at least 40% by the end of 2008. In line with the document and the Lisbon Strategy for Slovakia, three priority areas, in which Slovakia has the potential to carry out research and development activities at European level, were identified for national programs. The priorities should be based on the existing potential of science and technology, but should also take into account the development needs of the business sector. They should operate in such a way that their outputs meet the demand for R&D results. All above areas should receive assistance from the Funds.

***National Reform Programme of Slovakia for 2006-2008***, adopted by Government Resolution No 797/2005, identifies, at micro-economic level, the need for creating favourable business environment to ensure long-term competitiveness. The programme contains a number of planned measures focusing on different areas, including research and development and innovation. In these specific areas, it concentrates on three priorities: development and support of highly qualified scientists, research of international quality linked to the business sector and efficient public support to research and development and innovation. Among the proposed measures, it stresses the need for increasing transparency of state aid by a shift from sectoral state aid towards horizontal priorities, taking into account research and development and innovative small and medium-sized enterprises.

***National Strategic Reference Framework of Slovakia 2007-2013*** links the sectoral policies of Slovakia and defines in more detail the need for supporting the priority areas, with the aim of attaining the EU objectives defined by the Lisbon strategy. A suitable implementation framework for research and development projects supported from the Funds should help to attain the vision of the National Strategic Reference Framework.

The individual regions of Slovakia face various problems in the area of research and development. As a result, it was necessary for the proper interpretation of the problem areas to consider the ***economic and social development programmes of the self-governing regions***, which reflect the current situation and which served as the basis for defining the objectives of Operational Programme Research and Development in the context of programming assistance from the Structural Funds in 2007-2013.

***Long-Term Vision of National Science and Technology Policy till 2015*** is a strategic document of the Slovak Republic defining the most important intentions and objectives in the area of research and development, including those relating to the development of human resources, the topics of national research and development programmes and national R&D infrastructure development programmes and the objectives of international cooperation in science and technology. The basic requirements concerning the contents of the document are defined in section 5.1 of Act No 172/2005 Coll.

#### **Documents concerning infrastructure of higher schools**

- National Programme of Education of the Slovak Republic for Upcoming 15 to 20 Years, adopted by Government Resolution No 1193/2001 (the Millennium Project);
- National Plan of Regional Development adopted by Government Resolution No 133/2002,
- National Development Plan for 2004-2006 adopted by Government Resolution No 166/2003,
- Community Support Framework 2004-2006 for Slovakia – the final version of the document was approved by the Minister of Construction and Regional Development on 18 December 2003. The official decision of the European Commission C(2004)2001 approving CSF for Slovakia was published on 18 June 2004,
- Spatial Development Perspective of Slovakia 2001 adopted by Government

Resolution No 1033/2001 of 31 October 2001,

- Updated Convergence Programme of Slovakia for 2004 – 2010
- Strategy of Competitiveness of Slovakia till 2010, adopted by Government Resolution No. 140/2005,
- Strategy of Competitiveness of Slovakia till 2010, Action Plans, adopted by Government Resolution No. 557/2005,
- Draft NSRF 2007-2013 (1<sup>st</sup> version), adopted by Government Resolution 832/2005,
- National Strategic Reference Framework of the Slovak Republic for 2007-2013, adopted by Government Resolution No 457/2006,
- Update of the Draft National Strategic Reference Framework of the Slovak Republic 2007-2013, adopted by Government Resolution No
- National Reform Programme of Slovakia for 2006-2008, adopted by Government Resolution No 797/2005,
- National Strategy for Sustainable Development, adopted by Government Resolution No 978/2001 and Action Plan of Sustainable Development of Slovakia 2005 - 2010, adopted by Government Resolution No 574/2005,
- Concept of Further Development of Higher Schools in Slovakia for the 21<sup>st</sup> Century, adopted by Government Resolution No 685/2000,
- Concept of Life-Long Learning in the Slovak Republic, adopted by Government Resolution No 157/2004,
- Education Policy Report, National Report on the Attainment of Objectives of the European Commission's Working Programme Education and Vocational Training 2010;
- Implementation of the European Youth Pact in Slovak conditions and its incorporation into the Strategy of Competitiveness of the Slovak Republic till 2010, adopted by Government Resolution No. 6/2006,
- Programmes of economic and social development of the self-governing regions;
- Operational Programme Basic Infrastructure;
- Slovak Republic Joining the eEurope+ Initiative - Government Resolution No 522/2001 on the strategy of informatisation of society in the Slovak Republic
- Strategy of Informatisation of Society in Slovakia, adopted by Government Resolution No 43/2004.

#### **4.1.2.3 Innovative financial tools**

##### JEREMIE and PPP

In the overall context of this operational programme, the Slovak Republic fully acknowledges the importance of the aspects of the Lisbon Agenda relating to the creation of conditions for growth. For the Slovak Republic, Commission Communication to the Council, the European Parliament and the European Economic and Social Committee and the Committee of the Regions entitled “Implementing the Community Lisbon programme: financing SME Growth - Adding European Value”<sup>5</sup> is of particular importance. According to this Communication “The partnership for growth and jobs depends on Europe’s small and medium-sized enterprises (SMEs) achieving their potential, for they are crucial in fostering the entrepreneurship, competition and innovation that leads to sustainable growth and development

The Slovak Republic focuses its policies and tools on creating such conditions for prosperity of SMEs. Independent studies have shown that the macroeconomic conditions

---

<sup>5</sup> Brussels, 29.6.2006 – EC(2006) 349 final version

are really competitive. On the other hand, most SMEs lack the necessary resources for their development, irrespective of the development of the banking sector. For this reason, it is necessary that the Slovak Republic keeps its focus on this sector. Among other things, the Slovak Republic negotiates with the European Investment Fund (EIF) the possibilities of implementing the Joint Resources for Micro to Medium Enterprises (JEREMIE) initiative together with EIF as the manager of the fund.

The implementation of JEREMIE offers the following advantages, compared to direct support to small and medium-sized enterprises (SME):

- promising form for improving the absorption capacity for the Structural Funds;
- improved access of SMEs to financial resources;
- attracting sufficient private investments and know-how;
- revolving nature of funding;
- reduction of administrative complexity and decreased use of public sources due to the involvement of the private sector;
- no distortion of the market and competition;
- transparent use of resources.

The transfer of management tasks of JEREMIE to EIF offers additional advantages for Slovakia:

- introduction of „best practices“ by a renowned EU institution specialising on SMEs;
- increased impact of the Structural Funds, with the participation of renowned financial institutions from the public and the private sector.

Future competitiveness depends on an integrated, open and competitive financial market, covering also venture capital and loan instruments. In 2006, the Slovak Republic started, in close cooperation with EIF to assess the specific market failures in the area of SME financing.

At the request of the Commission, EIF has prepared a Gap analysis identifying problems with the access of SMEs to financing and the main gaps between potential demand and existing supply of innovative financial instruments on the market, which would make SME financing less difficult. These gaps stand in the way of the development of SMEs. The Slovak Republic acknowledges the existence of these gaps and welcomes the JEREMIE initiative, which could become the catalyst for overcoming these gaps, by creating appropriate market-oriented tools and attract private lenders and venture capital investors.

The proposed portfolio of financial instruments within JEREMIE gives the Slovak Government the opportunity to lay the cornerstone of future high economic growth and growth of competitiveness in the years to come, compared to other European countries.

The Gap analysis identified the following market gaps relating to the access of SMEs to financing. These gaps justify the need for state aid measures complying with EU rules:

- low availability of micro-loans to the self-employed and starters-up;
- low share of domestic loans and guarantee activities for SMEs in relation to GDP;
- low share of factoring in relation to GDP, compared to EU-25 average;
- low activity of venture funds in relation to GDP, compared to other Central European member states;
- low share of R&D expenditure on GDP, low transfer of technology into practice;
- non-existing network of Business Angels.

As the above financial instruments are related to SME activities covered by this operational programme, the Slovak Republic decided to allocate EUR 80 million from this operational programme (ERDF) to JEREMIE.

Considering the flexible structure of JEREMIE, these instruments can further be developed and adjusted and new instruments may be introduced, depending on the development of the Slovak market in the coming years so that they best correspond to the needs of SMEs and strengthen the Slovak economy.

#### Public-private partnership projects (PPP)

Improvement of public infrastructure plays an important role in creating the conditions for economic growth in line with the Lisbon Agenda and is therefore included in the National Strategic Reference Framework of Slovakia and in this operational programme. The Slovak Republic will therefore investigate the possibilities of using public-private partnerships for financing public infrastructure investments covered by this operational programme in a way ensuring efficiency and sustainability of public expenditure.

### **4.2 Global Objective of Operational Programme Research and Development**

The Global Objective of Operational Programme Research and Development is: Modernisation and increased efficiency of the system of support to research and development and improvement of the quality of infrastructure of higher schools so that they contribute to the growth of competitiveness of the economy, redressing of the regional disparities, creation of new innovative (high-tech) small and medium-sized enterprises, jobs creation and improvement of the conditions of the education process on higher schools.

The proposed interventions will help to increase the credibility of research and this will stimulate the interest of young talents in research activity or professional career in this sphere. New creative ideas flexibly responding to the needs of small and medium enterprises and their closer cooperation will also be beneficial. The resulting effect will be higher competitiveness of scientific teams within the national research, higher interest of small and medium enterprises in research activities concentrating on innovation in public research institutions, higher schools and other research centres. Slovak research teams will also be able to compete on international level and this will mean for the Slovak research sector that a closer cooperation with international organisations will develop and the Slovak applicants will be more successful in Framework Programme 7 and other EU initiatives.

### **4.3 Strategy for Attaining the Global Objective as the Result of Topical and Territorial Concentration**

The strategy of Operational Programme Research and Development is based on the SWOT analysis and the identified disparities and development factors. It aims to transform the Slovak Republic into a knowledge economy and minimize the uneven development of the regions by connecting new or existing growth poles. The Slovak Republic does not fully exploit its research and development and innovation potentials, which should serve as the main pillars of its development. The growth of the research and development potential depends primarily on creative application of knowledge and intelligence. This combination creates positive synergies producing competitive advantages of a country compared to other countries. In this context, the strategy concentrates interventions from EU Structural Funds on those topics and territories, which will help to achieve the strategic objective of the National Strategic Reference Framework of the Slovak Republic in the programming period of 2007-2013 in a more efficient way.



Considering the similarity of structural problems in the area of research and development throughout Slovakia, a new joint Operational Programme Research and Development for both Cohesion policy objectives was designed, with expected impacts of projects carried out in the Bratislava region onto the research and development potential in the whole of Slovakia. This argument was also confirmed by the consent of the European Commission and of the Council dated June 2006 to the transfer of money from the Convergence objective to research and development in the Bratislava region. Another argument for a joint operational programme is that it will allow easier and, in terms of administration, more efficient management and implementation.

In line with Article 5 of Council Regulation (EC) No 1083/2006, assistance from the ERDF shall concentrate, within the Regional Competitiveness and employment objective of operational programme Research and Development on three priorities in the context of sustainable development strategies with simultaneous support to employment. The priorities lead to the creation and strengthening of efficient regional innovation economies and system relationships between the public and the private sector, universities and technological centres, taking into account the local needs. The priority axes of the operational programme are aimed at strengthening regional research and development capacities linked to innovation through the support of centres specialising in certain area or technology (for example the currently developing automotive industry), support of cooperation networks between businesses and/or the relevant institutions of tertiary education, research and transfer of technologies. One of the activities should be the support to new firms established by tertiary education and research institutions, with particular emphasis placed on the spin-off effects.

Priority axis Research and Development in the Bratislava region (Regional competitiveness and employment objective) faces the same structural problems as the other regions of Slovakia covered by the Convergence objective. Overcoming the problem of insufficient cooperation between tertiary education and research institutions on the one hand and businesses on the other requires support to the building and modernization of research and development infrastructure, with subsequent support to the development of relationships between the public and the private sector. Underdeveloped and outdated equipment and infrastructure reduce the credibility of research within the business sector and it is therefore unthinkable to exclude this area of support. On top of that, the Bratislava region concentrates about one half of the research and development potential of Slovakia. Its expansion depends also on the equipment used in the education process and might provide inspiration for career choices of young people.

It is therefore necessary to concentrate support on those areas, which will allow the continuous development of research and development activities and career growth, taking into account particularly the young generations. This requires conditions that are appropriate to the research activities concerned. If this condition is fulfilled, networks of excellence will expand and knowledge and technology transfer from the research sector into practice will take place more efficiently both within the Bratislava region and in the other regions of Slovakia. This should be further facilitated by the support to research activities from ERDF. All above-mentioned priority areas of support to research and development (both in the Bratislava region and under the Convergence objective) will concentrate on topical priorities of research and development of Slovakia (as described in section 4.3.1.1).

The result will be improved cooperation between the Bratislava region and the other regions of Slovakia and international cooperation between academic, public or state research and development institutions and SMEs. For these reasons, the Slovak Republic was granted the exception of re-allocating one part of the financial resources from the



Convergence objective to the Regional competitiveness and employment objective. Considering the above arguments, it is not possible to separate geographically research and development between the Convergence and Regional competitiveness and employment objectives, as the problems in the area of research and development are identical for both objectives.

#### **4.3.1 Topical Concentration of Contributions**

##### **4.3.1.1 Research and development**

Support of innovation, informatisation and the knowledge economy by creating an environment stimulating the growth of competitiveness of industry and services, better use of the existing factors of economic growth and creation of new knowledge-based sources of sustainable growth – these are the objectives of topical concentration of the strategy in line with the National Strategic Reference Framework. The strategy of priority axis Research and Development is reflected in the renewal and building of technical infrastructure for research and development, support to the networks of excellence (as the pillars of the development of a region and supra-regional cooperation) and transfer of knowledge and technology from research and development into practice. The objectives of priority axes concentrated on research and development are complementary to and create synergies with priority axes of OP Education, OP Informatisation of society and OP Bratislava region. For more details see chapter 7.2.1.2.

##### ***Renewal and Building of Technical Infrastructure for Research and Development***

Research, development and technological innovation as the main pillars of a knowledge economy require qualified human resources and adequate technical equipment (devices, laboratories, information networks etc.). The Slovak Republic has been facing the problem of inadequate technical equipment for tens of years. This had the result of its low competitiveness in international scientific and research competitions and minimum support from businesses placing orders for innovative procedures. In this context, it is desirable to invest into this area in the first stage so that research and development and subsequent technological innovation become one of the main development pillars of the Slovak society.

The above-mentioned area of support therefore includes activities linked to the existence of good-quality research projects and tasks implemented by organisations applying for assistance. It combines modernisation and improvement of quality of the technical infrastructure for research and development in 2007-2013, supports building of laboratories equipped with modern instrumentation in those areas, which are most promising for the future development of Slovakia and concentrates on building and modernising support infrastructure for research and development (particularly information technologies).

##### ***Support of networks of excellence in research and development as the pillars of development of the region and support to supra-regional cooperation.***

Influenced by the past political regime, research and development centres have had only few achievements at national and international level, which was partly caused by their high level of fragmentation and lack of coordination. This area of assistance aims to integrate the research and development potential and the potential of technological innovation in Slovakia in line with regional development priorities. It is necessary to concentrate on creating functional cooperation links between research and development centres in Slovakia, which have the potential to achieve top results and help to solve development

issues of the region, in which they are located, respecting regional development and innovation strategies.

Support should be concentrated on those areas, which will help to increase the number of existing networks of excellence facilitating the development of a particular region/of the whole Slovakia and improve the quality of their outputs, measured by achievements in the international context. In order to attain this vision it is necessary to support the building of research and development centres linked to the development priorities of a particular region, support integration of research and development institutions into supra-regional and international research and development cooperation networks and help creating national and regional technological platforms, which will ensure the interaction between research and development institutions, regional and national authorities and the business sector.

### ***Transfer of knowledge and technology from research and development into practice***

The proposed area of assistance follows on and complements the above-mentioned areas of support and aims to facilitate the implementation of research outputs in the business practice, as the business sector is the driving force of economic development.

A broad spectrum of activities was identified supporting joint projects with the industry. These activities will be complemented by the support to scientific and technological parks, technological centres and incubators (exclusively within public research and development organisations). Research and development potential may be increased, if support programmes mobilising and identifying potential areas of innovation and programmes involving the competition of business plans are designed and carried out, combined with other activities facilitating cooperation and building of long-term “responsible” partnerships between universities and the industry or its contact points. Consultation processes aimed at linking the research sector and the business practice will lead to the building of contact points in the form of offices/units for the transfer of knowledge and technology. Emphasis will be placed on the so-called spin-off effects from research and development towards social and economic practice.

The topical concentration of Operational Programme Research and Development is based on the Action Plan of the Strategy of Competitiveness of Slovakia till 2010, the National Reform Programme of the Slovak Republic for 2006-2008 and is aligned with the basic direction and the system priorities of Long-Term Vision of National Science and Technology Policy till 2015 (as described in section 4.1) in the area of fundamental and applied research and experimental development. The topical concentration should eventually help to attain the objectives of the EU Lisbon Strategy. Support to these topics will make research programmes accessible to other public organisations and the business sector not only in Slovakia but also in the other Member States, improving cooperation and strengthening open research and innovation. This will eventually increase the impact of research on competitiveness and its globalisation. At the same time, research and development in Slovakia will receive more financing from the state and the private sector due to higher demand and, as a result, will come closer to the attainment of the Lisbon strategy objectives.

The focus and the content of operational programme Research and Development will be in line with research and development priorities till 2015. “Renewal and building of technical infrastructure for research and development”, “Support to the networks of excellence in research and development” and “Transfer of knowledge and technology produced by research and development into practice” will support the 11 research and development priorities listed below. In justified cases, it will be possible to prepare a call for projects submission or to support projects with a different focus, considering the current needs or demand by the economy or society.

## **1. Health – Quality of Life**

Medical research and development will be concentrated on the prevention and treatment of the most frequent diseases dangerous for life or preventing full involvement in professional and social life. This will include in particular the prevention and treatment of cardiovascular diseases and early diagnosis and treatment of oncological diseases (the diseases with the highest mortality in Slovakia). Attention will also be paid to virology and infectious diseases, immunology, chronic and degenerative metabolism disorders, applied microbiology, respiration diseases, old-age diseases, allergies, etc. Particular attention will be paid to the prevention and treatment of mental disorders and depression in particular, as one of the most wide-spread diseases in Slovakia reducing the quality of life. The following topics will be of key importance:

- promotion of healthy lifestyle – prevention as the best treatment, awareness as the best prevention;
- transfer of knowledge from molecular medicine into clinical practice – exploitation of the knowledge of the human genome;
- genetics and medicinal biotechnologies.

Food and agriculture as its primary source are also among the factors significantly influencing public health and quality of life. In this context, attention will be paid to research and development concentrating on the following areas:

- safer, healthier and better quality food; extensive consumption and global food industry as potential health risks;
- environmental farming.

## **2. Progressive materials and technologies**

World economy globalisation opens new opportunities to highly specialised producers with a policy of constant innovation only. Slovak producers now have the chance to sell their products to EU markets and other countries. In order to succeed, they need a system continuously generating new knowledge on selected materials and production technologies.

To that view, it is necessary to concentrate on research and development of new materials, including construction materials (for the construction, engineering and consumer goods industry), functional materials (electrical, magnetic, optical, bio-compatible materials and plastics), composite, multi-functional and smart materials and nanomaterials, combined with the introduction of new technologies, including nanotechnologies. It is also necessary to improve analytical and numerical methods for forecasting the properties of items produced from the new materials (virtual testing) and develop suitable methods for measuring their properties. Research must also assess possible health and environmental risks and replace environmentally hazardous substances in line with EU chemical legislation (REACH).

## **3 Biotechnologies**

Biotechnological research and development will be orientated on industrial biotechnologies concentrated on the production of chemicals, materials and bio-energy using fermentation techniques or enzymatic catalysis (using micro organisms or their enzymes). Research and development in this area will also be focused on agro-biotechnologies using the most recent knowledge of plant improvement and breeding of micro organisms and animals, by using targeted transfer of genes with the aim of increasing the nutritional or medical value of food and improving economic parameters of agricultural commodities.

#### **4 Knowledge technologies supported by ICT**

The volume of knowledge we currently have highly exceeds the volume, which we are able to use efficiently. Diagnosis of the current situation of the knowledge society from historical viewpoint. Quality of human capital in symbiosis with the new role of research and development as the key factors of the country's dynamic development. Development of technologies facilitating the process of finding, sorting, interpreting and implementing knowledge is a precondition for Slovakia's progress towards the knowledge society.

Research in this area should be concentrated on the development and use of devices, information and communication technologies and mechatronics, as well as on the development of software supporting the management of knowledge in electronic services and systems for the efficient management of various activities of the society.

Research should also pay increased attention to the development of knowledge technologies involving the use of automated robot-based systems and progressive laser, electron beam and plasma technologies.

#### **5 Infrastructure for development of society**

The globalisation process requires well-developed infrastructure. In the years to come, research and development focusing on the following areas will play a key role:

- optimisation of the system of settlement and economic activities - landscape engineering taking into account sustainability of development;
- creation and protection of natural and rural potential of Slovakia;
- optimisation of the transport needs of the society, development and building of intelligent transport systems;
- planning of future development of transport, considering social, economic and environmental impacts;
- architecture of postal networks and technologies;
- telecommunications - next generation networks and services;
- interactive digital radio and TV broadcasting;
- introduction of e-based services (e-commerce / e-business);
- creation of micro-environment of humans.

#### **6 Energy and energy industry**

EU and Slovakia's energy industries currently depend on imports of energy carriers (oil, gas, uranium). Further economic development and growth of the quality of life require increasing the energy safety of Slovakia through efficient use of energy sources available in the country's territory. Research and development involving many areas of science will focus on new and renewable environmentally-sound energy sources, rational use of energy in all industrial and non-industrial branches and distribution of energy.

To that view, it is necessary to intensify R&D activities in several areas: research of geothermal energy sources and their use, development of technologies for generating electricity and heat from renewable sources (water, sun, wind, biomass); exploration of potential deposits of energy carriers (coal, crude oil, natural gas, uranium) in the territory of Slovakia and possibilities for their exploitation; research in nuclear energy focusing also on nuclear safety and spent fuel storage; research of fourth-generation reactors and nuclear fusion (participation of Slovakia in global ITER and DEMO projects), development of new systems for the transmission of energy (high voltage cables without electric and magnetic stray fields).

## **7 Civilisation challenges**

In human sciences, it is necessary to search for solutions to the problems of social inclusion, which stand in the way of full participation of the members of marginalised groups in social life. In this area, research projects will concentrate also on education towards citizenship and transformation of values and of the role of individuals in social networks.

Other important R&D areas will include development of new methods and forms of education and efficient management and internationalisation of EU area, including growing migration and its consequences for the people of Slovakia.

Globalisation as a dynamic, multi-dimensional process of economic, social, political, technological, environmental, cultural, religious, military-strategic and other changes and new opportunities and threats penetrates into all aspects of life and makes nations more dependent on each other. Far-reaching changes to the functioning of the world economy, combined with other aspects of the globalisation process pose new challenges on the adaptation of small countries with open economies, such as Slovakia, and require that research also covers issues like:

- globalisation and its impact on the dynamics of changes within the Slovak society;
- human, social and cultural capital – strategy of their development;
- European system of law and legal awareness within the Slovak society.

## **8 Cultural and artistic heritage of Slovakia**

Globalisation of the post-modern age poses new issues relating not only to economy, politics and communications, but also to national culture and the culture of minorities, cultural heritage, its preservation and development. The European Union declared its intention to be "unified in diversity".

The challenge to explore, preserve and, where possible, digitize and archive artefacts of the national culture and the culture of minorities (be it in language, literature, visual arts, architecture, music or folks culture) is of key importance for all EU nations.

The objective of research programmes is to show that national culture has developed within the European context and is part of the European context. It is necessary to explore Slovakia's contribution to European and world cultural heritage and make it visible to professionals from all around the world and then to the broad public.

## **9 Security**

Security of civilians against threats like terrorism, natural or industrial disasters and other catastrophes was given by the Commission into the competence of the member states and also included into FP7, which covers only a fraction of the necessary research (under topic 10 of specific programme "Cooperation"). This is an interdisciplinary topic involving natural, technical, social and human sciences. The objective of research activities is to ensure prevention and management of a particular disaster and subsequent consolidation of the situation. Research activities are based on research and technology of new detectors (of chemical and biological weapons, explosives, radioactive materials, dugs, etc.), information technologies (presence of persons and objects, communication, simulations, risk analysis) and also include health care in field conditions, management of shock conditions and stress situations and subsequent consolidation of economy, transport and communications. Research is mostly of civilian character; classified research activity will take place in exceptional cases only.

## 10 Protection of the environment

This priority covers all areas of environment protection, starting from the analysis of the current situation of the environment and environmental impacts of human activity up to environment protection technology. Emphasis is placed on areas such as prevention of environmental damage and pollution, waste disposal technology, recycling or measures countering the negative consequences of climatic change.

Particular emphasis will be placed on research in the following areas:

- environmental aspects of settlements and landscape with a view to ensure their sustainable development;
- impact of electromagnetic fields on living organisms.

Research will also cover investigation of the mutual relationships between economic and social development and the environment, considering the impacts of globalisation and integration as the basic preconditions for sustainable development, with the aim of achieving high quality of life both on national and regional level. Particular attention will be paid to the identification of those components of sustainability, which support all its aspects and which create the barriers for this process.

## 11 Use of domestic raw materials

The use of the potential of domestic sources of raw materials is one way for ensuring balanced development of the regions and jobs creation. Final production using available domestic resources is an important contribution to the growth of value creation and competitiveness of production. Intensified use of domestic raw materials must respect environmental principles and the principles of sustainable development.

Research and development will be focused on increasing the level of use and finalisation of domestic natural sources and renewable sources in particular. Activities will concentrate on research and development of engineering components, products and materials based on wood with improved parameters, introduction of more environmental forms of production (for example sulphite and natron cellulose and development of new types of paper for digital print) and improvement of packaging materials. It will further be necessary to orientate research and development activities on achieving higher level of finalisation in the processing of magnesite and basalt and silicon-based and clay materials.

These priorities will apply in addition to OP R&D also to:

- identified topics of state research and development programmes;
- support to research and development through the Research and Development Support Agency.

Definition of the above priorities is based on two preconditions, namely available research and development capacities for the individual science and technology disciplines and usability of R&D outputs by the economy or society.

The horizontal objectives of the proposed topical priorities are:

- sustainable development of the country;
- development of the knowledge society;
- higher economic and social benefits produced by research and development.

The key area of the topical focus of OP R&D is support to applied research and innovation, transfer of research and development outputs into practice and linking R&D organisations with businesses and SMEs in particular. Applied research is covered by all three above areas of assistance within the topics supported by OP R&D. In addition to direct activities supporting applied research under *transfer of knowledge and technology produced by*

*research and development into practice*, applied research will also be supported through *renewal and building of technical infrastructure for research and development and support to the networks of excellence in R&D as the pillars of regional development and support to supra-regional cooperation*.

An important component for linking R&D organisations with businesses will be the support to Regional Research and Innovation Centres (RRIC) throughout Slovakia through special framework activities. RRIC should act as applied research and development competence centres and broker centres for knowledge and technology transfer, support partnerships between higher schools, R&D organisations and businesses and help to develop innovation policy tools (innovation centres, technological platforms, information centres) by making the initial investments into their infrastructure and by paying the initial cost. Support to RRIC under OP R&D is one of the components of the integrated projects to build 7+1 RRICs throughout Slovakia. Support will also be provided to administrative organisation and operation of RRIC, including salaries and training activities, which will be financed under OP Employment and social inclusion.

In addition to the Ministry of Education and the Ministry of Labour, Social Affairs and Family, the Economy Ministry will also be involved in RRIC (through the Slovak Innovation and Energy Agency).

Regional research and development centres will have the form of an association of legal persons in line with section 20 f of the Civil Code. Founders of RRIC will include regional self-governments (higher territorial units, municipalities and towns), public higher schools and regional offices of the Slovak Academy of Sciences.

RRIC will help to establish the contacts between SMEs and research organisations and will stimulate and satisfy the demand for research activities and their outputs.

At the same time, RRIC will facilitate regional development and help to redress the regional disparities, by targeted use of the potential of the individual regions and by supporting the use of the results of applied research and introduction of innovation with the aim of fostering economic development of regions. This principle applies not only to the activities of RRICs, but also to all activities of OP R&D related to research and development.

Topical concentration will help to redress the regional disparities and increase the competitiveness and attractiveness of regions. Research and development are the means for promoting regional development, as they help to establish and support contacts and links between research and industry.

#### **4.3.1.2 Infrastructure of higher schools**

The attainment of the strategic objective of the NSRF for the programming period of 2007-2013, i.e. to increase the competitiveness and performance of the regions and of the Slovak economy, while respecting the principles of sustainable growth, requires increased investments into education, including investments into its infrastructure (modernisation of buildings of higher schools and their interior equipment) for the needs of the education process. In this way, synergies between investments into higher education infrastructure and the activities of OP Education can be achieved, the latter orientated on educational activities for students and employees of higher schools. High employment and creation of conditions for high productivity of labour through modern education policy supported by modernised education infrastructure is the best long-term guarantee of high standard of living for all citizens of Slovakia. The synergies between priority axis Infrastructure of higher schools and the priority axis of OP Education and the complementarity to the

priority axes of Regional operational programme and OP Informatisation of society are described in detail in chapter 7.2.1.2.

As to the support of infrastructure under OP R&D, it is necessary to point out the difference between infrastructure of higher schools and research and development infrastructure. Infrastructure of higher schools only covers educational infrastructure of higher schools. This difference is explained in more detail in section 5.3.3.

### 4.3.2 Territorial concentration of contributions

#### 4.3.2.1 Research and Development

The fundamental principle for geographical application of the strategy of NSRF and OP R&D strategy is geographic eligibility of regions to financing from the Structural Funds and the Cohesion Fund, respecting three objectives of EU cohesion policy for the programming period of 2007 – 2013 defined according to the regions' economic performance.

Another basis was the structure of settlements in Slovakia (polycentric system of settlements) based on growth poles, which are defined by KURS 2001 as settlement centres and core settlement areas.

An important factor for regional application of NSRF strategy is the equal spreading of settlement centres in Slovakia with polarized and agglomerated territories (the so-called core settlement areas) forming around the most important centres. These towns and their agglomerations can fulfill the role of the so-called “**development engines**” or **growth poles** of the individual territories.

The social and economic development taking place in these territories has a dominant influence on the neighbouring territories and the whole economy. As to the level and importance of impacts of socio-economic processes taking place in the growth poles on the performance and competitiveness of national economy, individual groupings of settlements became **innovation or cohesion growth poles** (for more information see chapter 3.1 of the NSRF).

Assistance under OP R&D will be concentrated in innovation growth poles, which will create the conditions for the creation and development of important growth sources based on the use of knowledge and increase of efficiency and effectiveness of economic and social processes influencing the development in the remaining territory of Slovakia.

#### **Innovation growth poles**

Innovation growth poles consist of centres of settlement of national and regional importance. Centres of settlement of national importance are regional capitals; centres of settlement of regional importance are towns, which are or in the past were the seats of district offices and selected other towns, which have regional economic and social importance.

Due to its status as the capital city with rich history and due to its geographic position, the most important centre, standing apart from all other centres, is *Bratislava*. It is the seat of the most important educational, research, health, finance, culture and industrial capacities of Slovakia and it has a dominant international position. Staying behind by a huge margin is the town of Kosice, in which important growth sources with international status are also concentrated. Bratislava and Kosice have the best conditions for developing the knowledge-based economy and they are able to generate the strongest impulses for increasing the



performance and competitiveness of the national economy. Following after these towns are the current regional capitals.

Around the most important centres (innovation growth poles), territories have formed, which are linked with the centres and create together complex functional territories. These territories are referred to as **areas of influence of innovation growth poles** and they consist of the most important core settlement areas, as defined by KURS 2001<sup>6</sup>.

The most important innovation growth poles and their areas of influence have the highest development potential; they should act as "engines" of economic and social development and should contribute to the competitiveness of Slovakia in international context. Innovation growth poles of regional importance should act as "stabilisers" of regional development, with their development helping to redress the undesirable regional disparities. These regional centres are accessible from anywhere in Slovakia in less than 30 minutes.

Even in case of priorities, where the principle of territorial concentration is applied, it will be possible to provide assistance also to territories located outside the growth poles in specific and justified cases. This approach will complement the priority approach in the territorial application of the strategy. Outside the growth poles, grants will be provided to efficient and effective projects, which cannot be implemented in the preferred territories, taking into account the objectives of OP R&D.

#### **4.3.2.2 Research and development in the Bratislava region**

The Bratislava region, which, in line with Council Regulation (EC) No 1083/2006 is not eligible for funding from the Structural Funds under the *Convergence* objective, as it does not meet the criteria for providing assistance under this convergence priority, is covered by the *Regional competitiveness and employment objective*. The Bratislava region is a specific case, as it concentrates almost 50% of the research and development potential of Slovakia and faces the same structural problems in the area of research, development and innovation as the other NUTS II regions of Slovakia (insufficient technical equipment and infrastructure). In order to overcome the barriers for the attainment of the objective of the National Reform Programme of Slovakia for 2006-2008 to make research, development and innovation one of the main development pillars of Slovakia, the government of the Slovak Republic adopted Resolution No 201 of 1 March 2006 concerning the proposal for ensuring balanced funding of research and development from the European Regional Development Fund in 2007-2013 in the entire territory of Slovakia. Following the adoption of this document, negotiations with relevant representatives took place and the EU granted Slovakia an exception allowing the transfer of a part of the allocation for the Convergence objective to the Regional competitiveness and employment objective, in accordance with Council Regulation (EC) No 1083/2006. When using these re-allocated funds, it will be necessary to demonstrate that each project supported in the Bratislava region will have an impact on the whole territory of Slovakia or any of the other regions outside of Bratislava.

At the same time, funding will be concentrated on areas in line with Article 5 of Regulation No. 1080/2006 concerning the ERDF (for example "...strengthening of regional capacities of R&D, support to industrial research and technological development, SMEs and transfer of technology..."). Similarity between the measures for the support to research and development in the Bratislava region and the measures under the Convergence objective does not mean that the proposed measures exceed the scope of the above-mentioned

---

<sup>6</sup> According to KURS 2001, core settlement areas are systems of settlement comprising in addition to agglomerated settlement systems also settlements based on simple settlement relationships using the polarisation effects of centres. According to the intensity of these relationships with the centres and the importance of these centres, core settlement areas are broken down into three hierarchic levels. For the purposes of NSRF, core settlement areas of the first two levels were used as a basis.

Article, as the activities proposed for the Bratislava region are covered by the first priority of Article 5 of Regulation No 1080/2006 concerning ERDF.

The analytical part of this document clearly identifies the specific status of the Bratislava region compared to the other regions of Slovakia, particularly as concerns quantitative indicators of R&D capacities (e.g. number of researchers, number of over-the-limit value equipment). This concentration of R&D capacities in the Bratislava region (number of R&D organisations), however, does not mean that the region has different problems and needs than the other regions. The contrary is true; situation is similar in the entire territory of Slovakia, as research and development in the Bratislava region are integral parts of the national system. In addition to that, the effects and benefits of research activity in the Bratislava region have an impact on the entire territory of Slovakia.

For this reason, the focus of activities under OP R&D in the Bratislava region is the same as in the remaining territory of Slovakia. The Long-Term Vision of National Science and Technology Policy till 2015 also applies to the entire territory of Slovakia; i.e. its system and topical priorities (described in sections 4.1 and 4.3.1.1) also apply to the Bratislava region.

#### **4.3.2.3 Infrastructure of higher schools**

From regional point of view, funding will be targeted equally at the whole territory covered by the Convergence objective, considering that there exist the same disparities and development factors (as shown by the results of the SWOT analysis) in all 7 self-governing regions concerned (Trnava, Trenčín, Nitra, Žilina, Banská Bystrica, Prešov and Košice). No specific regional challenges or challenges for certain types of higher schools are expected; competition will be open to all regions and all types of schools in the territory covered by the Convergence objective. Funding will, as a priority, be provided to innovation growth poles, in line with the principle of territorial concentration of the NSRF.

## **5. Priority axes of Operational programme research and development**

Table 8: List of priority axes of operational programme

Priority axis 1 <i>Infrastructure of research and development</i>
Priority axis 2 <i>Support to research and development</i>
Priority axis 3 <i>Infrastructure of research and development in the Bratislava region</i>
Priority axis 4 <i>Support to research and development in the Bratislava region</i>
Priority axis 5 <i>Infrastructure of higher schools</i>
Priority axis 6 <i>Technical assistance for the Convergence objective</i>
Priority axis 7 <i>Technical assistance for the Regional competitiveness and employment objective</i>

## **5.1 Priority axis 1 *Infrastructure of research and development***

### **Specific objective 1:**

*Modernisation and improvement of quality of technical infrastructure for research and development in 2007-2013 with a view to increase the ability of research and development institutions to efficiently cooperate with renowned research institutions in the EU and other countries, as well as with entities of the social and economic practice through the transfer of knowledge and technologies.*

### **5.1.1 Measure 1.1 *Modernisation and building of technical infrastructure for research and development***

#### **Specific objective 1.1:**

*Modernisation and improvement of quality of technical infrastructure for research and development in 2007-2013 with a view to increase the ability of research and development institutions to efficiently cooperate with renowned research institutions in the EU and other countries, as well as with entities of the social and economic practice through the transfer of knowledge and technologies.*

**Framework activity 1.1.1:** Modernisation of research and development infrastructure and equipment of higher schools, research institutions, research centres and other research and development organisations.

#### Examples of activities:

- modernisation and investments into technical and laboratory equipment and instrumentation
- the necessary cost related to investments into research, development and laboratory equipment (e.g. accessories to equipment needed for its operation)
- building and modernisation of local supporting IT infrastructure for research and development
- the necessary structural modifications related to investments into research, development and laboratory equipment

**Framework activity 1.1.2:** Support of research infrastructure in areas of strategic importance for further development of the economy and the society (12 topical priorities of research and development, needs of key industrial sectors of Slovakia, increase of the standard of living and the need for sustainable economic growth), with emphasis placed on interdisciplinary projects involving several education or research institutions and joint research centres with the involvement of the academic and business sectors.

#### Examples of activities:

- investments into research and laboratory equipment
- the necessary structural modifications related to investments into research and laboratory equipment
- the necessary cost related to investments into research and laboratory equipment (e.g. accessories to equipment needed for its operation)

**Framework activity 1.1.3:** Modernisation, building and sustainable development of ICT infrastructure of research and development in research and development centres, including the support to broadband networks between top research and development organisations.

#### Examples of activities:

- building and development of broadband networks between research and development centres
- building and modernisation of local supporting IT infrastructure for research and development, such as local computer networks, grid computing farms, super-computers etc.
- the necessary structural modifications related to investments into information technology and broadband networks

#### **Examples of eligible expenses under measure 1.1:**

- purchase of equipment and instrumentation;
- purchase of machines, devices and laboratory instrumentation;
- expenses related to the reconstruction, modification and renewal of buildings in connection with the purchase of new technologies and equipment;
- purchase of intangible assets (software, licences...);
- building of computer networks;
- purchase of ICT technologies;
- renting of office equipment, machines, devices and instrumentation (including intangible assets) during the term of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).

#### **Description of implementation of measure 1.1:**

The objective of measure 1.1 is to create a good quality research and development infrastructure as the precondition for increasing the volume and quality of research and development activity in Slovakia.

Investments into research and development infrastructure, as described in the above examples, will be focused on the procurement of laboratory equipment, instrumentation and ICT technologies directly linked to the implementation of research and development activities of the supported organisation. An indicative amount of 10% from the allocation to this priority axis is planned for the necessary structural modifications related to the installation of new research equipment and instrumentation.

Under this measure, it is also possible to support research and development projects/institutions, which will generate profits from research activities or research equipment procured not only for the beneficiary, but also for the potential customers of research outputs (e.g. small and medium-sized enterprises). Modernisation of technical infrastructure for research and development thus creates the precondition for increasing economic prosperity and competitiveness of regions and the whole country.

The existence of well-equipped and highly performing teams in properly selected areas of research and development is the basic precondition for the attractiveness of the territory for investors and, last but not least, will positively influence the selection of partners for international research and development projects. Activities will be supported by direct and indirect financial mechanisms. It will be possible to use state aid schemes for this measure. This will allow small, medium-sized and large enterprises increasing the level of their research and development as one of their activities. Projects will be implemented primarily in innovation growth poles and their areas of influence. This approach will, in line with the principle of territorial concentration (section 4.3.2 of OP R&D and text of NSRF), help to redress disparities between regions.

The focus and the content of measure 1.1 will be in line with research and development priorities till 2015 and will support the 12 research and development priorities of Slovakia (section 4.3.1.1 of OP R&D). In justified cases, it will be possible to prepare a call for projects submission or to support projects with a different focus, considering the current needs or demand by the economy or society.

From strategic point of view, the content of this measure supports the following system priorities of the Long-Term Vision of National Science and Technology Policy till 2015 (as described in chapter 4.1 of OP R&D):

- achieve synergies between the support of research and development from various sources (national budget, businesses, structural funds, funding under FP 7 for research, technical development and demonstration activities);
- ensure efficient support of human resources in research and development and of technical infrastructure of research and development;
- ensure adequate direct and indirect support to science and technology;
- contribute with science and technology to the growth of competitiveness of domestic production and service sectors;

#### **5.1.2 Justification of priority axis 1 *Infrastructure of research and development***

Research, development and technological innovation as one of the main pillars of a knowledge economy require qualified human resources and adequate technical equipment (instrumentation, equipment, laboratories, information networks etc.). Both conditions have to be fulfilled at the same time. The Slovak Republic has improvement potentials in both areas, and in particular in the area of research and development infrastructure, as it is most likely the worst (or among the worst) from all EU countries. **If research and development and the related technological innovation are to become the key pillars of the development of the Slovak economy, it is necessary to invest, in the first stage, into technical equipment for research and development - this defines the framework for activities under measure 1.1.** Significant investments into technical equipment are a basic precondition for re-focusing support grant schemes to the output side of the research and development and innovation system in the future. One of the problems is that it is currently not possible to provide incentives to Slovak businesses to give new research and development orders to SAS, universities or departmental institutions and private R&D organisations, as most of these institutions lack the technical equipment of the required standard to fulfil such orders. The above situation negatively influences the competitiveness of Slovak R&D organisations in the international context, which leads to their low success rate in obtaining funding from abroad (EU Framework Programmes for research and development, European Science Foundation, ...).

Priority axis Infrastructure of research and development (and its complementarity to and synergies with other priority axes) contributes to a more efficient use of the Structural Funds in the programming period of 2007-2013.

Priority axis Infrastructure of research and development and priority axis 1 Reform of the system of education and vocational training of OP Education produce important synergies with support provided to 2 basic components of research and development infrastructure (technical and human infrastructure). OP Education will support the development of human resources (education of students and employees of higher schools carrying out research activities and scientific workers – employees of research and development organisations, mobility measures, etc.). These activities will be funded from the ESF. OP R&D will support primarily technical infrastructure for research and development (instrumentation).

Priority axis Infrastructure of research and development and the priority axes of OP Informatisation of society are complementary to each other (they complement each other without overlapping) and synergies exist between them within NSRF horizontal priority Information society. OP R&D will support ICT infrastructure of research and development organisations, including the support of broadband networks between research and development organisations with a view to ensure efficient communication between organisations and exchange of data for special research tasks.

Measures under priority axis 1 Infrastructure of research and development will receive complementary co-financing from state aid schemes. State aid schemes will concentrate on small and medium-sized enterprises, with a smaller portion of funding provided to large enterprises.

If support from the structural funds is provided to large enterprises, MA shall require guarantees from such large enterprises that they will not use the provided assistance to support investments for relocating production from another EU member state.

## **5.2 Priority axis 2 Support to research and development**

### **Specific objective 2:**

*Improving the efficiency of the system for the support of research and development so that it contributes to the growth of competitiveness, redressing of regional disparities, creation of new innovative (high tech) small and medium-sized enterprises and jobs creation.*

### **5.2.1 Measure 2.1 Support of networks of excellence in research and development as the pillars of regional development and support to international cooperation**

#### **Specific objective 2.1:**

*Increase the quality of research organisations and support to excellent research activities with emphasis placed on areas of strategic importance for the further development of the economy and the society.*

**Framework activity 2.1.1:** Support to exchange and joint research programmes carried out by Slovak R&D and educational institutions in cooperation with renowned foreign R&D institutions.

#### Examples of activities:

- joint research projects at Slovak universities and research and development institutions in cooperation with foreign research and development organisations
- investment and operating expenses directly related to joint research projects at Slovak universities and research and development institutions in cooperation with leading foreign research and development organisations

Framework activity 2.1.2: Support of important research and development projects in areas of strategic importance for the further development of the economy and the society (12 research and development priorities of Slovakia, needs of key industrial sectors of Slovakia, increase of the standard of living and the need for sustainable economic growth).

#### Examples of activities:

- cost related to the implementation of important research and development projects in areas of strategic importance for the further development of the economy and the society
- investment and current expenses directly related to projects covering areas of strategic

importance for the further development of the economy and the society (12 research and development priorities of Slovakia, needs of key industrial sectors of Slovakia, increase of the standard of living and the need for sustainable economic growth).

**Framework activity 2.1.3:** Support of cooperation between regional structures and research and development organisations, including cooperation between research and development institutions and secondary schools

Examples of activities:

- support to the integration of research and development organisations into supra-regional and international cooperation networks in research, development and innovation
- support to research projects responding to the needs of regional development, linked to regional development documents
- support to joint projects of research institutions and secondary schools

**Framework activity 2.1.4:** Support of international cooperation in the area of research and development

Examples of activities:

- complementary support to research projects and teams financed from EU Framework Programme for Research and development
- support to the participation in international networking events, presentations of research centres, etc.

**Framework activity 2.1.5:** Support of the return of Slovak scientific workers (including graduates and post-graduates) working abroad to Slovakia

Examples of activities:

- cost related to the implementation of projects and motivational programmes for the return (including return for limited period of time) of Slovak post-graduates of foreign universities and of Slovak scientists working abroad to Slovak universities and research organisations
- Framework activity 2.1.6:** Support of human resources in areas of strategic importance for the further development of the economy and the society.

Examples of activities:

- covering of expenses related to the acquisition and work of scientific workers in areas of strategic importance for the further development of economy and society

**Examples of eligible expenses under measure 2.1:**

- management, administrative and technical staff;
- purchase of equipment and instrumentation;
- purchase of machines, devices and laboratory instrumentation;
- purchase of intangible assets (software, licences...);
- purchase of technical and scientific literature (magazines, books...)
- building of computer networks;
- purchase of ICT technologies;
- expenses related to the reconstruction, modification and renewal of buildings in connection with the purchase of new technologies and equipment;
- renting of office equipment, machines, devices and instrumentation (including intangible assets) during the term of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).



- renting of rooms/premises for the implementation of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).
- operating expenses related to project implementation (consumables and auxiliary materials, water, gas, electricity, heating, insurance, postal and telecommunication expenses, communication networks...);
- travel expenses of technical, management and administrative staff – domestic and foreign business trips (travel expenses are accepted as eligible only if an employer-employee relationship exists).

### **Description of implementation of measure 2.1:**

Investments described in the above examples of eligible expenses will be primarily focused on integrated research projects (applied research projects in particular). This measure will also allow implementation of projects supporting networks of excellent research centres, international cooperation and mobility of research workers. When assessing the excellence of research organisations, the excellence criteria of Long-term Vision of National Science and Technology Policy till 2015 will be used, which are also provided in Annex 2 to OP R&D

Investments into the purchase of laboratory equipment, instrumentation and ICT technologies are part of integrated research projects supported under this measure and of other research projects of the organisation.

An indicative amount of 10% from the allocation to this priority axis is planned for the necessary structural modifications related to the installation of new research equipment and instrumentation.

This measure will, as a priority, support projects which will generate profits from research activities or research equipment procured not only for the beneficiary, but also for the potential customers of research outputs (e.g. small and medium-sized enterprises). Successful implementation of applied research projects with the transfer of their outputs into practice thus create the preconditions for increasing economic prosperity and competitiveness of regions and the whole country. One of the factors influencing the focus of activities of research organisations is demand by the business sector.

Support to centres of excellence (being the best research and development organisations) increases the potential for good quality research outputs and the chances for their application in practice.

Activities will be supported with non-repayable (grants) and repayable (innovative financial instruments) forms of assistance. State aid schemes will also be available for this measure. This will allow small, medium-sized and large enterprises increasing the level of their research and development as one of their activities. Projects will be implemented mainly in innovation growth poles and their areas of influence. This approach will, in line with the principle of territorial concentration (section 4.3.2 of OP R&D) and text of NSRF), help to redress disparities between regions.

The focus and the content of measure 2.1 will be in line with research and development priorities till 2015 and will support the 12 research and development priorities of Slovak research and development (section 4.3.1.1). In justified cases, it will be possible to prepare a call for projects submission or to support projects with a different focus, considering the current needs or demand by the economy or society.



From strategic point of view, the content of this measure supports the following system priorities of the Long-Term Vision of National Science and Technology Policy till 2015 (as described in chapter 4.1 of OP R&D):

- a) achieve synergies between the support of research and development from various sources (national budget, businesses, structural funds, funding under FP 7 for research, technical development and demonstration activities);
- b) ensure efficient support of human resources in research and development and of technical infrastructure of research and development;
- c) ensure adequate direct and indirect support to science and technology;
- d) concentrate support from the public sources on research intended for further use; this will also improve the interconnection between fundamental and applied research, following improved cooperation between the public and private R&D sectors and with economic and social partners.
- e) increase economic and social benefits of international cooperation in science and technology for Slovakia;
- f) contribute with science and technology to the growth of competitiveness of domestic production and service sectors;

### **5.2.2 Measure 2.2 Transfer of knowledge and technology from research and development into practice**

#### **Specific objective 2.2:**

*Increase the level of cooperation of R&D institutions with the society and economy through the transfer of knowledge and technology, thereby facilitating economic growth of the regions and of the whole Slovakia.*

#### **Framework activity 2.2.1:** Raising innovation culture in the academic sector by incubators

##### Examples of activities:

- creation and implementation of programmes for the mobilisation and creation of potential innovation at public research and development institutions and higher schools
- creation and organisation of business plan competitions, operation of incubators, etc. at public research and development institutions and higher schools

#### **Framework activity 2.2.2:** Support to applied research and development

##### Examples of activities:

- implementation of applied research and development projects in the public and non-governmental sector
- implementation of industrial research projects
- support to applied research and development projects in the business sector (SMEs and large enterprises), including the support to researchers and their activities with the aim of developing new activities of businesses;
- support to the cooperation between businesses (SMEs and large enterprises) and the academic sector, particularly through access of businesses to research facilities of the academic sphere as part of their cooperation.
- establishment of and support to science and technology parks and technology centres with direct involvement of tertiary educational institutions with a view to transfer new knowledge in the commercial sector (SMEs and large enterprises) in the form of premises providing rooms, services and contact to the sources of new knowledge;
- establishment of and support to competence centres orientated on a specific sector, with

the involvement of universities and with emphasis on education, research, development and transfer of technology;

- support to the preparation of planning documentation for science and technology parks, technology and competence centres, including feasibility studies

**Framework activity 2.2.3:** Improving the quality of internal management of transfer of knowledge and technology from the academic sector into practice, including activities aimed at eliminating the barriers between research and development on the one hand and the society and economy on the other

Examples of activities:

- support of contact points between industry (SMEs and large enterprises) and research and development organisations
- support to the preparation of plans for the establishment of institutions serving universities and academic institutions in the area of technology and knowledge transfer (including valorisation and commercialization institutions and bodies);
- establishment and operation of institutions serving universities and academic institutions in the area of technology and knowledge transfer (including valorisation and commercialization institutions and bodies), with the necessary expertise, training experience and understanding of researchers' needs, laws, business principles and development of technology
- support to activities for the removal of barriers between research and development on the one hand and the society and economy (SMEs and large enterprises) on the other.

**Framework activity 2.2.4:** Increased use of intellectual property rights by research and development organisations from the academic sector

Examples of activities:

- support to the preparation of projects for the establishment of institutions and bodies providing comprehensive support in intellectual property rights management to research institutions financed from public sources and to joint research institutions involving organisations financed from public sources;
- establishment and operation of institutions and bodies providing comprehensive support in intellectual property rights management to research institutions financed from public sources and to joint research institutions involving organisations financed from public sources;
- provision of financial coverage of first stages of legal protection of intellectual property

**Framework activity 2.2.5:** Building of and support to regional centres

Examples of activities:

- building of applied research and development competence centres and broker centres for knowledge and technology transfer, support of partnerships between higher schools, R&D organisations and businesses (SMEs and large enterprises) within regional centres by making the initial investments into their infrastructure and by paying the initial cost;
- developing innovation policy tools (innovation centres, technological platforms, information centres) within regional centres by making the initial investments into their infrastructure and by paying the initial cost.

### **Examples of eligible expenses under measure 2.2:**

- management, administrative and technical staff;
- purchase of equipment and instrumentation;
- purchase of machines, devices and laboratory instrumentation;
- purchase of intangible assets (software, licences...);
- purchase of technical and scientific literature (magazines, books...)
- building of computer networks;
- purchase of ICT technologies;
- expenses related to the reconstruction, modification and renewal of buildings in connection with the purchase of new technologies and equipment;
- renting of office equipment, machines, devices and instrumentation (including intangible assets) during the term of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).
- renting of rooms/premises for the implementation of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).
- operating expenses related to project implementation (consumables and auxiliary materials, water, gas, electricity, heating, insurance, postal and telecommunication expenses, communication networks...);
- travel expenses of technical, management and administrative staff – domestic and foreign business trips (travel expenses are accepted as eligible only if an employer-employee relationship exists);
- building, reconstruction and renewal of buildings directly related to projects of regional centres, science and technology parks, technology centres and competence centres.

### **Description of implementation of measure 2.2:**

Measure 2.2 is designed to support the culture of innovation in research organisations and research orientated on practical application of research results in the national economy. Its objectives therefore include creation and transfer of newly acquired knowledge and technology into practice.

Investments described in the above examples of eligible expenses will be primarily focused on integrated research projects (applied research projects in particular). This measure will also support projects promoting the culture of innovation in the academic sector through virtual incubators, science and technology parks, technology centres, competence and regional centres and use of intellectual property rights.

Investments into the purchase of laboratory equipment, instrumentation and ICT technologies are part of integrated research projects supported under this measure and of other research projects of the organisation.

An indicative amount of 10% from the allocation to this priority axis is planned for the necessary structural modifications related to the installation of new research equipment and instrumentation and for constructing and reconstructing buildings directly related to the project of regional centres, science and technology parks and technology and competence centres.

This measure will, as a priority, support projects which will generate profits from research activities or research equipment procured not only for the beneficiary, but also for the potential customers of research outputs (e.g. small and medium-sized enterprises). Successful implementation of applied research projects with the transfer of their outputs

into practice thus creates the preconditions for increasing economic prosperity and competitiveness of regions and the whole country. One of the factors influencing the focus of activities of research organisations is demand by the business sector.

Support to integrated applied research projects and other tools for the creation and transfer of knowledge into practice (e.g. establishment of research centres, science and technology parks, interconnection and cooperation between the academic sector and businesses) directly contributes to economic development of the regions and the whole country.

Activities will be supported with non-repayable (grants) and repayable (innovative financial instruments) forms of assistance. Eligible activities will also include activities supported under measure 1.1, provided they are part of a broader project meeting the criteria for this measure. It is also considered to create a state aid scheme for this measure, which would allow small, medium-sized and large enterprises improving the level of research and development as part of their activities. Projects will be implemented mainly in innovation growth poles and their areas of influence. This approach will, in line with the principle of territorial concentration (section 4.3.2 of OP R&D and text of NSRF), help to redress disparities between regions.

Support to regional centres from OP R&D may also be used to implement innovation policy tools. In light of the above fact, the Ministry of Economy and the Slovak Innovation and Energy Agency will also be able to take part in the preparation of calls for project submission, evaluation and approval process, monitoring and financial management of projects.

The focus and the content of measure 2.2 will be in line with research and development priorities till 2015 and will support the 12 research and development priorities of Slovak research and development (section 4.3.1.1). In justified cases, it will be possible to prepare a call for projects submission or to support projects with a different focus, considering the current needs or demand by the economy or society.

From strategic point of view, the content of this measure supports the following system priorities of the Long-Term Vision of National Science and Technology Policy till 2015 (as described in chapter 4.1 of OP R&D):

- a) achieve synergies between the support of research and development from various sources (national budget, businesses, structural funds, funding under FP 7 for research, technical development and demonstration activities);
- b) ensure efficient support of human resources in research and development and of technical infrastructure of research and development;
- c) ensure adequate direct and indirect support to science and technology;
- d) concentrate support from the public sources on research intended for further use; this will also improve the interconnection between fundamental and applied research, following improved cooperation between the public and private R&D sectors and with economic and social partners.
- e) contribute with science and technology to the growth of competitiveness of domestic production and service sectors;

### **5.2.3 Justification of priority axis 2 *Support to research and development***

One of the problems of Slovak research and development is its high fragmentation and lack of coordination among research and development institutions and lacking links to renowned research and development institutions abroad. In Slovakia, there exists quite a number of small research and development teams, which operate practically on the same field, but without mutual cooperation or cooperation with renowned institutions abroad. **Measure 2.1**

**aims to increase the quality and integration of the R&D and technological innovation potential of Slovakia, in line with the development priorities of the regions.** It is necessary to concentrate on creating functional cooperation links between research and development organisations in Slovakia and abroad with the potential to achieve top results. This would help to solve development issues of the region, in which these organisations are located. This would also create a network of top R&D organisations linked to technological innovation and respecting the priorities of the region concerned. Integration of (Slovak) research and development organisations into international science and technology networks and cooperation consortia often requires an initial investment, which, due to the limited financial resources, often creates a barrier for their involvement in such programmes (for example drafting of (large scale) research projects under framework programmes, particularly if the Slovak organisation is the project coordinator). Support needs to be provided to their financing, administration and management. Priority axis 2 and its measure 2.1 should also foster communication between the partners forming the basis of the knowledge economy and economic growth (research and development basis, the business sector and legislation and regional development authorities). Development of a specific area or region could be helped by the creation of specific communication platforms.

One of the most problematic areas of the Lisbon Strategy in the EU is the use of the results of research and development in practice. In Slovakia, this problem is particularly urgent. Where R&D results are used at an increased level, research and development form the basic pillars of the development of the society and of the growth of standard of living. **Measure 2.2 builds on the previously described measures; measure 1.1 of priority axis 1 and measure 2.1 are aimed at modernizing and increasing the potential output and quality of research and development institutions.** The existence of leading-edge research and development organisations creates good preconditions for the practical application of their outputs, provided there is demand from the business sector. It is therefore necessary to support these activities systematically, with a view to exploit scientific and research knowledge and create a number of positive effects, which will not be limited to the research and development sector (generation of own revenues, improving the reputation of a university and its researchers in the international context), but would also extend to the business sector and, eventually, to the whole society and the development of the whole region. Measures supporting commercial use of science and research thus create the conditions for increasing competitiveness of regions and growth of employment and for attracting foreign investors to economic sectors with higher value added creation. The key feature of the activities outlined above will be the focus on the so-called spin-off effects from research and development towards social and economic practice. Measure 2.1 and measure 2.2 will help to build relationships and links between universities, research and businesses.

Priority axis Support to research and development (and its complementarity to and synergies with other priority axes) contributes to a more efficient use of the Structural Funds in the programming period of 2007-2013.

Priority axis Support to research and development and priority axis 1 Reform of the system of education and vocational training (OP Education) produce important synergies in supporting human resources for research and development. OP Education will support the development of human resources (education of students and employees of higher schools carrying out research activities and scientific workers – employees of research and development organisations, mobility measures, etc.). These activities will be funded from the ESF. OP R&D will support human resources with activities supporting the return of Slovak scientific workers from abroad or their stay in Slovakia and by providing financing to research projects, which will give researchers the opportunity of professional realization.

Priority axis Support to research and development and priority axis Innovation and growth of competitiveness of OP Competitiveness and economic growth create the preconditions of complementarity in building and operating regional centres, which can contribute to the application of innovation policy tools.

Measures under priority axis 2 Support to research and development will receive complementary co-financing from state aid schemes. State aid schemes will concentrate on small and medium-sized enterprises, with a smaller portion of funding provided to large enterprises.

If support from the structural funds is provided to large enterprises, MA shall require guarantees from such large enterprises that they will not use the provided assistance to support investments for relocating production from another EU member state.

### **5.3 Priority axis 3 Infrastructure of research and development in the Bratislava region**

#### **Specific objective 3:**

*Modernisation and improvement of quality of technical infrastructure for research and development in the Bratislava region in 2007-2013 with a view to increase the ability of research and development institutions to efficiently cooperate with renowned research institutions in the EU and other countries, as well as with entities of the social and economic practice through the transfer of knowledge and technologies.*

#### **5.3.1 Measure 3.1 Modernisation and building of technical infrastructure for research and development in the Bratislava region**

##### **Specific objective 3.1:**

*Modernisation and improvement of quality of technical infrastructure for research and development in the Bratislava region in 2007-2013 with a view to increase the ability of research and development institutions to efficiently cooperate with renowned research institutions in the EU and other countries, as well as with entities of the social and economic practice through the transfer of knowledge and technologies.*

**Framework activity 3.1.1:** Modernisation of research and development infrastructure and equipment of higher schools, research institutions, research centres and other research and development organisations in the Bratislava region.

##### Examples of activities:

- modernisation and investments into technical and laboratory equipment and instrumentation
- the necessary cost related to investments into research, development and laboratory equipment (e.g. accessories to equipment needed for its operation)
- building and modernisation of local supporting IT infrastructure for research and development
- the necessary structural modifications related to investments into research, development and laboratory equipment

**Framework activity 3.1.2:** Support of research infrastructure in areas of strategic importance for the further development of the economy and the society (research and development priorities of Slovakia, needs of key industrial sectors of Slovakia, increase of the standard of living and the need for sustainable economic growth), with emphasis placed on interdisciplinary projects involving several education or research institutions and joint

research centres with the involvement of the academic and business sectors from the Bratislava region.

Examples of activities:

- investments into research and laboratory equipment
- the necessary structural modifications related to investments into research and laboratory equipment
- the necessary cost related to investments into research and laboratory equipment (e.g. accessories to equipment needed for its operation)

**Framework activity 3.1.3:** Modernisation, building and sustainable development of ICT infrastructure of research and development in research and development organisations, including the support to broadband networks connecting top research and development organisations in the Bratislava region.

Examples of activities:

- building and development of broadband networks between research and development centres
- building and modernisation of local supporting IT infrastructure for research and development, such as local computer networks, grid computing farms, super-computers etc.
- the necessary structural modifications related to investments into information technology and broadband networks

**Examples of eligible expenses under measure 3.1:**

- purchase of equipment and instrumentation;
- purchase of machines, devices and laboratory instrumentation;
- expenses related to the reconstruction, modification and renewal of buildings in connection with the purchase of new technologies and equipment;
- purchase of intangible assets (software, licences...);
- building of computer networks;
- purchase of ICT technologies;
- renting of office equipment, machines, devices and instrumentation (including intangible assets) during the term of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).

**Description of implementation of measure 3.1:**

The objective of measure 3.1 is to create a good quality research and development infrastructure as the precondition for increasing the volume and quality of research and development activity in Slovakia.

Investments into research and development infrastructure, as described in the above examples, will be focused on the procurement of laboratory equipment, instrumentation and ICT technologies directly linked to the implementation of research and development activities of the supported organisation. An indicative amount of 10% from the allocation to this priority axis is planned for the necessary structural modifications related to the installation of new research equipment and instrumentation.

Under this measure, it is also possible to support research and development projects/institutions, which will generate profits from research activities or research equipment procured not only for the beneficiary, but also for the potential customers of research outputs (e.g. small and medium-sized enterprises). Modernisation of technical

infrastructure for research and development thus creates the precondition for increasing economic prosperity and competitiveness of regions and the whole country.

The existence of well-equipped and highly performing teams in properly selected areas of research and development is the basic precondition for the attractiveness of the territory for investors and, last but not least, will positively influence the selection of partners for international research and development projects. Activities will be supported by direct and indirect financial mechanisms. It will be possible to use state aid schemes for this measure. This will allow small, medium-sized and large enterprises increasing the level of their research and development as one of their activities. Projects will be implemented primarily in innovation growth poles and their areas of influence. This approach will, in line with the principle of territorial concentration (section 4.3.2 of OP R&D and text of NSRF), help to redress disparities between regions.

The focus and the content of measure 1.1 will be in line with research and development priorities till 2015 and will support the 12 research and development priorities of Slovakia (section 4.3.1.1 of OP R&D). In justified cases, it will be possible to prepare a call for projects submission or to support projects with a different focus, considering the current needs or demand by the economy or society.

From strategic point of view, the content of this measure supports the following system priorities of the Long-Term Vision of National Science and Technology Policy till 2015 (as described in chapter 4.1 of OP R&D):

- achieve synergies between the support of research and development from various sources (national budget, businesses, structural funds, funding under FP 7 for research, technical development and demonstration activities);
- ensure efficient support of human resources in research and development and of technical infrastructure of research and development;
- ensure adequate direct and indirect support to science and technology;
- contribute with science and technology to the growth of competitiveness of domestic production and service sectors;

### **5.3.2 Justification of priority axis 3 *Infrastructure of research and development in the Bratislava region***

The Bratislava region concentrates, in quantitative terms, about 50% of the research and development potential of Slovakia. About 50% of all technical equipment is located in the Bratislava region and about 50% of all scientific workers work in the capital of Slovakia. At the same time, however, the Bratislava region faces the same structural problems in the area of research and development as the rest of Slovakia, i.e. obsolete equipment, underdeveloped research and development infrastructure, weak links between research institutions and the society/economy, etc.). This phenomenon was negatively reflected in the low success rate of Slovak research and development workers in getting funding from the 6<sup>th</sup> Framework Programme (EUR 2.67 per capita). On top of that, funding granted under this programme was rarely granted to research projects as such, but rather to the so-called supporting activities (projects, the objective of which is to organise seminars, workshops, studies, etc.). For this reason, the Slovak Government intends to improve significantly the potential of research and development in Slovakia. According to the Lisbon Strategy, research and development should become one of the most important pillars of development of Slovakia. Considering the above-mentioned facts, the Slovak Republic asked for an exception to re-allocate the resources from objective 2 Convergence so that it would be possible to support the projects of Bratislava-based research and development institutions.



The analytical part of this document clearly identifies the specific status of the Bratislava region compared to the other regions of Slovakia, particularly as concerns quantitative indicators of R&D capacities (e.g. number of researchers, number of over-the-limit value equipment). This concentration of R&D capacities in the Bratislava region (number of R&D organisations), however, does not mean that the region has different problems and needs than the other regions. The contrary is true; situation is similar in the entire territory of Slovakia, as research and development in the Bratislava region are integral parts of the national system. In addition to that, the effects and benefits of research activity in the Bratislava region have an impact on the entire territory of Slovakia.

For this reason, the focus of activities under OP R&D in the Bratislava region is the same as in the remaining territory of Slovakia. The Long-Term Vision of National Science and Technology Policy till 2015 also applies to the entire territory of Slovakia; i.e. its system and topical priorities (described in sections 4.1 and 4.3.1.1) also apply to the Bratislava region.

This priority axis is aimed at addressing the problems of the Bratislava region, which are very similar to those of the other regions of Slovakia. They are related in particular to underdeveloped research and development infrastructure. The measures and framework activities are therefore very similar to those of priority axis 1. The same is true for their justification, which is also similar to that of priority axis 1.

Priority axis Infrastructure of research and development in the Bratislava region (and its complementarity to and synergies with other priority axes) contributes to a more efficient use of the Structural Funds in the programming period of 2007-2013.

Priority axis Infrastructure of research and development in the Bratislava region and priority axis Modern education for the knowledge society for the Bratislava region (OP Education) produce important synergies with support provided to 2 basic components of research and development infrastructure (technical and human infrastructure). OP Education will support the development of human resources (education of students and employees of higher schools carrying out research activities and scientific workers – employees of research and development organisations, mobility measures, etc.). These activities will be funded from the ESF. OP R&D will support primarily technical infrastructure for research and development (instrumentation).

Measures under priority axis 3 Infrastructure of research and development in the Bratislava region will receive complementary co-financing from state aid schemes. State aid schemes will concentrate on small and medium-sized enterprises, with a smaller portion of funding provided to large enterprises.

If support from the structural funds is provided to large enterprises, MA shall require guarantees from such large enterprises that they will not use the provided assistance to support investments for relocating production from another EU member state.

#### **5.4 Priority axis 4 Support to research and development in the Bratislava region**

##### **Specific objective 4:**

*Improving the efficiency of the system for the support of research and development so that it contributes to the growth of competitiveness, redressing of regional disparities, creation of new innovative (high tech) small and medium-sized enterprises and jobs creation in the Bratislava region.*

#### **5.4.1 Measure 4.1 Support of networks of excellence in research and development as the pillars of regional development and support to international cooperation in the Bratislava region**

##### **Specific objective 4.1:**

*Increase the quality of research organisations and support to excellent research activities in the Bratislava region with emphasis placed on areas of strategic importance for the further development of the economy and the society*

**Framework activity 4.1.1:** Support to exchange and joint research programmes carried out by R&D and educational institutions in the Bratislava region in cooperation with renowned foreign R&D institutions.

##### Examples of activities::

- joint research projects at Slovak universities and research and development institutions in cooperation with foreign research and development organisations
- investment and operating expenses directly related to joint research projects at Slovak universities and research and development institutions in cooperation with leading foreign research and development organisations

**Framework activity 4.1.2:** Support of important research and development projects in the Bratislava region in areas of strategic importance for the further development of the economy and the society (research and development priorities of Slovakia, needs of key industrial sectors of Slovakia, increase of the standard of living and the need for sustainable economic growth).

##### Examples of activities:

- cost related to the implementation of important research and development projects in areas of strategic importance for the further development of the economy and the society
- investment and current expenses directly related to projects covering areas of strategic importance for the further development of the economy and the society (research and development priorities of Slovakia, needs of key industrial sectors of Slovakia, increase of the standard of living and the need for sustainable economic growth).

**Framework activity 4.1.3:** Support of cooperation between regional structures and research and development organisations, including cooperation between research and development institutions and secondary schools in the Bratislava region

##### Examples of activities:

- support to the integration of research and development organisations into supra-regional and international cooperation networks in research, development and innovation
- support to research projects responding to the needs of regional development, linked to regional development documents
- support to joint projects of research institutions and secondary schools

**Framework activity 4.1.4:** Support of international cooperation in the area of research and development

##### Examples of activities:

- complementary support to research projects and teams financed from EU Framework Programme for Research and development
- support to the participation in international networking events, presentations of research centres, etc.

**Framework activity 4.1.5:** Support of the return of Slovak scientific workers (including post-graduate students and post-graduates) working abroad to higher schools and research institutions in the Bratislava region

Examples of activities:

- cost related to the implementation of projects and motivational programmes for the return (including return for limited period of time) of Slovak post-graduates of foreign universities and of Slovak scientists working abroad to Slovak universities and research organisations
- Framework activity 4.1.6:** Support of human resources in areas of strategic importance for the further development of the economy and the society.

Examples of activities:

- covering of expenses related to the acquisition and work of scientific workers in areas of strategic importance for the further development of economy and society

**Examples of eligible expenses under measure 4.1:**

- management, administrative and technical staff;
- purchase of equipment and instrumentation;
- purchase of machines, devices and laboratory instrumentation;
- purchase of intangible assets (software, licences...);
- purchase of technical and scientific literature (magazines, books...)
- building of computer networks;
- purchase of ICT technologies;
- expenses related to the reconstruction, modification and renewal of buildings in connection with the purchase of new technologies and equipment;
- renting of office equipment, machines, devices and instrumentation (including intangible assets) during the term of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).
- renting of rooms/premises for the implementation of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).
- operating expenses related to project implementation (consumables and auxiliary materials, water, gas, electricity, heating, insurance, postal and telecommunication expenses, communication networks...);
- travel expenses of technical, management and administrative staff – domestic and foreign business trips (travel expenses are accepted as eligible only if an employer-employee relationship exists).

**Description of implementation of measure 4.1:**

Investments described in the above examples of eligible expenses will be primarily focused on integrated research projects (applied research projects in particular). This measure will also allow implementation of projects supporting networks of excellent research centres, international cooperation and mobility of research workers. When assessing the excellence of research organisations, the excellence criteria of Long-term Vision of National Science and Technology Policy till 2015 will be used, which are also provided in Annex 2 to OP R&D

Investments into the purchase of laboratory equipment, instrumentation and ICT technologies are part of integrated research projects supported under this measure and of other research projects of the organisation.

An indicative amount of 10% from the allocation to this priority axis is planned for the necessary structural modifications related to the installation of new research equipment and instrumentation.

This measure will, as a priority, support projects which will generate profits from research activities or research equipment procured not only for the beneficiary, but also for the potential customers of research outputs (e.g. small and medium-sized enterprises). Successful implementation of applied research projects with the transfer of their outputs into practice thus create the preconditions for increasing economic prosperity and competitiveness of regions and the whole country. One of the factors influencing the focus of activities of research organisations is demand by the business sector.

Support to centres of excellence (being the best research and development organisations) increases the potential for good quality research outputs and the chances for their application in practice.

Activities will be supported with non-repayable (grants) and repayable (innovative financial instruments) forms of assistance. State aid schemes will also be available for this measure. This will allow small, medium-sized and large enterprises increasing the level of their research and development as one of their activities. Projects will be implemented mainly in innovation growth poles and their areas of influence. This approach will, in line with the principle of territorial concentration (section 4.3.2 of OP R&D and text of NSRF), help to redress disparities between regions.

The focus and the content of measure 4.1 will be in line with research and development priorities till 2015 and will support the 12 research and development priorities of Slovak research and development (section 4.3.1.1). In justified cases, it will be possible to prepare a call for projects submission or to support projects with a different focus, considering the current needs or demand by the economy or society.

From strategic point of view, the content of this measure supports the following system priorities of the Long-Term Vision of National Science and Technology Policy till 2015 (as described in chapter 4.1 of OP R&D):

- a) achieve synergies between the support of research and development from various sources (national budget, businesses, structural funds, funding under FP 7 for research, technical development and demonstration activities);
- b) ensure efficient support of human resources in research and development and of technical infrastructure of research and development;
- c) ensure adequate direct and indirect support to science and technology;
- d) concentrate support from the public sources on research intended for further use; this will also improve the interconnection between fundamental and applied research, following improved cooperation between the public and private R&D sectors and with economic and social partners.
- e) increase economic and social benefits of international cooperation in science and technology for Slovakia;
- f) contribute with science and technology to the growth of competitiveness of domestic production and service sectors;

#### **5.4.2 Measure 4.2 *Transfer of knowledge and technology from research and development into practice in the Bratislava region***

##### **Specific objective 4.2:**

*Increase the level of cooperation of R&D institutions with the society and economy through the transfer of knowledge and technology, thereby facilitating economic growth of the regions and of the whole Slovakia.*

**Framework activity 4.2.1:** Raising innovation culture in the academic sector in the Bratislava region by incubators

##### Examples of activities:

- creation and implementation of programmes for the mobilisation and creation of potential innovation at public research and development institutions and higher schools
- creation and organisation of business plan competitions, operation of incubators, etc. at public research and development institutions and higher schools

**Framework activity 4.2.2:** Support to applied research and development in the Bratislava region

##### Examples of activities:

- implementation of applied research and development projects in the public and non-governmental sector
- implementation of industrial research projects
- support to applied research and development projects in the business sector (SMEs and large enterprises), including the support to researchers and their activities with the aim of developing new activities of businesses;
- support to the cooperation between businesses (SMEs and large enterprises) and the academic sector, particularly through access of businesses to research facilities of the academic sphere as part of their cooperation.
- establishment of and support to science and technology parks and technology centres with direct involvement of tertiary educational institutions with a view to transfer new knowledge in the commercial sector (SMEs and large enterprises) in the form of premises providing rooms, services and contact to the sources of new knowledge;
- establishment of and support to competence centres orientated on a specific sector, with the involvement of universities and with emphasis on education, research, development and transfer of technology;
- support to the preparation of planning documentation for science and technology parks, technology and competence centres, including feasibility studies

**Framework activity 4.2.3:** Improving the quality of internal management of transfer of knowledge and technology from the academic sector in the Bratislava region into practice, including activities aimed at eliminating the barriers between research and development on the one hand and the society and economy on the other

##### Examples of activities:

- support of contact points between industry (SMEs and large enterprises) and research and development organisations
- support to the preparation of plans for the establishment of institutions serving universities and academic institutions in the area of technology and knowledge transfer (including valorisation and commercialization institutions and bodies);
- establishment and operation of institutions serving universities and academic institutions in the area of technology and knowledge transfer (including valorisation and

commercialization institutions and bodies), with the necessary expertise, training experience and understanding of researchers' needs, laws, business principles and development of technology

- support to activities for the removal of barriers between research and development on the one hand and the society and economy (SMEs and large enterprises) on the other.

**Framework activity 4.2.4:** Increased use of intellectual property rights by research and development organisations from the academic sector of the Bratislava region

Examples of activities:

- support to the preparation of projects for the establishment of institutions and bodies providing comprehensive support in intellectual property rights management to research institutions financed from public sources and to joint research institutions involving organisations financed from public sources;
- establishment and operation of institutions and bodies providing comprehensive support in intellectual property rights management to research institutions financed from public sources and to joint research institutions involving organisations financed from public sources;
- provision of financial coverage of first stages of legal protection of intellectual property

**Framework activity 4.2.5:** Building of and support to regional centres in the Bratislava region

Examples of activities:

- building of applied research and development competence centres and broker centres for knowledge and technology transfer, support of partnerships between higher schools, R&D organisations and businesses within regional centres by making the initial investments into their infrastructure and by paying the initial cost;
- developing innovation policy tools (innovation centres, technological platforms, information centres) within regional centres by making the initial investments into their infrastructure and by paying the initial cost.

**Eligible expenses:**

- management, administrative and technical staff;
- purchase of equipment and instrumentation;
- purchase of machines, devices and laboratory instrumentation;
- purchase of intangible assets (software, licences...);
- purchase of technical and scientific literature (magazines, books...)
- building of computer networks;
- purchase of ICT technologies;
- expenses related to the reconstruction, modification and renewal of buildings in connection with the purchase of new technologies and equipment;
- renting of office equipment, machines, devices and instrumentation (including intangible assets) during the term of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).
- renting of rooms/premises for the implementation of the project, up to the price customary in the location (observing the principle of economy, usefulness and efficiency).
- operating expenses related to project implementation (consumables and auxiliary materials, water, gas, electricity, heating, insurance, postal and telecommunication expenses, communication networks...);

- travel expenses of technical, management and administrative staff – domestic and foreign business trips (travel expenses are accepted as eligible only if an employer-employee relationship exists);
- building, reconstruction and renewal of buildings directly related to projects of regional centres, science and technology parks, technology centres and competence centres

#### **Description of implementation of measure 4.2:**

Measure 4.2 is designed to support the culture of innovation in research organisations and research orientated on practical application of research results in the national economy. Its objectives therefore include creation and transfer of newly acquired knowledge and technology into practice.

Investments described in the above examples of eligible expenses will be primarily focused on integrated research projects (applied research projects in particular). This measure will also support projects promoting the culture of innovation in the academic sector through virtual incubators, science and technology parks, technology centres, competence and regional centres and use of intellectual property rights.

Investments into the purchase of laboratory equipment, instrumentation and ICT technologies are part of integrated research projects supported under this measure and of other research projects of the organisation.

An indicative amount of 10% from the allocation to this priority axis is planned for the necessary structural modifications related to the installation of new research equipment and instrumentation and for constructing and reconstructing buildings directly related to the project of regional centres, science and technology parks and technology and competence centres.

This measure will, as a priority, support projects which will generate profits from research activities or research equipment procured not only for the beneficiary, but also for the potential customers of research outputs (e.g. small and medium-sized enterprises). Successful implementation of applied research projects with the transfer of their outputs into practice thus creates the preconditions for increasing economic prosperity and competitiveness of regions and the whole country. One of the factors influencing the focus of activities of research organisations is demand by the business sector.

Support to integrated applied research projects and other tools for the creation and transfer of knowledge into practice (e.g. establishment of research centres, science and technology parks, interconnection and cooperation between the academic sector and businesses) directly contributes to economic development of the regions and the whole country.

Activities will be supported with non-repayable (grants) and repayable (innovative financial instruments) forms of assistance. Eligible activities will also include activities supported under measure 1.1, provided they are part of a broader project meeting the criteria for this measure. It is also considered to create a state aid scheme for this measure. This will allow small, medium-sized and large enterprises increasing the level of their research and development as one of their activities. Projects will be implemented mainly in innovation growth poles and their areas of influence. This approach will, in line with the principle of territorial concentration (section 4.3.2 of OP R&D and text of NSRF), help to redress disparities between regions.

Support to regional centres in the Bratislava region from OP R&D may also be used to implement innovation policy tools. In light of the above fact, the Ministry of Economy and the Slovak Innovation and Energy Agency will also be able to take part in the preparation

of calls for project submission, evaluation and approval process, monitoring and financial management of projects.

The focus and the content of measure 4.2 will be in line with research and development priorities till 2015 and will support the 12 research and development priorities of Slovak research and development (section 4.3.1.1). In justified cases, it will be possible to prepare a call for projects submission or to support projects with a different focus, considering the current needs or demand by the economy or society.

From strategic point of view, the content of this measure supports the following system priorities of the Long-Term Vision of National Science and Technology Policy till 2015 (as described in chapter 4.1 of OP R&D):

- a) achieve synergies between the support of research and development from various sources (national budget, businesses, structural funds, funding under FP 7 for research, technical development and demonstration activities);
- b) ensure efficient support of human resources in research and development and of technical infrastructure of research and development;
- c) ensure adequate direct and indirect support to science and technology;
- d) concentrate support from the public sources on research intended for further use; this will also improve the interconnection between fundamental and applied research, following improved cooperation between the public and private R&D sectors and with economic and social partners.
- e) contribute with science and technology to the growth of competitiveness of domestic production and service sectors;

#### **5.4.3 Justification of priority axis 4 Support to research and development in the Bratislava region**

The Bratislava region concentrates, in quantitative terms, about 50% of the research and development potential of Slovakia. About 50% of all technical equipment is located in the Bratislava region and about 50% of all scientific workers work in the capital of Slovakia. At the same time, however, the Bratislava region faces the same structural problems in the area of research and development as the rest of Slovakia, i.e. obsolete equipment, underdeveloped research and development infrastructure, weak links between research institutions and the society/economy, etc.). This phenomenon was negatively reflected in the low success rate of Slovak research and development workers in getting funding from the 6<sup>th</sup> Framework Programme (EUR 2.67 per capita). On top of that, funding granted under this programme was rarely granted to research projects as such, but rather to the so-called supporting activities (projects, the objective of which is to organise seminars, workshops, studies, etc.). For this reason, the Slovak Government intends to improve significantly the potential of research and development in Slovakia. According to the Lisbon Strategy, research and development should become one of the most important pillars of development of Slovakia. Considering the above-mentioned facts, the Slovak Republic asked for an exception to re-allocate the resources from objective 2 Convergence so that it would be possible to support projects of Bratislava-based research and development institutions.

The analytical part of this document clearly identifies the specific status of the Bratislava region compared to the other regions of Slovakia, particularly as concerns quantitative indicators of R&D capacities (e.g. number of researchers, number of over-the-limit value equipment). This concentration of R&D capacities in the Bratislava region (number of R&D organisations), however, does not mean that the region has different problems and needs than the other regions. The contrary is true; situation is similar in the entire territory of Slovakia, as research and development in the Bratislava region are integral parts of the



national system. In addition to that, the effects and benefits of research activity in the Bratislava region have an impact on the entire territory of Slovakia.

For this reason, the focus of activities under OP R&D in the Bratislava region is the same as in the remaining territory of Slovakia. The Long-Term Vision of National Science and Technology Policy till 2015 also applies to the entire territory of Slovakia; i.e. its system and topical priorities (described in sections 4.1 and 4.3.1.1) also apply to the Bratislava region.

This priority axis is aimed at addressing the problems of the Bratislava region, which are very similar to those of the other regions of Slovakia. They are related in particular to low quality of research, lacking links to the private sector and low number and quality of innovation in the business sector. The measures and framework activities are therefore very similar to those of priority axis 2. The same is true for their justification, which is also similar to that of priority axis 2.

Priority axis Support to research and development in the Bratislava region (and its complementarity to and synergies with other priority axes) contributes to a more efficient use of the Structural Funds in the programming period of 2007-2013.

Priority axis Support to research and development in the Bratislava region and priority axis Modern education for the knowledge society for the Bratislava region (OP Education) produce important synergies in supporting human resources for research and development. OP Education will support the development of human resources (education of students and employees of higher schools carrying out research activities and scientific workers – employees of research and development organisations, mobility measures, etc.). These activities will be funded from the ESF. OP R&D will support human resources with activities supporting the return of Slovak scientific workers from abroad or their stay in Slovakia and by providing financing to research projects, which will give researchers the opportunity of professional realization.

The priority axis is complementary to priority axis Innovation and informatisation of OP Bratislava region: OP Bratislava region will support innovation activity by private businesses; OP R&D will support the culture of innovation on higher schools. This can support the transfer of knowledge produced by research and development into practice. The precondition for such transfer is the existence of links (cooperation) between businesses and the academic sphere.

Measures under priority axis 4 Support to research and development in the Bratislava region will receive complementary co-financing from state aid schemes. State aid schemes will concentrate on small and medium-sized enterprises, with a smaller portion of funding provided to large enterprises.

If support from the structural funds is provided to large enterprises, MA shall require guarantees from such large enterprises that they will not use the provided assistance to support investments for relocating production from another EU member state.

## **5.5 Priority axis 5 Infrastructure of higher schools**

### **5.5.1 Objective and focus of the priority axis**

The objective of priority axis Infrastructure of higher schools is increasing the quality of education on higher schools (universities) through investments into physical infrastructure used for the education process.

This objective will be attained through a single measure:

- Building of infrastructure of higher schools and modernisation of their interior equipment with a view to improve the conditions of the education process

Objective of the measure:

- increasing the quality of higher education through investments into physical infrastructure

Priority axis Infrastructure of higher schools applies to the whole territory covered by the Convergence objective, i.e. the whole territory of Slovakia, except for the Bratislava region. Eligible NUTS 3 regions are the regions of Trnava, Trenčín, Nitra, Žilina, Banská Bystrica, Prešov and Košice.

Priority axis Infrastructure of higher schools is financed from the European Regional Development Fund.

The quality and the level of the education process at universities are also related to the condition of the buildings and facilities, in which the education process takes place. Quality and availability of education suffers under a long-term lack of investments into the technical and interior equipment of school buildings. The result is unsatisfactory technical condition of a large number of buildings, moral and physical obsolescence of technical equipment, high operating expenses and lack of modern technology used in the education process. This priority axis addresses the bad technical condition of physical infrastructure of higher schools, bad technical condition of buildings and their interior equipment and is aimed at increasing the standard of equipment used in the education process.

With the aim of improving the education process, this priority axis will support the building of infrastructure of higher schools and modernization of their interior equipment.

New technologies at schools will also modernise the education content and prepare students for their professional life in the knowledge economy. As improving the quality of the education process requires a complex approach, this priority axis is linked to the priority axes of Operational Programme Education. The priority axis also helps to attain the education objectives defined by national documents and the Lisbon strategy.

This priority axis will create the room for synergies with Operational Programme Education financed from the European Social Fund. Synergies between OP Research and Development and OP Education will facilitate a complex reform of the education system in Slovakia and improvement of its quality. One of the deciding criteria for grants for the improvement of school infrastructure will be the quality of education provided by higher schools.

### **5.5.2 Measure 5.1 Building of infrastructure of higher schools and modernisation of their interior equipment with a view to improve the conditions of the education process**

Higher education suffers under a lack of investments causing the bad technical condition of and existence of barriers in a large number of buildings used by higher schools, the unsatisfactory condition of their interior equipment (which is frequently physically and morally outdated) and insufficient use of modern technologies in the education process. For the above reasons, this measure concentrates on the reconstruction and possibly extension of university buildings and modernisation of their interior equipment. Such interior equipment should be used exclusively for activities related to the education process on higher schools, with research and development infrastructure of higher schools supported under priority axis 1 of this OP.

Supported under this measure will be investment activities involving the reconstruction and extension of university buildings and/or modernisation of their interior equipment with a view to improve the conditions for the education process at universities. In this context, priority shall be given to the modernisation of interior equipment of higher schools. Activities will be supported by non-repayable forms of assistance (grants).

This measure aims at achieving the required qualitative and quantitative standards of university equipment and accessibility standards, taking into account the current needs of modern education.

#### **Examples of eligible activities:**

- a) Modernisation of interior equipment of universities, in which the education process takes place, with a view to improve the conditions for new forms of learning (supported shall be in particular new technologies in building classrooms for language, chemistry, biology and physics lessons, workshops, ICT rooms, provision of computers to academic libraries, building and maintenance of ICT networks).
- b) Investment activities focused on the reconstruction of higher schools (for example additional heat insulation, replacement of windows, roof replacement or repair, replacement of central heating system, repairs on building walls, static reinforcement of buildings, renewal of plaster on buildings, reconstruction of sanitary rooms and WC, reconstruction of heating, water supply, sewage and electrical systems);
- c) constructing new buildings of existing higher schools;
- d) extension of university buildings (e.g. annexes or superstructures, academic libraries, additional services provided within the campus, improvement of campus surroundings);
- e) modernisation and reconstruction of accommodation facilities, gymnasiums, canteens and sporting grounds of universities.

#### **Examples of eligible expenses under measure 5.1:**

- construction, reconstruction and modernisation of buildings directly related to the project (e.g. installation of heat insulation, replacement of windows, roof replacement or repair, replacement of central heating system, repairs on building walls, static reinforcement of buildings, renewal of plaster on buildings, reconstruction of building exterior, modification of building interior, provision of barrier-free access, increasing fire safety of buildings, reconstruction of sanitary rooms and WC, reconstruction of heating, water supply, sewage and electrical systems, construction of new buildings of higher schools);

- expenses related to the extension of existing university buildings (e.g. annexes or superstructures, academic libraries, additional services provided within the campus, improvement of campus surroundings);
- expenses related to the modernisation and reconstruction of accommodation facilities, gymnasiums, canteens and sporting grounds of existing universities;
- expenses related to the modernisation of interior equipment of higher schools, in which the education process takes place, with a view to improve the conditions for new forms of learning (supported shall be in particular new technologies in building classrooms for language, chemistry, biology and physics lessons, ICT rooms, provision of computers to academic libraries);
- procurement of land plot up to 10% of project's total eligible expenses.

### **5.5.3 Justification of priority axis 5 Infrastructure of higher schools**

Support to the improvement of higher schools' infrastructure is absolutely necessary, considering the facts mentioned in part 3 of the operational programme. Activities aimed at reconstruction of buildings and improvement of economy of their operation will be of particular importance. Compared to the support of higher schools infrastructure used for research and development (measure 1.1), measure 5.1 has a more general focus on the modernisation of equipment used also for other activities of higher schools, but primarily for the education process. This will support complex development of higher schools based on modernised education infrastructure (priority axis 5) and R&D infrastructure of higher schools (priority axis 1).

Measure 5.1 will directly finance the reconstruction and extension of buildings and modernisation of interior equipment of higher schools related to the education process on higher schools. Measure 1.1 will concentrate on the renewal of technical infrastructure for R&D on higher schools. In this case, the necessary structural modifications will depend on the need for instrumentation (e.g. technical devices, laboratory instrumentation, devices, local supporting infrastructure (ICT) etc.). Investments will also be used to modernise interior equipment (or to build technical infrastructure) for the needs of R&D on higher schools.

Successful implementation of the activities under measure 5.1 should help to address the issue of bad infrastructure of higher schools, which is caused by long-lasting lack of investments into this area.

Addressing the problem of unsatisfactory technical condition of buildings, moral and physical obsolescence of technical equipment, high operating cost and lack of modern technology used in the education process requires a set of measures and sequence of steps leading to complex renewal and modernisation of buildings and their technical equipment and to a reduction of energy consumption for heating.

Proposal of individual steps aimed at the renewal of building:

1. Replacement of windows or sealing of windows (considering temperature and moisture conditions in buildings, it is possible to replace windows also without additional heat insulation of the peripheral walls, after a case-by-case evaluation of the hygiene conditions and the potential risk of mould built-up. Taking into account the high share of windows on thermal losses (depending on their quality and surface area), it is possible to assume a 15 to 25% reduction of energy consumption with assumed cost of SKK 6,000 per sq.m of window.
2. Additional heat insulation of roofs also with effects on the reduction of operating cost (elimination of the consequences of leaks); the efficiency of this measure

depends on the share of the roof on the surface area of all structures causing heat losses. Efficiency increases with the decreasing number of storeys. A reduction of energy consumption by 5% as a maximum can be assumed, with cost of SKK 1,500 per sq. m. of roof. As additional heat insulation on peripheral walls is applied by using a scaffolding, it is possible to provide additional heat insulation to roof prior to the peripheral walls.

3. Additional heat insulation of the peripheral walls carried out as part of building reconstruction with the possibility to reduce heat energy consumption by 10-15% with cost of SKK 1,500 per sq.m. of peripheral walls.
4. Other adjustments are related to entrance areas and stairways and to maintaining the required temperature of roads/pathways. It is possible to assume a reduction of energy consumption by about 5%.

All above measures are an important part of building modernisation effort aimed at meeting the requirements on safe operation, functionality and reduction of operating cost. The proposed measures should be carried out in a complex manner particularly on buildings that have been in use for more than 30 years.

Priority axis Infrastructure of higher schools (and its complementarity to and synergies with other priority axes) contributes to a more efficient use of the Structural Funds in the programming period of 2007-2013.

Priority axis Infrastructure of higher is synergic to priority axis Reform of the system of education and vocational training of OP Education, as a clear relationship exists between the quality of education and the conditions, in which the education process takes place. Improvement of the quality of the educational process in a comprehensive way requires investments into the improvement of the technical condition of buildings used in the education process, which are planned under priority axis Infrastructure of higher schools of OP R&D.

Synergies with priority axis Development of civic infrastructure facilities of the Regional operational programme include improvement of physical infrastructure of all types of schools (modernisation of interior equipment and reconstruction of buildings); OP R&D concentrates on higher schools, ROP on kindergartens, elementary and secondary schools.

Priority axis Infrastructure of higher schools and the priority axes of OP Informatisation of society are complementary to each other (they complement each other without overlapping) and synergies exist between them within NSRF horizontal priority Information society. OP R&D will finance provision of computers to academic libraries at higher schools. This will raise the level of services provided to students and may help in the processing and protection of the data sources. The priority axis will also finance building and maintenance of ICT networks on higher schools.

## **5.6 Priority axis 6 Technical assistance for the Convergence objective**

### **Specific objective 6:**

*Ensure implementation of OP R&D in line with the requirements placed on the management, implementation, control, audit, monitoring and evaluation of operational programme and on administrative structures responsible for the implementation of the operational programme, provision of support to projects preparation, publicity measures and exchange of experience.*

### **5.6.1 Objective and focus of the priority axis**

Technical assistance is designed to support efficient management of the operational programme under the Convergence objective, its promotion and evaluation of OP R&D and of selected projects. It will also concentrate on activities related to the management, monitoring, control, analysis and provision of information, including publicity measures, evaluation and exchange of experience. Technical Assistance will also finance the supporting IT system needed by the Education Ministry as the managing authority for OP R&D to avoid duplicities in financing IT systems under OP Technical Assistance. IT Monitoring System (ITMS), which will be used in a uniform fashion to manage the operational programmes, and its cost will be fully covered by OP Technical Assistance.

The above-mentioned objective will be attained through the following activities:

- provision of resources for salaries of staff involved in the programming, management, implementation, audit and control of OP R&D;
- technical arrangements for programming, management, implementation, audit and control (technical equipment, assessments, studies, analyses, advisory, software support, audit, control, etc.)
- supporting IT systems, as needed by the managing authority for OP R&D
- information activities, publicity measures
- preparation for next programming period
- ensuring the activities of the monitoring committee and sub-committees

The purpose of this priority axis is to support the implementation priority axes 1, 2 and 5. Efficient implementation of the operational programme also depends on the ability of implementation bodies and structures to discharge their duties in line with EC regulations.

### **5.6.2 Justification of priority axis 6 Technical assistance for the Convergence objective**

Priority axis 6 will help to ensure efficient management of OP R&D, with certain amount of money allocated to the programme's promotion and evaluation and implementation of selected projects. These measures will, among other things, promote research and development in Slovakia and raise the interest of the public in this topic. On top of that, this priority axis will provide financial coverage for the management, monitoring, control, analysis and provision of information.

## **5.7 Priority axis 7 Technical assistance for the Regional competitiveness and employment objective**

### **Specific objective 7:**

*Ensure implementation of OP R&D in line with the requirements placed on the management, implementation, control, audit, monitoring and evaluation of operational programme and on administrative structures responsible for the implementation of the operational programme, provision of support to projects preparation, publicity measures and exchange of experience.*

### **5.7.1 Objective and focus of priority axis**

Technical assistance for the Regional competitiveness and employment objective is designed to support efficient management of the operational programme under the Regional competitiveness and employment objective, its promotion and evaluation of OP R&D and of selected projects. It will also concentrate on activities related to the management, monitoring, control, analysis and provision of information, including publicity measures,

evaluation and exchange of experience. Technical Assistance will also finance the supporting IT systems needed by the Education Ministry as the managing authority for OP R&D to avoid duplicities in financing IT systems under OP Technical Assistance. IT Monitoring System (ITMS), which will be used in a uniform fashion to manage the operational programmes, and its cost will be fully covered by OP Technical Assistance.

The above-mentioned objective will be attained through the following activities:

- provision of resources for salaries of staff involved in the programming, management, implementation, audit and control of OP R&D;
- technical arrangements for programming, management, implementation, audit and control (technical equipment, assessments, studies, analyses, advisory, software support, audit, control, etc.)
- supporting IT systems, as needed by the managing authority for OP R&D
- information activities, publicity measures
- preparation for next programming period
- ensuring the activities of the monitoring committee and sub-committees

The purpose of this priority axis is to support the implementation priority axes 3 and 4. Efficient implementation of the operational programme also depends on the ability of implementation bodies and structures to discharge their duties in line with EC regulations.

#### **5.7.2 Justification of priority axis 7 Technical assistance for the Regional competitiveness and employment objective**

Priority axis 7 will help to ensure efficient management of OP R&D, with certain amount of money allocated to the programme's promotion and evaluation and implementation of selected projects. These measures will, among other things, promote research and development in Slovakia and raise the interest of the public in this topic. On top of that, this priority axis will provide financial coverage for the management, monitoring, control, analysis and provision of information.



## 6. Horizontal priorities

The strategy of the National Strategic Reference Framework defines the following four areas of horizontal activities, which are reflected in Operational Programme Research and Development:

- marginalised Roma communities
- equality of opportunities
- sustainable development
- information society

The impact of the individual horizontal priorities will be visible at the level of projects, which will be evaluated by applying evaluation procedures taking into account the evaluation criteria for this specific area.

### 6.1. Marginalised Roma communities

From among all marginalised groups of the population, NSRF pays particular attention to the specific issues of marginalized Roma communities. The purpose of this horizontal priority is to strengthen cooperation and increase efficiency of coordination of activities and financial resources aimed at improving the living conditions of the members of marginalised Roma communities. Support to marginalized Roma communities is concentrated on four priority areas: education, employment, health care and housing, and three inter-related topics: poverty, discrimination and gender equality. With horizontal priority 'marginalised Roma communities', NSRF intends to create the preconditions for efficient use of assistance from the structural funds for addressing the problems of MRC. Political responsibility for horizontal priority marginalised Roma communities is borne by the Deputy Prime Minister for Knowledge Society, European Affairs, Human Rights and Minorities. The coordinator of horizontal priority MRC is the Office of the Plenipotentiary of the Slovak Government for Roma Communities (OPSG RC), which will establish a department for the coordination of HP MRC <sup>7</sup> in order to carry out activities related to administrative arrangements and methodological guidance for horizontal priority MRC.

The ambition is to use the structural funds for extending, complementing and better coordinating the already-existing national level programmes. Based on several years of experience with the implementation of Government policy for the integration of economically and socially excluded Roma communities and by using the proven inclusion tools, the period from 2007 to 2013 can be used to produce synergic and sustainability effects. The pillars for these activities include: government policy based on compensation measures, departmental education concepts (preparation of children in pre-school age, use of teacher's assistants, support to Roma language, integrated education), regional development and housing policies (building of rental housing and infrastructure), support to health (medical assistants), community development and employment (community social advisors, community centres, social enterprises) and other. As a strong point, there exists a well-developed institutional network comprising state institutions (regional offices of OPSG RC, departments of higher territorial units, regional offices of the Slovak National Centre for Human Rights, etc.) and the non-governmental and civil sector. This network represents qualified human potential. In order to find a comprehensive solution and achieve better coordination, particularly at regional level, the Office of the Plenipotentiary of the Slovak Government for Roma Communities ordered the preparation of Regional Concepts

<sup>7</sup> In line with the document entitled "Analysis of Administrative Capacities for the Programming Period of 2007 -2013" approved by Government Resolution No 396 of 2 May 2007



for the Development of Roma Communities in areas with high concentration of marginalised groups (the regions of Košice, Prešov and Banská Bystrica). These concepts were prepared with the involvement of broad partnerships and they were also discussed and approved at the level of higher territorial units.

The proposed tools for achieving the desired impacts and coordination include:

- comprehensive approach to the problems of MRC, which is applied in the following OPs: Regional OP, OP Employment and Social Inclusion, OP Education, OP Environment, OP Competitiveness and Economic Growth and OP Health);
- individual (demand-driven) projects, which can be implemented under all OPs;

**Individual projects** having an impact on HP MRC will be implemented as follows:

- the applicant will, in a separate section of the grant application, clearly indicate that the project is focused on MRC;
- the actual impact of projects on HP MRC, as indicated by the applicant, will be assessed by OPSG RC in the process of evaluation of projects focusing on MRC;
- projects identified by OPSG RC as having significant impacts on MRC will receive extra points (except for those operational programmes, which cover HP MRC by a specific measure or group of activities);
- OPSG RC monitors projects focusing on MRC on a sample defined by MA or IB/MA.

**Information and publicity measures**, as an important component for creating the atmosphere of cooperation and for communicating successful solutions improving the situation of marginalised Roma communities, will be covered by OPSG RC with the following activities:

- it will, in regular intervals and in cooperation with MA and IB/MA, inform the Central Coordinating Authority and the Deputy Prime Minister for Knowledge Society, European Affairs, Human Rights and Minorities on the progress of implementation of HP MRC;
- it shall arrange for the implementation of the communication plan for HP MRC with the aim of raising the awareness among the members of MRC and the broad public of the possibilities for obtaining assistance and of the results of implementation of HP MRC.

**With the aim of involving beneficiaries and other stakeholders**, creating a broader platform for communication on HP MRC and better monitoring of impacts of the implemented projects on marginalised Roma Communities, the CSF working group for the development of Roma communities (official name Working Committee for the Development of Roma Communities) will continue its work in close cooperation with the department for the coordination of HP MRC of the Office of the Plenipotentiary of the Slovak Republic for Roma Communities. The activities of this working group proved to be a good example of SF implementation in the 2004-2006 programming period.

The proposed priority axes do not contain activities specifically designed for the Roma community. The framework activities are designed to encourage new opportunities for jobs in the education, research and development sectors, but do not specifically address the issue of social inclusion of marginalised Roma communities. The programme is neutral to this group and offers equal career opportunities to everybody. In case, the horizontal priorities are addressed indirectly at the stage of jobs creation, the principle of antidiscrimination and support to employment of the Roma community will be preserved.

Considering the general focus of the OP, it is possible to support, for example, sociological research specifically orientated on marginalised Roma communities.

### Part concerning infrastructure of higher schools

With regard to the specific focus of priority axis 3, this horizontal priority is not specifically reflected in the proposed measures, which would, in a special way, support marginalised Roma communities. Romas will, equally as other target groups of students, benefit from modernised education infrastructure, depending on the needs of the individual schools and rules prescribed by programme documentation.

## **6.2 Equality of Opportunities**

Support of the fundamental rights, non-discrimination and equal opportunities is among the fundamental principles applied in the EU. Equality of opportunities is one of the pillars of the European Employment Strategy and the European Framework Strategy of Non-Discrimination and Equal Opportunities for All. In line with these documents, horizontal priority Equality of Opportunities shall support combating discrimination based on sex, race, ethnical origin, religion and beliefs, disability, age or sexual orientation.

Particular emphasis is placed on gender equality (equality of opportunities between men and women). Application of the principle of gender equality is one of the fundamental objectives of the European Community and one of the main objectives of structural funds. According to Article 2 of the Amsterdam Treaty, the task of the European Community is to achieve equal status of men and women in society and Article 3 sets forth the obligation to eliminate inequality and to advance gender equality in all activities using gender mainstreaming method. According to this approach, the conceptual, strategic, decision-making and evaluation processes in all stages of preparation and implementation have to consider gender equality. This means in the context of the structural funds, that equality of opportunities for all and support of balanced representation of men and women need to be considered in programming, monitoring and evaluation activities.

Horizontal priority Equality of Opportunities will be applied and monitored in all operational programmes. Horizontal priority Equality of Opportunities will affect only those projects, which have a positive or negative impact on equality of opportunities. With respect to the other projects (which do not have any impact on equality of opportunities), this principle will not be applied.

The horizontal priority will also be applied in the form of accessibility of physical environment, transport and public services to people with limited mobility and orientation.

Several disadvantaging factors often occur together, complicating access to and staying on the labour market, access to education and other opportunities. For this reason, the principle of equal opportunities will not only be respected in all activities supported from the funds; it will also be actively promoted by specific priorities of the NSRF "support to the growth of employment and social inclusion" and "modern education for the knowledge society". Equality of opportunities on the labour market is covered by specific priority "support to the growth of employment and social inclusion". One of the objectives of this priority is to create equal opportunities in the access to the labour market and integration of disadvantaged groups on the labour market, including the support of mechanisms for eliminating gender inequality on the labour market. Under specific priority "modern education for the knowledge society", equality of opportunities is supported through concrete activities, which create the conditions for equal access to formal and informal education for all and at any time in life. Particular attention is paid to the issues of disadvantaged groups of the population.

The coordinator of implementation of NSRF horizontal priority "Equality of Opportunities" is the Minister of Labour, Social Affairs and Family of the Slovak Republic.

Horizontal priority Equality of Opportunities will be applied in all operational programs covered by NSRF.

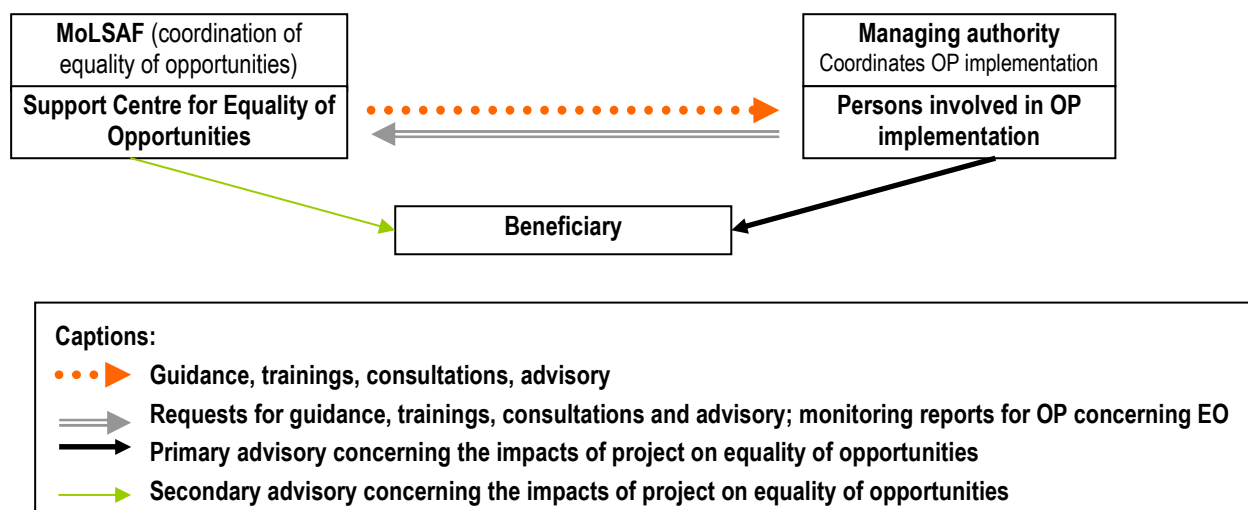
The assessment of the impacts of a project on horizontal priority Equality of Opportunities shall be mandatory for all applicants (applying for assistance from the SF and the CF) and shall be included in the project application. The applicant shall be obliged to assess whether or not the project will have an impact on equality of opportunities. If a project has an impact on equality of opportunities, it shall first be decided whether the impact is positive or negative and the relationship to equality of opportunities will be included into evaluation criteria. If a project does not have any impact on equality of opportunities, the relationship to equality of opportunities shall not be included into evaluation criteria.

The evaluation criteria for assessing the impacts of a project on equality of opportunities shall be prepared by the Labour Ministry. The Labour Ministry will also provide guidance to all managing authorities and arrange for the training of MA personnel. Project indicators of any such project will also include indicators monitoring the impact on equality of opportunities.

The Ministry of Labour shall set up a support centre, which will provide assistance to applicants in assessing the impacts of their projects on equality of opportunities. The managing authorities of the individual operational programmes shall set up focal points (contact persons), whose task will be to cooperate with the support centre of the Labour Ministry and provide advisory to beneficiaries concerning the relationship of their projects to horizontal priority equality of opportunities and concerning evaluation of projects in the process of projects selection and during the implementation/monitoring of projects.

These activities will be coordinated by the Ministry of Labour, Social Affairs and Family of the Slovak Republic. The Labour Ministry shall, in cooperation with the Central Coordinating Authority, carry out adequate publicity measures with a view to increase the positive impact of activities supported under OP Technical assistance and OP Employment and social inclusion on equality of opportunities.

**Figure 3:** Coordination of implementation of horizontal priority "Equality of opportunities"



The principle of equality of opportunities is present in all activities under the priority axes of Operational Programme Research and Development. The proposed priority axes are designed so as to combat discrimination and support gender equality (with a view to improve the status of women). Public institutions receiving funding from the ERDF, will support gender equality in all areas of the society. This horizontal priority will be considered within the evaluation procedures. Men and women shall have equal

opportunities in education, employment, cultural and professional growth. It is expected that the programme will create new jobs for inactive or unemployed women and support their integration into the research area. Discrimination of women is a phenomenon still prevailing also in developed countries of the EU. It is therefore necessary to address this situation by maintaining an equal status of both genders in the professional sphere. Projects will have to include activities combating discrimination not only based on gender, but also based on racial and ethnical origin, disability, age, religion or sexual orientation. Emphasis will be placed on young people who, after leaving school, become long-term unemployed by giving them a chance to participate in research and development projects.

The priority axis concentrated on higher schools infrastructure offers equality of opportunities through activities, which create the conditions for equal access to modernised physical infrastructure of education to all university students. At the same time, equality of opportunities is facilitated by the broad range of beneficiaries under the OP from both the private and public sector.

Where inequality exists, it can be eliminated by consistent application of equality of opportunities principles in the implementation of projects under OP R&D, thereby gradually improving the bad situation. Adherence to these principles may even further stimulate the growth of the number of women in research and development, which was recorded in the last three years.

### **6.3 Sustainable development**

Sustainable development means that the needs of the current generation should be satisfied without jeopardizing the ability of the future generations to satisfy their needs. It is one of EU fundamental objectives guiding all EU policies and activities. It is focused on constant improvement of the quality of life and welfare of the current and future generations living on Earth. To that view, it supports a dynamic economy with full employment, high level of education, health protection, territorial and social integrity and environment protection. Change of behaviour and attitudes of citizens and politicians towards respecting the principles and objectives of sustainable development is key and long-term task of the whole society.

Sustainable development, being one of the key principles of NSRF, is included in the strategic objective of the National Strategic Reference Framework of the Slovak Republic for 2007-2013, which defines the principle of sustainable development as one of the preconditions for increasing the competitiveness and performance of the regions and of the Slovak economy in 2007-2013. The long-term vision of the NSRF must therefore be attained, i.e. the process of convergence of the Slovak economy to the EU-15 average must respect sustainable development.

The objective of horizontal priority Sustainable Development is to ensure that the effect of all interventions financed under the NSRF support sustainable development and all its components (i.e. environmental, economic and social components), respecting the objectives and indicators of the EU Strategy for Sustainable Development. As interventions relating to the three above-mentioned components are made under several operational programmes, monitoring and evaluation of the attainment of the objective of this horizontal priority will be done at NSRF level, by evaluating the strategic objective of the NSRF, which includes the principle of sustainable development

At the political level, it is the Deputy Prime Minister for Knowledge Society, European Affairs, Human Rights and Minorities, who plays a coordination role in the implementation of horizontal priority SD. He fulfils this role through the Government Council for

Sustainable Development (in a position of the chairman of the council). The coordinator of this horizontal priority at the working level is the Government Office.

The task of the Government Office is to ensure that the horizontal priority is efficiently managed and implemented with respect to all operational programmes and their priority axes, and to monitor and evaluate the attainment of the horizontal priority objectives also on NSRF level

For this purpose, the working group for horizontal priority SD was set up at the Government Office. Members of the group include representatives of all relevant managing authorities, the Central Coordinating Authority as well as the representatives of social and economic partners (representatives of regional and local self-governments, the academic sector, research institutions, business associations, trade unions and professional associations and the civic society).

The Government Council for Sustainable Development is an advisory and coordination body of the Slovak government for the application of the principles of sustainable development. It comments, among other things, on documents presented by the working group for horizontal priority sustainable development. When addressing certain problems of sustainable development, collaborators and advisors of the Council include experts from universities and scientific institutions, representatives of self-governing regions, business associations and trade unions and representatives of public administration.

The key tools for managing interventions in a way supporting horizontal priority Sustainable Development are the following integration tools defined by the conceptual, legal and institutional framework of sustainable development:

- strategic and programme documents, concepts relating to sustainable development;
- principles, priorities, objectives and indicators of sustainable development.

An area significantly contributing to sustainable development is that of **energy production and energy efficiency**, which will be supported not only under OP Competitiveness and economic growth, but also under the Regional Operational Programme and OP Environment (use of renewable energy sources), OP Health, OP Research and development, OP Bratislava region and Rural Development Programme financed from the EAFRD. In line with the competence law <sup>8</sup>, this ministry is responsible for energy policy and is responsible for the fulfilment of Slovakia's commitments resulting from EU regulations, directives and strategic documents and is obliged to inform the EC on the fulfilment of these commitments.

In line with the above, a close cooperation between the Ministry of Economy and the managing authorities of the above-mentioned operational programmes will be necessary. The Ministry of Economy shall, in cooperation with the managing authorities of the above-mentioned operational programmes ensure that the evaluation committee for the selection of projects involving the use of renewable sources or relating to the increase of energy efficiency includes qualified representatives. The tasks of such representatives will include, in addition to projects evaluation, approving indicators for the proposed project so that it is possible to monitor the contribution of the project to the increase of energy efficiency.

The Ministry of Economy will, through the intermediate body under the managing authority for OP Competitiveness and economic growth (Slovak Innovation and Energy Agency - SIEA) also ensure that the relevant energy-related data are collected from the

---

<sup>8</sup> Act No 575/2001 Coll. on the organisation of activities of the government and central public administration authorities

individual managing authorities to allow their central monitoring and evaluation by the Ministry of Economy for all relevant operational programmes.

Sustainable development is one of EU fundamental objectives guiding all EU policies and activities. Sustainable development is a targeted, long-term (continuous), comprehensive and synergic process influencing the living conditions and all aspects of life (cultural, social, economic, environmental and institutional aspects) at all levels (local, regional and national) aimed at achieving a functional model of a certain community (local and regional community, country, international community), which will satisfy the biological, material, spiritual and social needs and interests of its inhabitants, while eliminating or significantly reducing the impacts threatening, damaging or destroying the living environment and forms of life, preventing an unacceptable high burden on the country, using its resources in a rational way and protecting the cultural and natural heritage.

The Slovak Government considers sustainable development to be one of the fundamental pillars of the knowledge society. It will therefore support balanced development, considering also social and environmental aspects in addition to economic growth.

The key tools for managing interventions in a way supporting horizontal priority Sustainable Development are the following integration tools defined by the conceptual, legal and institutional framework of sustainable development:

- strategic and programme documents, concepts relating to sustainable development;
- principles, priorities, objectives and indicators of sustainable development.

Horizontal priority Sustainable development will be implemented with these integration tools in the following phases of the programme cycle:

- a) implementation
- b) monitoring and evaluation

#### a) Implementation

- In the implementation phase of operational programmes, horizontal priority sustainable development will be covered by defining a uniform clause to be included into the manuals for beneficiaries by all MAs and IB/MAs and requiring the applicant to clearly indicate in the project, whether or not the project is intended to support sustainable development and if so, in what manner
- In the implementation phase, horizontal priority sustainable development will further be addressed by adjusting the projects evaluation criteria to the objectives of horizontal priority Sustainable development; draft evaluation criteria for individual horizontal priorities will be submitted to the Government Office by the individual MAs and IB/MAs. The above integration tools will be used to define evaluation criteria.

#### b) Monitoring and evaluation

- In the monitoring and evaluation phase, horizontal priority SD will be covered by the monitoring of SD indicators at priority axis and operational programme level. The Government Office, in cooperation with the representatives of the individual managing authorities, will select a set/group of indicators out of the indicators defined for the operational programme or in the National System of Indicators, which will be monitored by the Monitoring Committee from the aspect of sustainable development.
- The renewed 2006 EU strategy for sustainable development is based on the EU Strategy for Sustainable Development, which, at national level, was translated into the Action Plan of Sustainable Development of the Slovak Republic for

2005-2010. This Action Plan contains long-term priorities (integrated objectives), for which 28 strategic objectives were defined. The Government Office, in cooperation with the MAs, shall decide, which of the 28 strategic objectives are relevant for the operational programme. The Government Office will then assess the contribution of the operational programmes to the attainment of Action Plan for Sustainable Development strategic objectives. The results of this evaluation will be included in annual reports on operational programmes implementation and in the annual report on NSRF. Evaluation reports on SD will be submitted for approval to the members of the working group for SD and the Government Council for SD and will be used as the basis for progress evaluation of the Action Plan of Sustainable Development of the Slovak Republic for 2005-2010.

- The Government Council shall prepare a monitoring report on horizontal priority SD, which will also include regional dimension of the activities and this report will be included in to the annual report on NSRF.
- Based on these reports and in cooperation with the relevant partners, the Government Office plans to issue an analysis or a study that will provide an overview of the fulfilment of the principles of sustainable development from national perspective and also broken down according to regions.
- All outputs of the Government Office will, based on an agreement with individual MAs, serve as the inputs for the meetings of individual monitoring committees.
- Coordinators of HP SD will take part in monitoring committee meetings of the individual operational programmes.

With a view to ensure sustainable development throughout the implementation of priority axes of OP R&D, it is necessary to reform and strengthen state research and innovation systems. Strengthened public-private partnerships combined with improved regulatory environment will create optimum conditions for education, research and development, vocational training and successful professional career, which will help to attain this objective in the social, economic and environmental sphere (for example introduction of new modern environmental technologies into practice). This will strengthen the competitiveness of Slovak teams at national and international level and jobs creation. The environmental aspect will be covered by the introduction of modern environmental technologies with limited negative impacts onto the environment under areas of assistance reconstruction and building of technical infrastructure of research and development and transfer of knowledge and technologies produced by research and development into practice on territories covered by the Convergence and Regional competitiveness and employment objectives.

Adherence to the principles of this horizontal priority and implementation of environmental projects create the preconditions that OP R&D will contribute to the development of environmental technologies, particularly in the area of reduction of energy consumption in production, use of alternative energy sources and fuels, use of waste as energy source and recovery and disposal of hazardous waste. OP R&D thus directly contributes to the implementation of measure 1 of Environmental Technologies Action Plan (ETAP) in Slovakia, which was approved by the Slovak Government on 21 Dec 2005.

Based on the results and recommendations of SEA, special attention will be paid to projects directly dealing with topics related to the environment and public health (monitoring with the use of special indicators, whose list is provided in Annex 5). At the same time, monitoring reports prepared by beneficiaries during projects implementation will be used to keep track of the impacts of projects onto the environment and public health. Beneficiaries



will be obliged to state positive, neutral or negative impacts onto these environmental components in their monitoring reports. SEA recommendations also include the need for incorporating environmental criteria into the system of evaluation criteria, which were accepted and presented to the working group responsible for the preparation of evaluation criteria. This working group started to work in May 2007.

#### Part concerning infrastructure of higher schools

In this area, emphasis is placed on compliance with strategic documents of the Slovak Republic concerning sustainable growth.

Out of the 28 strategic objectives formulated in the *Slovak Republic's National Strategy for Sustainable Development*, the following is relevant for infrastructure of higher schools:

#### 8. Building a modern, high quality school system; support of science and research

Objective 8 is covered with the support of the development of education infrastructure (reconstructions of buildings and modernisation of interior equipment), which will help to build a modern and high-quality school system on universities.

The *Slovak Republic's National Strategy for Sustainable Development* is being implemented through the *Action Plan of Sustainable Development of the Slovak Republic in 2005-2010*, defining concrete objectives, which will help to increase the competitiveness of Slovakia, while observing the principles of sustainable development. The following priority areas are related to infrastructure of higher schools:

- **increase of quality and efficiency of higher education**
- **life long learning at national, regional and local level**
- **informatisation of the school system**

Improvement of the infrastructure of higher schools will also involve investments into the reduction of energy consumption of buildings (provision of additional heat insulation, modernisation of heating systems), which will eventually lead to lower ambient air pollution and reduction of consumption of energy sources.

### **6.4 Information society**

At present, the traditional approach to building the knowledge society (use of the 'knowledge triangle' – education, research and innovation) is being changed by adding the fourth dimension, informatisation. Introduction of information and communication technology (ICT) and improvement of efficiency of processes through ICT use helps to increase the effectiveness and efficiency of implementation of the individual components of the knowledge society.

The objective of this horizontal priority is to support higher efficiency, transparency and quality of implementation of NSRF priorities through the introduction and use of ICT.

Building of the information society will be supported by the NSRF in two ways, under OP Informatisation of society (OP IS), but also through informatisation projects under the other operational programmes. In this context, implementation of the horizontal priority information society requires an integrated approach to informatisation projects implemented under operational programmes other than OP IS. This integrated approach requires close cooperation of the managing authorities and intermediate bodies of these programmes with the managing authority and intermediate body for OP IS.

The strategy of OP IS concentrates on the creation of technological, application and process environment for the introduction of efficient electronic services provided by public administration and on the improvement of their accessibility through broadband



connections. OP Informatisation of society concentrates on eGovernment (including eHealth and eCulture) projects and projects related to broadband internet access. These projects will create a suitable environment for the development of infrastructure and e-services in specific areas covered by other managing authorities and intermediate bodies.

At horizontal level, development of information society will be supported through informatisation projects under operational programmes other than OP IS. In this sense, horizontal priority Information society concentrates on optimizing the specific processes of public administration services and on the integration of technological and application infrastructure owned by the MoE SR, MoEnv SR, MoLSAF SR, MoEdu SR, MTPT SR and MCRD SR. The horizontal priority will support activities in the area of procurement and operation of technological and application infrastructure and local and specialised networks and development of electronic services in specific areas. Interventions under this horizontal priority will support the introduction of eGovernment services, such as eContent, eLearning, eTransport, eInclusion, eBusiness, eTourism, eSkills etc., which are included in sectoral strategies of their own OPs<sup>9</sup>. Projects in these areas will be financed from own sources allocated under the relevant operational programmes.

Informatisation of society projects implemented as part of these operational programmes will be linked to activities supported under OP Informatisation of society. OP IS will create an integrated methodological, process, technological and application environment for the coordinated development of these projects.

At the political level, it is the Deputy Prime Minister for Knowledge Society, European Affairs, Human Rights and Minorities, who is responsible for the implementation of horizontal priority Information society. The coordinator of the horizontal priority at the working level is the Government Office. At the conceptual and implementation level, horizontal management and implementation of all projects related to informatisation of society shall be the responsibility of the Ministry of Finance as the responsible central public administration authority in line with Act No 275/2006 Coll. concerning public administration information systems and amending certain laws.

The task of the Government Office is to ensure that the horizontal priority is efficiently managed and implemented in relation to all operational programmes and their priority axes, and to monitor and evaluate the attainment of the horizontal priority objectives also on NSRF level. For this purpose, the working group for horizontal priority Information Society was set up at the Government Office. Members of the group include representatives of all relevant managing authorities, the Central Coordinating Authority and the Ministry of Finance, as well as the representatives of social and economic partners (representatives of regional and local self-governments, the academic sector, research institutions, business associations, trade unions, interest associations and the civic society). Another body that was set up is the Office of the Plenipotentiary of the Government for Informatisation of Society, which takes part in the meetings of the working group for information society in an advisory role, in line with its statute.

The key tools for managing interventions in a way that supports horizontal priority 'information society' are the following integration tools (documents) defined by the conceptual, legal and regulatory framework applicable to informatisation of society. In line with the competence law and the Act on public administration information systems, the responsibility for these documents rests with the Ministry of Finance as the responsible central administration authority.

- strategic documents and action plans concerning informatisation of society;

---

<sup>9</sup> Complementarity of interventions under OP IS with interventions under the other OPs is described in OP IS.

- the national concept of informatisation of public administration and the concepts for the development of public administration information systems, which were prepared in line with the national concept by public administration institutions;
- national projects implemented under OP IS;
- data, technology and security standards;
- methodological instructions, guidance documents, handbooks for applicants and calls for project submission.

These are tools defined by the valid legislative and strategic framework. In line with the Competence Law and the Act on Public Administration Information Systems, these tools are under the responsibility of the Ministry of Finance as the central public administration authority responsible for informatisation.

Introduction of information and communication technology (ICT) and increased efficiency of processes due to their use increases the efficiency and effectiveness of implementation of all components of the knowledge society. The knowledge society and the information society thus do not represent two different factors supporting sustainable economic growth and the growth of Slovakia's competitiveness. The objective of coordinating these activities is to ensure that they contribute to the attainment of the objectives of the national Lisbon strategy.

The main objectives of information society development in Slovakia are as follows, in line with strategic documents concerning informatisation of society:

- information literacy
- efficient introduction of e-government services;
- broad availability of Internet.

Implementation of this horizontal priority will reinforce the synergies between the relevant operational programmes and ensure that activities supported under individual projects support information society in all its aspects.

Horizontal priority Information society will be implemented with these integration tools in the following phases of the programme cycle:

- a) implementation
- b) monitoring and evaluation.

#### a) Implementation

- in the implementation phase of operational programmes, horizontal priority information society will be covered by an uniform clause (its definition to be consulted with the Finance Ministry) to be included into the manuals for beneficiaries by all MAs and IB/MAs and requiring the applicant to clearly indicate in the project, whether or not the project is intended to support information society and if so, in what manner;
- in the implementation phase, horizontal priority Information Society will further be addressed by adjusting the projects evaluation criteria to the objectives of horizontal priority Information Society; draft evaluation criteria for individual horizontal priorities will be submitted to the Government Office by the individual MAs and IB/MAs; the Government Office, in cooperation with the Finance Ministry, shall assess the draft projects evaluation criteria in relation to the above-mentioned integration tools.

## b) Monitoring and evaluation

- In the monitoring and evaluation phase, horizontal priority IS will be covered by monitoring IS indicators at priority axis and operational programme level. The Government Office and the Finance Ministry, in cooperation with the representatives of the individual managing authorities, will select a set/group of indicators out of the indicators defined for the operational programme or in the National System of Indicators. The selected indicators will then be used by the monitoring committee to monitor progress towards the attainment of information society objectives.
- The Government Council shall prepare a monitoring report on horizontal priority IS, which will also include regional dimension of the activities and this report will be included into the annual report on NSRF.
- Based on these reports and in cooperation with the relevant partners, the Government Office plans to issue an analysis or a study that will provide an overview of the fulfilment of the principles of information society from national perspective and also broken down according to regions.
- All outputs of the Government Office will, based on an agreement with individual MAs, serve as the inputs for the meetings of individual monitoring committees.

Coordinators of HP IS will take part in monitoring committee meetings of the individual operational programmes.

The objective of this horizontal priority is, in line with the National Strategic Reference Framework, to support higher efficiency, transparency and quality of implementation of NSRF priorities by introducing and using ICT equipment. This will also support the dynamic development of information society in all sectors, where ICT may increase efficiency of and benefits from the available resources. In the area of research and development, attention is paid to this priority in the general context (indirect forms of support of various framework activities). Specific are the framework activities under measures 1.1 *Reconstruction and building of technical infrastructure for research and development* and 2.1 *Reconstruction and building of technical infrastructure for research and development in the Bratislava region*, defining as one of the activities the use of funding from ERDF for the modernisation and building of support infrastructure in the area of information technology.

### Part concerning infrastructure of higher schools

The main objective of the Strategy of Competitiveness of Slovakia till 2010 is to "ensure that Slovakia reaches the standard of living of the most developed EU countries as soon as possible". The means for attaining this objective should be "fast" and "long-term" economic growth supported with the creation of favourable conditions for the growth of competitiveness of the economy. This can be achieved by creating the conditions for the development of the so-called knowledge economy and informatisation of society.

Support to information society is reflected in the measure relating to the infrastructure of higher schools with planned activity "Modernisation of interior equipment of higher schools, in which the education process takes place, with a view to improve the conditions for new forms of learning (supported shall be in particular new technologies in building classrooms for language, chemistry, biology and physics lessons, workshops, ICT rooms and provision of computers to academic libraries)".

## **7. Alignment of strategy with policies, documents and objectives**

### **7.1 Alignment with EU strategic documents and policies**

#### **7.1.1 Community Strategic Guidelines;**

The strategy of Operational Programme Research and Development reflects the topics contained in Community Strategic Guidelines under priority 2 Improving knowledge and innovation for growth. The proposed measures will support activities aimed at increasing and improving investments into research and technological development and will foster innovation by linking the scientific sector with the application of research and development results in practice. The final effect will be higher cohesion of the regions and attractiveness of research and development for young talented researchers. This will minimise the drain of human scientific capital abroad. Partnership building and increasing the number of networks of excellence will stimulate development of the region and increase its competitiveness. This will lead to a competition between research teams for the best forms of innovation easily understood and applied by the business sector.

**Priority axes are fully aligned with Community Strategic Guidelines** for economic, social and territorial cohesion, defining the basic framework for the national strategic reference frameworks of the member states with a view to support a harmonious, balanced and sustainable development of the Community. Priority axes are related to the topics contained in the second guideline: "Improving knowledge and innovation for growth".

			CSG		
			Make Europe and its regions a more attractive place for investments and work	Improving knowledge and innovation for growth	More and better jobs
OP R & D	Priority axis Infrastructure of research and development	Modernisation and building of technical infrastructure for research and development			
	Priority axis Support to research and development	Support of networks of excellence in research and development as the pillars of development of the region and support to supra-regional cooperation.			
		Transfer of knowledge and technology from research and development into practice			
	Priority axis Infrastructure of research and development in the Bratislava region	Modernisation and building of technical infrastructure for research and development in the Bratislava region			
	Priority axis Support to research and development in the Bratislava region	Support of networks of excellence in research and development as the pillars of development of the Bratislava region			
		Transfer of knowledge and technology from research and development into practice in the Bratislava region			
	Priority axis Infrastructure of higher schools	Building of infrastructure of higher schools and modernisation of their interior equipment with a view to improve the conditions of the education process			

### 7.1.2 Lisbon and Gothenburg Strategy

One of the main points for attaining the strategic objective of the Lisbon Strategy is the transformation of countries to a knowledge economy and society by supporting information society and research and development and by accelerating the process of structural reforms increasing competitiveness and innovation and helping to complete the single market. The priority axes of OP R&D directly implement the proposed idea to support the ambition of the EU to become the most dynamic and most competitive knowledge economy in the world.

The Gothenburg Strategy for Sustainable Development (similarly to the Lisbon Strategy) will be supported by priority axes aimed at creating a true European Research Area, which will be able to contribute to the objectives of continued competitiveness and growth. The alignment with these strategies is described in more detail in sub-chapter 7.2.3.

### 7.1.3 EC Legislation Relating to Cohesion Policy

OP R&D is fully in line with EC legislation concerning cohesion policy (Regulation of the European Parliament and of the Council on the European Regional Development Fund, which, in line with Article 4 Convergence of the same regulation, will support sustainable integrated regional and local development and employment through modernisation and diversification of regional and local structures and will help to create sustainable jobs as follows:

research and technological development, innovation and entrepreneurship, including strengthening of research and technological development capacities and their integration into the European Research Area, including infrastructure, support to research and development (particularly to small and medium enterprises) and transfer of technologies, improvement of the links between small and medium enterprises and universities, research and technological centres, development of business networks, development of public-private partnerships and clusters.

#### Part concerning infrastructure of higher schools

##### Guideline 1

Improve the attractiveness of member states, regions and towns by improving their accessibility, ensuring adequate quality and level of services and preserving their environmental potential.

##### Guideline 2

Support innovation, business activity and economic growth based on knowledge through research and innovation capacities, including new information and communication technology.

Alignment of operational programme measures with European Union policies:

1. " 5.1 Building of infrastructure of higher schools and modernisation of their interior equipment with a view to improve the conditions of the education process" is aligned with Guidelines 1 and 2;

OP is aligned with the Regulation of the European Parliament and of the Council on the European Regional Development Fund, as it contributes directly to the attainment of priorities defined in Article 3 and 4.

#### **7.1.4 EC legislation relating to competition rules**

OP R&D complies with the competition rules – Council Regulation (EC) No 1/2003 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty.

The Slovak Republic, as a member state of the EU, fully transposed the EC regulations concerning state aid into its national legislation (currently covered by Act No 231/2001 Coll. on state aid, as amended). OP R&D will be implemented in line with the state aid rules. EC legislation concerning state aid is directly applicable and binding in the Slovak Republic (Article 88 and 89 of the Treaty). The Managing Authority shall ensure that any state aid provided under OP R&D complies with state aid rules applicable at the time of granting the aid.

Protection and support of competition is supervised in Slovakia by the Antimonopoly Office of the Slovak Republic (as central public administration authority).

#### **7.1.5 EC legislation concerning public procurement**

The main principles and rules of public procurement are laid down in the Treaty Establishing the European Community and EC Directives on public procurement. The main principles include transparency, equal treatment, non-discrimination, mutual recognition and proportionality and efficiency in spending financial resources.

Public procurement and public contracts are covered by approximated legislation (Act No 25/2006 Coll. concerning public procurement and amending certain laws), which introduces a public procurement system respecting the commitments of the Slovak Republic as a member of the EU. This act covers public procurement of goods, construction works, service contracts, construction works concessions, competition of tenders and administration of public procurement.

Implementation of this Act increases transparency in public procurement and competition, thereby contributing to the development of competition and the business environment in general. The legislation also increased the efficiency of control of public expenditures and limits the possibilities for corruption. This act covers public procurement of goods, construction works, service contracts, construction works concessions, competition of tenders and administration of public procurement.

The central public administration authority responsible for public procurement is the Public Procurement Office.

Activities not subject to the Public Procurement Act (such as market surveys) are carried out in line with the Commercial Code (in the form of public tenders).

#### **7.1.6 EC legislation concerning protection and improvement of the environment**

OP R&D was subjected to strategic environmental assessment in line with Act No 24/2006 Coll. concerning environmental impact assessment and amending certain laws, which corresponds to Directive 2001/42/EC on the assessment of effects of certain plans and programmes on the environment and is applied for assessing strategic documents.

As to the proposed activities under OP R&D, no negative impacts onto the environment are expected.

Preparation and selection of projects in the process of operational programme implementation will take into account the principles of environment protection and improvement in line with Act No 543/2002 on nature and landscape protection.



### **7.1.7 EC legislation concerning equality of opportunities, gender equality and non-discrimination**

Activities in projects implementation will be carried out in line with EC legislation containing rules on equality of opportunities, gender equality and non-discrimination.

The fundamental human rights and freedoms are guaranteed in the Slovak Republic by the Constitution of the Slovak Republic. At the same time, the Slovak Republic has to observe international treaties and national legislation implementing the principle of equality of opportunities. In the process of transposition of European anti-discrimination policy into the Slovak legislation, Act No 365/2004 Coll. concerning equal treatment in certain areas and protection against discrimination and amending certain laws (the Anti-Discrimination Act) was adopted in 2004.

The purpose of the Anti-Discrimination Act is to provide natural persons and legal entities such protection against all form of discrimination, which will give the victims the possibility to ask for adequate and efficient judicial protection, including compensation of damages. The Act specifies in more detail the provisions contained in the Slovak Constitution and certain international treaties concerning equality and non-discrimination. As there was a number of laws containing anti-discrimination clauses in effect prior to the adoption of the Anti-Discrimination Act, amendments of the related legal regulations were approved together with the adoption of the Anti-Discrimination Act, with a view to avoid duplicities. These amendments strengthen, among other things, the principle of gender equality.

As an active tool for preventing all forms of intolerance, the Slovak Government started to issue a systematic tool for combating discrimination, the "Action Plan for Preventing all Forms of Discrimination, Racism, Xenophobia, Anti-Semitism and Other Forms of Intolerance". (The Action Plan for 2006-2008 is the fourth one since 2000). The purpose of the Action Plan is to create and maintain a systematic and permanent focus on human rights issues and prevention of discrimination in all sectors and develop cooperation between ministries, non-governmental organisations and other stakeholders.

### **7.1.8 Innovative financial tools**

The European Commission recognized, in its communication to the spring European Council entitled '*Working together for growth and jobs - A new start for the Lisbon strategy*'<sup>10</sup>, the lack of venture capital for start-up and young innovation businesses. The EC also stated in the communication that the future competitiveness of Europe depended on a single, open and competitive financial market, including risk capital and particularly that part of the risk capital markets, which is generally referred to as venture capital<sup>11</sup>. External financing is an absolute necessity for entrepreneurs who want to grow after they spent up their starting capital.

For the Slovak Republic, Commission Communication to the Council, the European Parliament and the European Economic and Social Committee and the Committee of the Regions titled "Implementing the Community Lisbon programme: financing SME Growth - Adding European Value" is of particular importance<sup>12</sup>. According to this Communication "The success of the partnership for growth and employment depends on Europe's small and

---

<sup>10</sup> Brussels, 2.2.2005 EC(2005) 24 final wording

<sup>11</sup> Venture capital markets (venture capital funds and growing securities markets) are covered by non-formal investors (Business Angels)

<sup>12</sup> Brussels, 29.6.2006 – EK(2006) 349 final wording



medium-sized enterprises (SMEs) achieving their potential, for they are crucial in fostering the entrepreneurship, competition and innovation that leads to sustainable growth and development."

In line with the above documents, part of the funds for OP R&D will be implemented through a joint initiative of the EC, EIB, EIF and EBRD called JEREMIE (Joint European Resources for Micro and Medium Enterprises). This initiative concentrates on improving access of small and medium-sized enterprises to financial resources, in particular in the areas of science and research and areas supporting the attainment of the Lisbon objectives.

### **7.1.9 Regions for economic change**

During the implementation of the OP, the managing authority shall actively monitor inclusion of innovation activities under the "Regions for economic change" initiative into the OP. It will do so by enabling the participation of a representative of the network in the monitoring committee.

## **7.2 Alignment with strategic documents and policies of the Slovak Republic**

### **7.2.1 National Strategic Reference Framework and Operational Programme Research and Development**

#### **7.2.1.1 Alignment with NSRF strategy and vision**

Operational programme Research and development is covered by strategic priority "knowledge economy" and fully reflects the basic vision and objectives of the National Strategic Reference Framework. The objectives of the measures to be implemented will support the overall convergence of the Slovak economy to the EU-15 average by means of sustainable development. Significant increase of competitiveness and performance of the regions and the Slovak Economy by 2013, while respecting the principles of sustainable development (the strategic objective of the NSRF) will be attained by the implementation of activities, such as support to high quality technical infrastructure and equipment, strengthening of partnerships on national and international level, transfer of knowledge from research into practice and building and modernisation of infrastructure of higher schools.

#### **7.2.1.2 Complementarity/synergies with other operational programmes**

##### ***Priority axis 1 Infrastructure of research and development***

##### **Operational Programme Education (OP Edu)**

Priority axis 1 Reform of the system of education and vocational training

Priority axis Infrastructure of research and development and priority axis 1 Reform of the system of education and vocational training of OP Education produce important synergies with support provided to 2 basic components of research and development infrastructure (technical and human infrastructure). OP Education will support the development of human resources (education of students and employees of higher schools carrying out research

activities and scientific workers – employees of research and development organisations, mobility measures, etc.). These activities will be funded from the ESF. OP R&D will support primarily technical infrastructure for research and development (instrumentation).

#### **Operational programme Informatisation of Society (OP IS)**

OP R&D and OP IS are complementary to each other (they complement each other without overlapping) and synergies exist between them within NSRF horizontal priority Information society. OP R&D will support ICT infrastructure of research and development organisations, including the support of broadband networks between research and development organisations with a view to ensure efficient communication between organisations and exchange of data for special research tasks.

### ***Priority axis 2 Support to research and development***

#### **Operational Programme Education (OP Edu)**

Priority axis 1 Reform of the system of education and vocational training

Priority axis Support to research and development and priority axis 1 Reform of the system of education and vocational training of OP Education produce important synergies with support provided to human resources (education of students and employees of higher schools carrying out research activities and scientific workers – employees of research and development organisations, mobility measures, etc.). These activities will be funded from the ESF. OP R&D will support human resources with activities supporting the return of Slovak scientific workers from abroad or their stay in Slovakia and by providing financing to research projects, which will give researchers the opportunity of professional realization.

#### **Operational programme Competitiveness and economic growth (OP C&EG)**

Priority axis 1 Innovation and growth of competitiveness

Priority axis Support to research and development and priority axis 1 Innovation and growth of competitiveness of OP C&EG create conditions for complementarities in building and activities of regional centres, which can contribute to realization of innovation policy tools.

### ***Priority axis 3 Infrastructure of research and development in the Bratislava region***

#### **Operational programme Education (OP Education)**

Priority axis 4 Modern education for the knowledge society in the Bratislava region

Priority axis Infrastructure of research and development in the Bratislava region and priority axis Modern education for the knowledge society for the Bratislava region (OP Education) produce important synergies with support provided to 2 basic components of research and development infrastructure (technical and human infrastructure). OP Education will support the development of human resources (education of students and employees of higher schools carrying out research activities and scientific workers – employees of research and development organisations, mobility measures, etc.). These activities will be funded from the ESF. OP R&D will support primarily technical infrastructure for research and development (instrumentation).

#### ***Priority axis 4 Support to research and development in the Bratislava region***

##### **Operational programme Education (OP Education)**

Priority axis 4 Modern education for the knowledge society in the Bratislava region

Priority axis Support to research and development in the Bratislava region and priority axis 4 Modern education for the knowledge society for the Bratislava region of OP Education produce important synergies with support provided to human resources (education of students and employees of higher schools carrying out research activities and scientific workers – employees of research and development organisations, mobility measures, etc.). These activities will be funded from the ESF. OP R&D will support human resources with activities supporting the return of Slovak scientific workers from abroad or their stay in Slovakia and by providing financing to research projects, which will give researchers the opportunity of professional realization.

##### **Operational programme Bratislava Region (OP BR)**

Priority axis 2 Innovation and informatisation

This priority axis is complementary to priority axis 2 Innovation and informatisation of OP Bratislava region: OP Bratislava region will support innovation activity by private businesses; OP R&D will support the culture of innovation on higher schools. This can support the transfer of knowledge produced by research and development into practice. The precondition for such transfer is the existence of links (cooperation) between businesses and the academic sphere.

#### ***Priority axis 5 Infrastructure of higher schools***

##### **Operational programme Education (OP Education)**

Priority axis 1 Reform of the system of education and vocational training

There is a clear relationship between the quality of education and the conditions, in which the education process takes place. Improvement of the quality of education requires investments into the improvement of the technical condition of buildings used for the education process. Links between the above measures support the growth of competitiveness of the individual educational institutions and of the regions, using synergic effects in tertiary education.

##### **Regional operational programme (ROP)**

Priority axis 1 Development of civil infrastructure facilities

Both operational programmes have similar contents; however, they are orientated on different types of schools: OP R&D concentrates on higher schools, ROP on kindergartens, elementary and secondary schools. The result of the two operational programmes will be improved physical infrastructure of all types of schools (reconstruction of school buildings and modernisation of their interior equipment).

##### **Operational programme Informatisation of society (OP IS)**

Priority axis Infrastructure of higher schools and the priority axes of OP Informatisation of society are complementary to each other (they complement each other without overlapping) and synergies exist between them within NSRF horizontal priority Information society. OP R&D will finance provision of computers to academic libraries at higher schools. This will

raise the level of services provided to students and may help in the processing and protection of the data sources.

### **Links between and coordination of activities financed from the ESF and the ERDF**

Considering the complementary relationships between specific priorities financed from the ERDF and the ESF, which are defined in chapter 4.4 of the NSRF, linking of activities and coordination between managing authorities will be ensured. System of management of the SF and the CF in 2007-2013 (Government Resolution No 833 of 8 October 2006) and the guidelines issued by CCB define standard procedures and activities, which are binding for all MAs and all processes of SF and CF management (e.g. uniform form of calls for projects submission, uniform time limits for the selection of operations, standardised form of grant application and contract with beneficiary, etc.). This creates the platform for efficient and effective coordination of OP implementation.

In order to produce synergies between activities financed from the ESF and the ERDF, relevant managing authorities shall cooperate more closely in the implementation of the OP (in line with chapter 4.4 of the NSRF). Harmonisation of projects submission will be ensured through harmonisation of the calls for project submission for the relevant areas of assistance in the time plan for announcing the calls (in line with guideline of the CCA No 6/2007) for the following year. Calls announced by individual MAs will contain information for applicants on the interconnection between activities; this information will also be published on the information portal of the CCA, together with the time plan for calls announcement and with the calls for projects submission of all OPs. There will also be reciprocal involvement of experts in the process of projects/operations evaluation and selection. As to the monitoring of such projects, there will also be reciprocal membership to monitoring committees. The process of coordination of these activities will be described in detail in the guidelines of the CCA.

In addition to special monitoring in annual reports on OP implementation, the CCA shall, in the annual report on NSRF implementation, pay adequate attention to monitoring and evaluation of complementarity of activities financed from the ESF and the ERDF.

### **7.2.1.3 Interfaces – borderlines between priority axes covering similar topics**

#### ***Priority axis 1 Infrastructure of research and development***

##### **Operation programme Competitiveness and economic growth (OP C&EG)**

Priority axis 1 Innovation and growth of competitiveness

OP C&EG will be focused on the procurement of modern machines, devices, production processes and technologies etc. by businesses with the aim of improving the quality of products and services offered by these businesses. OP R&D will be focused on the renewal and building of research and development infrastructure (modernisation of and investments into technical and laboratory equipment and instrumentation) of both commercial and non-commercial entities. This infrastructure will be used to improve the quality of their activities related to research and development.

### ***Priority axis 2 Support to research and development***

#### **Operation programme Competitiveness and economic growth (OP C&EG)**

Priority axis 1 Innovation and growth of competitiveness

OP C&EG concentrates on building innovation policy tools such as innovation centres, technological platforms, clusters, etc. i.e. it aims at improving the conditions for innovative businesses and supporting innovation activity by businesses. OP R&D will support research and development activities by both the public and private sector.

OP C&EG supports innovation in industry and services, use of the results of production-related research in plans, projects, for modifications or designs of new, modified or improved products, procedures or services intended for sale or lease and their systematic use for the production of materials, equipment, systems, methods and procedures. This process may also result into the production of a first non-commercial prototype and its verification (including the production of testing stands), feasibility studies, preparation of construction documentation, including procurement of calculation and construction software and hardware for data management. OP R&D will support research and development carried out by the private and public sector by raising innovation culture within the academic sector through virtual incubators, by supporting applied research projects, by improving the quality of internal management of technology and knowledge transfer into practice and by increased use of intellectual property rights by research and development organisations from the academic sector.

### ***Priority axis 4 Support to research and development in the Bratislava region***

#### **Operational Programme Bratislava Region (OP BR)**

Priority axis 2 Innovation and informatisation

OP BK is focused on the support of innovation of the private sector and OP R&D on the support of research and development by both the private and public sector.

### **7.2.2 Operational Programme Research and Development under the European Territorial Cooperation Objective**

Research and development is a horizontal priority and also a priority area for the “European Territorial Cooperation” objective. Operational programme Research and development aims, among other things, at strengthening international competitiveness of research and development in Slovakia and its potential for participation in international science and technology cooperation within the European Research Area. Operational programme Research and development is therefore fully complementary to and synergies exist with the European Territorial Cooperation objective.

Similar types of activities can be found in the cross-border cooperation programmes of the Slovak Republic with Hungary and Austria. Both programmes may support cooperation in building research and development infrastructure, partnership building and cooperation between research and development institutions.

### **7.2.3 National Reform Programme / Action Plans of the Strategy of Competitiveness of Slovakia till 2010**

The National Reform Programme lists research, development and innovation as one of its main priorities. One of the 4 action plans is specifically devoted to this area. The proposed activities under specific priority research and development directly contribute to the implementation of the National Reform Programme in the following manner:

**Measure 1.1 *Modernisation and building of technical infrastructure for research and development***

**Measure 3.1 *Modernisation and building of technical infrastructure for research and development in the Bratislava region***

National Reform Programme

B. MICROECONOMIC POLICY

2. Science, research and innovation

2.1 Education and support of good scientists

2.2 Research of international standard with adequate links to the business sector

**Action Plan for Science, Research and Innovation, tasks 7, 8, 9, 13:**

7 – Support of national centres of excellence

8 - Tool for the support of international cooperation in science and technology and easier access to EU funding for research and development

9 - Programme for raising the popularity of science within the society

13 – Support of technological incubators for innovative businesses

**Measure 2.1 *Support of networks of excellence in research and development as the pillars of development of the region and support to supra-regional cooperation.***

**Measure 4.1 *Support of networks of excellence in research and development as the pillars of development of the Bratislava region and support to supra-national cooperation***

National Reform Programme

B. MICROECONOMIC POLICY

2. Science, research and innovation

2.1 Education and support of good scientists

2.2 Research of international standard with adequate links to the business sector

**Action Plan for Science, Research and Innovation, tasks 7, 8, 9, 13:**

7 – Support of national centres of excellence

8 - Tool for the support of international cooperation in science and technology and easier access to EU funding for research and development

9 - Programme for raising the popularity of science within the society

13 – Support of technological incubators for innovative businesses

**Measure 2.2 *Transfer of knowledge and technology from research and development into practice***

**Measure 4.2 *Transfer of knowledge and technology from research and development into practice in the Bratislava region***

National Reform Programme

**B. MICROECONOMIC POLICY**

**2. Science, research and innovation**

**2.1 Education and support of good scientists**

**2.2 Research of international standard with adequate links to the business sector**

**Action Plan for Science, Research and Innovation, tasks 7, 8, 9, 13:**

7 – Support of national centres of excellence

8 - Tool for the support of international cooperation in science and technology and easier access to EU funding for research and development

9 - Programme for raising the popularity of science within the society

3 – Support of technological incubators for innovative businesses

**7.2.4 National Strategy for Sustainable Development / Action Plan of Sustainable Development**

The National Strategy for Sustainable Development defines eight long-term priorities of sustainable development of Slovakia. Operational Programme Research and development has been designed taking into account the new model of the knowledge economy. Science and research are the means for achieving sustainable development. Properly targeted support of scientific, research and professional organisations will improve the international status of institutions, allow producing more innovative patents and attract foreign investments with a view to link the domestic and foreign research base. These topics are covered by the measures of the priority axes proposed within the above operational programme.

**7.2.5 Spatial Development Perspective of the Slovak Republic**

The document does not directly cover research and development in Slovakia. The only related topic is chapter 6 Information society, information technology and spatial development of Slovakia. In this chapter it is proposed to provide fast internet and on-line connection to research workers and students. OP R&D covers this issue with activities aimed at building high-speed networks.

**7.2.6 Regional strategic documents**

Regional strategic documents are in the process of preparation in Slovakia. At present, all higher territorial units (except for Bratislava and Nitra) are starting to prepare their Regional Innovation Strategies. Operational Programme Research and Development, and its second measure in particular, will be very closely linked to regional development priorities. This will be ensured by communication between the Ministry of Education and the regions.



The same procedure applies also to Plans of Economic and Social Development of the individual regions.

### 7.3 Links to other financial tools

#### 7.3.1 Synergies and complementarity with other EC financial tools

**7<sup>th</sup> Framework Programme of the EU for research, technical development and demonstration activities.**

**Synergies:** One of the main objectives of FP7 - strengthening the quality of European research, building of European Research Area and increasing competitiveness of industry through the transfer of knowledge and technology into practice – is reflected in the objectives of support to research and development in Slovakia funded from the Structural Funds in 2007-2013. This should give Slovak research and development organisations the possibility to be more actively involved in research and development projects financed under the EU Framework Programme for research and development.

**Dividing line:** The dividing line was drawn by the different rules for the Framework Programme (principle of excellence and EU-wide competition) and the Structural Funds (regional principle, non-application of the principle of excellence and competition limited to the Slovak Republic).

The need for coordinating these two tools is also recognized by the decision-makers at European level. As a result, the initiative of the Scientific and Technical Research Committee (CREST) entitled “How to improve coordination of the use of structural funds and FP7” was adopted. To investigate the possibilities and barriers for combining contributions from two such different grant schemes, a working group was established at CREST. The task of this working group is to remove the information gap on how to combine contributions from the structural funds and FP7. As a result, practical guidelines were produced and delivered to national and regional bodies, in order to make better use of the overlaps between structural funds and FP7. Slovakia is ready to adopt these outputs and use them in the implementation of OP R&D.

#### 7.3.2 Innovative financial tools

In June 2006, a Memorandum of Understanding was signed between the European Investment Fund and the Slovak Republic, in which both parties declared their interest in cooperating within the JEREMIE initiative.

The Slovak Government stated in its programme declaration in August 2006 that it would, in the programming period 2007-2013, use innovative financial instruments, i.e. financial engineering instruments covered by JEREMIE (with a view to achieve multiplication effects in using EU funding and the national budget).

The Slovak Republic confirmed its intention to pay out a part of the money from EU budget through JEREMIE in the programming period 2007-2013 also in the National Strategic Reference Framework (NSRF) for 2007-2013, which covers innovative financial tools (JEREMIE) in Annex 8.

In this context, the Slovak Government adopted (by Resolution No 36 of 8 October 2006) the document entitled “Proposal of innovative financial tools for NSRF for 2007-2013” (stage II). The document outlines financial engineering tools, whose use might be considered in the programming period of 2007-2013 (This was a baseline document, which had been prepared before the EIF carried out the analysis of market gaps in financing small



and medium-sized enterprises in Slovakia, the so-called Gap Analysis). According to point B.2 of Government Resolution No 836 of 8 October 2006, the Ministry of Finance, in cooperation with all relevant ministries, prepared a draft procedure for the implementation of JEREMIE initiative in the Slovak Republic in the programming period of 2007-2013. In point B.3 of the same resolution, the relevant ministers were given the task to identify, together with the Minister of Finance, appropriate financing measures in the form of innovative financial tools and public-private partnerships (PPP), to determine the financial allocations for this purpose and identify appropriate financial tools for these measures and to incorporate these data into the operational programmes.

By virtue of the above-mentioned Resolution No 836 of 8 October 2006, the Slovak Government also decided to create a Technical Assistance Tool for Public-Private Partnerships, the purpose of which is assisting in the preparation of good quality PPP projects, which will be implemented in line with the Public-Private Partnerships Policy adopted by the Slovak Government by Resolution No 914 of 23 November 2005,

### **7.3.3 Synergies and complementarity with programmes financed from EAFRD and EFF**

**Synergies with EAFRD** - the Slovak Republic will, through the Rural Development Programme for 2007-2013 support specialisation of agriculture and forestry. Complementarity of this document to OP R&D may be found in PA 1 "Increasing the competitiveness of agriculture and forestry sectors", which defines education activities orientating on the introduction of new procedures and technologies produced by research into agricultural practice. In this way, it will be possible to spread out the knowledge produced by research and development among agricultural business through projects implemented under OP R&D.

**Synergies with EFF** – the Slovak Republic will use contributions from the EFF through the Fisheries Programme of the Slovak Republic for 2007-2013. Complementarity with OP R&D may be anticipated through PA 2 “Aquaculture and processing and putting onto market of fisheries and aquaculture products”, whose objective "Support of aquaculture in relation to its modernisation, innovation and restructuring, taking into account sustainable development" may be attained more efficiently with the help of successful research projects carried out under OP R&D. When providing support to aquaculture, it is possible to use, as a complementary tool, funding from OP R&D, for research projects, which would contribute to the creation of new tools and methods for the modernisation, innovation and restructuring of fisheries in the Slovak Republic. Looking at the content of the two programme documents, it is obvious that activities will not overlap. Complementarity of certain projects implemented is more likely.

## 8. Financial plan of Operational Programme Research and Development

### 8.1 Financial plan

The financial allocation for 2007-2013 represents the annual commitments from ERDF (Article 37 (1)(e)(i) of Council Regulation No 1083/2006). The prices are stated in Euros, at current prices. The total allocation for the Convergence objective is EUR 883 million and for Regional competitiveness and employment objective EUR 326.4 million, which was reallocated from the Convergence objective to the Regional competitiveness and employment objective.

It is assumed that state aid schemes will be used in the implementation of the operational programme. Cross-financing options will not be used in this OP. Support to the so-called large-scale projects according to Article 39 of the General Regulations is not planned.

**Table 9: Financial plan of OP – annual commitments, broken down into funds**

(EUR at current prices)

Convergence and Regional competitiveness and employment objectives total

	Structural Funds(ERDF) (1)	Cohesion Fund (2)	Total (3) = (1)+(2)
2007	172,009,458.00	0	172,009,458.00
2008	167,379,330.00	0	167,379,330.00
2009	161,076,075.00	0	161,076,075.00
2010	148,600,352.00	0	148,600,352.00
2011	160,010,720.00	0	160,010,720.00
2012	176,545,790.00	0	176,545,790.00
2013	223,793,648.00	0	223,793,648.00
<b>Total 2007 - 2013</b>	<b>1,209,415,373.00</b>	<b>0</b>	<b>1,209,415,373.00</b>

Convergence objective

	ERDF (1)	Cohesion Fund (2)	Total (3) = (1)+(2)
2007	125,584,935.00	0	125,584,935.00
2008	122,204,457.00	0	122,204,457.00
2009	117,602,420.00	0	117,602,420.00
2010	108,493,834.00	0	108,493,834.00
2011	116,824,599.00	0	116,824,599.00
2012	128,896,933.00	0	128,896,933.00
2013	163,392,822.00	0	163,392,822.00
<b>Total 2007 - 2013</b>	<b>883,000,000.00</b>	<b>0</b>	<b>883,000,000.00</b>

Regional competitiveness and employment objective - transfer

	ERDF (1)	Cohesion Fund (2)	Total (3) = (1)+(2)
2007	46,424,523.00	0	46,424,523.00
2008	45,174,873.00	0	45,174,873.00
2009	43,473,655.00	0	43,473,655.00
2010	40,106,518.00	0	40,106,518.00
2011	43,186,121.00	0	43,186,121.00
2012	47,648,857.00	0	47,648,857.00
2013	60,400,826.00	0	60,400,826.00
<b>Total 2007 - 2013</b>	<b>326,415,373.00</b>	<b>0</b>	<b>326,415,373.00</b>

## 8.2 Financial plan for the whole programming period broken down according to priority axes and sources of funding

Table 10: Financial plan for the whole programming period broken down according to priority axes and sources of funding

(EUR at current prices)

Convergence and Regional competitiveness and employment objectives total

	EU sources (a)	National sources (b)=(c)+(d)	Indicative breakdown of national sources		Total (e)=(a)+(b)	Level of cofinancing (f)=(a)/(e)	For information	
			National public sources (c)	Private sources (d)			EIB contri bution	Other sources
Priority axis 1 <i>Infrastructure of research and development</i> Fund: ERDF	264,318,054	46,644,362	46,644,362	0	310,962,416	85%	0	59,230,937
Priority axis 2 <i>Support to research and development</i> Fund: ERDF	396,477,080	69,966,544	69,966,544	0	466,443,624	85%	0	88,846,404
Priority axis 3 <i>Infrastructure of research and development in the Bratislava region</i> Fund: ERDF	126,386,410	22,303,484	22,303,484	0	148,689,894	85%	0	38,401,809
Priority axis 4 <i>Support to research and development in the Bratislava region</i> Fund: ERDF	189,579,614	33,455,227	33,455,227	0	223,034,841	85%	0	57,602,713
Priority axis 5 <i>Infrastructure of higher schools</i> Fund: ERDF	200,000,000	35,294,118	35,294,118	0	235,294,118	85%	0	0
Priority axis 6 <i>Technical assistance for the Convergence objective</i> Fund: ERDF	22,204,866	3,918,506	3,918,506	0	26,123,372	85%	0	0
Priority axis 7 <i>Technical assistance for the Regional competitiveness and employment objective</i> Fund: ERDF	10,449,349	1,844,003	1,844,003	0	12,293,352	85%	0	0
<b>Total</b>	<b>1,209,415,373</b>	<b>213,426,244</b>	<b>213,426,244</b>	<b>0</b>	<b>1,422,841,617</b>	<b>85%</b>	<b>0</b>	<b>244,081,863</b>

### Convergence objective

	EU sources (a)	National sources (b)=(c)+(d)	Indicative breakdown of national sources		Total (e)=(a)+(b)	Level of cofinancing (f)=(a)/(e)	For information	
			National public sources (c)	Private sources (d)			EIB contri bution	Other sources
Priority axis 1 <i>Infrastructure of research and development</i> Fund: ERDF	264,318,054	46,644,362	46,644,362	0	310,962,416	85%	0	59,230,937
Priority axis 2 <i>Support to research and development</i> Fund: ERDF	396,477,080	69,966,544	69,966,544	0	466,443,624	85%	0	88,846,404
Priority axis 5 <i>Infrastructure of higher schools</i> Fund: ERDF	200,000,000	35,294,118	35,294,118	0	235,294,118	85%	0	0
Priority axis 6 <i>Technical assistance for the Convergence objective</i> Fund: ERDF	22,204,866	3,918,506	3,918,506	0	26,123,372	85%	0	0
<b>Total</b>	<b>883,000,000,</b>	<b>155,823,530</b>	<b>155,823,530</b>	<b>0</b>	<b>1,038,823,530</b>	<b>85%</b>	<b>0</b>	<b>148,077,341</b>

### Regional competitiveness and employment objective - transfer

	EU sources (a)	National sources (b)=(c)+(d)	Indicative breakdown of national sources		Total (e)=(a)+(b)	Level of cofinancing (f)=(a)/(e)	For information	
			National public sources (c)	Private sources (d)			EIB contri bution	Other sources
Priority axis 3 <i>Infrastructure of research and development in the Bratislava region</i> Fund: ERDF	126,386,410	22,303,484	22,303,484	0	148,689,894	85 %	0	38,401,809
Priority axis 4 <i>Support to research and development in the Bratislava region</i> Fund: ERDF	189,579,614	33,455,227	33,455,227	0	223,034,841	85 %	0	57,602,713
Priority axis 7 <i>Technical assistance for the Regional competitiveness and employment objective</i> Fund: ERDF	10,449,349	1,844,003	1,844,003	0	12,293,352	85 %	0	0
<b>Total</b>	<b>326,415,373,</b>	<b>57,602,714,</b>	<b>57,602,714,</b>	<b>0</b>	<b>384,018,087,</b>	<b>85 %</b>	<b>0</b>	<b>96,004,522</b>

For the Regional competitiveness and employment objective, the same level of co-financing from the ERDF (85%) was chosen, as the EU allocation to this territory was significantly increased after the transfer to EUR 326.4 million. This made it possible to set the maximum possible level of ERDF co-financing for priority axis Research and development in the Bratislava region. The level of co-financing complies with Article 53(2) of the General Regulation (Regulation No 1083/2006).

The rules of the Strategy of Financing of the Structural Funds and the Cohesion Fund for Programming Period of 2007 – 2013 approved by the Slovak Government apply in a uniform fashion to the provision of assistance from the Structural Funds, the Cohesion Fund and national public sources to projects under all objectives. To achieve the highest possible and most efficient use of the allocated funds, it was necessary to define meaningful, transparent and simple rules. With the above document, the Slovak Government also decided that the contribution from the Funds is defined in relation to total eligible public expenditure, in line with Article 53(1b) of the General Regulation (Regulation No 1083/2006).

### 8.3 Breakdown of Contributions from the ERDF by category of programmed use of the Funds in 2007-2013

In line with Regulation No 1083/2006, OP R&D contains an indicative breakdown by category of the programmed use of ERDF into categories of first three dimensions of categorisation of use of the Funds in 2007-2013 (in line with Article 11 of the implementing regulation). More data are contained in the tables below:

**Table 11:** Indicative breakdown by priority theme dimension of the use of the Funds (EUR, at current prices)

#### Convergence objective and Regional competitiveness and employment objective total

Category Code	Indicative amount (EUR) for the category
01* R&TD activities in research centres	273,493,124.00
02* R&TD infrastructure ( <i>including physical plant, instrumentation and high-speed computer networks linking research centres</i> ) and centres of competence in a specific technology	449,310,134.00
03* Technology transfer and improvement of cooperation networks between small businesses (SMEs), between these and other businesses and universities, postsecondary education establishments of all kinds, regional authorities, research centres and scientific and technological poles ( <i>scientific and technological parks, technopoles, etc.</i> )	78,140,893.00
11* Information and communication technology (access, security, interoperability, risk prevention, research, innovation, e-content, etc.)	175,817,007.00
75 Education infrastructure	200,000,000.00
85 Preparation, implementation, monitoring and inspection	22,857,950.00
86 Evaluation and studies, information and communication	9,796,265.00
OP Total *	976,761,158.00
OP Total	<b>1,209,415,373.00</b>

\* categories contributing to the attainment of the Lisbon objectives

## Convergence objective

Category Code	Indicative amount (EUR) for the category
01* R&TD activities in research centres	185,022,637.00
02* R&TD infrastructure ( <i>including physical plant, instrumentation and high-speed computer networks linking research centres</i> ) and centres of competence in a specific technology	303,965,762.00
Technology transfer and improvement of cooperation networks between small businesses (SMEs), between these and other businesses and universities, postsecondary education establishments of all kinds, regional authorities, research centres and scientific and technological poles ( <i>scientific and technological parks, technopoles, etc.</i> )	52,863,611.00
11* Information and communication technology (access, security, interoperability, risk prevention, research, innovation, e-content, etc.)	118,943,124.00
75 Education infrastructure	200,000,000.00
85 Preparation, implementation, monitoring and inspection	15,543,406.00
86 Evaluation and studies, information and communication	6,661,460.00
OP Total *	660,795,134.00
OP Total	<b>883,000,000.00</b>

\* categories contributing to the attainment of the Lisbon objectives

## Regional competitiveness and employment objective - transfer

Category Code	Indicative amount (EUR) for the category
01* R&TD activities in research centres	88,470,487.00
02* R&TD infrastructure ( <i>including physical plant, instrumentation and high-speed computer networks linking research centres</i> ) and centres of competence in a specific technology	145,344,372.00
03* Technology transfer and improvement of cooperation networks between small businesses (SMEs), between these and other businesses and universities, postsecondary education establishments of all kinds, regional authorities, research centres and scientific and technological poles ( <i>scientific and technological parks, technopoles, etc.</i> )	25,277,282.00
11* Information and communication technology (access, security, interoperability, risk prevention, research, innovation, e-content, etc.)	56,873,883.00
85 Preparation, implementation, monitoring and inspection	7,314,544.00
86 Evaluation and studies, information and communication	3,134,805.00
OP Total *	315,966,024.00
OP Total	<b>326,415,373.00</b>

\* categories contributing to the attainment of the Lisbon objectives

**Table 12:** Indicative breakdown by form of finance dimension of the use of the Funds (EUR, at current prices)

Convergence objective and Regional competitiveness and employment objective total

Category Code	Indicative amount (EUR) for the category
01 Non-repayable aid	1,129,415,373.00
04 – Other forms of finance	80,000,000.00
<b>Total</b>	<b>1,209,415,373.00</b>

Convergence objective

Category Code	Indicative amount (EUR) for the category
01 Non-repayable aid	833,000,000.00
04 – Other forms of finance	50,000,000.00
<b>Total</b>	<b>883,000,000.00</b>

Regional competitiveness and employment objective - transfer

Category Code	Indicative amount (EUR) for the category
01 Non-repayable aid	296,415,373.00
04 – Other forms of finance	30,000,000.00
<b>Total</b>	<b>326,415,373.00</b>

**Table 13:** Indicative breakdown by territorial dimension of the use of the Funds (EUR, at current prices)

Convergence objective and Regional competitiveness and employment objective total

Category Code	Indicative amount (EUR) for the category
00 Not applicable	<b>1,209,415,373.00</b>
<b>Total</b>	<b>1,209,415,373.00</b>

Convergence objective

Category Code	Indicative amount (EUR) for the category
00 Not applicable	<b>883,000,000.00</b>
<b>Total</b>	<b>883,000,000.00</b>

## Regional competitiveness and employment objective - transfer

Category Code	Indicative amount (EUR) for the category
00 Not applicable	<b>326,415,373.00</b>
<b>Total</b>	<b>326,415,373.00</b>

**Table 14:** Indicative regional allocations of the Convergence objective at NUTS 2 level (EUR, at current prices, not including allocation for technical assistance)

NUTS 2 Region	Amount	%
<b>Western Slovakia</b>	<b>294,736,254</b>	<b>34.24</b>
<b>Central Slovakia</b>	<b>283,029,440</b>	<b>32.88</b>
<b>Eastern Slovakia</b>	<b>283,029,440</b>	<b>32.88</b>
<b>TOTAL</b>	<b>860,795,134</b>	<b>100.00</b>

## 9. Implementation system

Chapter 9 defines the implementation system for OP R&D in line with Regulation of the Council (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No. 1260/1999 (hereinafter referred to as the "General Regulation") and in line with the System of Management of the Structural Funds and the Cohesion Fund for the Programming Period 2007-2013.

### 9.1 Bodies involved in programme management and implementation

#### 9.1.1 Central coordinating body

Based on Government Resolution No. 832 of 8 October 2006, the Ministry of Construction and Regional Development of the Slovak Republic as the Central Coordinating Body (CCB) for operational programmes under the National Strategic Reference Framework of the Slovak Republic for 2007-2013 shall be responsible for the strategic level of the system of management of the NSRF. In this context, the CCB discharges the following tasks in managing the use of the Structural Funds and the Cohesion Fund:

- it shall be in charge, at the level of the NSRF, for the programming, monitoring, evaluation, publicity measures and provision of information and training of administrative capacities in these areas;
- it shall coordinate the management and implementation processes of the operational programmes in line with the system of management of the Funds;
- it shall provide methodological guidance to entities involved in the management and implementation of operational programmes;
- it shall be responsible for the development, operation and maintenance of ITMS;
- it shall act as the MA for OP Technical Assistance.



### 9.1.2 Managing Authority

Managing authority of an operational programme (MA) represents the operational level of the management system of the NSRF. Managing authority is a body designated by a member state in line with Article 59(1) of the General Regulation, which is responsible for managing and implementing the programme in accordance with EU and national regulations. The operational programme shall be managed by MA in line with methodological instructions of the CCB, the certifying authority and audit body in the relevant areas.

By Government Resolution No. 832 of 8 October 2006, the Unit for OP Research and Development at the European Affairs Section of the Ministry of Education of the Slovak Republic was designated the managing authority for OP R&D.

In accordance with Article 60 of the General Regulation, the managing authority shall be responsible for managing and implementing the operational programme and in particular for:

- preparing the operational programme and the programme manual;
- co-financing of the operational programme from the national budget;
- providing guidance to IB/MA and beneficiaries;
- monitoring and evaluating the operational programme;
- guiding the work of the national monitoring committee for NSRF and drawing up and submitting to the monitoring committee and the European Commission the annual and final reports on implementation;
- ensuring compliance with the information and publicity requirements laid down in Article 69 of the General Regulation;
- concluding agreements on delegation of responsibility with the intermediate body under the managing authority and checking performance of the delegated tasks;
- recording and storing of data required for the financial management, monitoring, verification, audits and evaluation in electronic form;
- archiving and ensuring availability of documents in accordance with the requirements of Article 90 of the General Regulation;
- ensuring that projects are selected and approved for funding in accordance with the projects evaluation and selection criteria approved by the monitoring committee;
- signing of (non-repayable) grant contracts with the beneficiaries;
- verifying the co-financing of individual projects by the beneficiary or from other national resources;
- verifying that the co-financed products and services are delivered and that the expenditure has actually been incurred;
- ensuring that beneficiaries and other bodies involved in the implementation of operations maintain a separate accounting system;
- verifications according to Article 58 of the General Regulation.

In accordance with Article 71 of the General Regulation, the internal structure and delegation of responsibilities of MA for OP R&D will be described in the description of management and control systems, which the Member State shall submit to the EC before the submission of the first interim application for payment or at the latest within 12 months of the approval of the OP.

In the process of implementation of OP R&D, it is expected that the MA will cooperate with the Ministry of Economy in supporting the regional centres (framework activities 2.2.5 and 4.2.5). These centres may also be used to implement innovation policy tools. In light of the above fact, the Ministry of Economy and the Slovak Innovation and Energy Agency will also be able to take part in the preparation of calls for project submission, the evaluation and approval process and monitoring and financial management of projects.

### **9.1.3 Intermediate body under the managing authority**

In accordance with Article 59(2) of the General Regulation, the Member State may designate one or more intermediate bodies under the managing authority (IB/MA) to carry out some or all of the tasks of the managing authority. In accordance with Article 12 of the Implementing Regulation and in accordance with the system of management of the Structural Funds and the Cohesion Fund, detailed arrangements shall be formally recorded in a delegation of authority (the "Delegation").

Even in case of delegation, the overall responsibility for the management of the OP rests with the managing authority.

Based on Government Resolution No. 832 of 8 October 2006, the functions of the intermediate body for all priority axes and measures of OP R&D shall be discharged by the EU Structural Funds Agency of the Ministry of Education (the "Agency").

#### **Tasks delegated to the EU Structural Funds Agency of the MoEdu as IB/MA:**

- receiving and selecting projects for funding in accordance with the projects evaluation and selection criteria approved by the monitoring committee;
- signing of (non-repayable) grant contracts with the beneficiaries;
- verifying the co-financing of individual projects by the beneficiary or from other national resources;
- verifying that the co-financed products and services are delivered and that the expenditure has actually been incurred;
- ensuring that beneficiaries and other bodies involved in the implementation of operations maintain a separate accounting system;
- ensuring that data are gathered and analysed at the level of projects and measures, using a system of indicators;
- it is responsible for entering projects data into ITMS in line with the instructions of the CCB and MA.

The Agency is a new entity established on 1 January 2007. In setting up the Agency, the Education Ministry used the experience gathered during the programming period of 2004-2006, during which it discharged the functions of IB/MA. Newly hired staff of the Agency mostly include employees who have had previous experience with the Structural Funds from the programming period of 2004-2006.

### **9.1.4 Involvement of regional and local self-government authorities**

Regional and local self-government authorities will have the opportunity to take part in the process of implementation of OP R&D as beneficiaries or partners.

They will be involved in the preparation of calls for projects submission. They will take part in the evaluation process and will be members of the monitoring committee for the knowledge economy.

### 9.1.5 Monitoring committees

#### Monitoring committee for the Knowledge Economy

In accordance with Article 63 of the General Regulation, the Member State shall set up a monitoring committee (MC) for each operational programme within three months from the day of its approval by the European Commission. A single monitoring committee may be set up for several operational programmes. The primary task of the monitoring committee is to supervise efficiency and quality of implementation of the programme.

Monitoring committee for the Knowledge Economy is a joint monitoring committee for three operational programmes (OP Research and development, OP Competitiveness and economic growth and OP Informatisation of society) implementing the second strategic priority of the NSRF.

The chairman of the monitoring committee for the Knowledge Economy is the Deputy Prime Minister for Knowledge Society, European Affairs, Human Rights and Minorities. Monitoring committee members are appointed by the Deputy Prime Minister for Knowledge Society, European Affairs, Human Rights and Minorities. In accordance with Article 11 of the General Regulation, the composition of the monitoring committee is based on the partnership principle: monitoring committee members are, in addition to the representatives of the relevant ministries also regional and local authorities, representatives of the third sector and other economic and social partners (including non-governmental organisations) affected by the content of the operational programme. All stakeholders shall be represented in a balanced way. Members of the monitoring committee include representatives of the CCB, certifying authority and audit body and, a representative of the Commission shall participate in the work of the monitoring committee in the role of an advisor and observer.

The monitoring committee shall meet twice a year, or at the request of the MA or a member of the monitoring committee more frequently, if it is necessary to discuss issues requiring the consent of the monitoring committee (for example a proposal for the modification of the operational programme). The tasks and work of the monitoring committee shall be governed by the rules of procedure, which shall be approved by the monitoring committee in its first meeting.

The main tasks of the monitoring committee in accordance with Article 65 of the General Regulation are:

- it shall approve the criteria for selecting the operations financed within six months of the approval of the OP and approve any revisions of those criteria, if necessary;
- it shall consider and approve proposals to change or amend the content of the operational programme;
- it shall periodically examine the results of implementation, particularly the achievement of targets of the operational programme and the evaluations referred to in Article 48(3) of the General Regulation;
- it shall consider and approve the annual and final reports on implementation prior to their submission to the Commission;
- it shall be informed of the annual control report, or of the part of the report referring to the operational programme concerned, and of any relevant comments, the Commission may make after examining the report;
- it may propose to the managing authority any revision or examination of the operational programme likely to make possible the attainment of the relevant

Fund's objectives or to improve the management of the operational programme, including financial management.

### **National Monitoring Committee for NSRF**

The National Monitoring Committee for NSRF (NMC) shall be chaired by the Minister of Construction and Regional Development of the Slovak Republic as the representative of the CCB for NSRF. The tasks of the secretariat shall be discharged by the CCB. NMC shall approve its statute and rules of procedure in its first meeting.

The National Monitoring Committee shall meet at least twice a year. Members of the National Monitoring Committee are representatives of central state administration, communities and self-governing regions and other social and economic partners. Observers are the Slovak Republic Permanent Representation to the EU and the Ministry of Agriculture of the Slovak Republic. The Commission shall have an advisory role.

The main activities of the National Monitoring Committee include in particular:

- monitoring NSRF implementation;
- approving changes to NSRF under its responsibility;
- preparing the summary annual (and final) report for NSRF;
- approving strategic reports prior to their submission to the Commission;
- formulating recommendations for the work of monitoring committees of the operational programmes with a view to ensure an efficient system of monitoring implementation of the Cohesion Policy in Slovakia;
- approving reallocations of funds between different operational programmes;
- it discharges the duties of monitoring committee for OP Technical Assistance.

### **9.1.6 Committee for the Knowledge Society**

In point B.31 of Government Resolution No 832 of 8 October 2006 concerning the document "Update of the National Strategic Reference Framework of the Slovak Republic for 2007-2013", the Deputy Prime Minister for the Knowledge Society, European Affairs, Human Rights and Minorities was given the task to set up a committee for the coordination and evaluation of activities related to the knowledge economy under the relevant operational programmes and priority axes and to incorporate, in cooperation with the Minister of Construction and Regional Development, the authorities and responsibilities of the committee into the final version of the National Strategic Reference Framework of the Slovak Republic for 2007-2013.

The Committee for the Knowledge Society (the "Committee") was established by Government Resolution No 1090 of 20 December 2006 as the coordinating, advisory and technical body of the Slovak Government for issues concerning the development of the knowledge society, including issues related to the knowledge society in the relevant operational programmes of the National Strategic Reference Framework for 2007-2013 for the "Convergence" and "Regional competitiveness and employment" objectives and the National Strategic Rural Development Plan.

**Tasks of the Committee:**

- it shall submit to the Slovak Government recommendations and positions concerning the knowledge society;
- it shall coordinate preparation of the part "knowledge society" for the national annual and final report on NSRF implementation; This part shall contain in particular information on the attainment of financial and other indicators and of indicators for certain categories of expenditures, in relation to the objectives of the Lisbon Strategy according to Annex IV to Council Regulation (EC) No. 1083/2006.
- it shall cooperate with the central coordinating body in designing a national system of indicators for the area of the knowledge society;
- if necessary for the coordination of activities aimed at attaining the knowledge society objectives, the Committee shall provide guidance to the managing authorities, ministries and other central state administration authorities;
- the Committee shall, once per year as at December 31, prepare an evaluation report of its activities and submit it to the Slovak Government;
- it shall cooperate in the programming and implementation of JEREMIE financial tools aimed at improving access to funding for small and medium-sized enterprises particularly in the area of science and research, supporting attainment of objectives of the Lisbon strategy and supporting transfer of technology and innovation under operational programmes financed from the Structural Funds and the Cohesion Fund.

**9.2 Monitoring**

In line with the System of Management of the Structural Funds and the Cohesion Fund, monitoring is an activity involving collection, sorting, collating and storing relevant information in a systematic way for the needs of evaluation and control of the monitored processes. The main objective of monitoring is regular examination of the attainment of objectives of the NSRF, OP and projects, by using indicators.

Monitoring outputs are used as inputs for decision-making by the managing authority aimed at improving implementation of the operational programme, preparation of annual reports and the final report on OP implementation and for decision-making by monitoring committees (for example concerning a revision of the OP).

The monitoring process is based on a structured model of management at the level of NSRF, OP and projects. Monitoring and evaluation are carried out by all bodies involved in the management of the Structural Funds and the Cohesion Fund, up to the extent of their defined tasks and responsibilities, and by beneficiaries receiving support from the Funds.

**Task of the CCB in the area of monitoring:**

- it shall be responsible, in cooperation with the individual managing authorities, for drawing up and updating a national system of indicators for the NSRF;
- it shall coordinate and provide methodological guidance on monitoring to the managing authorities;
- it shall perform monitoring at NSRF level.

**Tasks of MA for OP R&D in the area of monitoring:**

- it shall proceed in accordance with the monitoring methodology issued by CCB;
- it shall submit to the CCB proposals for changes and amendments of the national system of indicators, if necessary;

- it shall be responsible for collecting and analysing monitoring data at programme level and at the level of categories of assistance, by using a system of indicators;
- it shall be responsible for drawing up, and after approval by the monitoring committee of the operational programme concerned, for submitting the annual and final reports to the Commission.

#### **Tasks of IB/MA in the area of monitoring:**

- it shall proceed in accordance with the monitoring methodology issued by CCB and instructions issued by MA;
- it shall be responsible for collecting and analysing data at projects and measures level in the area of monitoring by using a system of indicators and in the area of monitoring at the level of categories of assistance;

**Monitoring (and subsequent evaluation) is carried out in two ways** - by using a system of indicators and based on the categories of assistance from the Structural Funds

#### **Monitoring by using a system of indicators**

The objectives of the NSRF and the individual operational programmes are being defined and subsequently quantified in the process of programming by using a system of physical and financial indicators (national system of indicators for NSRF). The indicators will be binding for all entities and will form part of the ITMS. Attaining the defining indicators represents the most important tool for monitoring and evaluating attainment of the objectives of operational programmes and NSRF.

Operational programme indicators are listed in Annex 5.

Monitoring starts at the lowest level - that of the projects. For monitoring purposes, project is the basic unit, which is analysed using the relevant gathered data. By signing the grant contract, the beneficiary agrees to provide the required data for the purposes of project monitoring and reporting. Physical and financial indicators on projects received from the beneficiaries through uniform monitoring sheets are entered into ITMS, aggregated at the level of areas of assistance, priority axes, operational programme and NSRF.

#### **Monitoring according to categories of assistance from the Structural Funds**

In line with Article 9 of the General Regulation and Annex II to the Implementing Regulation, fund expenditures are monitored in a breakdown into the following categories:

- priority theme;
- forms of finance;
- type of territory;
- economic activity dimension;
- location dimension.

Each OP contains, at programme level, the indicative planned breakdown of Funds assistance into the first three categories. For the priority theme dimension, an indicative share of the Funds assistance is allocated to activities supporting the competitiveness and jobs creation, i.e. on the so-called "Lisbon activities". This will allow, during programme implementation and after its completion, monitoring and evaluating the contribution of the operational programmes to the attainment of the objectives of the Lisbon Strategy and of the National Reform Programme.



In monitoring by categories of Funds assistance, the following procedure is applied: After the project is approved, data are entered into the ITMS and, after project completion, the actual value for the category is recorded. By using the ITMS, categorized data at the level of individual projects are aggregated into higher levels of the programme structure and are part of the annual reports.

### **9.3 Evaluation**

In accordance with the System of Management of the Structural Funds and the Cohesion Fund, evaluation is a process systematically examining the benefits of programmes implementation against the objectives of the OP and NSRF, analysing efficiency of implementation processes and the appropriateness of individual programmes and areas of assistance and preparing recommendations for increasing their efficiency.

In accordance with Article 47 of the General Regulation, evaluations may be of a strategic nature (examining the evolution of a programme or group of programmes in relation to Community and national priorities) or of an operational nature (in order to support the monitoring of an operational programme). Evaluation is carried out before the start of the programming period (ex ante evaluation), during its implementation (mid term evaluation) and after the end of the programming period (ex post evaluation).

Evaluations are carried out under the responsibility of the Member State (CCB, MA) or the Commission, respecting the principle of proportionality. Results are published in line with the applicable rules on access to documents.

#### **Tasks of the CCB in the area of evaluation:**

- it shall be responsible for the ex ante evaluation of the main strategic document for the programming period following after 2013;
- it shall arrange for mid-term evaluation of the individual themes at central level;
- it shall coordinate and provide methodological guidance on evaluation to managing authorities;

#### **Tasks of MA for OP R&D in the area of evaluation:**

- it shall proceed in accordance with the evaluation methodology issued by CCB;
- it shall ensure that ex ante and mid term evaluation of OP is carried out and results of the mid term evaluation submitted to the monitoring committee of OP R&D and the Commission;
- it shall ensure communication with EC and inputs for the subsequent evaluation of OP and strategic evaluation, if any, carried out by EC.

#### **Tasks of IB/MA in the area of evaluation:**

- it shall proceed in accordance with the evaluation methodology issued by CCB and instructions issued by MA;

### **9.4 IT monitoring system for SF and CF**

IT Monitoring System for the Structural Funds and the Cohesion Fund (ITMS) is a central information system used for recording, processing, exporting and monitoring data on programming, project and financial management, control and audit of the Structural Funds and the Cohesion Fund. It consists of two parallel sub-systems for the programming period 2004-2006 and 2007-2013. The sub-systems for each of the programming periods closely cooperate with each other, using a shared database and shared records of entities.

ITMS is used by all operational programmes in the same extent. The task of the joint monitoring system is to ensure uniform and compatible system of monitoring, management and financial management of programmes financed from the Structural Funds and the Cohesion Fund.

The system is divided into three main parts:

1. non-public part of the ITMS ensures programme, projects and financial management, control and audit linked to the ISUF accounting system and the State Treasury and the Budget Information System;
2. outputs part creates static and dynamic data exports;
3. public part covers communication with beneficiaries, information system of the Commission SFC20087 and monitoring systems of the neighbouring countries for cross-border cooperation programmes.

Users of the public part of ITMS may, at their request, be all entities, which may submit a grant application. Communication between applicants/beneficiaries and the public part of the ITMS runs on the SSL protocol. CCB shall prepare a manual for beneficiaries for using the public part of the ITMS. ITMS will offer applicants/beneficiaries the following possibilities:

- submitting and receiving grant applications in electronic forms;
- obtaining well-ordered information on the status of processes of their projects; including applications for payment / cost reimbursement;
- other options (updating beneficiary data, submission of payment applications in electronic forms, submission of monitoring sheets in electronic form).

ITMS and communication processes of beneficiaries at project level include the following:

- opening of account, signing a user agreement between the MA and the beneficiary, activating of account;
- entering of data into electronic forms and their transfer into the public part of ITMS, sending of verified paper form by the beneficiary to the administrator and to users of the non-public part of ITMS;
- checking compliance of information in the electronic and paper form by the user of the non-public part of ITMS;
- further processing of the application after checking and, if necessary, correcting any discrepancies between the electronic and paper form.

#### **Tasks of CCB in relation to ITMS**

- it shall be responsible for the development, operation and maintenance of the system, it shall ensure operation of all parts of ITMS;
- it shall chair a committee composed of the representatives of each managing authority, responsible for proposing further development of the system, for communicating MA requirements to CCB and for providing guidance to system users according to CCB instruction; the committee shall also be responsible for system initialisation data;
- it shall prepare guidance on the use of ITMS;
- it shall perform updates of initialisation data at NSRF level.

#### **Tasks of MA for OP R&D in relation to ITMS:**

- it shall perform updates of initialisation data of its programme;



- it shall be responsible for entering data on the programme, projects and lower structures into ITMS, in line with CCB usage instructions;
- it shall be responsible for assigning roles to users in accordance with internal manuals;
- it shall provide first level support to users of the public and non-public part of ITMS.

#### **Tasks of IB/MA in relation to ITMS:**

- it shall be responsible for entering data on projects into ITMS, in line with usage instructions issued by CCB and MA;
- it shall be responsible for assigning roles to users in accordance with internal manuals;
- it shall provide first level support to users of the public and non-public part of ITMS.

### **9.5 Electronic exchange of data with the Commission**

In line with section 7 of the Implementing Regulation, electronic exchange of data between a Member State and the Commission's database SFC 2007 is mandatory.

Two forms of electronic communication are possible:

- web interface SFC2007;
- integration of the monitoring systems of the Member States with SFC2007.

In Slovakia, the second option was chosen: integration of ITMS II into the SFC2007 system. ITMS II will ensure data collection and communication with SFC2007. Individual MA may use the SFC2007 web interface; the use of the ITMS II interface, however, will ensure data integrity in both systems and shorten the time required for data entry. If ITMS or its interface are not operable, it will be possible, after previous approval by CCB, to use the web interface for entering data into SFC2007. The user entering the data, however, shall be responsible for reconciling the data in both systems.

ITMS II and SFC2007 interfaces:

- import of the breakdown of the allocation from the Structural Funds and the Cohesion Fund for the Slovak Republic according to objectives, at constant prices of 2004 and at current prices;
- export of NSRF;
- export of OP and priority axes;
- export of large-scale projects;
- export of OP TA;
- import of EC decisions concerning OP;
- breakdown of EU Funds categorisation;
- export of expenditure forecast;
- payment orders to EC;
- partial winding-up declaration;
- export of the description of management and control systems;
- export of annual reports;
- export of final reports;
- export of the final payment;
- settlement by using the n+2 (n+3) rule;
- export of non-structured data: NSRF;
- import of non-structured data: EC decisions concerning NSRF, OP.

Communication between ITMS II and SFC2007 at system level shall use secured electronic signature to be issued for ITMS II.

Identification of users and clients systems in SFC2007 shall be the responsibility of the so-called Member State (MS) Liaison. The tasks of MS Liaison for ERDF, ESF and CF in Slovakia is discharged by the designated employee of CCB. All applications for access to the SFC2007 web interface and change of the access rights have to be sent to the CCB. After checking the formal aspect and content of the application, MS Liaison shall communicate with the Commission in creating and activating the user account. Access passwords are sent by the Commission in two parts, one is received directly by the user, the other by MS Liaison.

## **9.6 Information and publicity**

In accordance with Article 69 of the General Regulation, the Member State and the managing authority shall provide information on and publicise operations and co-financed programmes to citizens with the aim of highlighting the role of the Community and ensure that assistance from the Funds is transparent.

For the purposes of information and publicity, the managing authority shall prepare a communication plan (CP) for the operational programme concerned and submit it to the Commission within four months of the approval of the OP. The managing authority shall implement the communication plan in such a way that all information and publicity measures in accordance with Article 5 to 7 of the Implementing Regulation are carried out.

### **Tasks of the CCB relating to information and publicity:**

- it shall prepare and implement the central communication plan for the SF and the CF covering all horizontal activities common to all operational programmes;
- it shall coordinate and provide methodological guidance on information and publicity measures to managing authorities;
- it shall act as the contact point for the Commission and Community communication networks and provide information to managing authorities.

### **Tasks of MA for OP R&D relating to information and publicity:**

- it shall prepare the communication plan for the operational programme;
- it shall prepare the communication plan and carry out all other information and publicity measures in line with the methodology issued by CCB;
- it shall submit the communication plan to the Commission within 4 months of the approval of the OP;
- it shall include publicity and information activities into the annual and final reports on OP implementation;
- it shall inform the monitoring committee of the OP on the progress of implementation of the communication plan and on the activities planned and carried out;
- it shall ensure, by incorporating the relevant provisions into contracts, that beneficiaries comply with the provisions of Article 8 of the Implementing Regulation (obligation to inform the public on assistance from the Funds).

### **Tasks of IB/MA relating to information and publicity:**

- it shall ensure, by incorporating the relevant provisions into contracts, that beneficiaries comply with the provisions of Article 8 of the Implementing Regulation (obligation to inform the public on assistance from the Funds).

### **Involvement of other bodies in information and publicity measures:**

The following bodies shall be involved in information and publicity measures under OP R&D, in accordance with Article 5(3) of the Implementing Regulation:

- national, regional and local authorities and development agencies;
- economic and social partners.

## **9.7 Financial management, control and audit**

The system of financial management of the Structural Funds and the Cohesion Fund comprises a set of connected and interrelated sub-systems and activities ensuring efficient financial planning, budgeting, accounting, reporting, payments to beneficiaries, monitoring of financial flows and financial control and audit in the implementation of assistance from the Funds.

The following bodies are involved in the system of financial management of an operational programme:

- managing authority;
- intermediate body under the managing authority
- certifying authority;
- paying unit;
- audit body.

The functions of the **managing authority** are described in section 9.1.2.

The functions of the **intermediate body under the managing authority** are described in section 9.1.3.

The role of the **certifying authority** is fulfilled by the European and International Affairs Section of the Ministry of Finance of the Slovak Republic. The tasks of the certifying authority include in particular:

- coordinating and providing methodological guidance on financial management of the Structural Funds and the Cohesion Fund, including coordination of paying units' activities;
- compiling and submitting interim applications for payment and the final application for payment to the European Commission;
- carrying out a preliminary financial inspection of the summary application for payment by paying units;
- certifying inspection, at all levels of financial management including that of beneficiaries, with the aim of getting reasonable assurance of the procedures of the managing authority, the intermediate body under the managing authority and paying units;
- certifying statement of expenses for the Commission;
- receiving EU funds to special non-budgetary accounts of the Ministry of Finance;
- transferring funds to beneficiaries through paying units;
- compiling and submitting each year to the European Commission by the end of April a forecast of expenditures for the relevant and the next year, based on documents received from managing authorities;
- keeping a book of debtors;
- compiling and submitting by 31 March the statement of amounts to be returned as at 31 December of the previous year, broken down according to the years, in which the

- procedure started;
- financial corrections of EU funding at the request by the Commission;
- returning ineligible expenses or unused funds to the Commission, including delay interest;
- introducing a uniform system of accounting for the certifying authority and paying units (Information System for Funds Accounting - ISUF);
- keeping of accounts, reporting and storing of documents.

The functions of the **paying unit** are discharged by the Department of EU Structural Funds Financing, EU Structural Funds Section of the Ministry of Education of the Slovak Republic. The tasks of the paying unit include in particular:

- assessing grant applications by beneficiaries received from managing authority;
- transferring funds received from the EU and the national co-financing funds to beneficiaries;
- filling in and submitting summary applications for payment and partial expense statements to the certifying authority;
- keeping of accounts, reporting and storing of documents.
- keeping of a partial book of debtors.

The functions of the managing authority and the paying unit at the Ministry of Education are discharged by independent organisational units.

The functions of the **audit body** are discharged by the International Finance Audit and Control Section of the Ministry of Finance. The main tasks of the audit body include:

- a) preparing a report setting out the results of the assessment of the systems set up pursuant to Article 71(2) of Council Regulation (EC) No 1083/2006;
- b) ensuring that audits are carried out to verify efficient functioning of the management and control system of the operational programme;
- c) ensuring that audits are carried out on operations on the basis of an appropriate sample to verify expenditure declared;
- d) presenting to the Commission within nine months of the approval of the operational programme an audit strategy covering the bodies which will perform the audits referred to under points (b) and (c), the method to be used, the sampling method for audits on operations and the indicative planning of audits to ensure that the main bodies are audited and that audits are spread evenly throughout the programming period. Where a common system applies to several operational programmes, a single audit strategy may be presented.
- e) by December 31 each year from 2008 till 2015:
  - (i) submitting to the Commission an annual control report setting out the findings of the audits carried out during the previous 12 month-period ending on 30 June of the year concerned in accordance with the audit strategy of the operational programme and reporting any shortcomings found in the systems for the management and control of the programme. The first report to be submitted by 31 December 2008 shall cover the period from 1 January 2007 to 30 June 2008. The information concerning the audits carried out after 1 July 2015 shall be included in the final control report supporting the closure declaration referred to in point (e);
  - (ii) issuing an opinion, on the basis, on the basis of the controls and audits that have been carried out under its responsibility, as to whether the management and control

system functions effectively, so as to provide a reasonable assurance that statements of expenditure presented to the Commission are correct and as a consequence reasonable assurance that the underlying transactions are legal and regular;

- (iii) submitting, where applicable under Article 88, a declaration for partial closure assessing the legality and regularity of the expenditure concerned.

When a common system applies to several operational programmes, the information referred to in point (i) may be grouped in a single report, and the opinion and declaration issued under points (ii) and (iii) may cover all the operational programmes concerned;

- f) submitting to the Commission at the latest by 31 March 2017 a closure declaration assessing the validity of the application for payment of the final balance and the legality and regularity of the underlying transactions covered by the final statement of expenditure, which shall be supported by a final control report.

Ensuring that audits on operations are carried out on the basis of appropriate sample to verify expenditure declared in accordance with Article 62(1) b of the General Regulation is the responsibility of the Ex-Post Financial Control of EU Funds Unit under the Control Department of the Ministry of Education. These tasks will be discharged in cooperation with the audit authority.

### **System of financial flows**

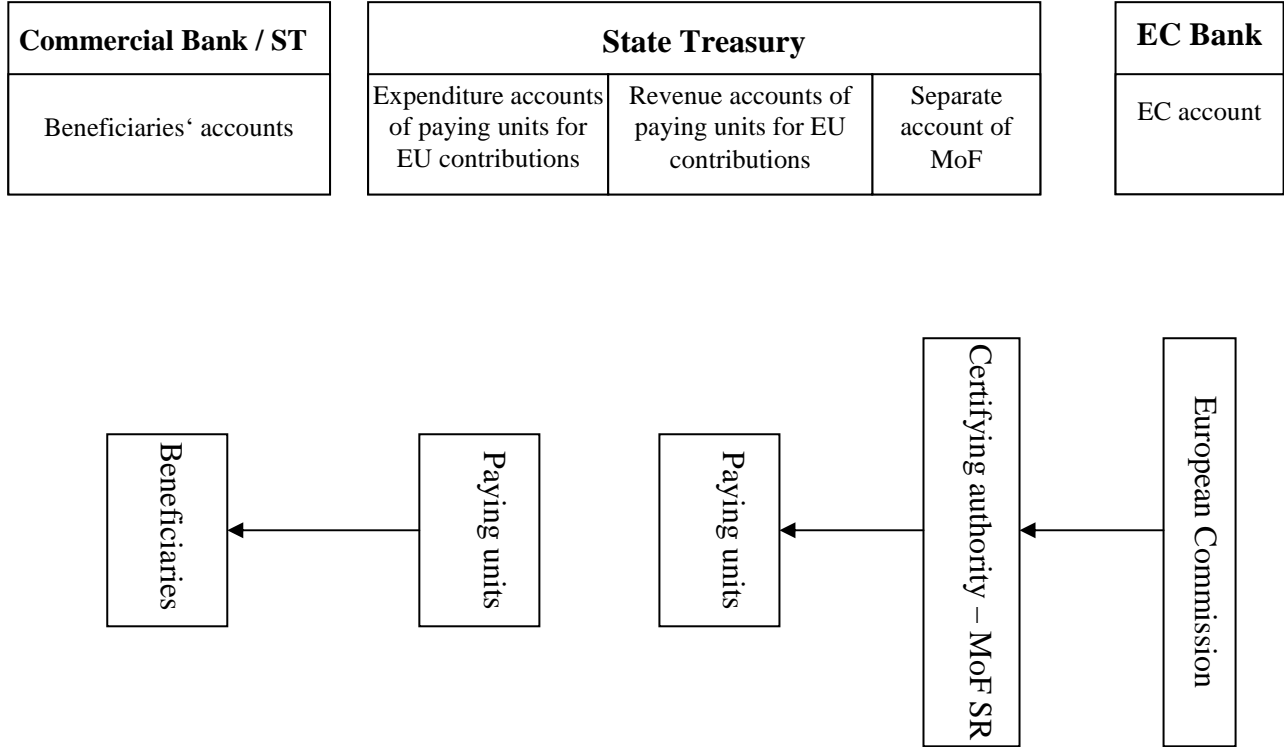
Payments from the Funds are transferred by the Commission to a special account of the Certifying Authority of the Ministry of Finance (State Treasury) as part of the commitment adopted by the Commission. Payments from the Funds to beneficiaries are provided through the national budget.

EU funds and co-financing contribution from the national budget are paid to beneficiaries through the paying unit, based on the grant contract in the proportion set for the project.

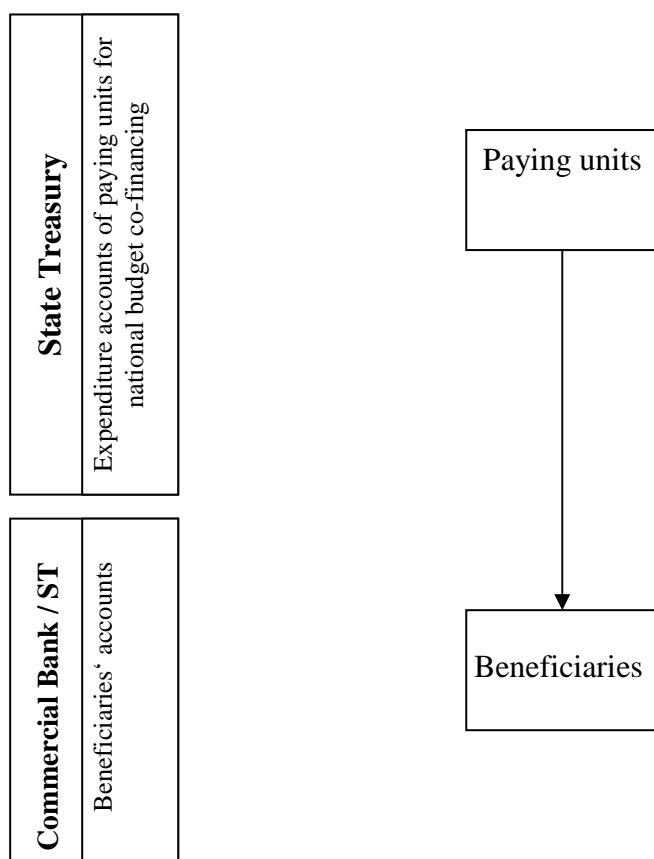
EU and national budget contributions are paid to the beneficiaries by the paying unit in the amount approved by the certifying authority, based on a summary application for payment (in case of reimbursement of expenditure). In the case of advance payments or advance financing, payments are made by the paying unit to final beneficiaries in the amount of the approved applications for advance payments (advance financing) without the previous consent of the certifying authority.

A detailed description of the arrangements for financial management is contained in the System of Financial Management of the Structural Funds and the Cohesion Fund in the Programming Period 2007-2013, adopted by Government Resolution No 835/2006 of 8 October 2006, which is available at [www.finance.gov.sk](http://www.finance.gov.sk).

**Flows of finance from the Structural Funds and the Cohesion Fund**



## Financial flows (national co-financing from the national budget)



## 10. Annexes

Annex 1: List of abbreviations

Annex 2: Glossary of Terms

Annex 3: Bibliography

Annex 4a: Members of the working group for the preparation of the operational programme

Annex 4b: Partner organisations involved in the process of preparation of OP R&D

Annex 5: List of indicators at priority axis level

Annex 6: Final report on ex-ante evaluation of the operational programme

Annex 7: Final position of the Ministry of Environment concerning SEA

Annex 8: Framework model of research and development financing in Slovakia till 2015