



UNITED NATIONS  
UNIVERSITY

**UNU-MERIT**



Universiteit  
Maastricht

**Monitoring and analysis of policies  
and public financing instruments  
conducive to higher levels of R&D investments  
The “POLICY MIX” Project**

**Country Review Slovakia**

Submitted by\*:

**Dr. Martin Berger**

(Institute of Technology and Regional Policy, Joanneum Research)

**Dr. Vladimír Baláž**

(Institute for Forecasting, Slovak Academy of Science)

**March 2007**

---

\* We highly appreciate a review of the report by Ing. Ján Strelecký, CSc., Director, Business and Innovation Centre Bratislava Ltd.

## Introduction and Policy mix concept

This report is one of the 31 country reviews produced under the project “Monitoring and analysis of policies and public financing instruments conducive to higher levels of R&D investments” (Contract DG-RTD-2005-M-01-02, signed on 23 December 2005).

The project is run by a consortium of 7 partners:

- UNU-MERIT (The Netherlands), consortium leader
- Technopolis (The Netherlands)
- PREST – University of Manchester (United Kingdom)
- ZEW (Germany)
- Joanneum Research (Austria)
- Wiseguys Ltd. (United Kingdom)
- INTRASOFT International (Luxembourg).

The role of country reviews is to provide a first exploratory analysis of the current policy mixes in place in all countries and detect most important areas of interactions between instruments as well as new modes of policy governance that are particularly adapted (or detrimental) for the building of policy mixes. A horizontal analysis of these country reviews will lead to the identification of typical policy mixes, to be related to particular NIS characteristics.

The country reviews are based on the methodological framework produced by the consortium to frame the “policy mix” concept. They have been implemented on the basis of expert assessments derived from the analysis of NIS characteristics and policy mix settings, using key information sources such as Trendchart and ERAWATCH reports, OECD reviews, and national sources, among which the National Reform Programmes.

In this work, the “policy mix for R&D” is defined as: **“the combination of policy instruments, which interact to influence the quantity and quality of R&D investments in public and private sectors.”**

In this definition, policy instruments are: “all programmes, organisations, rules and regulations with an active involvement of the public sector, which intentionally or unintentionally affect R&D investments”. This usually involves some public funding, but not always, as e.g. regulatory changes affect R&D investments without the intervention of public funds.

Interactions refer to: “the fact that the influence of one policy instrument is modified by the co-existence of other policy instruments in the policy mix”.

Influences on R&D investments are: “influences on R&D investments are either direct (in this case we consider instruments from the field of R&D policy) or indirect (in that case we consider all policy instruments from any policy field which indirectly impact on R&D investments)”.

The report examines the following 10 questions:

1. What are the main challenges of the National Innovation System, how did these challenges change over the last ca. five years, and what are their impact on R&D activity?
2. What are the main objectives and priorities of R&D policy in the country, and how did they change over the last ca. five years?
3. Is there a gap between the challenges and the main objectives and priorities?
4. Which policy instruments are in place today aiming at affecting R&D activities in the private and in the public sector? What are the instruments outside the R&D domain which are of particular relevance to R&D activities and the development of R&D expenditures?
5. Is there a gap between the main policy objectives and priorities, and the instruments in place?
6. Which group(s) of actors are targeted by the various policy instruments?
7. What are the most important policy instruments that affect R&D expenditures?
8. How did the set of R&D policy instruments arrive?
9. How does the governance of the system of R&D policy instruments take place, and is there a form of co-ordination between R&D policy and policy instruments from outside the R&D domain?
10. Is there any evidence for interactions among the policy instruments in place with respect to affect R&D expenditure?

The last section includes case study proposals, which will form a base for the decision on coverage of case studies in the next phase of the study.

# 1. National Innovation Systems Challenges

Applying a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of the Slovak national innovation system (NIS) Table 1 identifies several major challenges: The single most important challenge is low R&D-spending that did not match the rapid growth of GDP per capita (which increased by an average of 5.5% from 2000 – 2005). On the contrary, expenditure on R&D in general and in the business sector in particular is very low and decreasing.

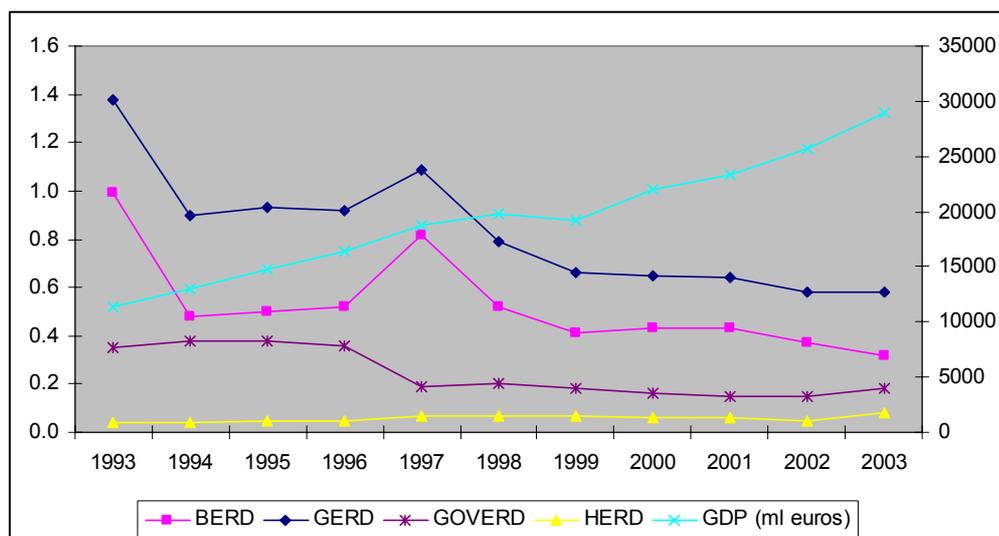
Even though gross expenditure on R&D (GERD) increased by an average of 4% p.a. from 2000 – 2004 when measured in current EUR, it decreased when measured in constant prices. GERD as a percentage of GDP used to be as high as 1.3% in 1993, but dropped markedly to 0.7% in 2000. Since then it has further decreased to 0.5% in 2004 (see table 2; figure 1), which is less than 30% of the EU-25 value.

**Table 1: SWOT of the Slovak NIS**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• High acquisition rate of innovative technology equipment by Slovak companies - top place in the EU-25 in innovation spending by companies.</li> <li>• Increasing expenditure on ICT by Slovak enterprises.</li> <li>• Availability of educated workers.</li> <li>• Reasonable levels of the tertiary graduates in science and technology per 1 000 of population.</li> <li>• Passing <i>Strategy of Competitiveness Development in Slovakia up to 2010</i> (The Lisbon Strategy for Slovakia) plus 4 Actions Plans.</li> <li>• Preparation of the <i>Innovation Strategy and National Reference Framework for 2007-2013</i>.</li> <li>• Functional monitoring system for innovation policies.</li> </ul>	<ul style="list-style-type: none"> <li>• Absolute and relative levels of the R&amp;D expenditure are one of the lowest in the EU and have been decreasing for years.</li> <li>• Business and public expenditure on R&amp;D in GDP only account for 38% and 25% of the EU-25 average).</li> <li>• University R&amp;D financed by the business sector is very low (5% of the EU-25 average).</li> <li>• Severe brain drain of young professionals, especially in S&amp;E.</li> <li>• Outdated R&amp;D-infrastructure and equipment.</li> <li>• Extremely low transfer of R&amp;D investments into commercial output (e.g. in terms of USPTO and EPO patent applications).</li> <li>• Low transfer rate of R&amp;D results to businesses.</li> <li>• Low workforce mobility between industry and academia.</li> <li>• Lack of strategic and explicit innovation policies, lack of a <i>National Innovation Plan</i>.</li> <li>• No central body for innovation policy design, implementation and management.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• National Budget 2006 includes an increased public spending on and financial support for R&amp;D, shift towards programme-based expenditure.</li> <li>• Increasing innovation expenditure may significantly boost innovation levels in Slovak enterprises.</li> <li>• Reasonable stocks of educated labour force generate a good environment for generation of innovations and their adoption in manufacturing industries in particular.</li> <li>• Single multinational companies have started research and service centres in Slovakia (e.g. Samsung).</li> </ul>	<ul style="list-style-type: none"> <li>• Innovation policies remain overlapping with S&amp;T policies. Low emphasis on the commercialisation of the R&amp;D results.</li> <li>• Current levels of R&amp;D-expenditure do not enable Slovakia to catch-up with the EU average.</li> <li>• Most inward FDI exploit low labour and (other) production costs and are aimed at technology diffusion rather than the generation of innovations.</li> <li>• Large regional disparities: 50-60% of R&amp;D activities (in terms of spending and personnel) are concentrated in Bratislava, which accounts for only 9% of the population.</li> </ul>

Source: own compilation based on *Proposal of Innovation Strategy for 2006-2013* (Ministry of Economy), Baláž (2006), *Trend Chart Slovakia 2005, 2006*

**Figure 1: R&D expenditure by performing sector as percentage of GDP (left axis) and GDP in million EUR (right axis) in Slovakia (1993-2003)**



Source: OECD, Main Science and Technology Indicators, November 2005.

**Table 2: Basic data on R&D-performance in Slovakia in 2000-2004**

	2000	2001	2002	2003	2004
GERD as % of GDP	0.65	0.64	0.58	0.58	0.53
Share of BERD in GERD, %	54.4	56.1	53.6	45.1	38.3
<b>R&amp;D infrastructure</b>					
No. of organisations reporting R&D	303	326	270	265	272
of which business sector	151	176	168	167	168
Total R&D personnel, FTE	15,221.0	14,422.5	13,631.3	13,353.6	14,328.0
of which researchers	9,955.0	9,584.8	9,181.1	9,626.5	10,717.8
Business R&D personnel, FTE	5,171.8	4,756.6	4,470.5	3,651.2	3,473.0
of which researchers	2,420.3	2,256.4	2,168.9	1,913.9	1,814.8
<b>R&amp;D expenditure by source of finance</b>					
GERD: total, EUR million	142.846	149.349	148.317	170.343	173.940
GERD: government source, EUR million	60.846	61.616	65.415	86.597	99.348
GERD: capital expenditure, EUR million	12.063	11.609	12.368	18.868	18.537
BERD: total, EUR million	77.745	83.756	79.447	76.816	66.605
<b>GERD by type of ownership of organisation</b>					
Inland – private, EUR million	46.866	49.103	42.948	42.594	40.922
State – owned, EUR million	81.411	82.007	85.568	109.267	112.354
Foreign, EUR million	1.390	1.215	1.549	5.170	5.325
International – private, EUR million	12.889	16.961	18.201	12.700	15.122

Source: compiled by Baláž; based on Statistical Office of the Slovak Republic: The 2001 - 2005 R&D yearbooks and Selected Data on R&D Organisations in Slovakia.

Notes: FTE = full time equivalent; Foreign ownership = majority stakes held by foreign investors; International – private ownership = minority foreign interest. Inland = expenditure inside Slovakia

Similarly, business enterprise expenditure on R&D (BERD) measured in current EUR experienced a slump of - 3% p.a. on average from 2000 – 2004. Because BERD decreased even stronger than GERD, its share in GERD dropped from 54% in 2000 to 38% in 2004. Currently, it accounts for only about one fifth of the EU-25 value. At the same time, the number of business R&D-personnel declined by an average of -

7.7% p.a. In addition, R&D-funds provided to universities amount to only 0.1% of GDP – this is only about one fourth of the EU-25 value (Eurostat, 2006).

A further problem (especially for the public sector) is the brain drain of young people educated in S&E, which is – partly – a result of low R&D-spending. Many young talents tend to seek career opportunities abroad that promise better equipped working places and higher wages (Trend Chart, 2005: 8; see also Global Competitiveness Report, 2005).

Basically, these key aspects have not altered much in recent years. However, important policy changes occurred in 2004/ 2005, because a) the government passed policy documents and laws that assigned a higher priority to R&D and innovation and b) Slovakia became eligible for EU regional and structural funds which became a prominent feature of the Slovak innovation policy in the meantime.

There are several factors that have contributed to the status-quo:

- Recent governments followed a liberalisation strategy, concentrated on structural reforms and macroeconomic policies in order to foster employment, wage growth and to reduce regional disparities. This happened at the cost of – among others – public R&D-expenditure and respective programs inducing R&D-spending by private firms.
- The Slovak economy relies heavily on its low wage level as a major competitive advantage. Therefore, domestic SMEs frequently do not see the need for uncertain and costly R&D-activities. Moreover, Slovakia can be considered a ‘dual economy’ with multinational corporations on the one hand and domestic SMEs on the other hand. While MNC tend to perform their R&D-activities at their home base, SMEs frequently lack the awareness, capabilities and resources to carry out R&D.
- Slovakia suffers from a severe brain drain of young scientists, because it can not offer favourable wage levels, state-of-the-art scientific infrastructure in universities, and career opportunities in R&D.

Even though the current national budget (for 2006) includes an increase in public spending (see below), the total level of R&D-funding remains low. Hence, the main challenges continue to be of primary importance.

**In summary**, the top three challenges for the Slovak NIS are, to:

- enhance R&D-capabilities and activities in business enterprises and to raise BERD;
- increase funding for infrastructure, personnel and R&D-projects in universities and R&D-institutes;
- reduce/reverse the brain drain of young professionals (especially in S&E) and enhance the number of R&D-personnel in domestic organisations.

## 2. Objectives and priorities of R&D policy

Prior to 2004 R&D and innovation were not considered a development priority by the Slovak government (Baláž, 2006: 18), and the Slovak Republic has still no *National Innovation Plan* or any other consistent innovation policy by mid 2006.

However, there are several policy documents in place.

The first *State Science and Technology Policy Concept for 2000-2005* postulated an increase of GERD to 1.8% by 2005, a target that soon became unrealistic. In the field of S&T two sets of priorities were set: a) cross-cutting programmes of R&D and b) thematic directions in R&D (see below for details).

In 2004-2005 a set of important laws was adopted in order to implement priorities stated by the concept (such as an increase in GERD, improvements in R&D-infrastructure and in industry-academia cooperation): the *Law on Science and Technology Assistance Agency*, the *Higher Education Law*, the *Law on Organisation of State Support to Research and Development* and the *Law on Slovak Academy of Science*. All these Laws were prepared and implemented under guidance of the Ministry of Education.

In 2003, the government prepared the *National Development Plan 2004-2006* which lists as one priority the “growth of competitiveness of industry and services using domestic growth potential”. Within this priority one measure aims to support innovation and applied research.

In 2005, the government changed its strategic priorities more towards innovation and R&D. For example, it developed the *Strategy of Competitiveness Development in Slovakia up to 2010* which declares research, development and innovation (RDI-) policy as one of four major priorities for fostering the knowledge-based economy.

Furthermore, the *Action Plan for Research, Development and Innovations* which passed government in July 2005 has the objective to build an internationally competitive system of research, development and innovation.

The objectives of the *Competitiveness Strategy* and the *four Action Plans* which are to be achieved by 2010 are the following:

- Increase GERD as a percentage of GDP to 2% by 2010;
- support business-oriented, internationally competitive R&D;
- increase efficient public support of innovation-oriented activities;
- promote young scientists;
- develop a modern education policy for the promotion of high levels of employment;
- ensure widespread use and understanding of information technologies;
- introduce effective e-government and modern on-line public services.

Also, the *National Reform Program 2006 – 2008* published in October 2005, includes a chapter on science, R&D and innovation. It postulates three priorities:

- raising and supporting quality scientists,

- international quality research with adequate interconnections to the business sphere,
- effective support of business activities aimed at development and innovation.

Moreover, the Ministry of Economy elaborated a proposal of the *Innovation Strategy for 2006-2013* which states as the main priority “generating higher innovation intensity as an essential tool for sustainable development in a knowledge-based economy” (TrendChart 2006: 20). The strategy includes

- three systemic objectives: more efficient system and infrastructure; better quality of human resources and better encouragement; more efficient innovation policies;
- three sectoral objectives: electrical and optical equipment, machinery and equipment; chemicals and chemical products; and
- two horizontal objectives: information- and nano- technologies.

However, the government has rejected the first draft and the second version has just been launched for internal discussion.

In addition, the Slovak government discussed the *2007 – 2013 National Reference Framework* (NRF) for the allocation of *EU Structural Funds*. In October 2006 the Slovak government approved the revised proposal for the NRF, which replaces a previous version of the NRF that the former government passed in May 2006. The revised NRF is the result of a dispute between the coalition parties, Smer-Social Democracy and Slovak National Party. The revised NRF framework includes three new operational programmes (competitiveness, health care and information society). While the former *knowledge-based economy operational program* was renamed to *R&D-program* and cut from EUR 2,600m to 883m, the *competitiveness and information society program* got some EUR 1,765m. Hence, in total programs related to the knowledge-based economy benefited. Some EUR 447m have been earmarked for R&D- and innovation-related activities in the Bratislava Region, which did not qualify for the *objective 2 assistance*. The priorities set in the revised NRF are yet to be approved by the European Commission (for details of the NRF programmes see Annex 1; Slovak Government, 2006c). In general, the final version of the revised NRF is not very different from the previous version, which was criticised for having too many operational programs, because this increases administrative costs and causes difficulty in the overall coordination of policy initiatives.

The **2006 State Budget** has set the following detailed aims regarding R&D:

- 40% of public R&D-expenditure awarded via tenders should go to universities by 2008 (up from 25% in 2005);
- 20% of the total university revenues should be generated by own business activities by 2008 (up from 17.3% in 2005);
- 60% of R&D-investment should come from private sources by 2008 (up from 52% in 2005);
- scientific publications in SCI- journals should increase by 20% in the period 2004-2008;
- R&D-projects with a real, tangible commercial output should increase by 20% in the period 2004-2008;

- innovative SMEs participating in public sector innovation programmes should increase by 20% in the period 2004-2008;and
- a total of 25 education and support programs for post-graduate students and scientific workers in life-long learning should be maintained in 2008 (up from 10 in 2005).

In August 2006 the new Slovak government published its program statement, which mentions R&D-support in two places:

- The section on economic policy states that innovations supporting long-term economic development should be a government priority. The government shall prepare a mix of innovation policy measures aimed at private firms. An innovation strategy will be elaborated and implemented, in order to raise innovation levels to the EU-25 average. The government also aims to prepare a system of regular evaluations of R&D-results. Evaluations should contribute to a more transparent and efficient allocation of public financial support to R&D.
- The section on the knowledge-based economy states that the government recognises the importance of science and technology for improvements in economic efficiency and living standards. The government aims to promote R&D-funding from multiple sources. Share of GERD as a share of GDP should rise to 0.8% (no time limit mentioned). Other priorities of the R&D development include (a) support to small and medium-sized enterprises, (b) IPR protection, and (c) support to R&D-infrastructure and centres of excellence. Special attention shall be paid to support for young talented R&D-workers. The government plans to introduce grant schemes for PhD students and post-docs.

In **summary**, the existing mix of innovation policy measures in Slovakia addresses the following **three major objectives** (TrendChart, 2006):

- Funding R&D- and innovation-activities,
- support R&D- and innovation-infrastructure and clustering, and
- support human resource development in the field of R&D.

### **3. Coherence between NIS challenges and R&D objectives and priorities**

For a fairly long time Slovak policy has not considered R&D a priority. Only recently, political documents mention such policies and address respective objectives. Hence, in political rhetoric the gap between challenges and objectives/ priorities narrows. However, it has to be seen if and how these documents translate into meaningful instruments. Still a stringent R&D- and innovation-policy is missing. Moreover, most of the recent policies target the public sector and seem to neglect R&D-activities in private companies.

Latest developments show that the demand for higher public R&D spending has, however, not been met by the 2007 budget, which foresees the same nominal level of financial support for the R&D system as in 2006. In real terms, this means a reduction of ca. 4% due to inflation. Having said this, some positive trends are confirmed: The shift towards programme-based expenditure was continued, the structure of the 2007 budget reflects the development priorities set by the *Competitiveness Development Strategy for Slovakia until 2010* (the "Lisbon Strategy for Slovakia") and public funding of universities and the Research and Development Agency has been increased. Moreover, the 2007 budget refers to a forthcoming *National Programme for S&T Development* which is supposed to aim at the creation of a modern and efficient public support system for R&D. These steps might increase the coherence between challenges and priorities.

## 4. Composition of the policy mix for R&D

The Slovak policy mix for R&D relies heavily on instruments directly in the R&D domain. Table 3 lists instruments inside and outside of this domain that are likely to have some impact on R&D-expenditure. Thereby, some instruments can not be categorised in one domain only, but are mentioned in different domains.

**Table 3: Policy mix for R&D in Slovakia**

Policy categories	Policy instruments: short description and target group
<b>R&amp;D Domain</b>	
R&D policy generic	<p><b>a) Research and Development Assistance Agency Activities</b>            The Research and Development Assistance Agency (RDA, the former Science and Technology Assistance Agency) is a government grant agency financed by the Ministry of Education. The RDA supports domestic and international R&amp;D-projects developed by government research institutes, universities, private enterprises and non-profit organisations. Target groups of this measure are scientists/ researchers (as individuals), higher education institutions, research units/ centres, other public and non-profit research organisations (not HEI), technology and innovation centres (non-profit) and innovative companies, which can apply for R&amp;D grants. Supported activities include pre-competitive research, applied industrial research, development/ prototype creation, commercialisation of innovation (including IPR), industrial design, co-operation promotion and clustering. The grants can be used for labour costs (including overheads), equipment and external expertise. The funds are provided by the Slovak state budget. Co-financing by private sector, foundations or charities is possible. From 2001-2006 the overall budget increased markedly (2001: EUR 0.2 million; 2002: 1.9; 2003: 2.5; 2004: 4.6; 2005: 12.6; 2006: 19). In the Action Plan for RDI 2005 the government assigned 20.6 million EUR for “building a new central state agency for support of R&amp;D” which caused a reorganisation of the RDA in March 2006. Its current mission is:</p> <ul style="list-style-type: none"> <li>• Supporting top basic and applied research as well as development in all S&amp;T fields, including intra and inter-disciplinary research.</li> <li>• Enabling development and implementation of new forms of support to research in Slovakia and promote cooperation between basic and applied research and business sector.</li> <li>• Enabling development and implementation of new forms of support to international cooperation in European R&amp;D</li> <li>• Supporting R&amp;D by supplying EU funds</li> <li>• Advising the Slovak government and parliament in matters related to R&amp;D and cooperate with the Ministry of Education when developing and implementing state S&amp;T policy.</li> </ul> <p>Moreover, the RDA created programs in support of:</p> <ul style="list-style-type: none"> <li>• Human Resources in R&amp;D: creating a conducive environment for post-doctoral R&amp;D-workers; supporting mobility between industry and academia; improving cooperation between Slovak and international R&amp;D-facilities; and improving education on R&amp;D-ethics. Typical instruments to achieve these targets include the creation of 3-year job-contracts for postdoctoral workers, re-integration grants for Slovak R&amp;D-workers employed at least 2 years abroad and grants for excellent mentors in PhD education. The program also plans to create a database of Slovak scientists working abroad. The Action plan for RDI (2005) assigned 5.0 million EUR to support doctoral and post-doctoral students and 2.3 million EUR to support to mobility of human resources in R&amp;D, which will be implemented by the RDA.</li> <li>• Popularisation of Science: educating young people about the importance of</li> </ul>

	<p>R&amp;D; promoting partnerships between research institutions, basic and middle schools, which shall increase the awareness for science; promoting popularisation of science in the media; promoting regional and national competitions on science-related issues for talented young people. Typical instruments include 3-4 years grants for schools, media and business organisations intending to popularise science. For this the Action plan for RDI assigned 1.3 million EUR in 2005.</p> <p>The current program is planned for the period 2006-2010. The RDA is supposed to launch at least one call related to this program every year. The program budget will be determined by the RDA and varies, depending on the State Budget resources.</p> <p><b>b) Business Incubators, Technology Parks and R&amp;D-Centres Scheme (BITPRDC)</b></p> <p>The overall aim of the scheme is to support infrastructure building and modernisation. The scheme wants to support the public sector, which, in turn, is supposed to foster businesses, increase employment and quality of life in particular Slovak regions. Following activities are supported:</p> <ul style="list-style-type: none"> <li>• business incubators for start-ups and personal businesses;</li> <li>• technology parks for various industries;</li> <li>• R&amp;D-centres for applied research;</li> <li>• feasibility studies and consultancy projects.</li> </ul> <p>The business incubators, technology parks and R&amp;D-centres should be based by Slovak municipalities and co-operate with universities. The duration of the program is 2004–2006. Target groups are companies, higher education institutions research units/ centres and other public and non-profit research organisations (not HEI). Eligible applicants include municipalities and regional governments, as well as partnerships created between municipalities/ regional governments and universities. Funding is provided as grants. Eligible costs include infrastructure (buildings), equipment, training and external expertise (consultants, studies). Labour, transport and marketing costs are excluded from the scheme. The program is co-financed by the Structural Funds, municipalities, regional governments and universities. The total budget for 2004–2006 is EUR 41.25 million (of which 30.94 million are provided by the ERDF and 10.31 million by the Slovak government and municipalities). The <i>National Agency for Development of SMEs</i> is responsible for the management of the scheme.</p> <p><b>c) Support to national networks of Centres of Excellence</b></p> <p>The Action Plan for RDI assigned 32.5 million EUR for the network of centres of excellence. The measure aims to improve the quality of R&amp;D-centres and research, in particular at universities. The measure targets the public sector (universities and the Slovak Academy of Science as well as regional and local government) and the private sector (including non-profit bodies). Activities developed under this measure are supported via direct grants and/or indirect financial support tools.</p>
R&D policy sectoral	<p><b>d) Support of Industry Research and Pre-Competitive Development (SIRPCD)</b></p> <p>The scheme aims to increase the competitiveness of Slovak products via industry research and pre-competitive development. Results of supported R&amp;D-activities should be directly applicable for the production of goods and services. The scheme also aims at developing closer networks between users and facilitators of industry research and pre-competitive development as well as at exploiting the R&amp;D-base to support environmental R&amp;D.</p> <p>Eligible projects include:</p> <ul style="list-style-type: none"> <li>• production processes and systems oriented at high-tech engineering, chemical engineering, pharmacology, agro-chemistry and environmental friendly activities;</li> <li>• new materials to be used in the above-mentioned industries and materials obtained via re-cycling;</li> <li>• advanced technologies, including smart management systems, nano- and</li> </ul>

	<p>biotechnologies;</p> <ul style="list-style-type: none"> <li>• technologies aimed at energy issues and the alternative use of coal and carbon-based materials;</li> <li>• technologies for the use and protection of the nature resources;</li> <li>• technologies for rationalising energy consumption.</li> </ul> <p>The project duration is 2004–2008. The project targets private companies and supports activities in the field of pre-competitive research, applied industrial research and development/ prototype creation. Thereby, the scheme aims at SMEs and large enterprises registered in Slovakia. Enterprises from the Bratislava region and/ or firms active in fishery, car production, mining and steel production, shipbuilding and transport are excluded. The grants can be used for labour costs (including overheads), infrastructure (buildings), equipment, external expertise and costs of transport and material spent for the research purpose. The measure is financed by the state budget and by the Structural Funds. It is co-financed by the private sector. In the period 2004-2006 the scheme planned to allocate EUR 22.10 million (of which EUR 7.73 million were provided by ERDF, EUR 6.63 million by the Slovak government and EUR 7.73 million by Slovak entrepreneurs). The scheme has several lots with varying budgets, depending on availability of funds from national and European sources. The first lot supported some 21 applied research projects with EUR 4.82 million. Main recipients were (private) industry research institutes in the chemistry, machinery and manufacture of transport equipment sector. The second lot supported some 37 projects with EUR 0.66 million. Most of these projects accounted for the introduction of quality management systems, certifications and the protection of intellectual property rights. The final part of the scheme's budget will be allocated in 2006. The manager responsible for the scheme is the Slovak Energy Agency.</p> <p><b>e) National research and development programs</b></p> <p>The national programs are prepared and managed by the Ministry of Education. Each program has assigned a board which acts as a guarantor. There are horizontal programs, aimed to improve standards in selected economic and social areas, and thematic programs, which shall foster the development of human resources and their mobility, building a technical and institutional R&amp;D-infrastructure, and international scientific and technological cooperation. State programs are approved by the Slovak government on the proposal of a guarantor. The board is responsible for the selection, assessment and approval of the state R&amp;D-program projects. It also performs interim and final assessments. The projects are implemented by public tender. The following 6 horizontal and 4 thematic state programs were approved for the period 2002–2005 (in brackets the share of funding):</p> <ul style="list-style-type: none"> <li>• Horizontal state programs: building an information society (21%); quality of life–health, nutrition, education (32%); progressive technologies development for a productive economy (22%); utilisation of domestic raw materials and resources (10%); application of progressive principles of energy production conversions (11%); participation of social sciences in societal development (4%). From 2002–2005 a total of EUR 97 million were spent on these programs.</li> <li>• Thematic state programs: personality and talent development for young researchers and Ph.D. students up to the age of 35 (30%); complex support and effective utilization of R&amp;D-infrastructure (41%); prognosis of development and utilisation of S&amp;T by 2015 (3%); current issues of societal development (27%). From 2002–2005 a total of EUR 22 million were spent on these programs.</li> </ul> <p>Target groups are public and private research institutes as well as firms.</p> <p><b>f) State purchase orders for R&amp;D</b></p> <p>State purchase orders are proposed by central government authorities on the basis of priorities approved in the S&amp;T concept. This entails supplementary R&amp;D-funding. Expenses for state purchase orders can reach a maximum of 28%</p>
--	--

	<p>of total expenditures on state programs. The government approved 14 draft purchase orders for the period 2002–2005. Content and goals of the individual purchase orders are published in the <i>Proposal for State Purchase Orders in Research and Development</i>. From 2002–2005 the state orders accumulated to EUR 15.4 million. In theory, any firm with a R&amp;D-department and any research organisations may apply, but in fact most grants were given to industry research institutes.</p> <p>Both the national programs (e) and the state orders (f) have generic as well as sectoral characteristics. According to the new <i>Law on Organisation of State Support to Research and Development</i> (March 2005) <b>national R&amp;D programs</b> will be cut to two or three priorities instead of ten and <b>state orders</b> will be abolished entirely (but both are still running in 2006). Instead, only the Ministry of Education and the Slovak Academy of Science will receive funds for R&amp;D from the state budget and can claim assistance for R&amp;D-institutions and infrastructure. Private and semi-private entities can only compete for RDA’s grant schemes, but cannot seek financial support for infrastructure or institutions. The <i>Action plan for RDI</i> of 2005 assigned EUR 15.9 million for the new system of the state R&amp;D programs.</p>
R&D / Innovation policy – Linkage	
R&D / Innovation policy – IPR	
R&D specific financial and fiscal policy	<p><b>g) New rules for the investment incentives prepared by the Ministry of Finance</b></p> <p>In 2005 the Ministry of Finance developed new investment incentive rules that aim to support investments in a) lagging behind regions and b) preferred sectors of the economy. The total volume of incentives for each investment project will be computed based on the territorial and sectoral criteria match. Regional criteria are based on unemployment rates, while the sectoral criteria favour investments in high-tech sectors. Three sectors were specified:</p> <ul style="list-style-type: none"> <li>• Sector A includes manufacturing industries and distribution and logistic activities,</li> <li>• Sector B includes high-tech sectors with network externalities (e.g. IC, bio- and nano-technologies) and strategic service centres (e.g. call and client centres, supporting services related to the development of human resources, financial services, marketing, sales and accounting), and</li> <li>• Sector C includes R&amp;D- and technology centres.</li> </ul> <p>Individual projects can receive two forms of state assistance: Either indirect assistance (tax allowance and transfers of state property) or direct assistance (subsidises for employees’ education, for job creation and for fixed investment in sector C).</p>
R&D specific education policy	<p><b>h) The Single Programme Document NUTS II – Bratislava Objective 3</b></p> <p>The program covers the Bratislava region which is not eligible for objective 1 EU-funding. It is a reference document, on the basis of which assistance will be provided for human resource development in the region, using national funds and resources of the European Social Fund. One of the two priorities targets life-long learning and support for R&amp;D in the Bratislava region via:</p> <ul style="list-style-type: none"> <li>• ‘Stimulation and improvements in quality of education matching needs of enterprise sector’ (EUR 31.8 million for period 2004-2006);</li> <li>• ‘Improving quality of employment and competitiveness of the Bratislava Region via development of human resources in the R&amp;D-sector’ (EUR 10.3 million for period 2004-2006).</li> </ul> <p>The target groups are public and private entities.</p>
R&D specific employment policy	
<b>Finance Domain</b>	
Financial and fiscal policy	See <b>g) New rules for the investment incentives prepared by the Ministry of Finance</b>
Macroeconomic policy	
<b>Human Capital Domain</b>	
Education policy	

Employment policy	<b>h) The Single Programme Document NUTS II – Bratislava Objective 3</b>
<b>Innovation Domain</b>	
Innovation policy generic	<p><b>i) Fund of Funds</b></p> <p>The former <i>Seed Capital Company</i> (SCC) was renamed to <i>Fund of Funds</i> (FoF) in April 2006. The NADME, which is the parent agency of the FoF, established three risk capital funds and appointed the FoF as the funds' manager in May 2006. Fund marketing and operation started in autumn 2006. The three funds are designed to support different phases of innovation process:</p> <ul style="list-style-type: none"> <li>• The <i>Seed Capital Fund</i> targets new businesses, which have no history and problems with obtaining financing by banks. The <i>Seed Capital Fund</i> can provide an equity stake of up to SK 10 million (EUR 263 thousands). The supported company can obtain another SK 5 million (EUR 132 thousand) from the <i>Regional Start-up Capital Fund</i>.</li> <li>• The <i>Slovak Development Fund</i> targets the development phase of innovations. The fund combines public and private financing. The <i>Slovenská sporiteľňa Bank</i> was selected as the main business partner for the scheme and is supposed to offer co-financing of business projects. The bank also provides project assessment and analysis.</li> <li>• The <i>Slovak Expansion Fund</i> supports the expansion phase of innovation process. NADSME hopes to engage international private equity funds for this scheme. So far it has had little success, because the volume of syndicated finance was too low for potential foreign investors.</li> </ul> <p>The FoF activities are primarily aimed at SMEs. The agency has complained about a general lack of highly innovative projects. Many project proposals have been backed by R&amp;D-results, but accounted for poor commercial potential. Financial projections and business plans used to be the weakest points R&amp;D-backed initiatives. The former SCC applied cautious investment strategies and the 'mortality rate' of supported firms was just about 20 percent. The FoF wants to follow the same approach as it operates as a LTD-type of company and must insist on economically feasible projects. The starting phase of the <i>Seed Capital Fund</i> would, therefore, support both high-tech and new-to-firm innovations. It is sufficient if a firm proves some 'value added' in its project application, e.g. developing a product or service which has already been offered abroad, but not in Slovakia. The SCC/ FOF spent some EUR 7.0 million in the period 1994-2005. The three new risk capital funds should allocate some EUR 40 million over 3 years. The private sector is expected to allocate the same sum.</p> <p><b>j) Support for start-ups and innovating firms under the roof of the Action plan for RDI</b></p> <p>The plan includes three activities to spur innovating companies: 2.5 million EUR have been assigned to support technology incubators and innovative firms, another 2.5 million EUR are allocated to assist funding of start-ups and to provide seed capital for innovative firms, and an additional 1.5 million EUR have been earmarked for the support of innovative enterprises and activities in the business sector.</p>
Innovation policy sectoral	
Other policies - industry	
Other policies - trade	
Other policies - defence	
Other policies – consumer protection	
Other policies – health and safety	
Other policies - environment	
Other policies – regional development	
Other policies - competition	
Other policies – social security	

## **5. Coherence between main policy objectives and priorities, and policy instruments**

So far, the existing policy mix only partly addresses major needs of the national and regional innovation system. Several important areas of R&D- and innovation- policies are inadequately covered by existing policy documents:

- Development of sophisticated industries depends on supply of R&D infrastructure and labour force. None of the existing schemes provides sufficient resources needed for closing R&D and technology gaps between Slovakia and developed EU members. Current public expenditure in these fields is too low as to generate demand on R&D-results by the private sector.
- There is an underdeveloped infrastructure for R&D-investment in Slovakia. The Slovak government was much admired for its tax reform, which, however, did not create a supportive environment for venture capital investments (e.g. pool of risk capital, tax treatment of venture capital, etc.).
- Links between industry and academia are too weak as to enable the transfer of know-how between these sectors. Some policy initiatives in this field have already been developed, but failed to bring positive results (Baláž, 2006: 22).

However, it has been shown that the policy mix is currently (about to be) restructured. Consequently, the assessment of many policy instruments depends on their new design/ implementation. At this moment it seems to be too early to assess their appropriateness.

## 6. Policy mix instruments and target groups

State funding in Slovakia mainly aimed at

- increasing funding for public R&D-performers (grants for institutional funding, project funding, State Research Programs);
- improving productivity of public R&D-performers (via Research and Development Assistance Agency grants and State Research Programs);
- increasing expenditures in R&D-performing firms (via Research and Development Assistance Agency grants and State Research Orders procurement).

Hence, classified according the *broad routes to increase R&D investment* proposed by the methodological report of the *Policy Mix* project the Slovak policy mix focuses strongly on route 2: the stimulation of greater R&D-investment in R&D-performing firms, and route 6: the increase of R&D in the public sector (see table 4).

Most other routes are widely neglected, even though some recent initiatives are targeted at non-innovative/ non-R&D performing firms, mainly SMEs and – potentially R&D-performing – start ups (Funds of Funds and some activities under the Action Plan for R&D and Innovation), as well as foreign firms (new investment incentive by the Ministry of Finance).

However, instruments and allocated funds – in all routes – seem to be still too limited to have a real impact.

**Table 4: Policy instruments and broad routes to increase R&D investments**

Policy categories	Policy instruments	ROUTE 1: promote establishment of new indigenous R&D-performing firms	ROUTE 2: stimulate greater R&D investment in R&D-performing firms	ROUTE 3: stimulate R&D investments in firms non-performing R&D	ROUTE 4: attract R&D-performing firms from abroad	ROUTE 5: increasing extramural R&D carried out in cooperation with public sector	ROUTE 6: increase R&D in public sector
<b>R&amp;D Domain</b>							
R&D policy generic	a) Research and Development Assistance Agency b) Business Incubators, Technology Parks and R&D Centres Scheme (BITPRDC) c) Support to national network of Centres of Excellence s	X	XX XX X			X	XX  XX
R&D policy sectoral	d) Support of Industry Research and Pre-Competitive Development (SIRPCD) e) National research and development programmes f) State purchase orders for research and development		XX XX X	X			XX
R&D / Innovation policy – Linkage							
R&D / Innovation policy – IPR							
R&D specific financial and fiscal policy	g) New Rules for the investment incentives prepared by the Ministry of Finance		X		X		
R&D specific education policy	h) The Single Programme Document NUTS II – Bratislava Objective 3 (SPD 3)		X				
R&D specific							

employment policy							
<b>Finance Domain</b>							
Financial and fiscal policy	g) New Rules for the investment incentives prepared by the Ministry of Finance		X	X	X		
Macroeconomic policy							
<b>Human Capital Domain</b>							
Education policy							
Employment policy	h) The Single Programme Document NUTS II – Bratislava Objective 3 (SPD 3)		X				
<b>Innovation Domain</b>							
Innovation policy generic	i) Funds of funds	XX	X	XX			
	j) Three measure of the Action plan for RDI	X	XX				
Innovation policy sectoral							
Other policies - industry							
Other policies - trade							
Other policies - defence							
Other policies – consumer protection							
Other policies – health and safety							
Other policies -							

environment							
Other policies – regional development							
Other policies - competition							
Other policies – social security							

X= relevant      XX= very relevant

## 7. Balance within R&D policy mix

The Slovak R&D policy mix relied heavily on direct financial measures. The state budget was the main source of the R&D-financing and provided some 57.1% of GERD in 2004. The private sector (38.3%) and foreign donors (4.3% – mainly EU grants) were other important sources. Funding by non-profit bodies and universities' own resources was negligible.

There is no data on R&D policy instruments used by private and foreign sectors (although the majority of EU funding was likely to consist of grants). Most public expenditure on R&D (EUR 84.96 million out of total EUR 99.35 million) went to discretionary institutional funding for R&D-projects, while the rest supported infrastructure costs of the R&D-system (table 5). The Slovak Academy of Science and universities accounted for the bulk of institutional funding.

**Table 5: State support to R&D in 2006 in Slovakia**

	EUR million
<b>Programmes implemented by Ministry of Education – total</b>	<b>42.89</b>
of which	
State programmes by Ministry of Education	3.59
The RDA projects	19.31
Co-ordination of horizontal activities of the state S&T policies	4.40
State R&D programmes	2.67
State programmes for support of R&D infrastructure	10.13
State programmes by the Ministry of Economy	2.79
<b>Slovak Academy of Science</b>	<b>41.20</b>

Source: Collection of Laws: The 2006 State Budget Law (No 655/2005)

In 2004 the Slovak government introduced a flat tax and there were no options for tax deductions. Public funding of R&D-projects was mostly delivered via grants. Grants for the **State Research Programmes** (SRP; see 4.) and grants channelled via the **Research and Development Assistance Agency** (RDA, see 4.) were given on a competitive basis. **State Research Orders** (SRO; see 4.) were implemented via public procurement. There were no subsidies for hiring R&D-personnel, but this measure was considered by the RDA. Experienced R&D-workers are allowed to apply for grants funding PhD fellowships. Risk capital measures, equity and loan guarantees were provided for innovation funding, but not in the field of public R&D-support. There was anecdotal evidence that some private sector research projects were backed by venture capital (e.g. Slovak American Enterprise Fund), but no systematic review of this issue is available.

Three types of competitive R&D-funding were developed by the authorities:

- Top-down funding aimed at projects with pre-defined themes. Grants for these projects were delivered via *SRP* and *SRO* and the *State R&D-Infrastructure Development Programs*.
- Bottom-up funding was provided by the RDA. It launched open calls for R&D-projects (with no pre-defined themes) once a year.
- Bilateral and multilateral international project funding was delivered on a competitive basis via ad-hoc calls.

Support to private research heavily relied on EU resources. The **Support of Industry Research and Pre-Competitive Development (SIRPCD)** scheme and the **Business Incubators, Technology Parks and R&D Centres** scheme (BITPRDC) envisaged some EUR 22.1 million and EUR 41.3 million respectively for the support of business innovation and applied R&D-activities. These schemes distributed grants to companies (SIRPCD) and municipalities (BITPRDC) (for details see 4.).

Since 2004 there has been a shift in the delivery channels of the state R&D-support. The volume of assistance distributed via *SRO* and *SRP* decreased, while the importance of competitive grants channelled via the RDA increased. For example, the RDA budget in 2006 (EUR 19.3 million) was four times higher than in 2004.

Table 6 summarises the importance of the instruments according to the following criteria:

- a) overall contribution to increase of private R&D expenditures
- b) impact on specific aspects of the NIS or R&D performers (when possible)
- c) public attention/ attention by policy makers
- d) volume of public funding involved
- e) beneficiary of a shift in public funding

**Table 6: Assessment of ‘importance’ of R&D policy instruments**

Instruments	Funding (2004-2006)	Criteria				
		a	b	c	d	e
a) Research and Development Assistance Agency	36.5	X		XX	X	XX
b) Business Incubators, Technology Parks and R&D Centres Scheme (BITPRDC)	41.3	XX			X	
c) Support to national networks of Centres of Excellence	32.5 (2005/2006)			XX	XX	
d) Support of Industry Research and Pre-Competitive Development (SIRPCD)	22.1 <sup>a</sup>					
e) National research and development programmes	119.0 (2002-2005)	X			XX	
f) State purchase orders for research and development	15.4 (2002-2005)					
g) New Rules for the investment incentives prepared by the Ministry of Finance	?					
h) The Single Programme Document NUTS II – Bratislava Objective 3 (SPD 3)	42.1				X	
i) Funds of funds	40.0 (+ another 40.0 expected from private sector) (2006-2009)	XX			X	XX
j) Support for start-ups and innovating firms under the roof of the Action plan for RDI	6.5 (2005/2006)	X				XX

X= relevant      XX= very relevant

## 8. Emergence of R&D policy mix

The R&D and innovation policies were elaborated and implemented by the *Ministries of Education and Economy*. As there was no national innovation policy (and no clear competence for the field of innovation), most policies by the *Ministry of Economy* were actually ad hoc initiatives and responded to opportunities for EU funding.

The *Ministry of Education* is responsible for R&D policy-making and uses a broad range of evaluation methods, which include internal reports, opinions and studies by external institutions and independent experts, and materials prepared by advisory bodies. It elaborated several policy analyses and plans (e.g. the *Concept of the State-Governed Scientific and Technical Policy up to the Year 2005, Technology Foresight*) and tried to implement these via instruments supported from the state budget. Most of these initiatives (*RDA, State Research Programmes*) had so far very limited success.

Since 2004, the *Strategy of Competitiveness* (elaborated by the Ministry of Finance) entered into force. The strategy was prepared by experts of the ministry and consulted with the professional public. The rationale behind the strategy was to shift Slovakia from a low-cost, low-value-added country to a knowledge-based economy.

The recent *Law on Organisation of State Support to Research and Development* (2005) arranged the elaboration of a *Long-Term Concept of the State S&T policies* (for 5-10 years) and of *National S&T Program* (for a 3 year period). However, none of these documents was elaborated by mid 2006.

### R&D policy challenges

The *Section for Science and Technology* (see Figure 2) provides regular evaluation reports on the performance of the S&T bodies and policy measures under its auspice. In 2001, the section submitted a report on *Assessment of Actual State in Infrastructure of Research and Development Organisation Workplaces* to the government and suggested measures how to improve the research infrastructure. In 2003 it prepared an interim report on the performance of the abovementioned concept. The report found (a) some progress in improving the information infrastructure of science and technology; (b) significant lack of public R&D-funding and (c) rapidly aging technical R&D-infrastructure (laboratories, tools, equipment, etc.). The 2006 report on the R&D-infrastructure found some modernisation of the R&D-infrastructure. Rather paradoxically, the *Slovak Academy of Science* accounted for both the most aged infrastructure and a major share of laboratories in the *Centres of Excellence*. The report concluded that R&D-infrastructure should be supported by the *State R&D-Infrastructure Programs*. These programmes are envisaged in the *Law on Organisation of State Support to Research and Development*, but have not been developed yet. They are envisaged in the 2006 budget, but there is no information on their actual implementation. Support should concentrate on the *Centres of Excellence*. The major challenge for the Slovak R&D policy, an extremely low financial support for R&D, however, persisted and was not adequately addressed by the incumbent policy measures.

The *Section for Science and Technology* also carried out regular evaluations of the *State Research & Development Programs*. Evaluation reports analysed planned and actual results accomplished by research projects as well as developments in financial indicators related to supported activities. These reports were published on the

section's website. The latest (mid 2006) analysis found that the implementation of *SRP* started rather late and that the government cut large parts of the financial resources for these programs. Some projects will end in 2010 and it was still too early to evaluate them. The analysis pointed out that most preliminary results were actually basic research, while practical applications were limited. The new *SRP* is about to be launched in 2007, with each *SRP* having to prove significant economic and social impacts.

A major event for the Slovak R&D policy mix was the reform of the public R&D system in 2006. The Slovak *2006 State Budget* (Collection of Laws, 2005), in force since 1 January 2006, improved the level of financial support for R&D. Furthermore, the current budget marks an important shift towards program-based expenditure: the bulk of government funding is no longer allocated to particular ministries (then to be spent at their discretion), but to specific programs. The eligible programs are listed in the budget, as are the agencies in charge of their implementation and sets of quantitative indicators for assessing the impacts of these policies. The indicators will be used for a period of more than three years in order to provide better conditions for long-term policy planning. Most R&D-programs will be implemented by the *Ministry of Education* and the *Slovak Academy of Science* (for budget details see table 4).

The structure of the 2006 budget reflects the development priorities set by the *Competitiveness Development Strategy for Slovakia until 2010* (the "Lisbon Strategy for Slovakia"). Public support for R&D-activities has been increased in several key areas. In 2006, for example, public university funding increased by 11.2% (to EUR 309.36 million) compared to 2005. The *Research and Development Assistance Agency*, which supports applied research projects, had its budget increased by 50% to EUR 19.31 million. In contrast, public funding of the *Slovak Academy of Science* remained unchanged. The revision of the R&D-budget reflects the government policy to increase the commercialisation of R&D-results. One aim is to encourage universities and research institutes to increasingly utilise funding from the private sector, means provided by the RDA and by international R&D-programs.

It is highly questionable, if this development will be further pursued by the new government, because it intends to launch extensive social initiatives. In order to finance these and to keep the Maastricht-criteria, the government announced substantial cuts in the *2006 State Budget*. Each ministry and/or government agency has to save on average 10% of its expenditure. The higher budget cuts were reported for the *Ministry of Defence*, but the *Ministry of Education* and *Slovak Academy of Science* also accounted for considerable budget restrictions. Total cuts on R&D-spending amount to some EUR 9.2 million. The *Centres of Excellence Program* –to be introduced this year – is likely to account for a major budget cut of EUR 5.5 million. The *Slovak Academy of Science* has to save some EUR 1.3 million. The academy will have to enrol some 100 PhD students less and restrict its publishing activities. The RDA grant agency will lose some EUR 2.6 million, but hopes to compensate the losses with EU funds. Significant budget cuts are also planned for universities and regional schools. The *Ministry of Education* has to save EUR 17.1 million in total (Hospodárske noviny daily, 2006).

As a matter of fact, these developments clearly do not contribute to meeting the challenges identified in section 1. Rather, they display the low priority and continuity of R&D policy and the unstable policy framework conditions in Slovakia.

In summary, the R&D policy instruments are so few and limited in scope that there is no much room for their interaction. Some old instruments (*State Research Programmes* and *SRO*) were suppressed a) because they had little visible impact on the R&D-development and b) due to general budget cuts. Given falling public expenditure on R&D, the design process can hardly be identified as ‘radical’ or ‘incremental’ – well intended plans and initiatives have little real backing. As there has been no National R&D policy (after the 2000-2005 *State S&T Policy Concept* expired), there is neither ‘construct’ nor ‘ex post’ policy mix, just a bundle of ad hoc initiatives.

## 9. Governance of the policy mix

### R&D/ Innovation System

Slovakia had neither a national R&D policy nor a national R&D-/ Innovation-Council by 2006. The national innovation system was fragmented and consisted of a number of government, private and non-profit organisations. Most of these organisations were controlled and/or supported by the government (major responsibilities were assigned to the *Ministry of Education* and the *Ministry of Economy*), its agencies and initiatives. This explicitly includes private organisations, because of their specific history: In the early 1990s, when many Slovak enterprises shed off their R&D-departments, the government tried to save at least remnants of the former R&D-infrastructure in the enterprise sector. As a result, some 37 industry research institutes (half of the 1989 level) were still in business by 2006. However, these institutes are nursed by their former ministries (mainly *Ministry of Economy*, see indent B) via grants and *State Research Orders*. Nevertheless, the research institutes had to reorient on profit-oriented activities, such as metrology and certification. As most of these institutes do not publish any data on their business, it is difficult to assess, how much 'research' contributes to total income and in how far these institutes can still be considered 'research institutes'.

In general, most of the basic and applied research was undertaken in the *Slovak Academy of Science* and the universities, while the *Ministry of Economy* and its agencies backed some applied research and the majority of innovation initiatives.

### A. Agencies and activities controlled/ supported by the Ministry of Education

The *Ministry of Education* concentrated on the support of basic and applied research. Applied research also was supported by public procurement and carried out in (private) industry research institutes.

- **Slovak Academy of Science (SAS)** is a research body providing the bulk of basic research in Slovakia. Its primary mission was to acquire new knowledge of nature, society and technology. It currently comprises 74 organisational units. In 2006 the SAS had a budget of EUR 40.03 million and employed some 3,150 people (of which 1,350 employees with a scientific degree and 906 PhD students). Financial support and the number of staff (including PhD students) changed little in last five years.
- **Higher Education Facilities:** There were 23 public and 7 non-state universities and higher education facilities in Slovakia by 2006. Most of them, however, are small, regional organisations. In December 2005 the *Ministry of Education* and *European University Association* signed an agreement on the evaluation of R&D-activities in 23 Slovak universities in order to improve the quality of the research.
- The **VEGA Grant Agency** was established by an agreement between the *Ministry of Education* and the *Academy of Science* in January 1996. VEGA is the funding and advisory body for the *Ministry of Education* and academy in the fields of 'implementation of S&T policies', 'basic research funding' and 'evaluation of research projects'. In 2005 VEGA supported some new 450 projects lasting 2-3 years with EUR 1.21 million. These projects do belong to any specific policy initiative, but are part of the institutional grants by the

*Ministry of Education* to universities and institutes of the academy (discretionary spending by the ministry).

- **Research and Development Assistance Agency** (former *Science and Technology Assistance Agency*) is responsible for tendering and funding grants to public and private research bodies. The RDA becomes an increasingly important source of funds for R&D-activities, in particular in applied research.

## **B. Agencies and activities controlled/supported by the Ministry of Economy**

The *Ministry of Economy* managed a network of innovation support agencies. These concentrated on the implementation of various innovation policy measures, most of which are heavily dependent on the EU-funds.

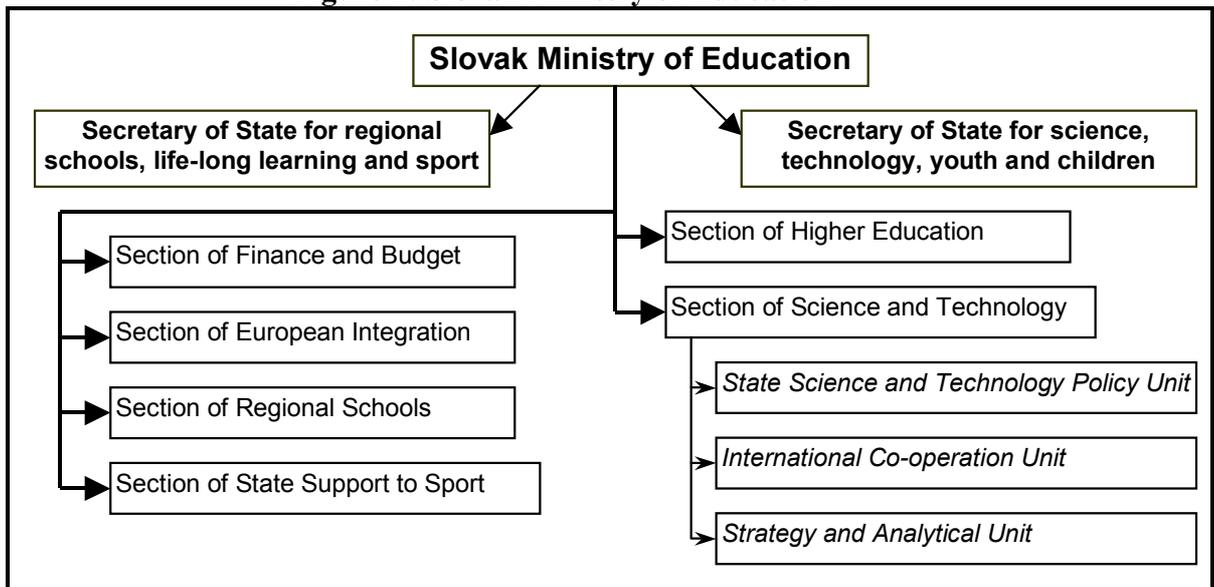
- **National Agency for the Development of Small and Medium Enterprises** (NADSME) was established with the aim to support the development and growth of small and medium-sized enterprises in Slovakia. It has operated as a non-profit association which includes three participants: the *Ministry of Economy*, the *Entrepreneurs Association of Slovakia* and the *Slovak Association of the Personal Businesses*. Since 2004 the NADSME has been responsible for managing calls of the BITPRDC scheme (see 4.) which finances (applied) research centres.
- The **Slovak Investment and Trade Development Agency** (SARIO) aims to create an investment friendly image of Slovakia in order to attract foreign direct investment, support Slovak export and contribute to reducing unemployment. It offers investment projects and incentives for foreign investors, searches potential locations for industrial zones, and develops export strategies for Slovak enterprises. SARIO also participates in the implementation of EU-structural funds in Slovakia and supports NADSME in managing calls related to BITPRDC.
- **Slovak Energy Agency** (SEA) has operated since 1999 and is a non-profit organization that focuses mainly on 'energy' and 'energy saving' issues. It is also responsible for managing calls under the SIRPCD scheme (see 4.).

## **R&D policy instruments**

R&D policies significantly overlap with S&T-policies. The *Ministry of Education* is in charge of S&T-policies. Most of the respective instruments were designed and implemented by the *Section of Science and Technology* of the *Ministry of Education*. The section has three units:

- The **State Science and Technology Policy Unit** provides analyses, forecasts, design, implementation and evaluation of S&T-policies and instruments. It also elaborates long-term priorities and development concepts for state S&T-policies and related policy measures. The design and management of the *State R&D Programs* is another important task of the unit. It also advises the procurement of the *State R&D Orders*.
- The **International Co-operation Unit** works on the design and implementation of international S&T-co-operation, in particular with EU member states. It also represents Slovakia in international governmental and non-governmental organisations related to S&T.
- The **Strategy and Analytical Unit** provides evaluations of public R&D policies and formulates strategic recommendations for the further development of S&T in Slovakia.

**Figure 2: Slovak Ministry of Education**



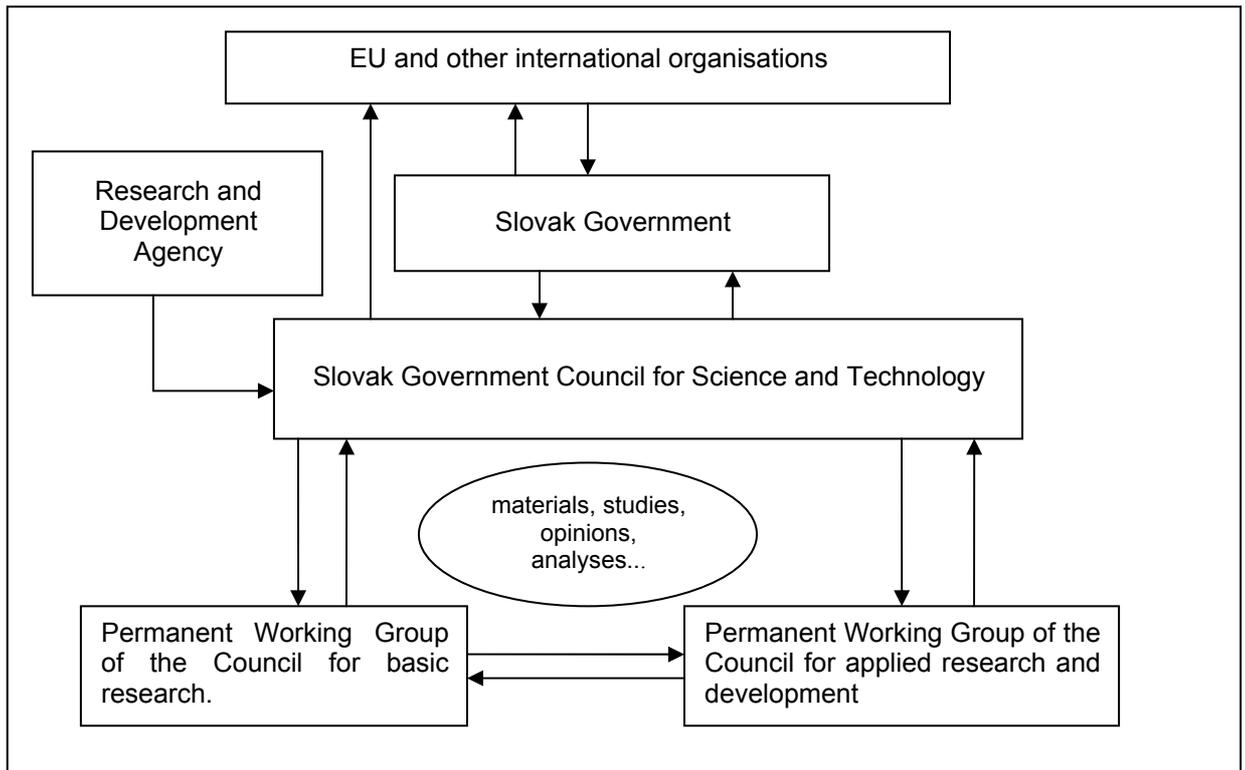
### **R&D policy co-ordination**

The co-ordination of R&D and S&T policies was handled by the **Slovak Government Council for Science and Technology (SGCST)** (Figure 3). The body originated in the former *Slovak Government Council for Science and New Technologies* and was restructured in 1999. The statutes of the SGCST declare that “the council is a permanent advisory body of the Slovak government in the field of the state science and technology policies....It discusses and evaluates conceptual and strategic materials on S&T policies elaborated for the Slovak government, EU organisations or other international organisations”. The SGCST is administered by the *Ministry of Education*. Both, the structure and responsibilities of the council underwent a thorough revision in 2006. The changes aimed at simplifying the council’s structure and orientating it towards the development of S&T policies, whereas innovation issues should be handled exclusively by the *Ministry of Economy (The Economic Strategy Unit)* and its agencies. The SGCST has now 15 members: *Minister of Education* (chairman), *Ministers of Finance and Economy* (vice-chairmen), *Minister of Transport, Posts and Telecommunication*, *Minster of Agriculture*, Chairman of the *Slovak Academy of Science*, another SAS representative appointed by the government, the president of the *Slovak Rector Conference*, the chairman of the *Universities Council*, another universities’ representative appointed by the government, and five representatives of the business sector also appointed by the government.

The council will establish two permanent **Working Groups**, one for basic and one for applied research. The great array of stakeholders should provide for good co-ordination between policy instruments from within and outside the R&D-domain. The real influence of the council is, however, limited by the financial resources allocated to the S&T-projects. Low attention to R&D and innovation issues paid by the council members is another shortcoming of this body. The council has met quite infrequently. In fact, coordination of R&D policies with other sectoral or horizontal policies (e.g. labour market, regional development, business environment etc.) has been rather poor. The *Ministry of Education* has managed projects and agencies developing basic

and applied research projects, while the *Ministry of Economy*'s agencies concentrated on applied research and innovation projects. The SGCST should, in theory, coordinate R&D and innovation activities of these key ministries, but lacks influence, legal responsibilities and personal resources. The *Ministries of Economy* and *Education* were governed by political parties with different ideological preferences (Liberal versus Christian Democrats) and found it difficult to cooperate. The lack of a national R&D-concept further complicated efforts for a clear and efficient R&D policy mix.

**Figure 3: Coordination of the R&D policies in Slovakia**



## 10. Interactions between policy objectives and instruments

### **Interactions between direct and indirect R&D policy instruments**

The number and volumes of R&D policy instruments are rather limited in Slovakia, and so is the potential room for their interactions. As for the **direct financial instruments**, grants and public procurement seem to be **complementary**. Public research bodies were the major recipients of R&D-grants, while private and semi-private R&D-institutes absorbed most *State Research Programs* and *State Research Orders*. However, the bulk of R&D-assistance has been channelled through grants. In principle, all R&D-organizations can apply for RDA grants.

The Slovak economic policy was liberal and allowed for **no** tax credits or other **forms of indirect assistance to R&D-organizations** in the period 1998-2006 (investment incentives for foreign investors were a notable exception).

The grant system had some positive and negative points. On the one hand, the grants enabled relatively extensive networks of R&D-organizations to survive; on the other hand they were too small to support good quality research. The VEGA grant agency, for example, was funding basic research and evaluation of research projects. In the period 2002-2005 VEGA sponsored some 1,586 grants with a total amount of EUR 7.26 million. The average grant size was EUR 4,578. The situation with large-scale grants was not better. The traditional system of the top-down procurement proved to be too complex and bureaucratic. Given the limited size of Slovakia and its R&D-infrastructure, frequently the same institutions were involved in the preparation, implementation and evaluation of research. Recently, the system of the *SRO* and *SRP* underwent a thorough transformation, though. While competitive grant bidding still accounts for a minor part of total R&D-grants, its shares increase quite rapidly. Despite these welcomed changes in R&D-funding, the overall public spending on R&D remains very low and hardly compares with the high levels of support granted to car manufacturers in support of their low- and medium-tech activities (see below).

### **Interactions between R&D policy instruments and policy instruments from other domains**

Macroeconomic, financial, competition and human resource policies had major impacts on the development and application of R&D policy instruments in Slovakia in 1998-2006.

#### ***Macroeconomic and financial policies***

Slovakia experienced a period of macroeconomic mismanagement and instability in 1992-1998. By 1998, for example, short-term interest rates increased to 21.1% and the inflation rate to 10.4%, while the budget deficit reached 4.7% of GDP. Consequently, the macroeconomic policies implemented after 1998 targeted mainly macroeconomic stability. There were severe cuts in public spending in many areas, including the R&D system. Since 2001, the Slovak economy has enjoyed an economic boom. Inflation, fiscal imbalances, interest spreads and unemployment rates moderated. There was also a remarkable influx of foreign direct investment. Economic growth benefited from a strong commitment by the Slovak government to

social and economic reforms. These reforms were aimed at (1) structural changes in the economic and social system and (2) macroeconomic stabilisation and creation of favourable conditions for the adoption of the Euro by 2009.

The government's reform agenda was highly acclaimed by foreign economic experts and media, and helped to attract large volumes of FDI to the country (car makers in particular). However, a more detailed analysis of the reforms' results brought about a rather mixed assessment. The reforms also had their downside: in particular, persistent high unemployment rates, low average wages and great regional disparities. These problems, of course, were sensitive political issues and, consequently, the government concentrated on structural reforms and macroeconomic policies. Due to the costs connected to the reform agenda, public spending on education, social and health care, as well as the R&D system was reduced. This reduction was also caused by the government's strong dedication to early adoption of the Euro that motivated a strict financial policy which kept public spending within the Maastricht limits and cut expenditure in less sensitive areas.

Originally, the *State Science and Technology Policy Concept for 2000-2005* aimed to increase R&D expenditure to 1.8% of GDP by 2005. Once this target became unrealistic, the government tried to avoid quantitative targets and replaced them with qualitative ones. In April 2006, former Prime Minister Mr Dzurinda mentioned the government's commitment to increase R&D expenditure to 1.8-2.0% of GDP by 2010. In August 2006 the program statement by new Slovak government set the target to 0.8% of GDP. The statement, however, avoided to specify a time horizon for this. Macroeconomic stability and the 2009 adoption of the Euro, on the other hand, were confirmed as first-rank priorities.

### ***Competition policies***

Macroeconomic stabilisation was closely related to structural reforms and competition policy, since it would not be possible, if unsustainable policies in the fields of labour market, health and social care as well as business environment were continued. Structural reforms undertaken by the Slovak government were unusually extensive and impacted almost all areas of the economic and social system. The most important structural reforms included:

- ***The Pension Reform*** became a major topic in 2004 and 2005. It created a funded pillar, which was mandatory for all entrants in the labour market and voluntary for other market participants. Interest in funded pensions was higher than expected. By August 2006, some 1.44 million people (70% of the total workforce) entered the new system. The creation of an extensive funded pillar had major implications for the generation of investments, since it is expected that savings of EUR 500 – 700 million will enter the capital market each year.
- ***Transformation of the fiscal system.*** The most important component of this transformation was the tax reform. It abolished eight different rates for personal and corporate income tax as well as VAT and replaced these by a flat rate of 19%. The reform also included the elimination of a double taxation of income, such as dividend tax, real estate transfer tax, inheritance tax and gift tax. The development of public finances in 2004-2006 indicates that the tax reform was a great success. The decreasing tax rate caused an increase in total tax receipts and the balance of public finances improved. Thereby, the transformation of the fiscal system partially overlapped with the public administration reform, because it included a shift of certain tax receipts to regions and municipalities.

- ***Labour market and social security reforms*** intended to increase employment through a more flexible labour market environment and better incentives for working and job-creation. The new labour code caused a re-definition of employee–employer relations and allowed greater flexibility in terms of recruitment and layoff of personnel, wage negotiations, holidays, trade-union participation on the corporate governance, etc. The new social policy tried to motivate people in need to rely on their own resources and abilities. This reform, for example, decreased social benefits for unemployed, while at the same time increased tax bonuses and financial incentives for people actively seeking jobs. The introduction of this reform was heavily criticised by those in need. However, during 2004-2006 the reform generated a large number of jobs (even though poorly paid) within the public work programs and caused a certain decrease in unemployment rates.
- ***The business environment reform*** simplified conditions for start-ups and enterprises. The new business code provided simplified requirements and administrative procedures for setting up a new business. A new credit register enhanced the protection of banks from lending to ‘dubious’ businesses and, hence, eased access to credits for ‘reliable’ enterprises.

Competition policies were hugely successful in supporting economic growth (6.2% in 2005) and attracting foreign investors. However, these policies fostered a dual structure. On the one hand, highly efficient, export-oriented and technologically advanced branches of multinational companies (MNCs) and international banks; on the other hand, few large enterprises owned by domestic capital and a great number of domestically owned SMEs with limited financial, human and technological resources. While branches of MNCs benefited from R&D performed in their R&D units abroad, R&D and innovation by domestic companies is very limited. According to the second *Community Innovation Survey* (CIS) only 16.9% of all Slovak companies introduced a new product in the period 1997-1999. For the period 2001-2003, CIS 3 found a slight increase to 19.0% - but still the rate is among the lowest in Europe.

Even though these competition policies did not have a traceable direct impact on other R&D instruments, they contributed to a more positive business environment and economic outlook and hence might set the framework for R&D activities by private companies.

### ***Industry and innovation policy***

The industrial policy, which has been very much oriented to the support of large-scale investors, **negatively impacted R&D funding**. Inadequate support of R&D and tertiary education sharply contrasted with generous support for foreign investors, in particular car-making companies. Since 1992, all successive Slovak governments tried to foster the car industry. By 2006, three major producers operated in the country (Volkswagen, Hyundai-Kia and Peugeot-Citroen). Slovakia is supposed to manufacture the highest number of cars per capita worldwide by 2006-2008. Car producers accounted for a significant part of inward FDI, both directly and indirectly through their suppliers establishing new plants in Slovakia. The government assisted carmakers with state aid of EUR 700 million in 2004-2006. This sum contrasts sharply with the total funds to the R&D sector of EUR 166 million in 2005.

Moreover, there was no consistent strategy of investment support in recent years. The government supported several large foreign investors in low- and medium tech

industries. The volume of assistance and scheme details varied between individual projects and the investment approval process was sometimes tainted with corruption, ad-hoc solutions and incompetence. In addition, there was no clear policy supporting high-tech industries.

In 2005 the *Ministry of Finance* responded to widespread criticism concerning excessive support of low- and medium-tech MNCs and prepared **new rules for investment incentives** (Slovak Government, 2005) which explicitly favour high-tech industries (see 4.). These new rules are likely to have some positive impacts on innovation and R&D development, especially, since the incentives do not discriminate between domestic and foreign investors. However, an interim assessment indicated some problems with the implementation of the rules, because of the combined focus on high-tech industry and backward regions at the same time (see 4.). This does not match the preferred locations of high-tech firms in metropolitan regions. Moreover, there are reports that the lengthy administrative procedures pose an obstacle for some firms.

### ***Human resources policies***

University education was considered a privilege and was not accessible to the majority of people during the communist period. Demand on university education far surpassed supply. Access to higher education widened during the transition to a market economy in the 1990s. Several new universities were established and, although of variable quality, partly satisfied the pent-up demand for higher education. The number of undergraduate students increased from 60,000 (1989) to 164,000 (2004), while age-specific university enrolment rates increased from 13% to 22%. The increase in postgraduate student numbers was even steeper: from some 600 in 1990 to 10,290 in 2004. The government allocated increasingly more funds to universities. Total public expenditure of the university system amounted to EUR 309 million in 2006, which is almost 12% more than in 2005. Measured as a % of GDP, public university funding increased from 0.71% to 0.76% in the same period, but remained low by European standards. The quantitative increase in university education was, however, not matched by a qualitative increase. University funding essentially depends on the numbers of students, whereas the quality of education and research are far less important. Universities have very limited resources for R&D and, consequently, research carried by most universities is considered of poor quality.

**In summary**, it appears that many policies outside the R&D domain had a negative impact on R&D policies, mainly because they competed with them about political attention and scarce public funds. Some even caused a reduction of public spending which also hit R&D expenditure. Positive impacts can only be assumed for the tax reform, which increased state revenues and, as a consequence, might have contributed to the increase of public R&D spending in the current budget (even though there is no direct evidence). This situation may change in the future, if the healthy business environment preserves. Slovak enterprises cannot rely on cheap labour for a long time and the former government seemed to have recognised the need for developing a knowledge society and R&D activities. The position of the new government on these issues is still uncertain, though.

In conclusion, the R&D policy mix in Slovakia gives the impression of being a rather arbitrary product of ad-hoc policies, whereby the policy making process outside the R&D domain obviously did not take into account its possible impact on R&D and innovation.

**Table 7: Intersections between policy types – tentative evaluation**

			R&D Domain							
			R&D Policy					R&D/Innovation Policy		
			Generic	Sectoral	Finance R&D specific	Educational R&D specific	Employment R&D specific	Linkage Policy	IPR Policy	
R&D Domain	R&D Policy	Generic	<b>Compl.</b>							
		Sectoral	<b>Compl.</b>	<b>Compl.</b>						
	Financial and Fiscal Policy	R&D specific								
	Education Policy	R&D specific								
	Employment Policy	R&D specific								
	R&D/Innovation Policy	Linkage Policy								
		IPR Policy								
	Financial and fiscal policy	Non-R&D Specific								
	Macroeconomic Policy		<b>Neg.</b>	<b>Neg.</b>	<b>Neg.</b>					
	Education Policy	Non-R&D Specific	<b>Neg.</b>							
	Employment Policy	Non R&D Specific								
Innovation Domain	Innovation Policy	Generic	<b>Compl.</b>							
		Sectoral								
	Other Policies	Industry Policy		<b>Neg.</b>						
		Trade Policy								
		Defence Policy								
		Consumer Protection policy								
		Health and Safety Policy								
		Environment Policy								
		Regional development Policy								
		Competition policy		<b>Neg.</b>						
	Other Policies									

## 11. References

- Baláž, V. (2006), Strategic Evaluation on Innovation and the knowledge based economy in relation to the Structural and Cohesion Funds, for the programming period 2007-2013; Country Report: Slovakia; Report to EC DG Regional Policy, draft version
- Collection of Laws (2006): Zákon o štátnom rozpočte na rok 2007 {The 2007 State Budget Law No 681/2006}, in Slovak
- Collection of Laws (2005), Zákon o štátnom rozpočte na rok 2006 {The 2006 State Budget Law No 655/2005}, in Slovak <http://www.zbierka.sk/search-res.asp?ti=no&slovo=655>
- European Commission (2006), The Researcher's mobility portal - The Slovak Republic - National Science and Technology Policies and Documents, [http://www.eracareers.sk/version\\_eng/index\\_en.php?l1=5&l3=n](http://www.eracareers.sk/version_eng/index_en.php?l1=5&l3=n)
- Eurostat (2006), Statistics on research and development ([http://epp.eurostat.ec.europa.eu/portal/page?\\_pageid=1996,45323734&\\_dad=portal&\\_schema=PORTAL&screen=ExpandTree&open=/science/research/rd&product=EU\\_MAIN\\_TREE&nodeid=64660&vindex=11&level=3&portletid=39993606\\_QUEENPORTLET\\_92281242&scrollto=0](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996,45323734&_dad=portal&_schema=PORTAL&screen=ExpandTree&open=/science/research/rd&product=EU_MAIN_TREE&nodeid=64660&vindex=11&level=3&portletid=39993606_QUEENPORTLET_92281242&scrollto=0))
- Hospodárske noviny daily (2006) Vládne šetrenie na školstve ohrozuje vedu, {Budget cuts dangerous for science}, Hospodárske noviny daily, Wednesday, 23rd August [http://hnonline.sk/1-10022250-19145040-k01200\\_detail-63](http://hnonline.sk/1-10022250-19145040-k01200_detail-63)
- Ministry of Education (2006a) The State R&D Programmes, in Slovak, available at <http://www.minedu.sk/VaT/SVaTP/SPVaV/spVaV.htm>
- Ministry of Education (2006b) Zhodnotenie stavu technickej infraštruktúry právnických a fyzických osôb vykonávajúcich výskum a vývoj v SR {Evaluation of the technical infrastructure in R&D sector in Slovakia}, in Slovak
- Ministry of Education (2003) Interim report on the performance of the "Concept of the state-governed scientific and technical policy up to the year 2005", for the period 2000 - 2002, Appendix in, Slovak
- Ministry of Education (2001) Assessment of actual state in infrastructure of research and development organizations and workplaces, in Slovak
- Slovak Government (2006a): Analýza použitia finančných prostriedkov na štátne programy výskumu a vývoja s dôrazom na efektívnosť a účelnosť ich použitia {Analysis of the efficiency of financial instruments used for the State Research Programmes}, Slovak Government Resolution of 26 July 2006
- Slovak Government (2006b) Programové vyhlásenie vlády Slovenskej republiky {Programme Statement of the Slovak Government}, in Slovak
- Slovak Government (2006c): Návrh aktualizácie Národného strategického referenčného rámca Slovenskej republiky na roky 2007 - 2013 {*Proposal for the revised National Reference Framework for period 2007-2013*}. Resolution No. 832/2006 of 8<sup>th</sup> October 2006
- Slovak Government (2005a) Pravidlá v oblasti poskytovania individuálnej štátnej pomoci investorom {Rules for State Assistance to Individual Investment Projects}, In Slovak. [http://www.finance.gov.sk/Documents/1\\_Adresar\\_redaktorov/Webmaster/PK/91\\_79339/Vlastny\\_material.htm](http://www.finance.gov.sk/Documents/1_Adresar_redaktorov/Webmaster/PK/91_79339/Vlastny_material.htm)
- Slovak Government (2005b), Národný Program Reforiem Slovenskej Republiky Na Roky 2006–2008, {National Reform Program of the Slovak Republic 2006 –

2008}

[http://www.euroinfo.gov.sk/index/open\\_file.php?file=rozne/NPR\\_slovak.doc](http://www.euroinfo.gov.sk/index/open_file.php?file=rozne/NPR_slovak.doc)

Slovak Government (2002) Uznesenie vlády SR č. 912/2002 {Government Resolution No 912/2002 of 21 August 2002 on the State R&D Orders beginning in 2002 and their financial sources}, in Slovak

Slovak Government Council for Science and Technology (2006) Štatút Rady vlády pre vedu a techniku SR z 29.3.2006, {The SGCST Statute}, in Slovak

TrendChart (2006) = European trend Chart on Innovation, Annual Innovation Policy Trends and Appraisal Report – Slovak Republic 2006

TrendChart (2005) = European trend Chart on Innovation, Annual Innovation Policy Trends and Appraisal Report – Slovak Republic 2004 – 2005

TrendChart (2004) = European trend Chart on Innovation, Annual Innovation Policy Trends and Appraisal Report – Slovak Republic Covering period: September 2003 – August 2004

## Annex 1: Revised National Reference Framework (October 2006)

Operational Programme	Purpose of investment	Originally envisaged, MEUR <sup>5</sup>	Revised MEUR <sup>6</sup>		Total	difference, MEUR
			NUTS II	Bratislava		
1	2	3	4	5	6 (=4+5)	7 (=6-3)
<b>1. Regions</b>	Primary schools, health and social care facilities, historical monuments, tourism	1 475	1 600		1 600	125
<b>2. Environment</b>	Waste management, nature and environmental protection	1 450	1 800		1 800	350
<b>3. Transport and</b>	Construction of motorways and railways, modernisation of trains	3 437	3 200		3200	-237
<b>4. R&amp;D <sup>4</sup></b>	R&D, universities' infrastructure	2 600	883	331	1 214	-1 386
<b>5. Employment and social inclusion</b>	Increasing employment levels for population groups in an unfavourable position	600	864	17	881	281
<b>6. Education</b>	Better access to and quality of life-long learning, transformation of curricula	800	600	17	617	-183
<b>6a. Education infrastructure</b>	<i>Reconstructions, extensions and modernisations of equipment in middle and higher education facilities</i>	575	<i>Cancelled</i>		0	-575
<b>7. Technical assistance</b>	Administration	100	97,6	0	98	-2
<b>8. Bratislava</b>	R&D, employment, education and infrastructure in Bratislava region			82	82	82
<b>9. Competitiveness <sup>1</sup></b>	Innovations, competitiveness, tourism	X	772		772	772
<b>10. Health care <sup>3</sup></b>	Reconstructions, extensions and modernisations of national health care facilities	200	250		250	50
<b>11. Information society <sup>2</sup></b>	E-government, information society		993		993	993
	<b>Total</b>	<b>11 237</b>	<b>11 060</b>	<b>447</b>	<b>11 507</b>	<b>270</b>

Source: Slovak Government (2006c): [Návrh aktualizácie Národného strategického referenčného rámca Slovenskej republiky na roky 2007 - 2013](#) {Proposal for the revised National Reference Framework for period 2007-2013}. Resolution No. 832/2006 of 8<sup>th</sup> October 2006

Notes: 1 = 772 MEUR for information society reallocated from the former Knowledge-based economy operational programme. 2 = 993 MEUR on information society deducted from the former Knowledge-based economy operational programme. 3 = includes reconstruction of buildings and introduction of quality systems; 4 = former Knowledge-based economy operational programme; 5 = as of May 2006; as of October 2006.