Strategic Evaluation on Innovation and the knowledge based economy in relation to the Structural and Cohesion Funds, for the programming period 2007-2013

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CONTENTS

Executive Summary

Slovakia provides for an interesting example of a country with high economic growth, but low levels of the RTDI development. Array of economic and social reforms implemented in 1998-2005 and cheap and educated labour helped to attract great amount of the FDI to manufacturing industries in particular. But by 2006, Slovakia accounted more for a processing economy, rather than a knowledge-based one. Slovak government is changing its priorities. It elaborated several innovation policy concepts (e.g. Competitiveness Strategy) and channelled more financial resources to RTDI activities as to escape a fate of low-cost, low-value added country.

There are large regional disparities between Bratislava (which matches EU-25 averages for most economic and R&D indicators) and rest of Slovakia in terms of per capita GDP and investment, and rates of unemployment and population with tertiary education. There are several common factors limiting growth potential in Western, Central and Eastern Slovakia: underdeveloped transport and R&D infrastructures, lower stocks of human capital, lacking FDI and high unemployment rates. Disparities between Bratislava and rest of the country generate different absorption capacities for RTDI activities. Policy mix related to documents on implementation of Structural Funds should reflect this fact.

Slovak Republic has no National Innovation Plan and/or any other consistent innovation policy. Most innovation policies in Slovakia overlap with the S&T policies. These are designed and implemented by the Ministry of Education. The Ministry of Economy manages a network of agencies implementing innovation policies related to SMEs. Policy initiatives by two Ministries lack proper co-ordination and contribute to poor linkages between industry and academia sectors. In 2006 the Ministry of Economy prepared Proposal for the Slovakia Innovation Strategy for 2006-2013. It contains several systemic, sectoral and horizontal priorities (e.g. a more efficient innovation system and infrastructure, better quality of human resources, focus on manufacture of electrical and optical equipment, machinery, and chemistry, and information and nano-technologies).

Policy measures promoting RTDI activities accounted for some 30% of the total expenditure by two sectoral operational programmes and two regional single programme documents. Slovak regions outside Bratislava absorbed most Community funding and channelled it to the basic infrastructure programmes (modernisation of railways, highways, etc.). It was plausible solution for shortened planning period 2004-2006. Community funding in planning period 2004-2013 should probably more focus on RTDI measures and channel them to Bratislava, which has higher absorption potential. Key conclusion for strategic orientations for Structural Fund investments in innovation and knowledge include:

- The RTDI policy mix must recognise different absorption capacities for RTDI projects by particular Slovak regions.
- Low enterprise demand on innovative solutions is a major challenge of the Slovak economy. Promote only those measures, which address real demand by businesses.
- Insist on Regional Innovation Strategies. Innovation policy mix must be integrated into general regional development strategies.

1 Introduction

In March 2000, the EU Heads of State and government launched an ambitious political initiative for the European Union to become "the most competitive, dynamic, knowledge-based economy by year 2010". The agenda, which has become known as the 'Lisbon Strategy', has included a broad range of policies and regulatory measures to achieve this goal.

At the 2005 Spring Council of European Union, Heads of State and government concluded that all appropriate national and Community resources, including those of Cohesion Policy, should be mobilised in order to renew the basis of Europe's competitiveness, increase its growth potential and its productivity and strengthen social cohesion, placing the main emphasis on knowledge, innovation and the optimisation of human capital. In short, the Council recognised that while some progress has been made since 2000 in moving towards the goals enshrined in the Lisbon Strategy there remains a need to create "a new partnership for growth and jobs"[1]

In launching the discussion on the priorities for the new generation of cohesion policy programmes, the Commission published on 6 July 2005 draft Community Strategic Guidelines entitled "Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007-2013". One of the specific guideline is to improve the knowledge and innovation for growth. More specific areas of interventions, which are proposed by the Commission, include: improve and increase investment in RTD, facilitate innovation and promote entrepreneurship, promote the information society for all, and improve access to finance.[2]

Innovation is an important factor in releasing the potential of the Lisbon agenda. The knowledge captured in new technologies and processes can drive growth and competitiveness and create new jobs. But knowledge must be treated as part of a wider framework in which business grow and operate. Developing knowledge-based economy requires adequate levels of investment in R&D, education, and ICT as well as creating a favourable environment for innovation.

Less developed areas of the Union are also confronted with this new competitiveness challenge. Increasing cohesion leads to improvements in living standards and the reduction of economic and social disparities, which depend to an important extent on increases in productivity. Increasing competitiveness implies economic change through the introduction of new technologies and new methods of production as well as the development of new skills. Innovation is at the heart of this process. Technological and organisational change and new demands generated by rising income levels and factors which create new economic opportunities and therefore, contribute to the growth potential of these countries.

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[1] Communication to the Spring European Council (2005) "Working together for growth and jobs: A new start for the Lisbon Strategy", COM(2005) 141. Available at: http://www.europa.eu.int/growthandjobs/key/index_en.htm.

[2] Communication from the Commission (2005) "Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007-2013", COM(2005) 0299. Available at: http://www.europa.eu.int/comm/regional_policy/sources/docoffic/2007/osc/index_en.htm.

Structural Funds are the main Community instruments to promote economic and social cohesion. In the past and current programmes, they have contributed to enhance the research potential and innovation in businesses and to develop the information society, particularly in the less developed areas. Cohesion policy has also promoted the development of regional innovation strategies and other similar initiatives in the field of the information society.

The overall objective of the strategic evaluation study, as set out in the terms of reference, is that the study should provide conclusions and recommendations for the future of Structural Fund and Cohesion policy. In particular, the Strategic Evaluation will be used to prepare the negotiations with the Member States for 2007-13, to prepare the next operational programmes and to provide input into the 4th Economic and Social Cohesion Report.

In line with the tender specifications, this country report addresses the following issues:

- An analysis of the current situation in the field of innovation and the knowledge-based economy at national and regional level. For the national level, performance is compared to the average performance for the EU25 Member States plus Romania and Bulgaria; and at regional level, where possible given available statistics, compared to a typology of EU regions;
- Lessons from the past and current experience of implementing innovation and knowledge economy measures in the Structural Funds, both in terms of priorities and strategic approaches; as well as in terms of operational implementation;
- Main needs and potential for innovation in the eligible regions drawing on available studies, strategy development and future and foresight studies; and
- Recommendations on main investment priorities for Structural Funds over the programming period 2007-2013 and their implications for regional development.

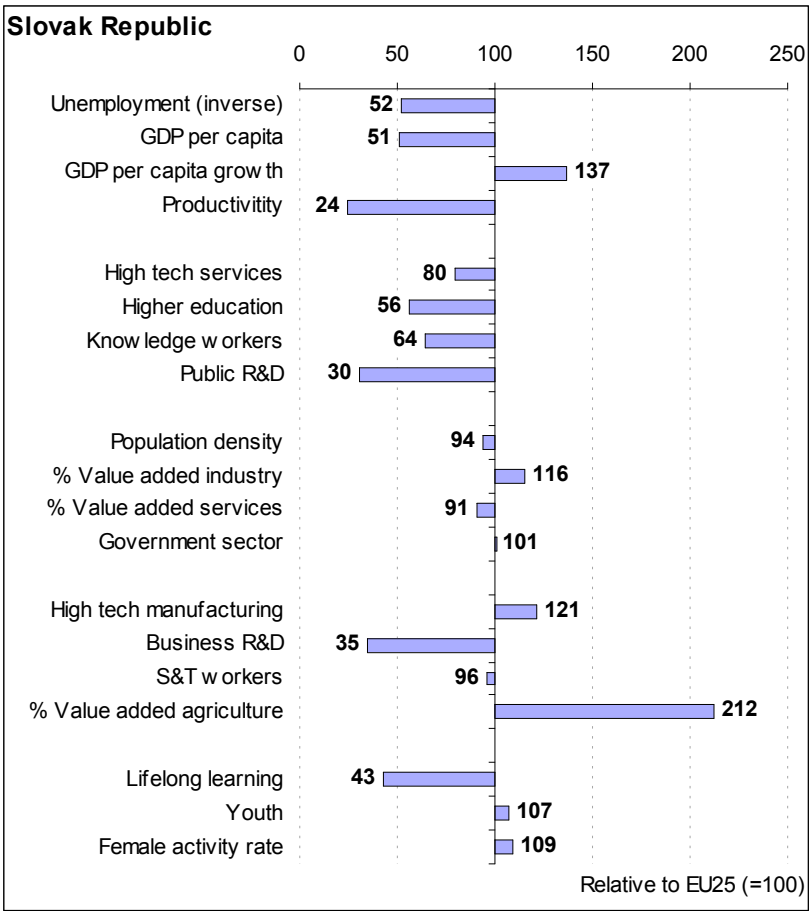
2 Investing in innovation and knowledge: a comparative overview of regional performance

This section provides a synthetic overview of the relative performance of the country, and where relevant main regions, with respect to the EU25 average for a number of selected key structural indicators of innovation and knowledge. The analysis aims to identify **main disparities and needs** at national, and wherever possible, regional level with a view to supporting the definition of priorities for future Structural Funds interventions (see sections 5 and 6 of this report).

2.1 Country overview: innovation and the knowledge economy

Exhibit 1 below provides a snapshot picture of the relative position Slovakia compared to the EU-25 average for a series of key knowledge economy indicators.

Exhibit 1: Relative country performance for key knowledge economy indicators



Source: Calculations of MERIT based on available Eurostat and national data from 2002-2003 depending on indicator. Detailed definitions and data for each indicator are provided in Appendix B.

In 2005 the Slovak economy accounted for excellent economic performance. Slovak GDP grew by 6.0% (4.2% in average in 2001-2005). Inflation rate fell to 2.8% and budget balance to 3.0% of GDP. Interest spreads were moderate and public and

private firms had better access to finance. The country entered the ERM II system and the 2009 term for the euro adoption seemed realistic.

Two factors are behind this economic boom and stable macroeconomic performance. The first one is the great influx of the foreign direct investment; and the second, the commitment by the Slovak Government to social and economic reforms. These reforms aim at (i) structural changes in the country's economic and social system and (ii) macroeconomic stabilisation and facilitating the adoption of the Euro by 2009. Most important reforms included pension reform (creating strong funded pillar), tax reform (introducing flat tax rate of 19%), business environment reform (simplifying conditions for entry of and activities undertaken by enterprises) and reform of social and health care services (aiming financial sustainability of these systems). According to the World Bank, these reforms have been very successful in field of macroeconomic stabilisation and fostering business environment (World Bank 2005). Less progress was however achieved in trying to remove regional disparities and cutting high unemployment rates.

In the field of innovations, Slovakia ranks as one of the poorest performers in the EU-25 area. The Summary Innovation Index (SII) ranks Slovakia on 28th place among 33 ERA countries. Slovakia accounts, however, for decent performance in five areas of the SII: (i) innovation expenditure by companies (this, is mostly related to multinational companies (MNCs), which account for a significant part of the influx in FDI), (ii) ICT expenditure, (iii) educated labour force, (iv) sales of new-to market products and (v) high shares of employment in high-tech manufacturing in relation to total employment[3].

Low R&D spending (caused by falling public support to R&D) is the major weakness of the national innovation system in Slovakia. In period 2000-2004 Slovak GERD increased from 143 MEUR to 174 MEUR, but its share in the GDP dropped from 0.65% to 0.53% (due to high growth in nominal and real GDP). Slovak BERD fell from 78 MEUR to 67 MEUR, and its share in GDP fell from 0.35% to 0.20% in the same period.

The country has a dual economy. Foreign-owned companies provide a significant part of total output and of the high-tech manufacturing exports. The MNCs, however, perform most of sophisticated activities (including R&D) in their headquarters. They favour Slovakia for its low costs of production and turn it into a branch-plant economy. Domestic enterprises, on the other hand, are mostly small and account for limited human and financial resources. This dual structure of the economy explains the very low levels of transmission and application of knowledge indicators. Low R&D support is reflected in poor levels of knowledge creation. Slovakia, accounts for very low numbers of scientific publications, patent applications to the EPO and USPO and shares of the high-tech exports in total exports.

[3] Looking at the EIS 2005 data, the basic layout of the innovation performance changed little in Slovakia compare to previous years. Slovakia accounted for very high innovation expenditure by companies (160% of the EU-25 average) and ICT expenditure (95% of the EU-25 average), which was related to purchase of high-tech equipment by branches of multinational companies (MNCs). Foreign direct investment was behind high levels of employment in mid/high-tech manufacturing (121% of the EU-25 average) and new to market product sales (239% of the EU-25 average).

Regarding human resources development, Slovakia maintains reasonable rates of the S&T graduates (68% of the EU-25 average) and shares of population with tertiary education (58% of the EU-25 average). Increasing rates of youth education (119% of the EU-25 average) indicate that the human resources gap between Slovakia and EU-25 may narrow in the future.

Nevertheless, Slovakia still faces a series of serious problems in innovation performance, namely: i) shares of business and public expenditure on R&D in GDP (38% and 25% respectively of the EU-25 average); ii) university R&D financed by the business sector (5% of the EU-25 average) and iii) early stage of venture capital (6% of the EU-25 average). The poor financial base of the R&D system is reflected in a very low commercial output. Rates of patent activity are only 3% of those in the EU-25 area.

Slovakia is a small open economy and heavily dependent on the foreign trade. High labour cost countries are able to compete in the increasingly globalised economy as long as they are specialised in industries that require a high content of knowledge, high qualification levels and expertise in the labour force. Slovakia has an educated labour force, but it competes with low costs of labour. By 2006, Slovakia accounts more as processing economy, rather than a knowledge-based one. Implementation of the Competitiveness Strategy may help Slovakia to escape a fate of low-cost, low-value added country.

2.2 Regional disparities and recent trends

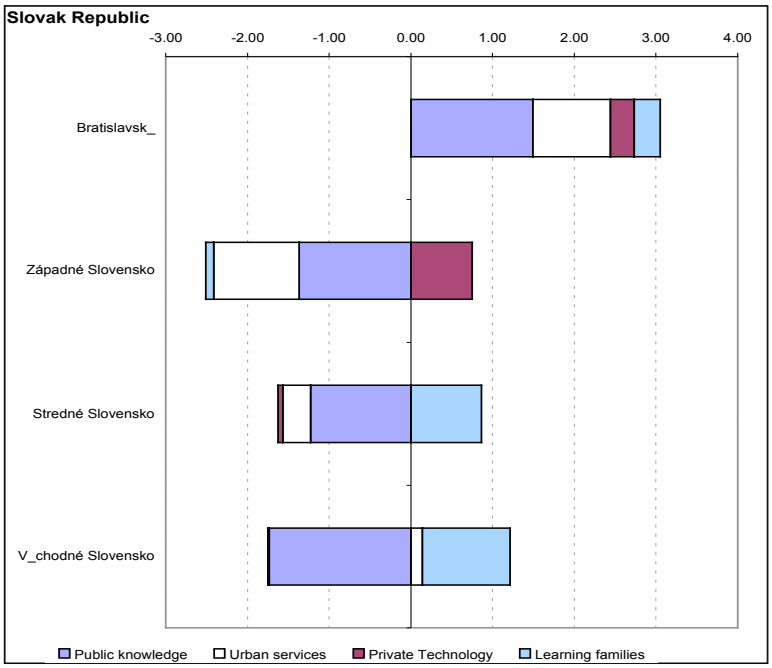
In order to analyse and describe the knowledge economies at regional level in the EU, the approach adopted was to reduce and condense all relevant statistical information available for a majority of regions. The approach involved firstly reducing the information from a list of selected variables into a small number of factors by means of factor analysis. These factors are:

- Public Knowledge (F1): human resources in science and technology combined with public R&D expenditures and employment in knowledge intensive services is the most important or common variables in this factor. Regions with large universities will rank high on this factor.
- Urban Services (F2): The most important variables for this factor are value-added share of services, employment in government administrations and population density. A key observation is that academic centres do not necessary co-locate with administration centres.
- Private Technology (F3) This factor is most strongly influenced by business R&D, occupation in S&T activities, and employment in high- and medium-high-tech manufacturing industries.
- Learning Families (F4). The most important variable in this factor is the share of the population below the age of 10. The Learning Families factor could also be interpreted as an institutional factor indicating a child-, learning- and participation-friendly environment, or even a 'knowledge-society-life-style' based on behavioural norms and values that are beneficial to a knowledge economy.

In a second step, the 200 plus EU27 regions were grouped into 11 types of regions (see appendix A) displaying similar characteristics by means of a cluster analysis. In the case of Slovakia the regions are grouped as follows:

- **Bratislavský (Bratislava region)** stands out from the other Slovak regions as a member of the cluster "**Local sciences & services**" (Appendix A). This cluster groups regions with diverse nationality consisting mainly of capital cities, such as Madrid, Warsaw, Lisbon, Budapest and Athens. These urban areas serve as national centres for business services, government administration, public research institutes and universities. Urban Services and Public knowledge are therefore the strongest factors for this type of region. GDP per capita is on average slightly below the EU25 average, but growing. The low score on life-long-learning is a weakness in most Local Science & Services regions, especially compared to the more wealthy and advanced Science & Service Centres. The Bratislava Region (Bratislavský) enjoyed double per capital GDP growth compare to the EU-25 in period 1996-2002. Indicators for the high-tech services, higher education and knowledge workers in Bratislava were significantly higher than those for the EU-25 average (Appendix B). The region, on the other hand was lagging behind in the 'Private technology' indicators. As for the "Local science and services" cluster, the Bratislavský region enjoys higher rates of employment in the high-tech services and participation in higher education and life-long learning. The region also has above average per capita GDP growth rates and productivity levels.
- The other 3 Slovak regions **(Západné. Stredné and Východné Slovensko)** are classified as "**Eastern cohesion**": Manufacturing industries is the dominant sector, whereas services and agriculture are rather small sectors. This type of region is mostly located in Poland, Czech Republic, Hungary and Slovak Republic. Two Portuguese regions are also included. The Public Knowledge factor is the main weakness of this type of regions. However, the score on the Private Technology factor is close to average, which means that it is much stronger in this respect than the Services Cohesion regions. Unemployment is high, even compared to Rural Industries and Services Cohesion regions. These 3 regions ranked to cluster of 'Eastern Cohesion' and accounted for the bellow-average indicators of the high-tech services, higher education and knowledge workers and urban services in this cluster. Low endowment of these regions by human capita and the R&D and physical infrastructures were reflected in the below average productivity rates and per capita GDP growth rates. he above-average rates of the high-tech manufacturing employment were a major competitive strength of the Západné Slovensko region.

Exhibit 2: Regional factor scores per region



Source: MERIT. The bars are stapled factor-scores showing the deviation (1=standard deviation) per factor from the average of 215 EU regions (0.00). The longer the bar, the bigger is deviation. Detailed regional scorecards can be found in Appendix B.

Strong polarisation between Bratislava and rest of the country is a remarkable feature of regional development in period 1990-2002. Disparities among other Slovak regions (excluding Bratislava) were much smaller and did not change much after 1996. Regional disparities are identified on level of districts (NUTS IV level, with average population of 120 thousands) and counties (NUTS II level, with average population of 1.7 MEUR) and are analysed via comparison of average values for Slovakia with standard deviations (expressed as percentage of Slovak average) for all districts. By early 2000s, regional disparities particularly were pronounced between Bratislava and rest of the country. While Bratislava's regional GDP (expressed in terms of purchasing power parity) was 112.8% of the EU-15 average, GDP in the Prešov region was less than one third (32.6%) of this value in 2002 (European Commission 2004)[4]. A regression model indicated that tertiary education levels, unemployment rates, investments and foreign investors proved to be major factors behind regional disparities (expressed in terms of regional average wages). Development of regional economies in Slovakia in 1990-2002 followed patterns suggested by regional polarisation theories. Polarisation approaches incorporating factors of infrastructure development, stock of human capital and agglomeration probably were the best models to describe processes of regional divergence in Slovakia and resembled to in the other European countries. Conclusions by this study complement findings by the MERIT. In period 1996 –2002 the NUTS II regions of Central, Western and Eastern Slovakia accounted for 13-45% decreases in per capita investment (in constant 1989 prices) compared to 1985 –1989 (Exhibit 2a). Investment in Bratislava, on the other hand, increased 4.2 times in the same time.

[4] Latest available data. No data on regional development in 2003-2006

Bratislava evidently differs from the rest of Slovakia in terms of per capita GDP and investment, and rates of unemployment and population with tertiary education. Differences among Western, Central and Eastern Slovakia are much smaller (see Exhibit 2a and Annex B1). There are several common factors limiting growth potential in these regions: underdeveloped transport and R&D infrastructures, lower stocks of human capital, lacking FDI and high unemployment rates.

Exhibit 2a: Selected indicators of regional disparities in Slovakia in 1985-2002

	Slovak average (std dev, in % of avg.)	**Bratislava**	**Western Slovakia**	**Central Slovakia**	**Eastern Slovakia**
Investment per capita, per year, constant 1989 Sk					
1985-1989	11 632 (44.46)	21 061	11 988	10 265	9 966
1990-1996	10 341 (55.37)	31 654	9 061	9 167	7 264
1997-2002	14 054 (100.1)	89 300	6 534	8 925	6 378
Unemployment rate, in%					
1990-1996	11.27 (36.86)	4.06	11.73	11.28	14.23
1997-2002	16.87 (41.79)	4.77	15.32	16.12	22.74
Tertiary education levels, in%					
1990-1996	6.96 (28.38)	12.33	2.88	3.49	3.60
1997-2002	9.18 (31.77)	19.83	5.52	6.00	5.87
Enterprises per 1000 population					
1997-2002	11.01 (48.50)	36.54	8.40	9.26	8.53
Share of foreign firms in total enterprises,%					
1997-2002	9.25 (32.81)	16.23	9.13	5.44	5.26

Sources: ŠÚSR (1985-2004): *Štatistická ročenka* {*Statistical Yearbook*} and *Vybrané údaje o regiónoch* {*Selected Regional Data*}, Štatistický úrad Slovenskej republiky {*Statistical Office of the Slovak Republic*}, Bratislava, various issues; and author's own computations. Notes: Unemployment rate at end of year. Investment included tangible and intangible investments. Urbanisation level: share of population living in municipalities with over 5000 inhabitants, according to the 1991 and 2001 Censuses. Tertiary education levels: share of population with tertiary education in total population, according to the 1991 and 2001 Censuses. Standard deviation, expressed as percentage of Slovak average, is stated in parenthesis.

Exhibit 2b presents patterns of regional R&D capacities and performance in Slovakia in 2004. Bratislava had some 9% of total Slovakia's population, but accounted for 50-60% of total R&D capacities in terms of numbers of R&D organisations and R&D spending and employment. Bratislava's R&D organisations also generated half of the total active licences sold in current year. Somewhat lower share of BERD in GERD was explained via high concentration of public R&D facilities (Universities and Academy of Science) in the capitol. Before 2000 Bratislava accounted also for bulk of certified product types and quality management systems. After 2000 certification process spread also to rest of Slovakia.

Bratislava enjoyed the highest R&D intensity and influx of the FDI. These two factors help to explain the high per capita GDP growth of 8.26% in period 1996-2002, while the country average was 6.54% (Exhibit 3).

High concentration of R&D infrastructure in Bratislava helps to explain limited absorption capacity of the RTDI measures implemented by Structural Funds in Slovakia. Bulk of these measures was introduced via sectoral operational programmes, for which Bratislava did not qualify.

Exhibit 2b: Basic indicators of regional R&D and innovation capacities and performance in Slovakia

Region	Bratislava	Western Slovakia			Central Slovakia		Eastern Slovakia		Slovakia
Indicator		Trnava	Trenčín	Nitra	Žilina	Banská Bystrica	Prešov	Košice	
R&D organisations [1]	105	22	33	20	27	21	19	25	272
R&D personnel in FTE	7 564.2	927.4	663.5	1015.8	890.0	955.5	392.8	1919.7	14 328.9
GERD total, MEUR	85.72	16.43	19.39	10.62	12.32	8.90	5.14	15.43	173.94
of which capital exp.	10.45	3.17	0.89	0.69	1.40	0.77	0.21	0.95	18.54
BERD total, MEUR [2]	15.34	10.38	15.96	4.24	7.64	4.23	3.34	5.48	66.60
Share GERD/GDP, % [3]	1.09	0.65	0.70	0.32	0.42	0.25	0.16	0.37	0.59
Share BERD/GERD, %	17.89	63.19	82.33	39.89	62.01	47.50	64.93	35.54	38.29
Total active licences sold in current year	27	11	5	3	4	2	1	0	53
Total passive licences bought in current year	47	47	47	47	47	47	47	47	376
Certified products (number of type) in current year	565	275	933	969	359	659	354	5 058	9 172
No. of certified quality management systems in current year	10	13	20	16	19	19	13	29	139

Source: Statistical Office of the Slovak Republic (2005): Yearbook of Research and Development in the Slovak Republic. Notes:. 1) R&D organisations include legal and physical entities of research and development that provided data in business, government, higher education and non-profit sectors. 2) By source of funding. 3) Refers to 2003. All other data refer to 2004. Exchange rate was 1 € per 40.045 Sk in 2004. GERD = Gross research expenditure on R&D; BERD = Business expenditure on R&D. FTE = Full time equivalent.

Exhibit 3: Recent trends per region in key indicators

		Unemployment	Per capita GDP	Industry share	Agriculture share	Population density	Tertiary education	R&D intensity
		1996-2003	1996-2002	1996-2002	1996-2002	1996-2002	1999-2002	1996-2002
		%-pnt ch.	% growth	%-pnt ch.	%-pnt ch.	% growth	%-pnt ch.	%-pnt ch.
EU25		--	--	--	--	--	--	--
Slovak Republic		3.70	6.54	-7.83	-1.08	0.09	0.78	-0.28
Regions:								
Bratislavský	SK01	3.00	8.26	-7.52	-0.70	-3.15	-1.04	0.20
Západné Slovensko (Western Slovakia)	SK02	3.80	5.54	-7.76	-1.19	-0.48	0.63	0.12
Stredné Slovensko (Central Slovakia)	SK03	5.40	6.67	-6.43	-1.07	0.24	1.20	0.11
Východné Slovensko (Eastern Slovakia)	SK04	1.20	6.41	-7.91	-0.96	1.96	1.39	0.07

Source : MERIT based on Eurostat data for period indicated

2.3 Conclusions: innovation and knowledge performance

Exhibit 4: summary of key disparities and needs per region

Region / group of regions	Key factors explaining disparity of performance (weaknesses)	Key needs in terms of innovation and the knowledge economy
Bratislavský kraj (Bratislava Region)	• (+) Leading region in Slovakia. Good R8D infrastructure, high stocks of human capital, high inflow FDI, pilot Regional Innovation Strategy;(-) Weak links between academia and industry	• Higher expenditure on R&D and innovation; • Academia-industry mobility schemes; • Support to industrial research;
Západné Slovensko (Western Slovakia)	• (+) Good physical infrastructure, good location; • (-) lower human capital, weaker R&D base, very low public and private R&D spending;	• Higher public investment in human capital; • Development of innovative clusters, combining domestic firms and MNCs; • Support to industrial research;
Stredné Slovensko (Central Slovakia)	• (+) extensive medium-tech manufacturing industries, • (-) lower human capital, weaker R&D base, very low public and private R&D spending; very high unemployment rates;	• Improvements in physical infrastructure; • Significant increases in investment in human capital; • Support to industrial research ; • Schemes preventing brain-drain;
Východné Slovensko (Eastern Slovakia)	• (-) Poorest Slovak region; low human capital; high incidence of social exclusion (Roma population); weak R&D base, peripheral location, lack of innovative enterprises, very low public and private R&D spending, very high unemployment rates, rural character	

High rates of economic growth typically are associated with high levels of the investments in research, technology, development and innovations in the OECD member countries. Slovakia provides for an interesting exception from this rule. Since 2001 Slovakia has enjoyed an economic boom, which was reflected in increasing living standards, decreasing inflation and stabilisation of macroeconomic environment. Much less progress, on the other hand, was done with building a knowledge-based economy. Slovakia, failed to address some most serious problems in innovation performance, namely low R&D spending and low support to human resources.

High economic growth was generated via structural reforms and influx of the foreign investments. The MNCs are concentrated in the Bratislavský region in particular. The Bratislavský region enjoyed benefits resulting from transfers of the modern technologies to branches of MNCs and profited more from the technology diffusion then knowledge creation. The rest of Slovakia accounted for lower influx of foreign investments and innovative technologies lower stocks of human capital, less developed R&D infrastructure and accounted for far lower increases in productivity.

Slovakia had second highest unemployment rate (18.5%) in period 2000-2004 in the EU-25. High level unemployment was identified with difficult industry restructuring, underdeveloped infrastructure and late arrival of the FDI. Slovak Government used opportunities provided by Structural Funds and set a number of investment priorities important for solving economic and social problems. These priorities included modernisation of basic infrastructure, development of human resources and growth of competitiveness of industry and services. The priorities were correctly set, but some issues were rather neglected, including RTDI activities. Several factors were behind this strategy (a) low absorption capacity for RTDI projects by most Slovak regions; (b) low attention paid by Government to RTDI issues prior to 2004 and (c) mismatch between resources for RTDI funding and absorption capacities in Bratislava and rest of country.

Some latest policy documents (Competitiveness Strategy, National Economic Strategy for period 2005-2013) identify these challenges and suggest allocating more resources to RTDI activities. Resource allocation, however, must be planned more carefully and most RTDI funding should be channelled to regions with higher absorption potential.

3 Innovation and knowledge: institutional context and policy mix at national and regional levels

Structural Fund support for innovation and knowledge is contingent on and seeks to generate strengthen the existing national (and/or regional) innovation system[5] in each Member State. In particular, institutional, legal and financial factors in the innovation system can limit the potential for certain types of intervention. Moreover, within the framework of the EU's "Lisbon objectives", Structural Fund interventions are expected to complement and provide added value to national (or regional) policy framework. In some Member States, Structural Fund interventions in favour of innovation and knowledge are marginal with respect to the national investment and policy effort, in others Structural Funds provide a main source of funding for such interventions. In both cases, there is a need to identify relevant national and EU policies which can have an impact on decisions on funding priorities.

3.1 Institutional and legal framework for innovation and the knowledge economy

This section of the report appraises two broad factors that condition the potential for coordinated intervention of EU and national (regional) policies in favour of innovation and knowledge:

- The first concerns the organisational structures of public and semi-public bodies responsible for the design, implementation and monitoring of innovation and knowledge economy policies. In particular, the analysis considers the responsibilities for funding or managing specific types of measures liable to be considered for support under the Structural Funds;
- The second concerns the institutional, legal and financial frameworks, which condition the linkage of national (regional) financing with EU financing.

By 2005 Slovakia had neither a National Innovation Plan nor a National Innovation Council. The national innovation system (NIS) is fragmented and consists of a number of government, private and non-profit organisations. Most innovation policies in Slovakia overlap with the S&T policies, which were designed and implemented by the Ministry of Education. Selected innovation policy topics are handled by the Slovak Government Council for Science and Technology (SGCST), which is headed by the Slovak Ministry of Education. This Council discusses and examines strategic plans and materials designed for the Slovak government and relating to S&T development in Slovakia. The Council, however, meets quite infrequently. Most of the R&D and innovation-supporting organisations (including private ones) are controlled and/or supported by the government and its agencies. Major

[5] The network of organisations, individuals and institutions, located within or active within national or regional boundaries, that determine and shape the generation, diffusion and use of technology and other knowledge, which, in turn, explain the pattern, pace and rate of innovation and the economic success of innovation.

responsibilities within the NIS are assigned to the Ministry of Education and Ministry of Economy.[6]

In general, most of the basic and applied research is undertaken through in the Slovak Academy of Science and 27 Universities (23 public and 4 private ones). The Research and Development Agency (RDA) manages grants for applied research.

The Ministry of Economy and its agencies back the majority of innovation initiatives, though a network of innovation support agencies. These agencies implement various innovation policy measures, many of which were heavily dependent on the EU funds:

- ***National Agency for the Development of Small and Medium Enterprises*** (NADSME), founded in 1993 and since 1997 operated as a non-profit association of 3 participants: the Ministry of Economy, the Slovak Association of Entrepreneurs and the Slovak Association of the Private Businesses. NADSME manages several EU structural Funds' measures and other innovation policy measures financed from national budget.
- ***The Slovak Investment and Trade Development Agency*** (SARIO) aims at creating a investment friendly image of Slovakia abroad and at attracting more foreign direct investments. SARIO has also participated, in collaboration with NADSME, in implementing EU structural funds measures.
- ***Slovak Energy Agency*** (SEA) is operated since 1999 as a non-profit organisation under the Ministry of Economy. It focuses mainly on guidance for the rational use of energy.

Innovation activities initiated by the Ministries of Economy and Education lack proper co-ordination. Weak co-operation is reflected in poor linkages between basic and applied research, and the commercial sector. Slovak Ministry of Economy and the NADSME has elaborated many policy initiatives aimed at strengthening research and innovations in Slovak SMEs. These policies, however, generated little success, judging by falling numbers of innovative SMEs in the early 2000s. Insufficient demand for innovative solutions has been the main problem of the Slovak productive fabric.

A common feature of Slovak innovation policy schemes is a large number of small grants or low funding levels per project. This increased the relative overhead costs of participation and reduced the attractiveness of a programme to firms. Larger programmes, on the other hand, offered the opportunity to be more comprehensive in their coverage and had greater visibility to industry. Slovak policies aimed at SMEs also were rather selective when supporting specific innovation activities. Slovakia, for example, accounted for very low numbers of patent applications to the EPO and USPTO. This problem partly was generated via relatively high costs of patent application process. No scheme, however, tried to address this issue. Only one of then innovation policy measures did not favour SMEs over large enterprises. Excessive concentration of Slovak innovation policies in SMEs probably was a policy mistake. Large firms use to have substantially higher levels of financial stability and much better strategic corporate planning. They could become at least as good innovation

[6] (National Development Plan and the Sectoral Operational Plans, containing targets in innovations, are developed by the Ministry of Construction and Regional Development. Innovation policy targets, however, are elaborated by the Ministries of Education and Economy)..

absorbers and producers as small firms. Most subsidises allocated to large enterprises, however, were spent for tax relief, land purchase and low- and middle-skilled job training.

Slovakia has very little private research bodies. Since 1989 Slovak R&D system has been accounting for spectacular fall in R&D intensity in terms of employment, expenditure and commercial output. From some 3.8% spent on R&D in 1989, the GERD fell to some 0.53% by 2005. When many Slovak enterprises shed off their R&D departments, Slovak government tried to preserve at least remnants of the former R&D infrastructure in enterprise sector. Some 37 industry research institutes preserved (half of the 1989 level) and are nursed by their former Ministries via grants and State Research Orders. The research institutes, on the other, had to re-orientate on activities bringing immediate profits, like metrology, certification, etc. As most of these institutes do not publish data on their business, it is difficult to assess, how research activities share in total income.

Exhibit 5: main organisations per policy area.

	Type of organisation	
Policy objectives	**National (&/or regional) public authorities and agencies**	**Key private or non-profit organisations**
Improving governance of innovation and knowledge policies	• SGCST) • Ministry of Economy • Ministry of Education	• NADSME • SARIO • SEA
Innovation friendly environment	• SGCST) • Ministry of Economy	• NADSME
Knowledge transfer and technology diffusion to enterprises	• Ministry of Economy • Ministry of Education	• NADSME • RDA
Innovation poles and clusters	• Ministry of Economy • Ministry of Construction and regional Development	• SARIO
Support to creation and growth of innovative enterprises	• Ministry of Economy	• NADSME
Boosting applied research and product development	• Ministry of Education • Ministry of Economy	• RDA • NADSME

Source: study team based on national/regional policy documents, TrendChart reports, OECD reports, etc.. See appendix C for a detailed definition of the policy categories.

In 2005 the Slovak Government has changed its strategic priorities and has engaged in a Competitiveness Strategy (The Lisbon Strategy for Slovakia) "Creation of knowledge-based economy" was declared a major development target. Changes in priorities were reflected also in some new policy initiatives. The 2006 State budget allocated higher support to R&D sector and the government decided to reform the public R&D sector, as to increase its efficiency. Indicative R&D budgets, planning and benchmarking were extended to 3 years. A Proposal for Slovak Innovation Strategy for 2006-2013 was elaborated.

Review of the Slovak national innovation system implies following conclusions:

- Slovak NIS is fragmented among various organisations and agencies. There is a general lack of co-ordination and no coherent innovation strategy. There are no

regional innovation agencies. Regional governments (except for Bratislava) have not realised the importance of innovations for economic growth and have not developed any regional innovation plans. R&D policies are directed by the Ministry of Education, which promotes basic research before applied research and lacks the resources to transfer research results to the business sector. Regional governments have powers related to planning and development, regional transport, middle schools, health & social care, culture and trans-border co-operation. Regional governments and municipalities are main introducers of industrial and technology parks in Slovakia. They however, have no Regional Innovation Plans, so far (except for Bratislava).

- Prior to 2004 R&D and innovation were not considered a development priority by the Slovak government and this is reflected in absence of any institutional and legal framework for the development of a knowledge based economy. Laws on R&D prepared by the Slovak government aim more at financial flows and budgetary issues within the public R&D system than at promotion of business sector R&D.
- Distribution of the SF resources has been assigned to a number of government agencies, with no co-ordination in terms of R&D support. Lack of coherent RTDI strategies severely limits efficiency of the SF intervention in fields of R&D in Slovakia.
- There was no special legislation facilitating effective use of the Structural Funds. The Strategy of Competitiveness Development in Slovakia up to 2010 (the Lisbon Strategy) was major strategic document on innovation and R&D policies in Slovakia in 2005. The Strategy has two basic pillars: (I) Completing and maintaining positive results of the structural reforms in field of macroeconomics, social care, health care and pension reform. (II) Development priorities for knowledge based economy. Four major priorities were identified for Pillar Two of the Strategy: of which Priority, (3) was implemented via the Action Plan on Research, Development and Innovation. The Action Plan recognises that innovative capacities of enterprises by a significant degree depend on inputs of new knowledge generated in research development. Slovakia accounts for relatively promising research potential, but development of research activities lags behind due to insufficient state aid to the research sector. The Action Plan (which was passed via Government resolution and has low legal powers) includes 14 projects aimed at building internationally competitive system of research, development and innovations in Slovakia in period 2005-2006. They also should promote inflows of private investments and a better use of the EU funds in this sector. Implementation of the Action Plan (and the whole Strategy of Competitiveness) was lagging behind in 2006.

3.2 Policy mix assessment

This section provides a summary overview and analysis of the national and regional policy mix in favour of innovation and knowledge in which the Structural Fund interventions take place. The analysis is conducted with respect to seven broad categories of objectives of innovation and knowledge policies (see appendix C for an explanation of each category).

Measures identified per category of the policy objectives are then further sub-divided in terms of the direct beneficiaries of funding (or legislative) action. To simplify, the report adopts three broad types of organisation as targets of policy intervention:

- Policies supporting academic and non-profit knowledge creating institutions;
- Policies supporting intermediary/bridging organisations involved in innovation support, technology transfer, innovation finance, etc.;
- Policies supporting directly innovation activities in private sector.

The matrix below summarises the current policy mix at national level. A simplified coding system is used with intensity of support (financial or political priority) for different policy areas and targets indicated by a colour coding system.

Exhibit 6: Policy mix for innovation and knowledge

	Target of policy action		
Policy objectives	**Academic /non-profit knowledge institutions**	**Intermediaries/bridging organisations**	**Private enterprises**
Improving governance of innovation and knowledge policies			
Innovation friendly environment	**SOPHR 1.1, 1.2, 1.3**		
Knowledge transfer and technology diffusion to enterprises	**SOPIS 1.1** **SPD2 1.1**		**SOPIS 1.1**
Innovation poles and clusters			
Support to creation and growth of innovative enterprises	**SOPIS 1.1**	**SOPIS 1.1** **SPD2 1.1**	**SOPIS 1.1** **SPD2 1.1**
Boosting applied research and product development	**SOPIS 1.3** **SPD2 1.2**	**SOPIS 1.3** **SPD2 1.2**	**SOPIS 1.3** **SPD2 1.2**

Legend

Top policy priority	
Secondary priority	
Low priority	

Source: calculations of study team based on national/regional policy documents, TrendChart reports, OECD reports, etc.

Slovak Government set several innovation policy targets to be achieved by 2010. Most targets are qualitative and include:

- Support to business-oriented, internationally competitive research and development;
- Increases in efficient public support of innovation-oriented activities;
- Promoting young scientists;
- Developing modern education policy as to promote high levels of employment;
- Ensuring high levels of mastering information technology by population; introduce •effective e-government and modern on-line public services).

The absolute volume of the assistance is low. The amount spent on support of seed capital, research grants and support to human resources in R&D sector, incubators (e.g. BITPRDC) in SMEs can hardly provide for dramatic upturns in innovation activities by Slovak SMEs. Slovak SMEs coped with under-capitalisation and lack of technological and intellectual resources. One-time financial support of innovation efforts seldom was enough to generate continuing stream of R&D activities in a typical SME. A common feature of Slovak innovation policy schemes is a large number of small grants or low funding levels per project. This increased the relative overhead costs of participation and reduced the attractiveness of a programme to firms. Larger programmes, on the other hand, offered the opportunity to be more comprehensive in their coverage and had greater visibility to industry.

So far, Slovak innovation and R&D policies (heavily relying on the Structural Funds), generated little success, judging by falling shares of innovative SMEs by early 2000s. This development has had its own logic. Slovak companies have undergone difficult and costly transition period, which significantly constrained their long-term planning, including R&D and innovation initiatives. Period of 1992-1998 was typical with establishing market system. Redistribution of property rights, creative and destructive privatisations, and high costs of capital were major issues of political economy. Early 2000s were typical with macroeconomic stabilisation, creation of competitive business environment and entering Single Market. Low costs of some production factors (wages and land in particular) were seen as major sources of competitive advantages. R&D and innovations were considered risky and costly steps to uncertain and unfamiliar environment. It is questionable, if large-scale innovation policy measures would have generated more demand on innovations by Slovak SMEs. Slovak Government probably was right to concentrate on framework-supportive policies, which promoted high economic growth and decreases in unemployment.

Development challenges may be rather different in the future. Slovak firms may become more interested in company research activities, when R&D and innovations become competitive advantages. Average wage in Slovakia are still low (some €448 in 2005), but rising. Slovak producers cannot rely on cheap labour for long time. There also is a pool of highly skilled professionals, who seek adequate employment and remuneration. Domestic producers will, no doubt follow. There already are some positive examples of (large) domestic companies considering R&D an important factor of their economic performance (Zentiva, Istrochem, Duslo, Matador). Medium-sized companies may come in next round. Less clear is strategy of the MNCs branches. As for the brown-field investment, most MNCs did not retain R&D units in Slovak companies they bought (U.S. Steel provides for a nice exception). The green-field investors mostly were interested in cheap labour, but with range of their activities increasing, more sophisticated activities may follow. Some foreign investors (Samsung, for example) have already started to tap the pool of educated labour and

establish research and service centres in Slovakia. These developments offer more opportunities for implementation of more sophisticated R&D and innovation policies (e.g. clusters, venture capital funds providing finance to research based-spin-offs, etc.).

Improving governance of innovation and knowledge policies is addressed in NDP and Strategy of the Competitiveness. These are basic documents on development of innovation system in Slovakia. Public sector is main target of these policies. Innovation friendly environment is targeted in the two Sectoral Operational Plans (SOPIS and SOPHR) and the Law on Organisation of State Support to Research and Development (Slovak Parliament 2005). SOPIS and SOPHR are aimed both at the public sector (municipalities) and private enterprises. The Law on Organisation of State Support to Research and Development refers to public S&T agencies and wants to improve efficiency of public R&D funding. Knowledge transfer and technology diffusion to enterprises are subjects of numbers of schemes undertaken by the NADSME, SARIO and RDA. These schemes support innovative enterprises directly via grants. The NADSME and SARIO also manage schemes funding technology parks. Innovation poles and clusters are poorly addressed by innovation policies in Slovakia. Some elements of the cluster policies are included in measures supporting technology and industrial parks. Support to creation and growth of innovative enterprises is main task of the NADSME. The Agency manages some 8 schemes promoting innovative activities of the Slovak SMEs. Boosting applied research and product development is supported in two ways (1) The SEA manages an aid scheme funding pre-competitive development and industrial research. The Scheme overlaps with the Measure 1.3 of the SOPIS; (2) Ministry of Education, via the VEGA and RDA grant agencies, supports research infrastructure for non-profit organisations and universities.

3.3 Conclusions: the national innovation system and policy mix

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 (Exhibit 7):

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

Opportunities for Community support lay in particular in following areas

- Providing financial resources for R&D, innovation and new technologies, setting standards for e-government and in human resource development.
- Promoting evaluation and benchmarking culture in innovation policies
- Fostering aid schemes for technology transfer.

Exhibit 7: Key opportunities and constraints for investment by the Structural Funds

Policy objectives	Opportunities for Community funding (national priorities)	Constraints or bottlenecks (factors limiting Community funding)
Improving governance of innovation and knowledge policies	• Professional advice and expertise in innovation policies. These policies issues were for long time neglected in Slovakia. • Promoting evaluation and benchmarking culture in innovation policies	The main potential constraint is low absorption capacity. It may be reflected in: • low domestic (complementary) public spending on R&D; • limited attention paid to R&D and innovations,; • lack of co-operation between industry and academia sectors.
Innovation friendly environment	• Financial resources for R&D, innovation and new technologies • Setting standards for e-government • Setting standards in human resource development	• Excessive reliance on EU funding, neglect of domestic initiatives. • Underdeveloped infrastructure for R&D investment.
Knowledge transfer and technology diffusion to enterprises	• Aid schemes for technology transfer. So far Slovakia made great profits from technology diffusion, in branches of MNCs in particular. Domestic SMEs may profit from schemes aimed at direct technology transfer, or indirect support (via technology parks).	• Lack of industry – academia mobility schemes in Slovakia may limit scope of the technology transfer.
Innovation poles and clusters	• Policies promoting innovative clusters in selected industries (manufacture of cars, electrical and optical equipment, biotechnologies and chemistry in particular	• Excessive reliance on MNCs and over-specialisation in manufacture of cars and car components may endanger stability of economic system.
Support to creation and growth of innovative enterprises	• Direct and indirect support to SMEs. Industrial and technology parks proved to be efficient measures of innovation policies.	• Insufficient demand on innovative solutions by most Slovak SMEs • Too many parallel schemes making orientation in innovation policies difficult
Boosting applied research and product development	• Slovakia accounts for very low rates of commercialisation of R&D results. Aid schemes and research infrastructure for pre-competitive development and industrial research should be key tools of innovation policies.	• Low R&D potential of most Universities • Low demand on R&D results by Slovak companies. Cheap and educated labour sometimes is considered a competitive advantage over innovative solutions

4 Structural Funds interventions to boost innovation and create a knowledge economy: 2000-2006

This section of the reports provides an analysis the patterns of Structural Fund expenditures in the fields of innovation and knowledge-based economy during the current programming period (2000-2006 for EU-15 or 2004-2006 for the new Member States). It examines the patterns from both a strategic point of view (the policy mix pursued by the Structural Funds programmes) and at an operational level (consumption of funds, management of innovation measures, indications of relative effectiveness of measures, case studies of 'good' practice).

4.1 Strategic framework for Structural Fund support to innovation and knowledge

4.1.1 Strategic approach to innovation & knowledge in Structural Fund programmes

Most innovation policy measures in Slovakia are financed from the Sectoral Operational Programme Industry and Services (SOPIS). The Programme has total budget of 301.26 MEUR (of which 151.21 MEUR is provided by the ERDF and 84.65 MEUR by national public bodies). The Programme Complement to the SOPIS identifies its global objective "Growth of competitiveness of industry and services". Two sectoral priorities were specified on basis of the sectoral SWOT analyses. (1) "Growth of competitiveness of industry and services using domestic growth potential" and (2) "Development of tourism". The priorities cover support for and assistance to production, trade and tourism so as to enhance competitiveness of products and services on the market by mobilization of innovation capacities, utilization of the results of applied research & development, rational use of human resources and development of cooperation of Slovak businesses with the Slovak public sector and foreign companies. Innovation-related measures concentrate in the Priority (1). This priority is aimed at tackling problems in the development of existing forward-looking enterprises and development of new enterprises, improvement of their competitiveness within the EU economy, and single market and adaptation of businesses in conditions of international labour division and by stimulating direct investments and by promoting trade, information and communications technologies, and e-commerce. SOPIS policies are funded via the ERDF.

Priority (1) of the SOPIS has a total budget of 173.85 MEUR (of which ERDF 77.34 MEUR and national public resources 70.9 MEUR) and contains most of measures aimed at innovations:

- Measure 1.1 'Support for new and existing enterprises and services' (44.2 MEUR);
- Measure 1.2: 'Support for building and reconstruction of infrastructure' (41.3 MEUR);
- Measure 1.3 'Support for business, innovation and applied research' (22.1 MEUR).

The Sectoral Operational Programme Human Resources (SOPHR) identifies the strategic priorities for the development of the active labour market policy, reinforcement of social inclusion and investments into human resources through education and training. It states three priorities (1) Development of active labour market policy, (2) Reinforcement of social inclusion and equal opportunities on the labour market and (3) Improved qualifications and adaptability of people in employment and of those entering the labour market. SOPHR policies are funded from ESF. Most policies targeting development of the knowledge-based society are covered by measures 3.1-3.3 of the Priority 3:

- Measure 3.1 'Adaptation of vocational training and education to the needs of the knowledge-based society' (29.14 MEUR).
- Measure 3.2 'Development, improvement and more extensive provision of further education with the aim at improving the qualifications and adaptability of people in employment' (48.88 MEUR).
- Measure 3.3 'Development of career guidance and of systems for anticipating changes of qualification needs of the labour market' (11.18 MEUR).

Community funding in the Bratislava region is implemented via the two Single Programme Documents SPD 2 and SPD3 (see Section 4.2.1).

The four large programmes allocated some 950MEUR in various projects. Some 303 MEUR was channelled to projects explicitly supporting R&D, technology transfer, innovation and human resources. Transfer of technology and life-long learning accounted for largest support. As for the particular programmes, shares of measures supporting R&D, technology, innovation and human resources were following:

1. Budget for SOPIS Measures 1.1, 1.2 and 1.3 accounted for some 35.7% of the programme total budget. This was rather modest allocation share, compare, for example to tourism sector (almost 43%).
2. SOPHR Measures 3.1, 3.2 and 3.3 supporting development of human resources accounted for some 21.6% of the total budget.
3. The SPD 2 Measures 1.1 and 1.2 aimed at SMEs and human resources accounted for some 50.9% of the total programme budget.

The calculations presented below in the two exhibits below are based on the allocation of Structural Fund budgets based on the intervention code classification. For practical purposes, the calculation of financial resources allocated to innovation and knowledge has been limited to the RTDI codes:

- 181 Research projects based in universities and research institutes
- 182 Innovation and technology transfers, establishment of networks and partnerships between businesses and/or research institutes
- 183 RTDI Infrastructure
- 184 Training for researchers

Additional calculations based on broader definitions of innovation are presented in Appendix D.

Exhibit 8: Overall allocation of resources at an objective 1 and 2 level (planned figures in Euro)

Objective	Total cost	SF			NF	
		Total	ERDF	ESF	Public	Private
RTDI INTERVENTIONS						
Objective 1	13 480 001	4 718 000	4 718 000	0	4 044 000	4 718 000
Objective 2	13 395 426	2 274 695	2 274 695	0	2 996 363	8 124 368
TOTAL COHESION POLICY						
Objective 1	1 766 311 799	1 041 043 045	573 574 135	284 480 923	382 827 456	342 441 298
Objective 2	121 168 389	37 168 218	37 168 218	0	41 064 685	42 935 486

Source: programming documents and financial data provided by DG REGIO

Exhibit 9: Regional allocation of resources (Euro)

Programs	RTDI INTERVENTIONS			TOTAL		
	Total SF	ERDF	ESF	Total SF	ERDF	ESF
OBJECTIVE 2						
Bratislava	2 274 695	2 274 695	0	37 168 218	37 168 218	0
Total Regional OPs	**2 274 695**	**2 274 695**	**0**	**37 168 218**	**37 168 218**	**0**
OBJECTIVE 1						
Basic Infrastructure	0	0	0	422 363 452	422 363 452	0
Human Resources Development OP	0	0	0	284 480 923	0	284 480 923
Industry and Services	4 718 000	4 718 000	0	151 210 683	151 210 683	0
Sectoral operational programme agriculture and rural development	0	0	0	182 987 987	0	0
Total Multiregional OPs	**4 718 000**	**4 718 000**	**0**	**1 041 043 045**	**573 574 135**	**284 480 923**

Source: programming documents and financial data provided by DG REGIO

Calculations based on strict definitions of RTDI (codes 181-184) reveal that this field accounted for tiny fraction of total Cohesion Policy expenditure (some 1.42%). Given very low national expenditure on R&D in Slovakia, this sum was a welcome supplement to national funding of R&D. In 2004, for example Slovak GERD accounted for some 173.94 MEUR and BERD 66.6 MEUR. If a 10% increase is estimated for 2005 and 2006, Slovakia's GERD totalled some 575 MEUR and BERD some 220 MEUR in period 2004-2006. This means that the Structural Funds contributed by 5.6% to Slovak GERD and 14.7% to BERD in period 2004-2006. As the most of the projects were aimed at private sector, the EU resources somewhat helped to boost RTDI budgets in the commercial sphere, but only by a limited extent. Low shares of the RTDI outlays in the cohesion-related support indicate that these means little contributed to building knowledge-based economy in Slovakia and the Community means were not spent very efficiently

4.1.2 Specific measures in favour of innovation and knowledge.

Exhibit 10: Key innovation & knowledge measures

Policy area	Number of identified measures (all programmes)	Approximate share of total funding for innovation & knowledge measures	Types of measures funded (possibly indicating importance)
Improving governance of innovation and knowledge policies	0	0	No scheme funded from Community means
Innovation friendly environment	5	44.1%	Developing human capital for knowledge-based economy, Objective 2
Knowledge transfer and technology diffusion to enterprises	4	42.9%	Industrial and technology parks and incubators, direct technology transfers to SMEs, support to applied R&D
Innovation poles and clusters	0	0	No scheme
Support to creation and growth of innovative enterprises	2	27.6%	direct and indirect support to SMEs
Boosting applied research and product development	1	7.3%	supporting pre-competitive development

Nb: this table is a summary of the table in appendix D.2. The total of the percent share per policy area may sum to more than 100 since certain measures fall into several categories.

Most RTDI measures are aimed at two areas:

- Support to innovative environment (via development of human resources), and
- Knowledge transfer and technology diffusion to enterprises

This approach seem rational, given key factors of regional disparities, which include

a) lack of human resources in lagging behind regions
b) lack of infrastructure in general and R&D infrastructure in particular

The RTDI measures are contained in key policy documents, namely national development plan and sectoral operational programmes. They correspond to priorities stated in these documents, e.g. growth in competitiveness and/or development of active labour market policy and improved qualifications and adaptability of people in employment and of those entering the labour market.

Measures supporting accumulation of human capital and transfer of technologies to SMEs accounted for the highest expenditure by measures supported from the Structural Funds. Much less means were allocated to measures aimed at boosting applied research and product development (Exhibit 10). These measures also were more complicated and their implementation took longer than expected. No measures

were aimed at more sophisticated policies, e.g. those supporting innovation poles and clusters.
In general measures more simple to implement were favoured over those requiring more policy expertise, but with 'higher value added'

4.2 Learning from experience: the Structural Funds and innovation since 2000

4.2.1 Management and coordination of innovation & knowledge measures

This section reviews the overall management of Structural Fund interventions in favour of innovation and knowledge during the current period. It examines the coherence, the role of key organisations or partnerships in implementing Structural Funds measures for innovation and knowledge, the linkages between Structural Fund interventions and other Community policies (e.g. the RTD Framework Programme) and the financial absorption and additionality of the funds allocated to innovation and knowledge.

Policy measures are administrated by Ministries and their agencies, and there is no specific public-private partnerships in the field of innovation and knowledge. Most Structural Fund measures were implemented by agencies, which already had a lot of experience with introduction of other Community programmes (Phare, e.g.). These include NADSME and Ministries of Economy and Construction & Regional Development. Some RTDI measures are aimed at the support of public-private partnerships on local level. The SOPIS Measure 1.2 and the SPD 2 Measure 1.2 are aimed at municipalities. These apply for grants for construction of industrial and technology parks for private companies. There is no top-down approach to ensure maximal synergies in innovation policies in Slovakia, as there is no National Innovation Strategy and/or Authority. Some applicants from private and public sectors, of course, try to use multiple sources of EU funding.

Exhibit 11 displays absorption capacity of innovation and knowledge measures. The absorption capacity seems very low, but the Exhibit should be considered with care. It reflects disbursements by end of 2005. Many projects are only starting in 2006. Anyway, absorption capacity is unsatisfactory. There are several factors behind this:

- The overall process of SF implementation is considered highly bureaucratic by end users. Interestingly, some applicants claim that domestic implementing agencies (Ministries in particular) impose higher administrative burdens than the Community rules.
- The procurement process is lengthy. Some applicants for the SOPIS projects have had to apply for commercial bank loans and have had to pledge their property. Loans and pledge processing takes its time. The timing of projects changes and contracts with applicants are delayed, creating additional financial burdens .
- Demand for innovative solutions by Slovak companies is limited, as cheap and educated labour force is considered a more important competitive advantage.
- Municipalities often prefer modernisation of basic infrastructure (water and sewage networks in particular) to high-tech projects.

- Project recipients have little experience with management and administration of the Community funded projects.
- Construction of industrial/technology parks is hampered by unclear property rights to land use.
- Municipal governments tend to account for short-term planning, limited to their election period, while management of projects on the industrial and technology parks requires a strategic vision.

The most successful measures included projects addressing real demand by end users. These include, e.g., SOPIS Measures 1.1 on technology transfer and 1.2 on technology incubators. These Measures also accounted for high rates of disbursement by early 2006. The SOPIS Measure 1.3 - explicitly aimed at supporting applied research – has absorption problems and is slow to implement.

Regional measures were slow to implement. The SPD 2 Measure 1.2, for example, aimed at developing services for entrepreneurs, is faced with a lower demand than expected.. Beneficiaries would rather favour investment in basic infrastructure.

Exhibit 11: Absorption capacity of innovation & knowledge measures, in Euro

OBJECTIVES	ALLOCATED	DISBURSED TOTAL SF	EXPENDITURE CAPACITY
Objective 1	4 718 000	223 883	4.75%
Objective 2	2 274 695	0	0.00%

Provided by ISMERI.

In 2007-2013 Slovak Government plans to spend some 812 MEUR on RTDI projects from the Structural Fund means Current planning rules, however, allow disbursing only some 12 MEUR in the Bratislava region (Objective 2). There is very little absorption capacity for remaining 800 MEUR outside Bratislava. Slovak Government currently tries to negotiate derogation from standard programming rules and channel the abovementioned financial means to Bratislava, as to use them more efficiently. In April and May 2006 the government coalition discussed plans for RTDI measures to be implemented in the 2007-2013 planning period. Particular members had different opinions on these topics and no conclusion was made by mid May 2006.

4.2.2 Effects and added value of Structural Fund support for innovation and knowledge

This section of the report analyses the effects and added value of the Structural Fund interventions in favour of innovation and knowledge during the current programming period. The analysis is based on two main sources, namely: available evaluation reports or studies concerning Structural Fund interventions; b) interviews and additional research carried out for this study. Accordingly, this section does not

pretend to provide an exhaustive overview of the effects or added value[7] of Structural Fund interventions but rather is based on the examination of a limited number of cases of good practice. These good practice cases may concern the influence of the Structural Funds on innovation and knowledge economy policies (introduction of new approaches, influence on policy development, etc.), integration of Structural Funds with national policy priorities, promoting innovative approaches to delivery (partnerships), or measures which have had a particularly important impact in terms of boosting innovation potential, jobs and growth.

By early 2006 many RTDI policy measures accounted for low levels of disbursement. Some projects also may take longer time to produce visible effects. It is therefore too early to assess results of Structural Fund interventions on innovation and knowledge economy performance at national and regional levels. Some points, however, can be made on particular measures, which account for the bulk of investment in innovation:

Measure 1.2 'Business Incubators, Technology Parks and R&D Centres

The SOPIS Measure 1.2 'Business Incubators, Technology Parks and R&D Centres can be considered successful a good example of measures supported from the Structural Funds and aiming R&D and innovation. Supported projects included six business incubators in smaller cities and two research centres in cities of Košice and Banská Bystrica. At least 60 businesses in total should be supported by this Measure. Given relatively large number of parks and research centres, this goal seems realistic. The NADSME part of the Scheme proved to be very popular with the end users and demand on funding exceeded supply. The measure helped to create environment for sustainable development of innovative firms. (For more information on the Measure see Annex E).

Policy measures aimed at promotion of R&D, innovation, technology transfer and development of human resources accounted for some 30% of the total expenditure by 2 sectoral operational programmes and 2 regional single programme documents. Given low level of innovativeness and R&D intensity in Slovakia, the overall share of the above-mentioned measures should be probably higher. Slovak regions outside Bratislava, on the other hand, account for peripheral location and underdeveloped infrastructure. Focus on RTDI may have missed the point in the non-Bratislava regions. These regions absorbed most Community funding and channelled it to the basic infrastructure programmes (modernisation of railways, highways, etc.). It seems like plausible solution for shortened planning period 2004-2006. Community funding should probably more focus on RTDI measures in planning period 2007-2013, but aim regions with good absorption capacity and concentrate on measures addressing real demand by businesses. Measures with the highest 'value added' in the future should include those with

- middle to higher level of sophistication (innovation cluster policies, support to R&D centres, promoting human mobility), and

[7] A good definition is "The economic and non-economic benefit derived from conducting interventions at the Community level rather than at the regional and/or national level". See Evaluation of the Added Value and Costs of the European Structural Funds in the UK. December 2003. (Available at : www.dti.gov.uk/europe/structural.html)

- better planning and evaluation practices, as to set realistic and measurable goals as to check progress with their implementation.

4.3 Conclusions: Structural Funds interventions in favour of innovation and knowledge

An analysis of absorption capacity of innovation & knowledge measures implemented via Structural Funds in Slovakia suggests following conclusions:

Overall, absorption capacity was very low. Measures related to the RTDI intervention accounted for tiny fraction of total Cohesion Policy expenditure (some 1.42%). Low absorption capacity of the RTDI investments had two major reasons: (i) low demand by Slovak enterprises on innovation policy measures and (ii)Allocation of the SF measures (via sectoral operational programmes) to regions with low absorption capacities (Západné, Stredné and Východné Slovensko). The Bratislava Region, which accounted for the best absorption capacity, was not defined as the Objective 1 region.

Although it is rather difficult to find "best practices" in a country with weak innovation policies and low absorption capacity for the innovation policy measures, the SOPIS 1.1 and 1.2 Measures accounted for the best policies supported via the Structural Funds, because they: (i) were popular with users and addressed real demand by domestic SMEs, (ii)accounted for good absorption capacity and high rates of disbursement by early 2006, and (iii) accounted for significant part of RTDI-related spending from Structural Funds

Both measures end in 2006 and a real value added in terms of the RTDI is yet to be seen. Analysis of the real value added, however, may be rather difficult after the 2006, as (a) evaluation culture is poor in Slovakia and (b) evaluation criteria set for these measures were rather vague or unrealistic[8].

Potential lessons learnt from these practices include:

- Support only those regions, which have real potential to absorb RTDI investments (e.g. account for developed R&D infrastructure and sensible stock of human capital).
- Address real demand by businesses
- Building R&D infrastructure in general seem more efficient than subsidising particular private firms.

[8] The Assistance to SMEs Scheme (SOPIS Measure 1.1), for example, aimed to support some 700 SMEs and increase labour productivity in terms of value added by 18% in supported SMEs by 2006. The Scheme also wanted to promote equal opportunities and at least 30% grants awarded to personal businesses should go to women applicants. Planned numbers of supported SMEs were rather too ambitions. By end of 2005 some 50 projects were approved and contracted and the Scheme budget was spent. It also is unclear, how the increases in value added will be checked.

Exhibit 13: main outcomes of innovation and knowledge measures

Programme or measure	Capability	Added value
SOPIS Measure 1.1 'Support for new and existing enterprises and services'	Very good absorption capacity, all projects (50) contracted in 2004	Direct support to technology transfer (purchase of equipment, modernisation of production facilities). Negative: selective firm support promotes corruption and distorts market operation.
SOPIS Measure 1.2 'Support for building and reconstruction of infrastructure'	The NADSME part of the Scheme contracted all budget (8 projects) in 2004. The SARIO part was lagging behind, some 4 projects contracted by end of 2005	Improving infrastructure and services of industrial and technology parks
SOPIS Measure 1.3 'Support for business, innovation and applied research'	Lagging behind. Some 37 projects in certification of quality management systems and 20 projects on pre-competitive R&D contracted by end of 2005	Important help to domestic applied research and commercialisation of R&D results. Rather complex, takes time to implement. Much needed in the future.
SOPHR Measure 3.1 'Adaptation of vocational training and education to the needs of the knowledge-based society'	Lagging behind. Lagging behind. Some 15% of budget spent by June 2005, but most projects finish in 2006	Generally low, bulk of budget is spent for middle school fellowship for poor students. Some 14% of budget is allocated to improved education methods (curricula, languages, etc.). Real results are difficult to check.
SOPHR Measure 3.2 'Development, improvement and more extensive provision of further education with the aim at improving the qualifications and adaptability of people in employment'	Lagging behind. Some 5% of budget spent by June 2005, but most projects finish in 2006	Investing in human capital via life-long learning. Much needed, but the real results are difficult to check.
SOPHR Measure 3.3 'Development of career guidance and of systems for anticipating changes of qualification needs of the labour market'	Lagging behind. Some 7% of budget spent by June 2005, but most projects finish in 2006	Career guidance is very important, given very high unemployment rates in Slovakia
SPD 2 Measure 1.1 'Support of small and medium enterprises'	Lagging behind, 1 project and 11% of total budget contracted by Sept 2005	Advisory services and direct purchase of technology and equipment for entrepreneurs. Negative: selective firm support promotes corruption and distorts market operation.
SPD 2 Measure. 1.2 'Support of common services for entrepreneurs'	Lagging behind, 1 project and 0.2% of total budget contracted by Sept 2005	Improving infrastructure and services of industrial and technology parks. Badly needed, but rather complex. Takes time to implement.

5 Regional potential for innovation: a prospective analysis

This section of the report seeks to summarise and draw conclusions from the analysis of the preceding sections, available studies and interviews and focus groups carried out for this study in order to provide an analysis of the regional innovation potential. In doing so, the aim is to provide a framework for orientations in terms of future Structural Fund investments in innovation and knowledge.

5.1 Factors influencing regional innovation potential

As demonstrated in Section 2, Bratislava was the only Slovak region to have its own Regional Innovation Strategy (RIS) prepared before Community support planned for period 2004-2006 was implemented. The project was initiated by Bratislava Self-Governing Region (BSGR) and was co-financed and methodologically led by the European Commission and implemented by the BIC Bratislava (Business and Innovation Centre). This RIS suggests 3 horizontal and 3 direct measures aimed to support innovation development in the Bratislava Region:

- Horizontal measures include (a) communication and networking, (b) regional technology policy - regional foresight and (c) Structural Funds and Single Programming Documents
- Direct measures include support of: (a) innovation infrastructure development, (b) cluster creation in selected technology sectors and (c) financing system and creation of capital funds for innovation activities.

Implementation of the RIS-BSGR strategy proposal by a large extend depends on measures implemented by the Single Programming Documents 2 and 3.

The experts interviewed pointed to the fact that the RTDI policy mix must recognise different absorption capacities for RTDI projects by Slovak regions (Exhibit 14). Only about 9% of Slovakia's population live in and around the capital, but the region nevertheless accounted for 50-60% of total R&D capacities in terms of the number of R&D organisations, There should be different mixes for Bratislava and rest of Slovakia:

- Bratislava already has reasonable R&D infrastructure and is ready for more sophisticated RTDI policies. Modernisation of the aging R&D infrastructure, development of innovation clusters and a better co-operation between industry and academia sectors are the main policy issues. Most prospective RTDI policies include support to creating broking institutions, development of innovation clusters and support to academia-industry co-operation and mobility schemes.
- Western, Central and Eastern Slovakia are likely to develop prosperous manufacturing industries and tourism sector. Direct technology transfer to SMEs and support to industrial/technology parks remain important innovation policy measures. Some resources, however, should be channelled to development and/or modernisation of regional R&D infrastructures as to increase potential for absorption of RTDI projects in the future.

Exhibit 14: factors influencing innovation potential by type of region

Region / type of region	Main factors influencing future innovation potential
Bratislava as a leading capital region ('Urban Services and Public knowledge' region)	• Trends: High concentration of R&D infrastructure and R&D spending; high levels of human capital; brain drain from other Slovak regions; existence of Regional Innovation Strategy; excellent location, access European markets and knowledge centres. • Prospects: Arrival of the high tech investors (bio-technologies and IT in particular); development of R&D centres for car industry; cross-border cooperation with Vienna;
Rest of Slovakia ('Eastern Cohesion' region)	• Trends: Underdeveloped physical and R&D infrastructure; lower stocks of human capital; brain drain to Bratislava and developed Europe, lagged arrival of the FDI; Lack of regional innovation strategies • Prospects: Establishing high-tech manufacturing industries, in the car sector in particular.

5.2 A prospective SWOT appraisal of regional innovation potential

By 2004 the Bratislava Region was the only Slovak regions with strong RTDI potential (Exhibit 15). Bratislava enjoyed high stocks of human capital, high inflow FDI, pilot Regional Innovation Strategy. The region is a leading car producer in Slovakia. Structure of Bratislava Region's economy changed significantly after 1989. The Region enjoyed by far the largest inflow of the foreign direct investment in Slovakia. Chemical engineering somewhat decreased in importance. The car industry and electrical engineering accounted for a rapid growth. The Bratislava's Volkswagen factory ranks to most important Slovak enterprises. A large cluster of supportive producer plants developed around this plant. The most spectacular expansion, however, was reported for selected service industries, financial services and telecommunications in particular. By 2006 Bratislava's economy relied on a strong service sector. The manufacturing industries, however, also account for significant contributions to the regional economy. The most important industries (in terms of their share in total regional gross valued added) are transport, telecommunications, hotels and restaurants (27%), financial services (23%) and manufacturing industry (24.3%). These industries rank similar also in terms of shares in total employment.

Major potential development opportunity is a shift towards more sophisticated activities (including R&D centres) in industries clustering around manufacture of cars (manufacture of electrical and optical equipment, machinery). Chemistry, nano-technologies and information technologies also rank to prospective activities. Major weaknesses potentially impeding innovation potential of the region include low business R&D expenditure, weak transfer of knowledge between the industry and academia sectors, and aging R&D infrastructure.

Regions of Western, Central and Eastern Slovakia account for medium-low scores in most factors. As for the innovation development, lower stock of human capital, underdeveloped R&D infrastructure are the major weaknesses (Exhibit 16 and Appendix B1). With transport infrastructure improving rapidly in last few years, these regions may expect further influx of the FDI related to manufacturing and profit from spillovers of R&D and technology. Major opportunity is to develop new competitive, export-oriented industries (manufacture of cars and components, machinery, electrical and optical equipment, chemistry, rubber and plastic products) and tourism sector. R&D-intensive industries may follow.

Exhibit 15: Innovation and Knowledge SWOT

Bratislava as a leading capital region	**Opportunities**	**Threats**
Strengths	High concentration of public R&D facilities, human resources and expenditure (for indicators see Exhibit 2b). Good opportunity to attract FDI in bio-technology and IT industries. R&D centres in car industry also account for great development potential.	Low demand on R&D results by domestic SMEs.
Weaknesses	Too much R&D orientates on basic research. University research is scarce and accounts for low quality. Weak transfer of knowledge between industry and academia sectors; but increasing interest by Government in enhancing this transfer.	Continuing low levels of commercialisation of R&D results

Exhibit 16: Innovation and Knowledge SWOT

Rest of Slovakia, major problem: "public knowledge"	**Opportunities**	**Threats**
Strengths	The Západné, Stredné a Východné Slovensko account for strong industrial tradition and have relatively well-developed medium and high-tech manufacturing. Theu also account for stocks of educated labour force. These regions may develop their strengths and transfer to high-tech, high-value added manufacturing industries, in car sector in particular.	Regions transform on 'assembly plants' with limited levels of knowledge-intensive activities
Weaknesses	Lower stocks of human capital; underdeveloped (public) R&D infrastructure; but rapidly growing regional Universities. Numbers of students seem more important than quality of teaching and research by now.	Limited transfer of knowledge between industry and academia sectors.

5.3 Conclusions: regional innovation potential

Policy headline 1: Potential for the Bratislava Region to transform to the R&D and innovation pole. Development of clusters in car industry, chemical industry, IT and biotechnologies in particular seems promising.

Bratislava concentrates over half of Slovak R&D capacities in terms of spending and employment. It accounts for some 60% of total FDI directed to Slovakia after 1989. The region has excellent location (neighbouring on 3 countries). Local firms have dense networks of co-operation with Vienna, Budapest, Prague and other European cities. The city also is centre of the car production – the largest Slovak industry. The region has its own innovation strategy, which focuses on innovation infrastructure development and cluster creation in selected technology sectors.

Policy headline 2: Potential to develop medium and high-tech industries in the Western, Central and Eastern Slovakia.

Western, Central and Eastern Slovakia had strong industrial tradition. Machinery, metallurgy and chemical industries generated major part of the regional GDP before 1989. Introduction of market reforms, lost of CMEA markets and company restructuring caused severe decline in manufacturing activities. These regions, however, still have a decent pool of educated labour, which is currently being tapped by the MNCs, in car industry in particular (regions of Zilina, Trnava, Kosice, Martin). These regions have to primarily invest in building basic infrastructure (construction of motorways and modernisation of railways) and development of human resources. Basic infrastructure and human resources are key factors for attracting FDI. This pattern of development operated well in Bratislava and selected areas of Central and Western Slovakia. These regions also account for underdeveloped (public) R&D infrastructure. It probably is task for national policy to support development of human resources, regional Universities and R&D centres in particular. Structural Funds may focus on innovation policy measures, which already proved to be successful in the past, namely grants for technology transfer and building industrial/technology parks. These two initiatives generated greatest demand by Slovak SMEs in lagging behind regions. Investments to more sophisticated innovation policy measures (industry-academia labour mobility, clustering policies, innovation poles, assistance to IPR) may have problems with absorption capacity.

Policy headline 3: Potential for the Community funding aiming tourism sector, in Central and Eastern Slovakia.

Some mountain areas in Central and Eastern Slovakia account for considerable potential of tourism development (the High Tatra mountains in the Poprad district, the Spis historical region in the Spis district, etc.). Slovak government recognised this potential and designed Priority 2 under the SOPIS as to assist tourism initiatives in regions outside Bratislava. Most of the policy measures in the tourism sector so far aimed simple and isolated projects in marketing and tourism infrastructure building. Less attention was paid to transfer of new technologies and management methods to tourism. Bratislava, for example, has already benefited from increasing numbers of low-costs airline companies, which brought great numbers of foreign tourists to the City. Promotion of new modes of travel and booking to Central and Eastern my be reflected in tourism boon in these areas as well.

6 Future priorities for Structural Fund support for innovation and knowledge: options for intervention

In Slovakia most debates on future innovation and R&D policy priorities are related to the allocation of means from the Structural Funds. Two important points were made, one related to absorption capacity of the RTDI investments in particular Slovak regions and second on the overall structure of the SF allocations in planning period 2007-2013.

An analysis of the use of EU Structural Funds points to the fact that there is a very low absorption capacity for the RTDI projects outside Bratislava. Bulk of Cohesion spending is concentrated in sectoral operational programmes. These exclude Bratislava. Current strategy (channelling most SF means to less developed regions) could be useful when building basic infrastructure in lagging behind regions, but ignores potential for development of innovations in region with best R&D infrastructure. The Slovak Government currently tries to negotiate derogation from the rules on channelling SF to Objective 1 regions and ask for higher allocation of the RTDI spending to the Bratislava (Objective 2) Region Means from the Structural Funds could provide for a significant boost of R&D spending in Slovakia, providing these means are invested in regions with a good absorption capacity. Proposed change in the regional allocation of the Structural Funds must be, of course, approved by the new Slovak Government and European Commission.

Slovak Government approved new version of the 2007 – 2013 National Reference Framework (NRF) on 17 May 2006 (Resolution No 457/2006). The NRF favours increased investments into the RTDI activities while at the same time giving considerable support to infrastructure projects. In the final NRF budget, the latter account for just over half the total budget. Roughly 39% (4.1 bln EUR) are allocated to four programmes related to the knowledge-based economy:

- Knowledge-Based Economy (2.6 bln EUR)
- Education (0.575 bln EUR)
- Health Care and Employment (0.2 bln EUR)
- Social Inclusion (0.6 bln EUR)

The NRF lists three major priorities:

- Infrastructure and regional accessibility
- Innovation, information society and knowledge-based economy
- Human resources and education

The Structural Funds programmes in period 2007-2013 will ultimately be managed by up to seven ministries. However, all policy measures related to the knowledge-based economy will be coordinated by the Ministry of Finance, which is likely to need more staff to deal with the related administrative challenges. The Government also agreed that no private companies could apply for support from the Structural Funds, except for companies active in the R&D and environment sectors. Furthermore, it was recognised that the low cofinancing threshold of the shortened 2004-2006 planning period (in many projects, no more than 15% cofinancing were required), has distorted

the market and caused misallocations of resources on numerous occasions. The new NRF attempts to tackle this problem by making municipalities, public and non-profit institutions - rather than private business companies - the main receivers of financial assistance in planning period 2007-2013. This solution was unsurprisingly met with criticism from many private companies and employers' associations.

The priorities set in the NRF are yet to be approved by the European Commission. Specific policies on the implementation of the Structural Funds will be formulated by next Slovak government following the general elections. European Affair Committee of the Slovak Parliament already unanimously approved the NRF in its current shape, there are hopes that the new government will take over the current NRF as it is. If there are no major changes in the NRF, the first policy measures under the new Structural Funds planning period could start operating in January 2007.

6.1 Strategic orientations for Structural Fund investments in innovation and knowledge

Key conclusion 1 : The RTDI policy mix must recognise different absorption capacities for RTDI projects by particular Slovak regions

Drop the sectoral priorities and concentrate more on regional development. Bratislava and rest of the country clearly differ in their development priorities.

Recommendation 1: The RTDI initiative by the Structural Funds should primarily aim regions with high innovation potential

Period after 1989 has been typical with strong polarisation trends in regional development. The Bratislava region benefited from agglomeration effects and great influx of the FDI. The region has already developed its R&D infrastructure, but needs to modernise it. It is sensible to concentrate most RTDI investments supported by the SF in Bratislava. Bratislava, however, was not recognised as the Objective 1 region in planning period 2004-2006. Most investments under Objective 1 was channelled to regions of Západné, Stredné and Východné Slovensko and used for building basic infrastructure. These regions have potential for establishing efficient manufacturing industries and tourism sector and may profit form technology transfer and industrial/technology parks. Their current capacity for absorption of more sophisticated RTDI projects is low, but may increase once their R&D infrastructure improves. Slovak Government currently negotiates derogation from standard programming rules and channel means for the RTDI initiatives in the 2007-2013 planning period to Bratislava. This initiative is right, given experience with the allocation of the SF in 2004-2006.

Key conclusion 2: Low enterprise demand on innovative solutions is a major challenge to the Slovak economy. Promote only those measures, which address real demand by businesses

The independent expert group on R&D and innovation appointed following the Hampton Court Summit "Creating an Innovative Europe" proposed that Member States should agree to a minimum voluntary commitment of Structural Fund interventions supporting research and innovation of the order of 20%. It should be, however, noted that allocation of resources should reflect current stage of development in particular regions, their absorptive capacities and real demand on RTDI measures by businesses. Slovak firms account for one of the lowest innovativeness levels in Europe. Slovakia has a dual economy. The MNCs account for highly efficient production systems and modern technologies, but import most innovation solutions from their headquarters. Many domestic SMEs consider RTDI activities risky and currently concentrate on low-cost, low value added activities. Innovation as major competitive strength should be the next stage of the SMEs development.

Recommendation 2: Address identifiable demand

Continue in programmes, which operated well. What works, works. Promote measures with identifiable demand by SMEs and enterprises. Managers of the particular RTDI measures supported by the Structural Funds indicated that technology transfers, incubators and industrial/technology parks seemed to be of best "value added". Simple measures aimed at the technology transfer were most successful in addressing demand by businesses, but promoted unequal access to technologies by particular firms. Measures supporting technology parks and R&D centres take more time to implement, but at least are not aimed at one-off gifts to firms.

An 'ideal policy mix' for the Bratislava region can include following measures:

- Promoting innovation clusters, networking and development of innovation poles
- Support to R&D centres and technology incubators
- Creating financial infrastructure for research-based spin-offs, new technology based companies and innovative firms. Venture capital funds and seed capital finance are badly needed in Bratislava.
- Promoting human mobility between Industry and Academia sectors and international mobility of R&D personnel

Measure 1.2 of the SOPIS (similar to the French measure FR 12 – Incubators Structure. See Trendchart database: http://trendchart.cordis.lu/tc_policy_measures_search.cfm), provides for example of good practice in this field

Central, Western and Eastern Slovakia may benefit from more simple measures, aimed at fostering development of human capital and technology transfer:

- Support to higher education and international mobility of the undergraduate and PhD students
- Support to technology transfer aiming manufacturing technologies, tourism and local resources of raw materials (e.g. wood processing industry)
- Establishing applied research centres with medium and/or large domestic producers and branches of the MNCs.

Key conclusion 3: There is lack of regional innovation strategic planning.

None of the Slovak regions, except for Bratislava, has its own regional innovation strategy. It is also important to point out that there is a mismatch between sectoral operational plans and regional development plans.

Recommendation 3: The Regional Innovation Strategy must consider major challenges, opportunities, strengths and weakness for development of regional innovations.

Every regional innovation strategy should be based on regional foresight studies. There was just one national-wide foresight exercise developed in 2002-2004 in Slovakia. Results of the exercise so far were used for re-formulation of the State S&T policies for period 2006-2010. Till 2006, there was little interest by regional governments in developing similar exercises on regional levels. Foresights studies, actually, is an interesting policy field and could be supported by Community funding. Every RIS should be based on broad discussions on long-term development trends by key regional stakeholders.

6.2 Operational guidelines to maximising effectiveness of Structural Fund interventions for innovation and knowledge

Key conclusion 4: Simplify access to Community funding

It emerged in an interview with the experts in regional governments that the overall process of SF implementation is considered highly bureaucratic by end users. Some domestic implementing agencies (Ministries in particular) impose higher administrative burdens than the Community rules.

Recommendation 4: Review current amount of both the national and Community regulations related to submission, evaluation and implementation of the Structural Fund projects

Applicants for the SF projects have to address a great array of institutions (Ministries and their agencies, commercial banks, local and regional authorities) as to collect all documents necessary for funding. This process may be very lengthy in countries with imperfect institutional environment and generate delays in project implementation. Sometimes applicants with better contacts on the "right places" are more successful in obtaining funds than applicants with really innovative solutions. High amount of administrative procedures discourages many applicants and there are problems with disbursement of funds. Several calls under the SF innovation policy measures during the period 2004-2006 were launched as late as in May 2006. It emerged from the interviews with experts, the amount of national administrative procedures imposed by national authorities probably should not excess those imposed by the Community.

Key conclusion 5: Involve stakeholders in preparation of major documents on regional development and implementation of the Structural Fund policy measures

Slovakia has regional governments, but in fact, is a centralised state. Regional governments have much more responsibilities than funding resources. Community initiatives are designed and implemented via central Ministries and their agencies in Slovakia. Regional governments had so far little to say in this respect, but the regions are main beneficiaries of the SF policies. As the regions will play an increasingly important role; a joint regional OP will have to be introduced. So far, only the Bratislava Region (falling under the Objective 2) has implemented its Regional Innovation Strategy with help of the Structural Funds).

Recommendation 5: Regional governments, stakeholders and experts should participate in developing programmes for regional implementation of the Structural funds in field of RTDI activities.

Regional governments have right to consult preparation of the SF initiatives developed under the SF, but the central government bodies decide final shape of these measures. Participation by the private sector on development of the RTDI policies is quite limited and it probably takes some time for private business to understand their role in regional development. In fact, Slovak regions have generated little demand on development and implementation of regional RTDI policies, except for Bratislava. This again points to question, as where the RTDI measures should concentrate – in Objective 1 regions, or in regions with good absorption capacities.

Key conclusion 6: Put more emphasis on impact assessment

So far, evaluation culture developed little in Slovakia. Many criteria set for evaluation of the innovation policies are either vague and formal or impossible to check. Most innovation policy measures were supported from the Community means in period 2004-2006 in Slovakia. There were regular annual and interim reports covering implementation of the SOPIS and SOPHR measures. Reports concentrated on compliance with administrative procedures and formal management of financial flows, but there was no information on actual economic and/or social advance generated via policy measures. It may be too early to evaluate their impact on business performance. Trends observed in the EIS 2005 so far do not imply any significant improvements in innovativeness of the Slovak SMEs. It was the first time that an evaluation and impact assessment was carried out. It will certainly become more sophisticated and effective in the future.

Recommendation 6: More attention should be paid to development of impact assessment techniques and procedures. Training of experts also may improve evaluation and assessment processes.

Innovation policies should promote initiatives with *measurable* outputs in terms of economic and social advance. Quantitative goals aimed at fund disbursement (e.g. 'to support 60 businesses' or 'one third of grants should go to women applicants') should be replaced with goals aiming outputs (e.g. numbers of patterns, increases in labour productivity, increases in shares of innovative products in total output, etc.). As a matter of fact, measuring outputs is difficult and requires experience, which may not necessarily be available in some new Member countries. Programmes aimed at training experts on evaluation and training could be a valuable initiative in this field.

Exhibit 17: Summary of recommendations on investment priorities

Region or group of regions	Strategic focus	Priority measures	Indicative financial resources
Bratislava, leading capital region ('Local sciences & services regions')	Promoting sophisticated RTDI policies: • communication and networking • development of clusters in selected technology sectors (car industry, IT, chemistry) • regional technology policy - regional foresight • financing system and creation of capital funds for innovation activities.	Developing broking institutions, innovation clusters and support to academia-industry co-operation and mobility schemes	Some 812 MEUR are planned to support RTDI measures in period 2007-2013. The Slovak Government negotiates for a derogation as to channel most of the resources to the Bratislava region (which is not Objective 1 region). Negotiations with the European Commission are under way. Subjective opinion of the author of this report is 15-25% of SF funding in the region
Regions of Západné. Stredné and Východné Slovensko ('Eastern Cohesion' regions)	• Support to SMEs and building R&D infrastructure • Promoting R&D and technology spillovers via FDI	Direct technology transfer to SMEs and support to industrial/technology transfer.	The actual amount of the means available depends on the Bratislava's share of the RTDI funding (see above). Subjective opinion of the author of this report is 5-10% of SF funding in the region

Appendix A Methodological annex

A.1 Quantitative analysis of key knowledge economy indicators

A 1.1 Factor analysis

In order to analyse and describe the knowledge economies at regional level in the EU, the approach adopted was to reduce and condense all relevant statistical information available for a majority of regions. The approach involved firstly reducing the information from a list of selected variables (Table 1) into a small number of factors by means of factor analysis.

Table 1. Reduction of the dataset (215 EU-27 regions) into four factors by means of factor analysis

	The 4 factors			
	F1 'Public Knowledge'	F2 'Urban Services'	F3 'Private Technology'	F4 'Learning Families'
Higher education (HRSTE), 2003	**.839**	.151	.190	.184
Knowledge workers (HRSTC, core), 2003	**.831**	.164	.267	.327
High-tech services employment, 2003	**.575**	.367	.428	.323
Public R&D expenditures (HERD+GOVERD), 2002	**.543**	.431	.275	-.195
Value-added share services, 2002	.323	**.869**	.002	.121
Value-added share industry, 2002	-.265	**-.814**	.386	-.061
Employment government administration, 2003	-.217	**.745**	.124	-.175
Population density, 2002	.380	**.402**	.043	.038
High and Medium/high-tech manufacturing employment, 2003	-.073	-.331	**.873**	-.089
Value-added share agriculture, 2002	-.222	-.350	**-.672**	-.198
Business R&D expenditures, 2002	.335	-.050	**.664**	.267
S&T workers (HRSTO, occupation), 2003	.560	.178	**.589**	.382
Population share under 10 years of age, 2001	-.237	.060	-.015	**.868**
Life-long learning, 2003	.472	-.009	.165	**.703**
Activity rate females, 2003	.418	-.227	.281	**.620**

Note: Principal Component Analysis. Rotation Method: Equamax with Kaiser Normalization, a Rotation converged in 9 iterations. Main factor loadings are highlighted in bold. Source: MERIT, based on Eurostat data, mostly referring to 2002 or 2003

Based on the variable with the highest factor loadings we can characterise and interpret the four factors and give them a short symbolic name:

- Public Knowledge (F1)

Human resources in Science and Technology (education as well as core) combined with public R&D expenditures and employment in knowledge intensive services is the most important or common factor hidden in the dataset. The most important variables in Public Knowledge are the education and human resource variables (HR S&T education and core). Cities with large universities will rank high on this factor.

One interesting conclusion is that public and private knowledge are two different factors (F1 and F3 respectively), which for instance has implications for policy issues regarding Science-Industry linkages. Public R&D and higher education seems especially related to high-tech services, whereas Business R&D especially serves high- and medium-high-tech manufacturing.

- Urban Services (F2)

This second factor contains information on the structure of the economy. It is well known that industrial economies are quite different from services based economies. It is not a matter of development per se, because in the European regions the variety of economic structure is very large and for a large part based on endowments and path dependent developments like the extent to which government administration is located in a region or not. This factor takes into account the differences between an industrial area and a service based area including the public administration services of the government. Another observation is that there are two different 'urban' factors, indicating that academic centres not necessary co-locate with administration centres. What may not be surprising is that the Urban Services factor is not associated with R&D, since R&D is more relevant for innovation in manufacturing than for service industries.

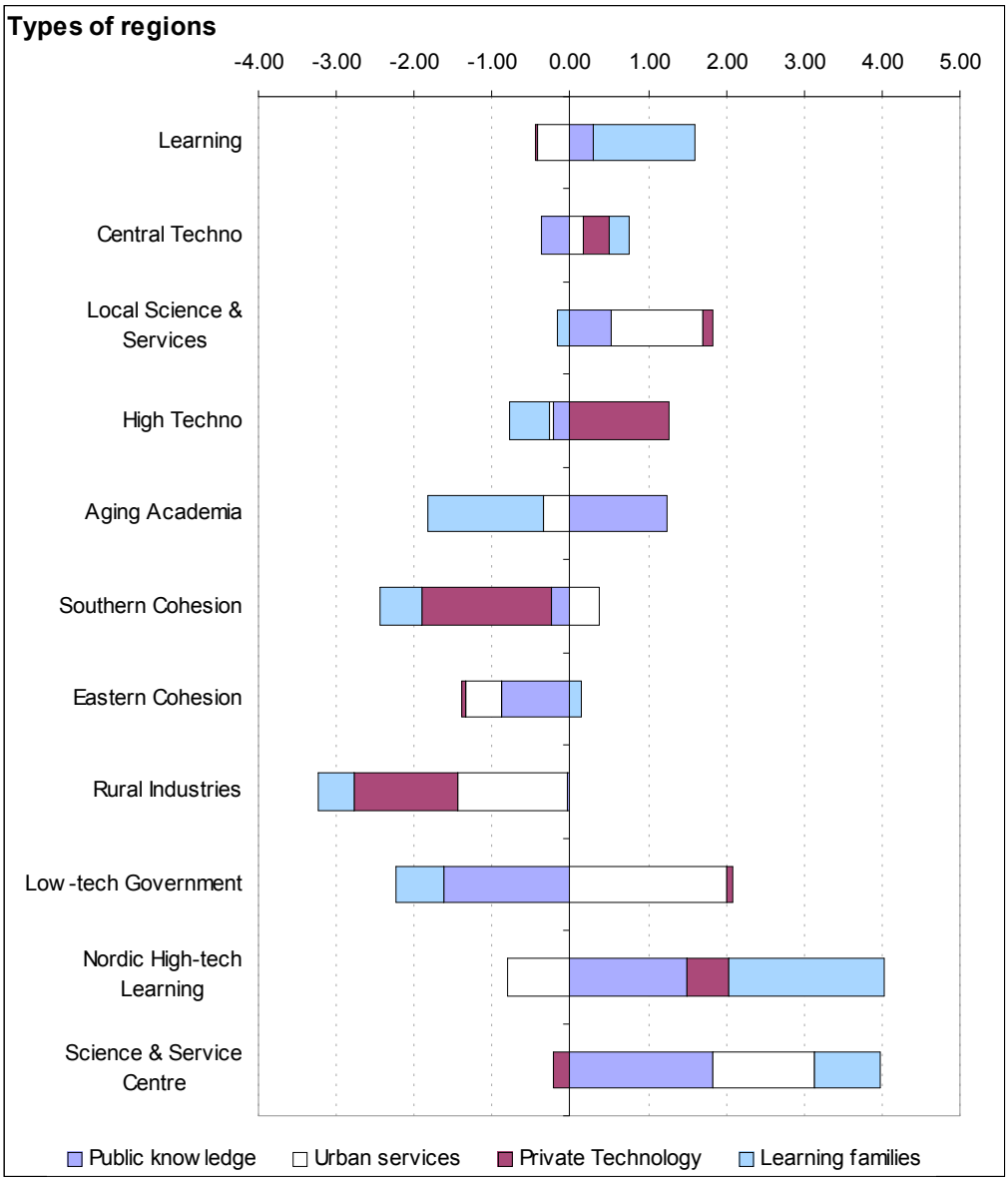
- Private Technology (F3)

This factor contains business R&D, occupation in S&T activities, and employment in high- and medium-high-tech manufacturing industries. A countervailing power is the existence of agriculture in the region. One interpretation could be that agricultural land-use goes at the cost of possibilities of production sites. Another interpretation is that agriculture is not an R&D intensive sector.

- Learning Families (F4)

The most important variable in this factor is the share of the population below the age of 10. Locations with relatively larges shares of children are places that are attractive to start a family. Possibilities for Life Long Learning in a region seems associated with the lively labour participation of the mothers of these youngsters. The Learning Families factor could also be interpreted as an institutional factor indicating a child-, learning- and participation- friendly environment, or even a 'knowledge-society-life-style' based on behavioural norms and values that are beneficial to a knowledge economy.

A 1.2 Description of the 11 types of EU regions



1 Learning

The Learning regions are first of all characterised by the high score on the factor 'Learning Families', and the three main components of this factor: life-long-learning, youth and female activity rate. On the other factors the regions are close to the regional average. Unemployment is on average the lowest compared to the other EU regions. Employment in the government sector is limited. GDP per capita is rather high. The regions are located in Austria, Ireland, the Netherlands, Sweden and the UK. There are many similarities with the Nordic High-tech Learning regions, but the business sector in the Nordic version invest more in R&D.

2 Central Techno

This is a rather large group of regions located mostly in Germany and France with close to average characteristic, but the share of High-tech manufacturing is rather

high. The factor-scores as well as GDP-per head is slightly above the regional average, except for the Public Knowledge factor which is slightly lower.

3 Local Science & Services
This group of regions with diverse nationality consist mainly of capital cities, such as Madrid, Warsaw, Lisbon, Budapest and Athens. These urban area's serve as national centres for business services, government administration, public research institutes and universities. Urban Services and Public knowledge are therefore the strongest factors for this type of region. GDP per capita is on average slightly below the EU25 average, but growing. The low score on life-long-learning is a weakness in most Local Science & Services regions, especially compared to the more wealthy and advanced Science & Service Centres.

4 High Techno
The High Techno regions host many high-tech manufacturing industries. They are mostly located in Germany (e.g. Bayern and Baden-Wurtemberg), some in Italy (e.g. Lombardia and Veneto) and two French regions. This type is very strong in Private Technology and has a high level of GDP per capita. The factors Public Knowledge and especially the Learning Family factor shows a relative weakness, e.g. in life-long-learning. Growth in terms of GDP per capita has been low and unemployment didn't improve much in the previous years.

5 Aging Academia
This group of regions is mostly located in East-Germany and Spain and also includes the capital regions of Bulgaria and Romania. The strength in the Public Knowledge factor is mostly based on the high share of people with tertiary education. The low score on the Learning Family factor is due to little life-long-learning and hosting relatively few children. The unemployment situation has improved, but is still very high.

6 Southern Cohesion
Southern cohesion regions are located in Southern Europe, consisting of many Greek, some Spanish and two Portuguese regions. The low score on the Private Technology factor is striking. There is hardly any high-tech manufacturing nor business R&D. Services is the most important sector, but also agriculture is still a rather large sector. The share of manufacturing industry in value added is very limited. Population density is low, but on average it has been increasing.

7 Eastern Cohesion
Manufacturing industries is the dominant sector, whereas services and agriculture are rather small sectors. This type of region is mostly located in Poland, Czech Republic, Hungary and Slovak Republic. Two Portuguese regions are also included. The Public Knowledge factor is the main weakness of this type of regions. However, the score on the Private Technology factor is close to average, which means that it is much stronger in this respect than the Southern Cohesion regions. Unemployment is high, even compared to Rural Industries and Southern Cohesion regions.

8 Rural Industries
Besides a low per capita GDP, Rural Industries regions have in common a low score on both the factors Urban Services and Private Technology. Population density is

very low. The service sector is often very small. Especially agriculture but also manufacturing industries are relatively large sectors. Besides regions in Bulgaria and Romania and Greece, there is also a more nordic sub-group consisting of Estonia, Lithuania and Itä-Suomi

9 Low-tech Government
This type of region, mostly located in southern Italy is characterised by a very low score on Public Knowledge combined with a high share of employment in the Government sector. Unemployment is severe, on average comparable to Eastern Cohesion regions. GDP per capita is however close to the regional average.

10 Nordic High-tech Learning
The Nordic version of the learning regions are typically strong in the Learning Family factor, but this type also has by far the highest business R&D intensity. In contrast with the popular characterisation of Nordic societies, the size of the government administration is the lowest of all the types. The low score on Urban Services is also due to the low population density. A rather unique feature of this type of regional knowledge economy is the combined strength in both the Public Knowledge and the Private Technology factor.

11 Science & Service Centre
The main characteristics of this urban group of regions are the high scores on the Public Knowledge and Urban Services factors. Population density is very high. This type also has the highest GDP per capita and productivity. The variables that are captured by the factor Learning Families also show a score above the regional average, but disappointing is the relatively low presence of high and medium-high-tech manufacturing and the business R&D intensity.

A.2 Qualitative analysis and preparation of country reports

In summary, the country reports were prepared in the following stages:

A first country document was prepared by the core study team in the form of a **template country report**. It contained overall guidance to the country experts and included a number of pre-filled tables, graphs and analysis sections based on information available at EU level.

Next, the core team members and the national experts who were involved in the pilot phase of the project commented completed elements of the templates. Drafted elements and templates were completed and compiled into **first country briefings (draft pilot reports)** by the national experts involved in the pilot phase of the project. These pilot country reports were prepared by experts for Belgium, Greece, Italy, France, and Poland.

Once the five first country briefings were completed, a **final set of guidelines** was prepared by the core team. These guidelines were agreed with the Commission services responsible for this evaluation. Prior to this, all first country briefings were reviewed during the January 2006 and presented to a first meeting of the scientific committee.

The work during the **country analysis phase** included:
Undertaking a series of key interviews (KI) with policy decision makers;
Organising a focus group (FG) with key national or regional RTDI stakeholders;
Collecting additional information and finalising short case studies; and
Preparing the synthesis notes of these various activities.

The above-mentioned work served as qualitative data and allowed the national experts to compile the draft **country reports**. All reports were subsequently reviewed, checked and finalised by the core team and the consortium members. Once this first check was completed, the core team organised a final peer reading of the document to verify its overall consistency and to ensure a final English language editing of the document. The core team then completed the final editing and layout of the document with a view to publication.

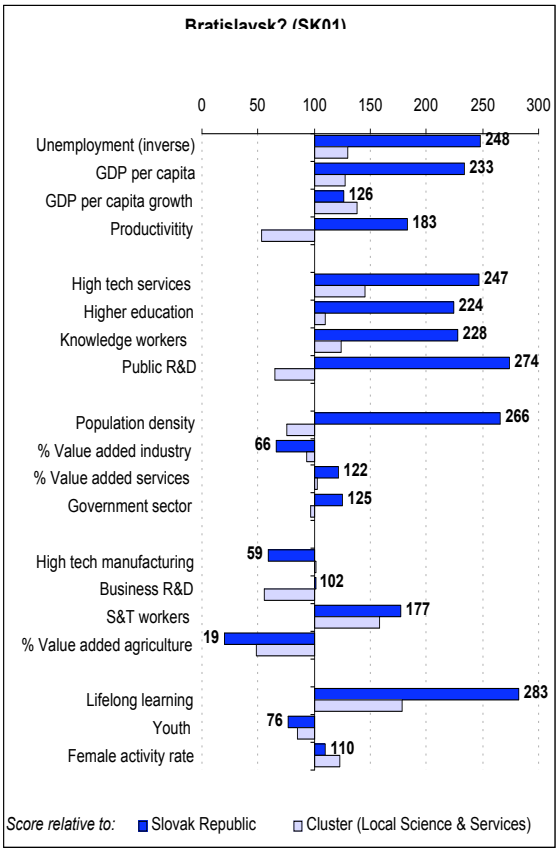
An overall synthesis report of all has been prepared and will be published by the European Commission providing an overview of the issues addressed in each of the 27 country reports produced by the evaluation team.

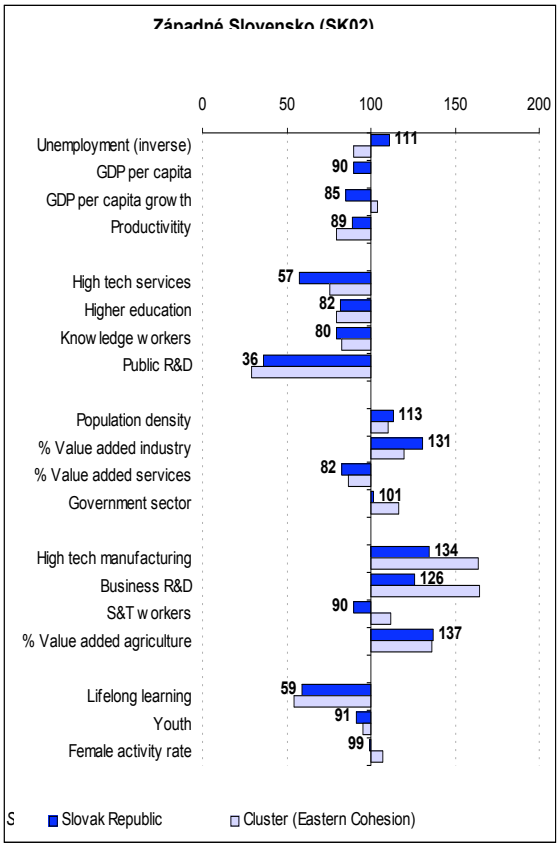
Appendix B Statistical tables and regional scorecards

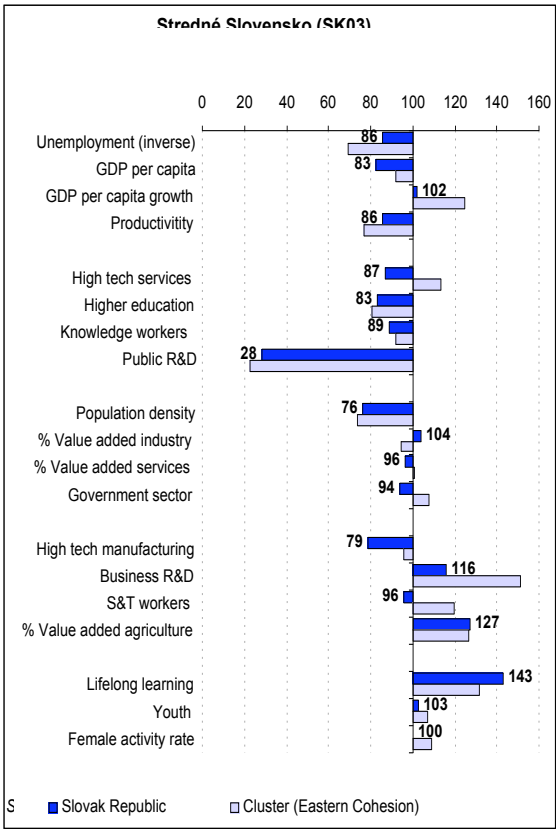
B.1 Overall quantitative analysis per region in Slovakia

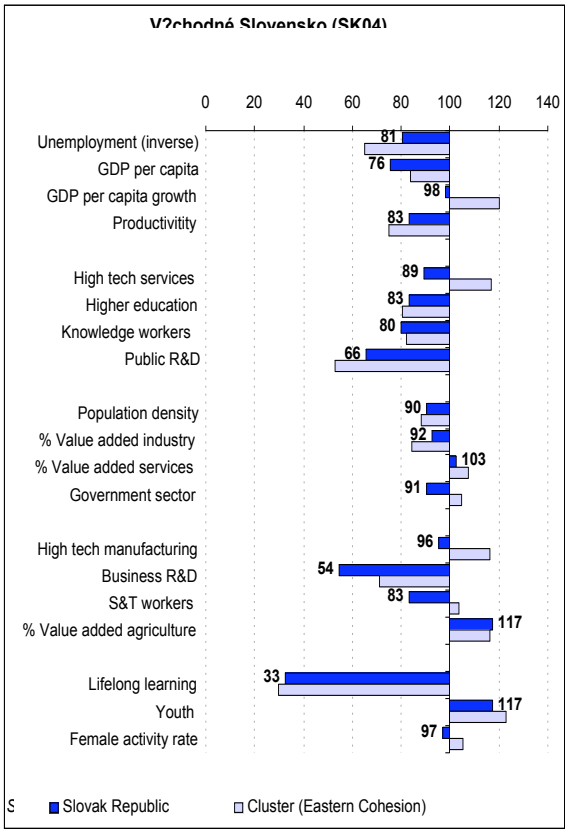
		Cluster	Economic performance				Public knowledge				Urban services				Private technology				Learning families			Cluster factor scores			
			Unemployment	GDP per capita	GDP per capita growth	Productivitity	High tech services	Higher education	Knowledge workers	Public R&D	Population density	added industry	added services	Government sector	High tech manufacturing	Business R&D	S&T workers	% value added agriculture	Lifelong learning	Youth	Female activity rate	Public knowledge	Urban services	Private Technology	Learning families per capita GDP
			2003	2002	1996-2002	2002	2003	2003	2003	2002	2002	2002	2002	2003	2003	2002	2003	2002	2003	2001	2003				
EU25			9.2	21170	4.8	4556	3.2	20.7	11.6	0.69	117	27.0	70.9	7.5	6.6	1.24	20.7	2.1	8.7	10.8	48.3				
Regional average			9.4	18882	4.8	3914	2.8	18.9	10.7	0.49	294	28.9	66.6	7.6	6.5	0.80	19.5	4.3	7.1	10.5	47.2				
Slovak Republic	SK		17.6	10857	6.5	1105	2.5	11.6	7.5	0.21	110	31.3	64.3	7.6	8.0	0.43	19.9	4.5	3.7	11.5	52.6				
Relative to EU25			52	51	137	24	80	56	64	30	94	116	91	101	121	35	96	212	43	107	109				
Bratislavský	SK01	3	7.1	25351	8.3	2028	6.3	25.9	17.0	0.57	292	20.7	78.5	9.5	4.7	0.44	35.3	0.9	10.5	8.8	57.8	1.49	0.95	0.29	0.32	0.85
Západné Slovensko	SK02	7	15.9	9777	5.5	981	1.5	9.5	6.0	0.08	125	41.0	52.9	7.7	10.8	0.54	17.8	6.1	2.2	10.5	52.0	-1.37	-1.04	0.75	-0.10	-1.20
Stredné Slovensko	SK03	7	20.5	8993	6.7	947	2.2	9.6	6.7	0.06	83	32.4	61.9	7.1	6.3	0.50	19.1	5.7	5.3	11.8	52.7	-1.23	-0.34	-0.06	0.86	-1.31
Východné Slovensko	SK04	7	21.8	8200	6.4	922	2.3	9.7	6.0	0.14	99	28.9	65.9	6.9	7.7	0.23	16.5	5.2	1.2	13.5	50.9	-1.73	0.14	-0.02	1.07	-1.41

B.2 Regional Scorecards









Appendix C Categories used for policy-mix analysis

C.1 Classification of policy areas

Policy area	Short description
Improving governance capacities for innovation and knowledge policies	Technical assistance type funding used by public authorities, regional agencies and public-private partnerships in developing and improving policies and strategies in support of innovation and knowledge. This could include past ERDF innovative action programmes as well as support for instance for regional foresight, etc.
Innovation friendly environment;	This category covers a range of actions which seek to improve the overall environment in which enterprises innovate, and notably three sub groups: innovation financing (in terms of establishing financial engineering schemes, etc.); regulatory improvements and innovative approaches to public services and procurement (this category could notably capture certain e-government investments related to provision of services to enterprises) ; Developing human capital for the knowledge economy. This category will be limited to projects in higher education aimed at developing industry orientated courses and post-graduate courses; training of researchers in enterprises or research centres[9];
Knowledge transfer and technology diffusion to enterprises	Direct or indirect support for knowledge and technology transfer: direct support: aid scheme for utilising technology-related services or for implementing technology transfer projects, notably environmentally friendly technologies and ITC; indirect support: delivered through funding of infrastructure and services of technology parks, innovation centres, university liaison and transfer offices, etc.
Innovation poles and clusters	Direct or indirect support for creation of poles (involving public and non-profit organisations as well as enterprises) and clusters of companies direct support: funding for enterprise level cluster activities, etc. indirect support through funding for regrouping R&D infrastructure in poles, infrastructure for clusters, etc.
Support to creation and growth of innovative enterprises	Direct or indirect support for creation and growth of innovative firms: direct support: specific financial schemes for spin-offs and innovative start-ups, grants to SMEs related to improving innovation management, marketing, industrial design, etc.; indirect support through funding of incubators, training related to entrepreneurship, etc.
Boosting applied research and product development	Funding of "Pre-competitive development" and "Industrial research" projects and related infrastructure. Policy instruments include: aid schemes for single beneficiary or groups of beneficiaries (including IPR protection and exploitation); research infrastructures for non-profit/public organisations and higher education sector directly related to universities.

[9] This is part of the wider area of in-house training, but in the present study only the interventions targeted to researchers or research functions will be analysed.

C.2 Classification of Beneficiaries:

Beneficiaries	Short description
Public sectors	Universities National research institutions and other national and local public bodies (innovation agencies, BIC, Chambers of Commerce, etc..) Public companies
Private sectors	Enterprises Private research centres
Networks	cooperation between research, universities and businesses cooperation between businesses (*clusters of SMEs)* other forms of cooperation among different actors

C.3 Classification of instruments:

Instruments	Short description
Infrastructures and facilities	Building and equipment for laboratories or facilities for university or research centres, Telecommunication infrastructures, Building and equipment for incubators and parks for innovative enterprises
Aid schemes	Grants and loans for RTDI projects Innovative finance (venture capital, equity finance, special bonds, etc.) for innovative enterprises
Education and training	Graduate and post-graduate University courses Training of researchers

Appendix D Financial and policy measure tables

D.1 Additional financial tables

To insert from ISMERI Excel file.

D 1.1 RTDI plus business (innovation technology) support

Overall allocation of resources at an objective 1 and 2 level (allocated Euro)

Objective	Total cost	SF			NF	
		Total	ERDF	ESF	Public	Private
RTDI INTERVENTIONS						
Objective 1	54 361 969	19 026 689	19 026 689	0	16 308 590	19 026 690
Objective 2	45 166 818	11 265 687	11 265 687	0	13 131 275	20 769 855
TOTAL COHESION POLICY						
Objective 1	1 766 311 799	1 041 043 045	573 574 135	284 480 923	382 827 456	342 441 298
Objective 2	121 168 389	37 168 218	37 168 218	0	41 064 685	42 935 486

Regional allocation of resources (Euro)

Programs	RTDI INTERVENTIONS			TOTAL		
	Total SF	ERDF	ESF	Total SF	ERDF	ESF
OBJECTIVE 2						
Bratislava	11 265 687	11 265 687	0	37 168 218	37 168 218	0
Total Regional OPs	**11 265 687**	**11 265 687**	**0**	**37 168 218**	**37 168 218**	**0**
OBJECTIVE 1						
Basic Infrastructure	0	0	0	422 363 452	422 363 452	0
Human Resources Development OP	0	0	0	284 480 923	0	284 480 923
Industry and Services	19 026 689	19 026 689	0	151 210 683	151 210 683	0
Sectoral operational programme agriculture and rural development	0	0	0	182 987 987	0	0
Total Multiregional OPs	**19 026 689**	**19 026 689**	**0**	**1 041 043 045**	**573 574 135**	**284 480 923**

Absorption capacity of RTDI interventions

OBJECTIVES	ALLOCATED	DISBURSED TOTAL SF	EXPENDITURE CAPACITY
Objective 1	19 026 689	559 707	2.9%
Objective 2	11 265 687	0	0

Categories 181 to 184 plus :

152 Environment-friendly technologies, clean and economical energy technologies
153 Business organisation advisory service (including internationalisation, exporting and environmental management, purchase of technology)
155 Financial engineering
162 Environment-friendly technologies, clean and economical energy technologies
163 Enterprise advisory service (information, business planning, consultancy services, marketing, management, design, internationalisation, exporting, environmental management, purchase of technology)
164 Shared business services (business estates, incubator units, stimulation, promotional services, networking, conferences, trade fairs)
165 Financial engineering

D 1.2 Broad innovation and knowledge economy funding

Overall allocation of resources at an objective 1 and 2 level (allocated Euro)

Objective	Total cost	SF			NF	
		Total	ERDF	ESF	Public	Private
RTDI INTERVENTIONS						
Objective 1	62 648 854	21 927 099	21 927 099	0	18 794 656	21 927 099
Objective 2	45 166 818	11 265 687	11 265 687	0	13 131 275	20 769 855
TOTAL COHESION POLICY						
Objective 1	1 766 311 799	1 041 043 045	573 574 135	284 480 923	382 827 456	342 441 298
Objective 2	121 168 389	37 168 218	37 168 218	0	41 064 685	42 935 486

Regional allocation of resources (Euro)

Programs	RTDI INTERVENTIONS			TOTAL		
	Total SF	ERDF	ESF	Total SF	ERDF	ESF
OBJECTIVE 2						
Bratislava	11 265 687	11 265 687	0	37 168 218	37 168 218	0
Total Regional OPs	**11 265 687**	**11 265 687**	**0**	**37 168 218**	**37 168 218**	**0**
OBJECTIVE 1						
Basic Infrastructure	0	0	0	422 363 452	422 363 452	0
Human Resources Development OP	0	0	0	284 480 923	0	284 480 923
Industry and Services	21 927 099	21 927 099	0	151 210 683	151 210 683	0
Sectoral operational programme agriculture and rural development	0	0	0	182 987 987	0	0

Absorption capacity by field of intervention

OBJECTIVES	ALLOCATED	DISBURSED TOTAL SF	EXPENDITURE CAPACITY
Objective 1	21 927 098	559 706	2.6%
Objective 2	11 265 687	0	0.0%
Total	**33 192 786**	**559 706**	**1.7%**

This third calculation adds RTDI plus business (innovation & technology) support plus information society. As D.1.1 plus:
322 Information and Communication Technology (including security and safe transmission measures)
324 Services and applications for SMEs (electronic commerce and transactions, education and training, networking)

D.2 Summary of key policy measures per programme

D2.1. Main measures in favour of innovation and knowledge

Identified RTDI measure or major project	**Focus of intervention (policy areas classification)***	Main Instruments**	**Main beneficiaries*****
SOPIS Measure 1.1 'Support for new and existing enterprises and services'	Knowledge transfer and technology diffusion to enterprises & Support to creation and growth of innovative enterprises	Aid schemes	Private sector
SOPIS Measure 1.2: 'Support for building and reconstruction of infrastructure	Knowledge transfer and technology diffusion to enterprises	Infrastructures and facilities	Public and private sector
SOPIS Measure 1.3 'Support for business, innovation and applied research'	Knowledge transfer and technology diffusion to enterprises & Boosting applied research and product development	Aid schemes	Private sector
Measure 3.1 'Adaptation of vocational training and education to the needs of the knowledge-based society'	Innovation friendly environment/developing human capital	Education and training	Public and private sectors
SOPHR Measure 3.2 'Development, improvement and more extensive provision of further education with the aim at improving the qualifications and adaptability of people in employment'	Innovation friendly environment/developing human capital	Education and training	Public sector
SOPHR Measure 3.3 'Development of career guidance and of systems for anticipating changes of qualification needs of the labour market'	Innovation friendly environment/developing human capital	Education and training	Public and private sectors
SPD 2 Measure 1.1 'Support of small and medium enterprises'	Support to creation and growth of innovative enterprises	Infrastructures and facilities	Public and private sectors
SPD 2 Measure. 1.2 'Support of common services for entrepreneurs'	Knowledge transfer and technology diffusion to enterprises	Aid schemes	Public and private sectors
SPD 3 Measure 2.1 'Stimulation and improvements in quality of education matching needs of enterprise sector':	Innovation friendly environment/developing human capital	Education and training	Public and private sector
SPD 3 Measure 2.2 'Improving quality of employment and competitiveness of the Bratislava Region via development of human resources in R&D sector'	Innovation friendly environment/developing human capital	Education and training	Public and private sectors

* Classification of RTDI interventions: Improving governance capacities for innovation and knowledge policies; Innovation friendly environment; Knowledge transfer and technology diffusion enterprises; Innovation poles and clusters; Support to creation and growth of innovative enterprises; Boosting applied research and product development (see appendix).

**Classification of instruments: Infrastructures and facilities; Aid schemes; Education and training.
***Classification of Beneficiaries: Public sectors; Private sectors; Networks

Appendix E Case study

Name of Case (related policy measure or action)
Title of measure/project: BITPRDC, The Business Incubators, Technology Parks and R&D Centres Scheme (Podnikateľské inkubátory, technologické parky a výskumné centrá). **Description:** The Scheme was aimed at support of business incubators for start-ups and personal businesses, technology parks for various industries, R&D centres for applied research and feasibility studies and consultancy projects. **Zone**: Objective 1 **Policy framework:** The Scheme is based on Slovak State Aid Law No 231/1999 and supported from the Structural Funds.
Brief history and main features
The Scheme promotes development of research infrastructure and co-operation between the public and private sectors. The business incubators, technology parks and R&D centres should be based by Slovak municipalities and co-operate with Universities. The support had form of the grant, which repaid real eligible costs occurred in the project. The ERDF contributes up to 75%, the State Aid up to 20% and the applicant at least 5% of the total eligible costs of the project. The minimal grant is €100 thousands and the maximal one 6 MEUR. The maximal eligible costs per project cannot exceed 8 MEUR. Eligible costs include purchase of tangible and intangible assets needed for the business incubator, technology park and the R&D centre creation and/or development (buildings, land and technology equipment), costs of removing old environmental burdens, and costs of external consultancy services related to the project. Labour, transport and marketing costs are excluded from the Scheme. The Scheme has two managers: the NADMSE and the SARIO. The NADSME manages calls aimed at incubators and R&D centres, while the SARIO calls for industrial and technology parks. The Scheme corresponds to the Measure 1.2 of the SOPIS. The EU experts working with the Ministry of Economy helped with the design of the SOPIS and National Development Plan. No special measure applied in the EU area served as a single model for this Scheme. There, however, are a number of similar Schemes operating in the Member Countries. The French measure FR 12 – Incubators Structure, for example, provides for example of good practice in this field.
Main results
The Scheme aims to support some 60 businesses in total in 2004-2006. The NADSME part of the Scheme contracted some 6.36 MEUR to 8 projects and budget for this part of the Scheme was spent by end of 2005. Supported projects included six business incubators in smaller cities and two research centres. The SARIO contracted four projects by end of 2005, with total support of 11.67 MEUR. Three projects were aimed at industrial parks and one on reconstruction of production facilities. Some 12 MEUR of public support remained to be spent by early 2006..
Reasons of success and conditions for repeatability
Good practices in this Scheme include • Popularity with users: The Scheme addresses real demand by end users. It should end in 2006 and at support least 60 businesses. Given relatively large number of parks and research centres, this goal seems realistic. The NADSME part of the Scheme in particular proved to be very popular with the end users and demand on funding exceeded supply. • Addressing major challenge: Slovakia accounts for weak research infrastructure and low rates of transfer of research results to business. The Scheme tries to foster co-operation between the public sector (which is receiver of the aid) and private one. • Market efficiency: Some Schemes distribute free gifts to selected numbers of privileged SMEs. They help SMEs to buy equipment, much of which would be bought anyway. It also is difficult to check, how innovative the technology equipment was and how it helped to boost firms' sales. Free gifts distort market operation, promote corruption and misallocation of resources. The Scheme did not distribute the Community funding for free, but subsidised only some running costs in incubators. The Scheme has been more complex and took longer to implement than technology transfer Schemes, but accounted for the potential for further expansion of support. Main lessons drawn from the application of the Scheme suggest that it is better if only one, but experienced agency, is involved in Scheme implementation. Slovakia currently prepares Structural Fund measures to be implemented in the 2007-2013 planning period. The BITPRDC is likely to serve as a model to a number of these. Good experience with the co-operation of the public and private sectors will be transferred to the future measures.

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List of useful websites at national or regional level

Type of organisation	*Name of organisation (in English)*	*Website*
Government and legislative bodies		
1	National Council of the Slovak Republic Slovak (Parliament)	www.nrsr.sk
2	Ministry of Economy	www.economy.gov.sk
3	Ministry of Education	www.education.gov.sk
Private sector organisations and entrepreneurship promotion		
1	National Agency for the Development of Small and Medium Enterprises. NADSME	www.nadsme.sk
2	Slovak Investment and Trade Development Agency, SARIO	www.sario.sk
Knowledge institutes (R&D and education bodies)		
1	Slovak Academy of Science	www.savba.sk
2	Scientific Grant Agency VEGA	http://vega.sav.sk
3	27 Higher Education Facilities (Commenius University and Technical University are the most important)	www.uniba.sk www.stuba.sk
Industrial research centres and innovation intermediaries		
1.	Research and Development Agency, RDA	www.apvt.sk
2	The Centre for Advancement, Science and Technology	www.sarc.sk
Financial system		
1	Slovak Guarantee and Development Bank	www.szrb.sk
2	Slovak Venture Capital Association	www.slovca.sk

Appendix G Stakeholders consulted

List of all individuals interviewed

Name	Position	Organisation
Dr Juraj Poledna	Advisor for Science and Technology	National Agency for Development of Small and Medium Enterprises (NADSME), Záhradnícka, 153, 821 08 Bratislava 2, Slovak Republic
Ing. Jarmila Paršová	Head of Regional Development Unit	Bratislavský samosprávny kraj (Bratislava Self-Governing Region), Bohrova 1, 851 01 Bratislava, Slovak Republic
Ing. Michal Zajac	Manager	National Agency for Development of Small and Medium Enterprises, Záhradnícka, 153, 821 08 Bratislava 2, Slovak Republic
Ing . Ján Strelecký, CSc.	Director	Business and Innovation Centre, BIC Bratislava, spol. s r.o., Zochova 5, 811 03 Bratislava, Slovak Republic
RNDr.Marta Cimbáková,	General Secretary of the Slovak Government Council for S &T	Ministry of Education - Department for State S&T Policy, Stromová 1, 813 30 Bratislava, Slovak Republic
Ing. Štefan Zajac, CSc.	Director	Institute for Forecasting, Slovak Academy of Sciences, Šancová 56, 811 05 Bratislava, Slovakia

Participants to focus group

Name	Position	Organisation
Ing. Štefan Zajac, CSc.	Director	Institute for Forecasting, Slovak Academy of Sciences, Šancová 56, 811 05 Bratislava, Slovakia
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Dr Juraj Poledna	Advisor for Science and Technology	National Agency for Development of Small and Medium Enterprises, Záhradnícka, 153, 821 08 Bratislava 2, Slovak Republic
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