Strategic Evaluation on Innovation and the Knowledge Based Economy in relation to the Structural and Cohesion Funds, for the programming period 2007-2013

Contract n° 2005 CE.16.0.AT.015

A report to:

The European Commission
Directorate-General Regional Policy
Evaluation and additionality

Country Report: SLOVENIA

Version: Final

Report produced by:
Maja Bučar

TECHNOPOLIS

In association with

ISMERI EUROPA

LACAVE, ALLEMAND & ASSOCIES CONSULTANTS

LOGO TECH Innovation & Development

7 July 2006

Legal Notice

Neither the European Commission, nor any person action on behalf of the Commission is responsible for the use which might be made of the following information.

The views of this study are those of the authors and do not necessarily reflect the policies of the European Commission.

CONTENTS

Executive Summary

Slovenia achieved relatively strong and stable economic growth in the period of transition. The average rate of real economic growth in 1993-2004 was 3.8% (Institute for Macroeconomic Analyses and Development, 2005). In 2005, GDP growth was slightly less than in 2004 (4.6%) at 3.9% and the predictions for 2006 are at 4.2%. Slovenia is joining EURO zone by 2007, as a result of the fact that meeting the Maastricht criteria has been one of the top economic policy priorities. As a small country, Slovenia is intensively integrated in the international economy. The high growth rate of exports contributed significantly to the high GDP growth. In 2005, the export of goods and services achieved a 9.2% growth rate.

In terms of RTDI, Slovenia is making progress in certain indicators, monitored by EIS (according to EIS 2004- see Trend chart report Slovenia 2004-2005), particularly in the area of increased business R&D investment. Slovenia is considered as a single region due to its small size and low population (2 million). As a single region, Slovenia was grouped into Central Techno cluster. The regional differences in Slovenia are small and are among the lowest in European Union.

The institutional framework of innovation policy in Slovenia has gone through several changes since independence. Increasingly, the importance of R&D and innovation is being recognised in the official policy papers like the Slovenian Development Strategy 2006-2013 and the National Research and Development Programme 2006-2010. Current level of investment in R&D has been for several years around 1.5%, even though Slovenia has committed itself to achieving a Lisbon/ Barcelona 3% target. While business expenditures on R&D are gradually increasing, the public share is stagnating. The EU funding for RTDI has so far not been a major source of financing. It comes namely via ERDF and the Objective 1 first priority "Better environment for innovation activities", which supports mainly the creation of 8 Centres of Excellence, investments in research infrastructure by technology parks/ networks or clusters and joint industrial R&D projects. Slovenia has been relatively successful in the 6th Framework Programme1 and EUREKA.

Based on the analyses of the implementation trends of the Strategy of Economic Development of Slovenia 2001-2006, the promotion of competitiveness and development of human resources were identified as the key means of achieving the set objectives. The Single Programming Document 2004-2006 focused on the following priorities:

a) Promotion of the productive sector and competitiveness
b) Knowledge, human resource development and employment
c) Restructuring of agriculture, forestry and fisheries
d) Technical assistance

In the period between 2004- 2006, 237.52 MEUR are earmarked for Slovenia from the Structural Funds and a further 190.57 MEUR from the Cohesion Fund (2004

[1] According to MHEST data, Slovenian research organisations participate in 284 projects in total contracted amount of 41.3 MEUR (Jan.2006).

prices). For the RTDI area, the first priority of the SPD, called "Promotion of productive sector and competitiveness", is the most relevant. The activities were to be focused on development of innovation environment, removal of administrative barriers and improved access to information, knowledge and finance for entrepreneurship. Also, development of suitable locations for further expansion of enterprises was to help improve the investment conditions.

Since majority of the programmes financed via Structural funds in Slovenia have only really just started in 2005 (or later), it is difficult to assess their full impact on innovation and even more so on economic performance at the national level. Still, the experience in Slovenia with the use of Structural Fund support for innovation and knowledge can be assessed as positive, in spite of several mostly administrative problems. The measures and the programmes have addressed the priorities set forth in strategic documents. Many of the activities, supported by SF would not be possible without these resources. Here particularly the research and development infrastructure of technology parks, centres of excellence and clusters and the joint R&D projects need to be mentioned. Less satisfactory is the integration of these support measures into the overall innovation support framework, but this must be attributed to specific internal issues of lack of coordination and poor implementation of policies.

The available draft National Development Programme 2007-2013 shows that the programme is formulated in close observance of the Slovenian Development Strategy and follows same objectives and priorities. At the level of OP the drafts are still rather vague. For RTDI, the section of OP ERDF proposing the Slovenian development network is especially interesting. In finalising the document, a more explicit criteria for the creation of economic- development- logistic centres should be developed along with assessment of the capacities (especially human) to sustain the planned number of centres, particularly so where they are linked with higher education and research institutions.

Recommendations for the future priorities of Structural Funs include:

- Promotion of the R&D and innovation programmes in priority areas, where clear business component is present;
- Support for the investment in human capital for R&D and innovation and careful approach to decentralisation of higher education sector and R&D. This would require specific measures to stimulate postgraduate studies, especially in S&T area, mobility of researchers and academics within the public R&D and education sector and between business sector and public R&D sector.
- Introduction of special support measures for innovation in service sector and non-technical innovation.

In terms of Operational guidelines to maximising effectiveness of Structural Fund interventions for innovation and knowledge, the recommendations suggest:

- Organisation of the entire SF process under single Agency
- Design of a comprehensive set of innovation measures and provide for close implementation monitoring and
- Providing additional training for administrative support of SF financing.

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"[2]

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.[3]

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.

---

[2] 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.

[3] 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.

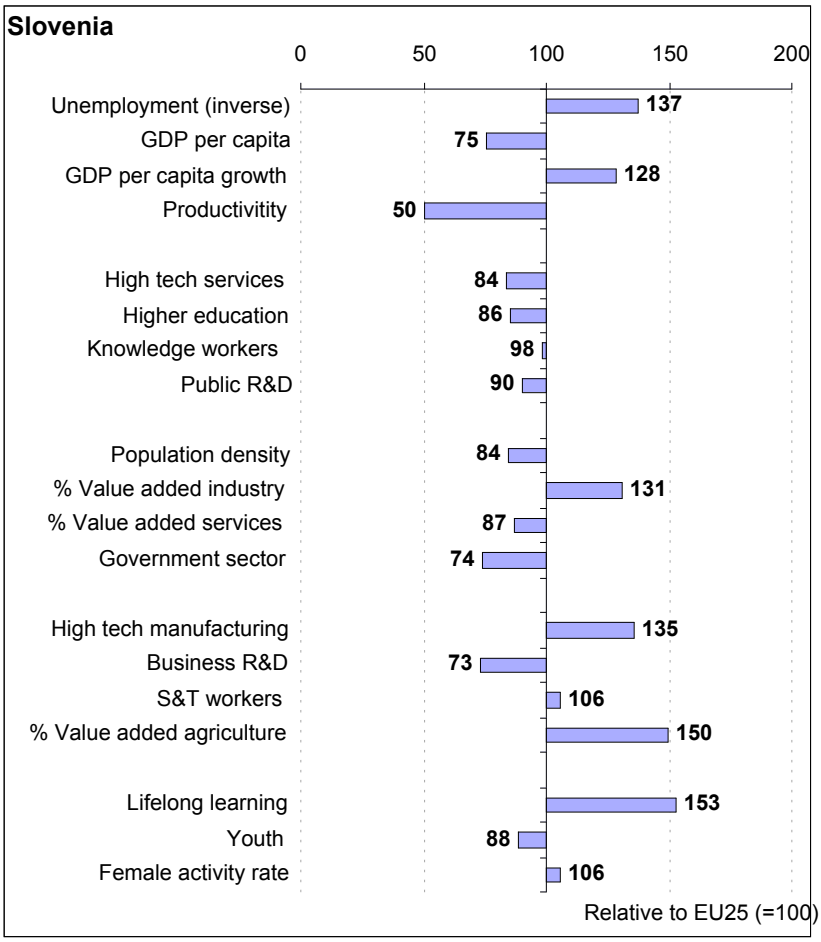
2 Investing in innovation and knowledge: a comparative overview of regional performance

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 of Slovenia 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.

Slovenia achieved relatively strong and stable economic growth in the period of transition. The average rate of real economic growth in 1993-2004 was 3.8%. (IMAD, 2005). In 2005, GDP growth was slightly less than in 2004 (4.6%) at 3.9% and the predictions for 2006 are at 4.2%. During the last two years the country made a significant progress also in curbing inflation rate, which was one of the key concerns of the macroeconomic policy. Slovenia is joining EURO zone by 2007, as a result of the fact that meeting the Maastricht criteria has been one of the top economic policy priorities. According to the recent appraisal by the EC (2006), the stability of public finance and the fact that the exchange rate has practically not changed since its setting should be a guarantee of a smooth transition to EURO.

As a small country, Slovenia is intensively integrated in the international economy. The high growth rate of exports contributed significantly to the high GDP growth. In 2005, the export of goods and services achieved a 9.2% growth rate, and exports expanded in most of traditional Slovenian markets: EU old and new members (in the latter an even higher than average export growth was achieved) and declined slightly only in the countries with which Slovenia had special bilateral arrangements prior to joining EU (Macedonia, Republic of Serbia and Montenegro). Overall, the export oriented sectors have been more successful (increased value added and employment) while on the other hand, several of industries more focused on domestic market, experienced difficulties (especially food processing, printing and publishing).

Overall, the unemployment rate is bellow EU average and is estimated at 6.5% (IMAD, 2006) but is declining as fast as the government had hoped for. The growth of jobs in business and public services has not fully compensated the loss of jobs in manufacturing, particularly labour intensive sectors such as textiles and clothing, leather and shoe manufacturing and in the last two years, food processing industry. Technological restructuring and modernisation has been slow, so has been the growth of value added. A more proactive economic policy in this regard is expected in the future.

Gradualism in the introduction of the reforms during the transition period had its benefits and costs. On the positive side, the absence of swift economic changes reduced the potential risks and lowered the social price of post-socialist changes. However, according to the predominant stream of economic policy makers, Slovenia has reached the point where the costs of gradualism already exceed its benefits. Since 2003 every year the national competitiveness index has decreased, according to IMD & WEF. This low score of the competitiveness index is attributed to the low level of innovation activity, the low level of foreign investment and the poor environment for entrepreneurship. In particular, IMD has been critical of the tax system, especially the relatively heavy burden of real personal taxes.

Several of these issues have been addressed in the Slovenian Development Strategy (2006-2013), passed by the government in June 2005. A more explicit set of reforms was proposed by the group of experts, led by younger neo-liberal economists. The Reform programme was accepted by the government in Nov. 2005 and led to the establishment of the Government Office for Growth

While involvement in higher education had increased significantly (in 2005, more than 50% of the generation 19-24), Slovenia, as most EU25 countries, is experiencing

the lack of interest in Science and Engineering among the youth. This is reflected in a decline of the share of S&T graduates in total number of university graduates from 1998 to 2003 from 23.8% to 18.6%. The current number of graduates is not yet critical, yet the prospects are of concern, so promotion of S&T studies is high on government agenda. According to EIS (2005), the rate of adults involved in life-long learning is increasing rapidly, raising some doubt among national experts as to the comparability of earlier and new data. A reform of higher education is proposed by the Reform Programme and the Minister of Higher Education, Science and Technology (MHEST). The main proposals focus on the opening up of the education sector to private (as well as foreign) competition, on supporting a more balanced regional spread of higher education facilities, and argue for the biased scholarship policy in favour of Science &Engineering.

Slovenia policy-makers were among the first to subscribe to Lisbon and Barcelona target of 3% of GDP for R&D. Yet the statistical figures have so far not confirmed the growth of investments in R&D, which is annually around 1.5%. (SURS, 2005). What has happened during the last ten years is a gradual, but constant growth of business investment in R&D. If in 1996 the share of the business sector in R&D expenditure (BERD/GDP) was 0.68, it reached 0.97% in 2004 [4](SURS, 2006)

During the early years of the transition period, Slovenia managed to preserve its public R&D sector relatively untouched, since increase in public expenditures outweighed the loss of business funds. The majority of the larger public research institutes survived, only some of the R&D departments in the industry were closed. The availability of public resources led to a shift towards more basic research. Even the consequent rise of business R&D investment did not change this, since most of the investment was intramural. The lack of cooperation between public research institutions and University and business sector is one of the key deficiencies of Slovenian innovation system. In spite of several measures to increase the cooperation between the two, not much progress has been recorded.

The characteristic of the public research funding has been an avoidance of priority setting. As explained in more detailed in the next chapter, the largest programme is the so called Research Group financing where eligibility criteria only considers scientific excellence, regardless of the area of research. On the other hand, the business sector R&D investment is much more sector specific, reflecting a predominant role of manufacturing and within manufacturing, of chemicals-specifically pharmaceuticals (32.9% of total business R&D expenditures) and machinery and equipment, especially electrical equipment (37.5%). The share of services in R&D expenditures is 11% and hardly reflects the otherwise important role of this sector in national economy with over 62% of value added.

Slovenia is making progress in certain indicators, monitored by EIS (according to EIS 2004- see Trend chart report Slovenia 2004-2005), particularly in the area of increased business R&D investment. The government claims that public R&D expenditure has increased in 2004, but this increase has so far not been reflected in

[4] In nominal terms, GERD was 88.27 bln SIT (377 MEUR) in 2003 in current prices, with BERD amounting 52.64bln (225 MEUR) (Source: Statistical Office, 2006). This would be approximately 44000 SIT/ per capita for GERD (or 188 EUR/ per capita according to the average exchange rate for 2003).

the statistics. In comparison to EU25, Slovenia also has above average rate of investment in ICT in relation to GDP, but if compared with previous years, ICT investments have in fact decreased. Slovenia is very good in extending the use of Internet by households and has a high level of mobile telephony penetration, but the spread of e-business is slow. The latter is especially true for business to business and government to business e-relations (Stare and Bučar, 2005).

Slow progress can be noted in the area of protection of intellectual property. The persistent low number of patents can partly be explained by the type of research carried out in the business sector and the lack of motivation/ resources for patenting in public research institutions. This is certainly an area which should deserve more policy attention in the future.

2.2 Regional disparities and recent trends

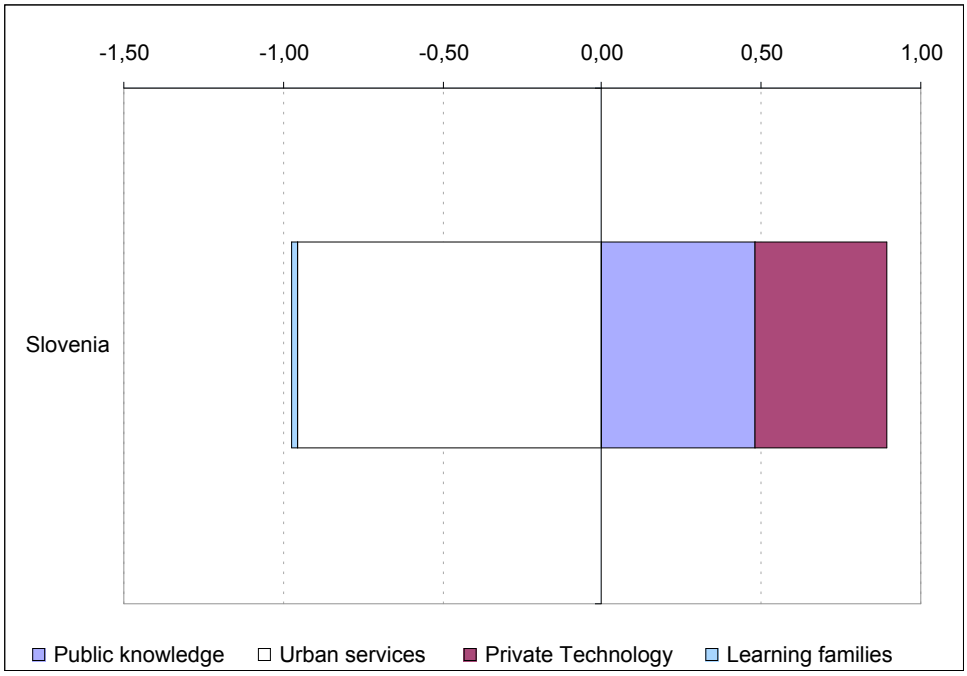
In order to analyse and describe the knowledge economies at regional level in the EU, the approach adopted was to reduce and condense all relevant statistical information available for a majority of regions. The approach involved firstly reducing the information from a list of selected variables into 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 EU terms, Slovenia is considered as a single region due to its small size and low population (2 million). As a single region, Slovenia was grouped into Central Techno cluster. 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. Looking at

the Exhibit 2a, the cluster description corresponds relatively well with the figures arrived to by the factor analysis.

Exhibit 2a: Regional factor scores for Slovenia



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.*

The regional differences in Slovenia are small and are among the lowest in European Union. Even though development policy has always reflected on the regions and regional disparities, most of the economic policies have been designed and implemented centrally, since no adequate administrative set-up is in place at the NUTS 2 or NUTS 3 level. The Strategy of Economic Development of Slovenia from 2001 to 2006 had a special chapter on preventing the expansion of regional differences, yet in IMAD's Development report (2006) it is stated that particularly during the years 2002-2004 the regional differences measured by the gap in GDP per capita have been increasing. The key reason for such developments is not the lack of progress in the least developed regions, but has to be attributed to particularly dynamic economic growth in the Central Slovenia.

During the last years, several attempts were made to organise Slovenia in two or three regions. Should Slovenia remain as a single region, some feared that this would endanger the country's eligibility for EU structural funding in the long run. Additional funds would be especially welcomed in the eastern part of the country, which does not enjoy the same development trend as the central region. Current government prepared a proposal to divide Slovenia into two so called "cohesion regions" for the purpose of the EU Structural Funds and try to compensate the less

developed parts with more resources in the next financial perspective. The long-term idea is to create two cohesion regions (NUTS 2), the West and the East Slovenia. Regions at NUTS 3 level Central Slovenia, Coastal, Goriska and Gorenjska as the more developed areas would constitute West Slovenia and would most likely not be eligible for EU funds due to the high level of GDP. The other eight NUTS 3 regions would belong to East Slovenia with significantly different development indicators. This can be reflected in the Exhibit 2b. This proposal was submitted for notification to EC in November 2005. In May 2006, the National assembly agreed to start the process of needed legal adjustments to the constitution, which would enable formation of the regions at NUTS 2 with respective administrative responsibilities. Still, this will be a gradual and disputable process, stirring hot political debates.

Exhibit 2b: Basic statistical data and socio-economic indicators for the proposed cohesion regions and Slovenia

Indicator	West Slovenia	East Slovenia	Slovenia
Area (in km2)	8,061	12,212	20,273
Population, 2004	918453	1078551	1997004
GDP in PPP	19152	13385	16029
% of EU25=100	89.5	62.5	74.9
Employment rate	59.7	55.5	57.4
Employment in service sector	60.9	45.8	52.8
Average years of schooling	10.97	10.35	10.64
unemployment	5.5	7.4	6.5
Share of youth among unemployed, in %	19.8	23.9	22.5
Life expectancy	76.13	73.74	74.89
Synthetic development indicator	73.0	127.0	100

Source: SURS, New Cronos, 2005

At NUTS 3 level, Slovenia has 12 statistical regions. These regions are very heterogeneous in terms of geographical size and population. Also, the economic structure in terms of both level and composition of value added[5] is diverse. Central Slovenia achieved the highest values in terms of its development level measured by GDP per capita: in 1995 this region was at 138 per cent of Slovenian average and 94 % of EU 25 average, by 2002 its position raised to 142 % of Slovenian average and 107% of EU 25. On the other hand, the least developed region Pomurska was at 1995 at 76 % of SLO average to decline to 69% and to 52% of EU 25 average by 2002. This shows that the differences between regions along these lines widened.

While declining, the disparities in regional unemployment still pose one of the key problems for Slovenia's regional development (Pečar, 2005). Three Slovenian statistical regions even exceed the European average unemployment rates. The situation is even worse regarding the youth unemployment rate, with as many as five regions having rates higher than EU average. This indicates that structural

[5] All data on regions comes from UMAR, Working paper 9/2005.

unemployment remains a major concern of regional unemployment. The policy approach to this issue is twofold: on one hand, incentives towards more (self-employment are provided through so called active employment policies, on the other a higher degree of mobility of labour is encouraged.

High regional disparities can be noticed also in the area of knowledge society indicators. Central Slovenia is the base of the largest Slovenian university- University of Ljubljana. This explains high concentration of research personnel in Central Slovenia, especially in higher education sector and public research institutes. In terms of gross domestic expenditure on R&D by sectors of performance 59% falls in Central Slovenia[6]. Due to high concentration of public research capabilities in Central Slovenia, specifically in Ljubljana, 93.5% of all research performed by government sector (public R&D institutes) and 78.4% of research, performed by higher education sector is done in Central Slovenia. 57.3% of all R&D expenditures occur in Central Slovenia.

These figures are bound to change with the planned decentralisation of higher education and more active support to regional business-knowledge zones, proposed in the Reform programme. Since the date covered by statistics, two new Universities have been established (in 2004 University of Primorska and in 2006 Politehnika, Nova Gorica- a first private university), and several additional programmes were introduced in various parts of Slovenia.

R&D performed by business sector is less concentrated on a single region, since it follows the pattern of concentration of key industrial activities with high R&D investment (pharmaceutical industry, electric and electronic machinery). The Central Slovenia accounts for 37% of R&D performed by business sector, followed by Gorenjska with 20%. Looking at the distribution of R&D expenditures by regions from 1996 forward, we can notice that expenditures are gradually increasing in all regions.

Since Slovenia is small, improved physical infrastructure as well as continuous investment in modern telecommunications (broad band access) is also important in overcoming regional disparities in human resources and research potential. Some warn that certain concentration of research resources needs to be maintained for practical reasons. In a country as small as Slovenia a policy of "one university and one technology park/ centre and a business zone" per community should not be the correct objective of decentralisation. Business firms report that they already experienced difficulties in obtaining a complex and interdisciplinary approach to the research/ development question due to the current segmentation of Slovenian research capabilities. Further breaking-up of existing R&D infrastructure and human resource potential would not be beneficial, unless supported by new research staff.

[6] All figures are for 2002 (SURS, Dec. 2005)

Exhibit 3: Recent trends 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		--	--	--	--	--	--	--
Slovenia		-0,20	6,12	-0,99	-0,78	0,20	-0,85	0,18

Source: MERIT based on Eurostat data for period indicated

As reflected in the exhibit 3, Slovenia was quite successful in terms of growth rate of GDP, but was not able to decrease the unemployment level as planned. Partly, this can be explained by declining importance of industrial sector, especially labour intensive industries. The lower shares of industry and agriculture in value added are also the result of successful growth of service sector. While Slovenia has experienced significant increase in number of enrolled students at tertiary level, the share of S&T graduates in total number of graduates is decreasing, reflecting the orientation of youth towards non-S&T studies.

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
• Slovenia as a single region	• Different dynamics in technological restructuring and modernization of manufacturing • Low innovation activity in SMEs	• Better cooperation between public research and business sector • More tailor-made measures to promote innovation in SMEs
	• Trends in number of Science and Technology Graduates show a decline of interest for S&T studies	• Active promotion of S&T studies among the youth along with modernisation of the facilities at technical schools
	• High concentration of public R&D and higher education facilities, limiting the availability of human resources to less developed regions	• Improved modern infrastructure and decentralisation of higher education
	• Decline in competitiveness index due to poor entrepreneurial environment	• Improved innovation infrastructure, R&D and innovation policy, fiscal policies, etc.
East Slovenia[7]	• Lower rate of new enterprise creation and thus higher rates of overall unemployment as well as unemployment among youth	• Specific support schemes for establishment of SMEs in less developed regions with higher subsidy rate than in other parts

• [7] There is no official data on East Slovenia, since this is still a proposal for a formation of a cohesion region. One of the few common characteristics of the

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[8] 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.

National innovation system The institutional framework of innovation policy in Slovenia has gone through several changes since independence, reflecting in part the search for the most efficient division of tasks between different ministries and in part the influence of the science and business communities. At the level of legislation and institutions, innovation framework is quite comprehensive, deficiencies exist in its coordination and implementation of various support measures. Increasingly, the importance of R&D and innovation is being recognised in the official policy papers like the Slovenian Development Strategy 2006-2013 and the National Research and

---

NUTS 3 statistical regions, which are proposed to form the new East Slovenia cohesion region is the so called index of development gap. In several other indicators one could depict as many differences as similarities among different parts of this "region".

[8] The network of organisations, individuals and institutions, located within or active within national or regional boundaries, that determines and shapes 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.

Development Programme 2006-2010. Current level of investment in R&D has been for several years around 1.5%, even though Slovenia has committed itself to achieving a Lisbon/ Barcelona 3% target. While business expenditures on R&D are gradually increasing, the public share is stagnating in spite of proclaimed R&D and innovation policy priority.

At the policy making level, the key role is played by the **Ministry for Higher Education, Science and Technology** (MHEST- www.mvzt.gov.si, which is responsible for setting the policy through the preparation of the five-year National Research and Development Programme. This is the basis for the funding of public research, for which a special public agency had been created in 2004 (Slovenian research Agency). **The Ministry of Economy** (ME- www.mg.gov.si), within its Directorate for Entrepreneurship is responsible for entrepreneurship promotion programmes and for some of the activities in the area of innovation: support to technology centres and university incubators, to the programme supporting the introduction of new managerial practices to improve productivity and to internationalisation. Also, the public calls for Priority 1 (innovation infrastructure) under the current Single Programming Document are being executed by this Ministry. The government's **Office for Growth, (**http://www.svr.gov.si/index.php) was established in January 2006 and is to coordinate reform programme and is expected to play an important role in the preparation of the National Development Programme as the basis for Single Programming Document 2007-2013.

Government Office for Local Self-Government and Regional Policy is not directly related to R&D policy, but is in charge of the coordination of the implementation of the Structural Funds and the administration of regional policy. The Office is:

- coordinating the inter-ministerial preparation and harmonisation of framework agreements with the EU, on the basis of which Slovenia can receive funds from the EU budget;
- managing the Structural Funds and the Cohesion Funds in Slovenia;
- coordinating, monitoring and evaluating the work of the ministries, government services as well as other public bodies and services involved in the implementation of structural policy tasks and reporting the findings to the government
- establishing and maintaining a functioning information system for the purpose of monitoring and evaluating the National Development Plan and the Single Programming Document.
- performing other expert tasks in accordance with the rules and decisions of the Slovene government.

At regional level, the role of the **regional development agencies** in the promotion of innovation (RDA) is growing and helping entrepreneurs in the regions to tap into national as well as international schemes for regional development promotion. Yet their legal and financial status varies significantly.
Law on Research and Development, 2002, provided for the formation of two public agencies, responsible for a permanent professional and independent selection process of projects and programmes that will benefit from public financing in each of their respective area of work. The **Slovenian Research Agency** (ARRS- http://www.arrs.gov.si/sl/) began operating in 2004 and regularly issues public calls for financing various activities, including the research programmes, basic and applied research projects, Young Researchers Programme, infrastructure support to public research institutes, support to Target research projects, and other programmes and

mechanisms, focusing on R&D support. Its counterpart in technology area is the **Technology Agency** (TIA- http://www.tia.si/eng/eng_sedez.php), which was formally established in 2004, with prime focus on providing support to innovation and technology programmes, on creating innovation friendly environment and support to knowledge transfer and technology diffusion to enterprises. Due to organisational complications, caused by new institutional set up, the Agency has not launched its strategic programme yet[9].

This institutional framework has been shifted around a lot during the recent years with responsibilities for specific areas changing from one to the other Ministry. This caused significant coordination problems and lack of transparency of the system and the measures. There is a **need for a coordinated horizontal approach** to innovation policy, with a clearer demarcation of the responsibilities and tasks of each involved institution.

Funding framework system:

Most of the financial resources for universities and public research institutes come from the Government. Business R&D funding is focused primarily on business sector (nearly 82%). According to recently released statistics, business R&D received only 4.68% of its resources from the government, while 13.2% of business enterprise R&D expenditure was financed from private funds abroad (SURS, 2006). Support measures for innovation and technology come from Ministry of Economy (technology parks, incubators, mobility scheme, etc.) and Ministry of Higher Education, Science and Technology (joint R&D projects, technology centres, centres of excellence, etc.)

Availability of financial resources for new firms is slowly improving. **Venture capital funds** are scarce (Horizonte, Activa) and the planned establishment of public-private venture capital fund has not been implemented yet. **Chamber of Industry and Commerce** (GZS- www.gzs.si) has decided in the spring 2006 to form a special fund to support entrepreneurship and thus more actively engage itself in support to creation and growth of new firms.

The **EU funding** has so far not been a major source of financing. It comes namely via ERDF and the Objective 1's first priority "Better environment for innovation activities", which supports mainly the creation of 8 Centres of Excellence, investments in research infrastructure by technology parks/ networks or clusters and joint industrial R&D projects. Slovenia has been relatively successful in the 6th Framework Programme[10] and EUREKA.

The importance of **Slovene Enterprise Fund** (SEF- *http://www.podjetniskisklad.si/*) is growing as a national financial organisation for support to SMEs with the different forms of favourable financing. Besides various subsidized credit lines, SEF has a special programme of loan guarantees in connection with private banks. In the nineties, the commercial banks were not very open to new businesses, but under the scheme where SEF provides loan guarantees, several banks have opened special more

[9] See detailed explanation on the Technology Agency in Trend Chart Annual Innovation Policy Trends and Appraisal Report- Slovenia, 2005.

[10] According to MHEST data, Slovenian research organisations participate in 284 projects in total contracted amount of 41.3 MEUR (Jan.2006).

favourable programmes for SMEs. The widening of the SEF activities can be attributed to Structural Funds.

The government policy from 2001-2004 on promotion of establishment of clusters resulted in the formation of several **clusters**[11]. The more active ones like the automobile cluster, the cluster on ventilation and air-conditioning, the tools cluster, etc. have become an important element of impact on innovation policy of their members and gradually gaining importance on the national level.

Exhibit 5: main organisations per policy area.

Policy objectives	Type of organisation	
	National (&/or regional) public authorities and agencies	**Key private or non-profit organisations**
Improving governance of innovation and knowledge policies	• Ministry of Higher Education, Science and Technology (MHEST) • Ministry of Economy (ME) • Office of the Government for Growth	• Slovenian Science Foundation • Chamber of Industry and Commerce
Innovation friendly environment	• Slovenian technology agency-TIA	•
Knowledge transfer and technology diffusion to enterprises	• TIA • Ministry of Economy – programme to support technology parks/ centres	• Technology offices at Universities and larger public research institutes Mixed level of success)
Innovation poles and clusters	• MHEST (centres of excellence) • ME (university incubators) • TIA	• Established clusters (automobile, ventilation, tools, textiles, etc.)
Support to creation and growth of innovative enterprises	• Slovenian Entrepreneurship Fund	• Chamber of Industry and Trade • Venture capital firms (Horizonte, Aktiva, etc.) • Commercial banks' programmes for SMEs
Boosting applied research and product development	• Slovenian Research Agency • ME& MHEST programme under EU Structural Funds	

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

[11] The measure to support the establishment of clusters was stopped in 2005, but new window to support clusters was opened by the support to joint research projects within clusters and the support to research infrastructure (described in detail in 4.1.2.).

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 in 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	NRDP (2006-2010)	Slovenian Research Agency (SRA)	
Innovation friendly environment		Slovenian Technology agency	One stop agency
Knowledge transfer and technology diffusion to enterprises	Joint research projects, Centres of excellence	Technology parks/ centres	Technology networks
Innovation poles and clusters	University incubators	Support to research infrastructure for clusters	Clusters
Support to creation and growth of innovative enterprises		Slovene Enterprise Fund	Guarantee schemes Subsidies for investment in new technology Voucher scheme
Boosting applied research and product development	Applied research projects	Support to research infrastructure for clusters	Joint research projects
Legend			
Top policy priority			
Secondary priority			
Low priority			

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

- Policies supporting academic and non-profit knowledge creating institutions

The key policy document, setting the R&D policy is the National Research and Development Programme (NRDP). The current NRDP 2006-2010 addresses the improvement of governance of public R&D research as one of the key priorities and sets organisational objectives for the Slovenian Research Agency as the key implementation agency. In accordance with the priorities of NRDP, the Agency should adjust the existing measures (more attention to applied research, better transfer of knowledge from public R&D institutions to private sector).

Since 1999, the major programme, opened in particular to research institutions in public sector, is the *Research programme* funding, where five-year contracts are awarded to the selected groups of researchers. The eligibility criteria allow only researchers with Ph.D. to form the group, and selection process is strictly based on scientific excellence of the group leader as well as the team members. This programme absorbs major share of public R&D finance and supports predominantly basic research. The Agency supports *basic and applied research projects* via annual public calls, runs a special programme for *Young researchers*, several *infrastructure programmes* (support to participation in international conferences, organisation of international meetings in Slovenia, publications, data bases, etc.) and international research cooperation. A special programme called *Targeted research projects*, where different ministries specify their needs for research inputs in their policies, is also supervised by the Agency.

Current strong concentration of public research funding on basic research is to change if the NRPD implementation is carried out in accordance with its objectives to boost applied R&D projects. The current ratio of nearly 80% in favour of basic research should lower to 60%, while resources for applied and developmental research should increase to 40%. The government's intention is to channel all increased R&D financing[12] towards targeted basic and applied research projects as well as shift the structure in favour of projects instead of programme financing. Applied research projects should receive priority treatment in allocation of all new money. To stimulate knowledge transfer and diffusion of technologies to enterprises, measures like establishment of centres of excellence and university incubators were introduced and an additional window was opened for joint research projects. All three measures were supported through ERDF as well.

[12] To achieve 3% R&D investment share in GDP, the government should increase its annual allocations to R&D by 0.1% of GDP annually until 2010. This new money should be allocated in accordance to NRDP priorities.

- Policies supporting intermediary/bridging organisations involved in innovation support, technology transfer, innovation finance, etc.;

Establishment of different types of bridging organisations has started relatively early in Slovenian innovation system. It can be characterised on one hand by regular practice of introducing different types of instruments and organisations seen in EU, especially in more developed and innovative countries and on the other, by frequent shifting the type and financial amount of the support provided by the government to various forms of intermediary/ bridging organisations. Still, at the policy level, support to intermediaries has always been declared as a priority and this remains so in the current strategic documents as well.

Support to establishment of technology parks/ centres had started in 1994. *Technology centres* are independent legal entities established by several companies for the purposes of R&D in a specific field or branch, as well as for the provision of R&D equipment subsequently made available to companies for their development projects. There are currently 25 active technology centres operating in the fields ranging from textile processing, footwear, toolmaking, and electrical engineering, information and safety technologies.

Technology parks(3) are supported by Ministry of Economy- until 2005 the services they offer to SMEs located within the parks were subsidised, but in 2005 and in 2006 a special public call, supported also by the funds from European Regional Development Fund provided substantially increased resources for construction of new premises and new research infrastructure investments within technology parks.

Both technology parks and centres form top policy priority in creation of innovation friendly environment and in the improvement of knowledge transfer and technology diffusion. The measures cover the subsidies for operational costs and through the funds from ERDF also research infrastructure (building, equipment, strategies to develop new services, etc.)

Cluster programme has been initiated by the government in 2003 (see details in Innovation Trendchart Report for Slovenia 2004, where detailed description of the evolution of cluster programme is given). The initiative was welcomed by business firms and in the years to follow several clusters were formed. All together 29 projects related to clustering were supported by the end of 2004: 3 pilot cluster projects, 13 early stage clusters and additional 13 cluster initiatives, bringing together 350 companies and 40 education/research institutes, employing a total of over 60,000 people. The interest of the business sector far surpassed the ability of government to support this initiative, in spite of high priority assigned to clustering. Several more developed clusters also approached EU funds for financial support. In 2005, the government decided to stop co-financing cluster formation and instead opened the possibility for the already established clusters[13] to apply for the support under ERDF. This scheme provided clusters with co-financing for research projects/ research infrastructure development.

[13] Data base at Chamber of Industry and Commerce cites 14 clusters.
Source: http://www.gzs.si/Nivo1.asp?ID=24668&IDpm=9260 .

Objective 1 “Better environment for innovation activities” of SPD supported the creation of *Centres of Excellence* and *technology networks* (initiated by private institutes) and organisations, supporting industrial R&D activities. The initiative is partly modelled after VIth Framework Programme’s “Networks of excellence”. It combines research facilities at different public research units (both institutes and universities are involved) in research, which is focused on the needs of business sector members of the centres of excellence. Financial resources go to research units, but co-financing must be coming from business sector for each individual project. 8 centres of excellence have been established so far. According to the interviews with project managers the centres have generated new research activity in the areas directly relevant for business sector. Cooperation with business sector is gradually increasing and business partners in the centres are getting more and more involved in directing the research towards the questions relevant for them.

Formation of *technology platforms* is the initiative of the Slovenian Chamber of Industry and Commerce, launched in response to EU policy in the area of R&D and innovation. Several technology platforms have been initiated and are in the process of formal establishment. It is expected that the MHEST will introduce a specific measure supporting such cooperation, since it was announced in their technology support programme for 2006.

As a result of PHARE 2002, the formation of *university incubators* was suggested at the two (later three) universities. Their current level of activity has not yet fulfilled the expectations, partly due to administrative problems (delays in announcement of public call for their financing) and partly due to reluctance by the Universities themselves.

While some of the bridging institutions, established under various support schemes, managed to survive and perform relatively well in spite of irregularities in their financing (for example TECES as a tools technology centre or Ljubljana’s technology park), others contribute only marginally to technology transfer due to their poor visibility (some of the smaller technology centres, incubators, etc.). The lack of transparency of Slovenian innovation policy is most obvious in this area, since it is impossible to predict when or who will issue the public calls providing for subsidies to any of the forms of bridging institutions or when will the contracts be signed or actual money received. This is happening regardless of the fact that at the level of policy all these instruments are always declared as top priorities.

- Policies supporting directly innovation activities in private sector

This policy area is among more deficient one. Besides the support measures available at the Slovenian Entrepreneurship Fund (subsidies for new technology/ equipment, loans for projects, introducing new products/ services and guarantees to SMEs for loans at the commercial banks) few other instruments focus on direct support. Financing is available for joint research projects both at the Slovenian Research Agency and the Ministry of Higher Education, Science and Technology. While the recipients of the first are usually public research institutes working in cooperation with business sector, which provides for the required co-financing, the second programme is more development focused and the recipient is a business firm (even if the money is provided for the firm to commission research from public research organisation).

Another interesting measure, which focuses on SMEs, yet not only on support to innovation activities is so called "voucher scheme". Ministry of Economy is financing via Slovenian Public Agency for Entrepreneurship and Foreign Investment promotion a measure, under which SMEs can get a reimbursement of the consultancy costs they need for their business (legal and financial advise, advise in the preparation of new strategic business plans, etc.).

Slovenian Entrepreneurship Fund is considered as the best current institution to provide support to creation and growth of enterprises, so financial support is increasing, most significantly through ERDF. In the long run, support should be also provided by the creation of a new public-private venture fund, which is being planned for some time now.

Several innovation policy objectives have been integrated in the recent policy documents, even though specific measures for their implementation are still pending. Both, the National Research and Development Programme (2006-2010) and Slovenian Development Strategy (2006-2013) as the two most important strategic documents stress the need to **improve innovation governance and knowledge policies**. NRDP suggests the combination of technology foresight, EU R&D priorities and expert group assessments as the background for selection of priorities to be followed by public R&D financing. Also, better coordination of different government bodies involved in RDTI is called for in both documents. SDS explicitly recognizes the importance of horizontality of innovation policies as well as the need for continuous evaluations of both, policy objectives and measures.

In practice, the two documents have yet to be followed by specific measures contributing to better innovation governance. Current innovation policy is rather unclear, since at the institutional level some of the implementation measures are left with the Ministry of Economy, some with MHEST and some are expected to be coordinated by TIA or under the Office for Growth. The end result is a rather unclear and at least from the viewpoint of recipients of support measures disorganized system. One can therefore conclude that in spite of treating the improvement of governance of innovation and knowledge policies as top policy priority, the

implementation is not going in this direction and the government needs to pay more attention to this objective.

Since innovation and more dynamic technological restructuring of the economy is to be one of the key sources of growth in the next years, **creation of innovation friendly environment** is included as one of the development priorities of SDS. The Strategy calls for comprehensive revision of all regulations from the perspective of innovation support and it suggests different new measures like the creation of a public-private venture fund, mobility scheme to improve the human resources in business sector R&D, more support to bridging institutions, but no specific instrument in this regard has been developed so far. One of the mechanisms to improve innovation environment was to be Slovenian Technology Agency, which according to the Law on Research and Development (2002) was to be the key policy setting body in the area of innovation. It remains to be seen if the Agency will be able to fulfil these expectations.

With the expansion of the programmes of Slovenian Entrepreneurship Fund, the support for **creation and growth of innovative enterprises** is picking up. This again is one of the areas that all strategic documents in the past and currently proclaim as a priority. The discussion on setting up a special venture capital fund on the basis of public-private partnership has been going on for several years now. The Law on entrepreneurship, accepted in 2004, proposed such a fund, but due to delay in preparation of by-laws no action has been taken by the government. In the meanwhile, the Chamber of Industry and Trade decided to invest some of its resources to form a Support Fund for new enterprises in March 2006.

3.3 Conclusions: the national innovation system and policy mix

The various policy objectives in the area of RDTI address all the key issues of Slovenian innovation system. Also, the debate following the acceptance of the relevant policy documents (NRDP, SDS, and Reform Programme) reflects the common feeling that: i) R&D system needs to be restructured to allow better cooperation between the public research institutions and business; ii) Slovenia needs an innovation-friendly environment; and iii) Slovenia needs to promote the growth of new high-tech and innovative firms.

The laws and the organisational infrastructure are in place, what remains open is programme coordination and transparency of the system. Since all of the policy documents are fairly recent, it would be unfair to evaluate their implementation at this stage already. At the level of policy-planning , the issues addressed, objectives set and the policy measures planned are all correct. The next step is their implementation. What raises some concern, however, is that after a year and a half since the first reorganisation of the government responsibilities, the coordination of the Slovenian innovation policy still remains unclear and programmes/ measures, planned in the strategic policy documents like National Research and Development programme or Slovenian Development Strategy are not systematically developed in a coherent support framework.

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	• More detailed Technology Foresight with the objective to define RDTI priorities for mid and long-term.	• Strong science lobby objecting to priority setting per se.
Innovation friendly environment	• One-stop "shop" for innovation support measures for enterprises •	• No clear single Body/ Ministry/ Agency responsible for innovation policy
Knowledge transfer and technology diffusion to enterprises	• Strengthen the support to technology centres/ parks by designing stable and transparent instruments • Support to cooperation projects between business sector and public research institutes	• Absorption capacity, especially of parks/ centres in less developed regions • Human capital deficiencies- lack of interdisciplinary knowledge
Innovation poles and clusters	• Continuation of the support programmes for research projects within clusters/ technology platforms	•
Support to creation and growth of innovative enterprises	• Further support to SEF programmes: subsidies for new technology/ equipment; loan guarantees to commercial banks and subsidies for expansion of production by introduction of new products/ services • Voucher consultancy schemes to SMEs, with preferential treatment of innovation consultancy • Support the initiatives for establishment of spin-offs from Universities and research institutes • Assistance to SMEs and public research institutions in IPR	• Labour and tax legislation • Absorption capacity in SMEs • Lack of human resources
Boosting applied research and product development	• Increased financial support to joint applied R&D projects, initiated by the business firms	• Rigidity of national administrative regulations for FTE researchers- question of additionallity [14]

[14] If a researcher is financed from Research Programme at the level of 1 FTE, his/ her engagement on any other project is only possible at zero labour cost, even though the nominal value of FTE is not at the level a salary for senior researcher. So motivation to enter into additional applied research projects is low.

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

Basic strategic documents, giving directions for the use of Structural Funds in the period 2004-2006 were the Strategy of Economic Development of Rep. of Slovenia 2001-2006 and the National Development Programme 2001-2006. They laid the background for a more specific Single Programming Document for the period 2004-2006. SPD was prepared in accordance with EC guidance during the pre-accession period. The main objectives of SPD were:

- Annual average growth rate of GDP should be higher than within EU 15 to enable gradual closing of the gap between GDP per capita in Slovenia and average in EU;
- Growth of employment: the economic growth should be reflected in increased number of jobs and maintenance of the existing ones. The plan was to achieve with the assistance of the resources from SF to create additional 4000 new jobs during the period 2004-2006.
- Balanced regional development: regionally adjusted development approach should assure that the growth of GDP and employment will occur also in less developed, mostly boarder regions.

Based on the analyses of the implementation trends of the Strategy of Economic Development of Slovenia 2001-2006, the promotion of competitiveness and development of human resources were identified as the key means of achieving the set objectives. The Single programming document focused on the following priorities:

e) Promotion of the productive sector and competitiveness
f) Knowledge, human resource development and employment
g) Restructuring of agriculture, forestry and fisheries
h) Technical assistance

In the period between 2004- 2006, 237.52 MEUR are earmarked for Slovenia from the Structural Funds and a further 190.57 MEUR from the Cohesion Fund (2004 prices).

For the RTDI area, the first priority of the SPD, called "Promotion of productive sector and competitiveness", is the most relevant. The activities were to be focused on development of innovation environment, removal of administrative barriers and improved access to information, knowledge and finance for entrepreneurship. Also, development of suitable locations for further expansion of enterprises was to help improve the investment conditions.

According to the official documents of the Government's Office for local self-Government and Regional Policy, the resources of ERDF, located to the Priority 1. were to be used for the following measures:

- 1.1. Promotion of innovation environment (20% of resources)
- 1.2. Promotion of development of tourist destinations (20% of resources)
- 1.3. Improvement of the support environment for entrepreneurship (15% of resources)
- 1.4. Economic infrastructure and public services (45% of resources).

From the viewpoint of RTDI, the second priority should be mentioned as well, since activities in the area of human resources, which were planned there have a potential impact on innovation policy as well. Most of the specific measures concentrated on promotion of lifelong learning, active labour policies (education and training of the registered unemployed) and promotion of entrepreneurship as a means of (self-employment.

During the implementation process, the priority one was mainly coordinated by the Ministry of Economy, while the second priority was in the hands of the Ministry of Labour, Family and Social Affairs, with some measures coordinated also by the Ministry of Education. This led to separation/ fragmentation of the activities at the level of instruments, which made cross- synergies impossible to achieve.

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	21.715.888,57	16.059.382,87	16.059.382,87	0,00	5.656.505,70	0,00
TOTAL COHESION POLICY						
Objective 1	334.516.689,00	237.509.597,00	136.523.478,00	75.635.986,00	97.007.092,00	2.247.503,00

Source: programming documents and financial data provided by DG REGIO

The current level of support received from Structural Funds is not unimportant for RTDI resources, yet the activities supported have not been publicized sufficiently and are relatively unknown outside direct beneficiaries. Some of the on-going activities prior to availability of the Structural Funds were shifted from the national resources to ERDF. In terms of magnitude, the yearly RTDI resources are only a minor share of total cohesion resources and represent around 10% of national R&D expenditure.

More important than the actual magnitude of the resources was the debate when preparing SPD and the implications this had later for both the NRDP and SDS. Horizontality of innovation policy was often stressed during the SPD preparation, as was the need to integrate creation of innovation-friendly environment in all policy actions and the promotion of business- science cooperation. This aspect was however lost during the design of the measures and the overall coordination focused not on the content but on the execution of otherwise segmented projects to achieve better disbursement of the SF. Once again, the policy objectives were not supported in the design of policy measures.

The regional objective of SPD was to underline all of the planned activities. There were no specific interventions in RTDI area planned for a single region only, but in the distribution of funds and in the eligibility criteria the region's development level was observed. Typically, the projects where own participation of resources was required, the percentage was higher for the projects coming from Central Slovenia.

4.1.2 Specific measures in favour of innovation and knowledge

The relevant measures for RTDI in the priority one are 1.1,1.3, and partially 1.4. Under measure 1.1,the specific objectives include promotion of technology transfer between public research institutes and higher education and the business sector, promotion of new high-tech firms and increase of R&D investment. Measure 1.1. has been implemented via three public calls: first two in 2004 and the last one in the beginning of 2006.

The funds were available for:

- development and modernisation of technology centres, technology parks and incubators;

- preparation of strategies, programmes and new services to be offered by technology centres/ parks, incubators, clusters or technology networks and for project management;
- for joint development- research projects proposed by firms and knowledge institutions, working together within the clusters or/and technology networks or centres of excellence, especially in the priority areas (ICT, new materials, process technologies, biotechnology with pharmaceuticals, environment technologies);
- new investment in research infrastructure within business zones, clusters or technology networks.

Within measure 1.3. key supported activities include:

- subsidies for consultancy costs for SMEs through a voucher scheme, implemented via the Public Agency of the Republic of Slovenia for Entrepreneurship and Foreign Investments
- subsidies for investment in new technologies and equipment for SMEs
- guarantees to SMEs for loans from commercial banks.

The second and third instrument were implemented through Slovenian Entrepreneurship Fund.

Within the measure 1.4. Economic infrastructure and public services, the Ministry of Higher Education, Science and Technology offered the support for the research infrastructure of the centres of excellence.

Exhibit 9: Key innovation & knowledge measures

Policy area	Number of identified measures (all programmes)[15]	Types of measures funded (possibly indicating importance)
Improving governance of innovation and knowledge policies	No measure	
Innovation friendly environment	1 measures/ 2 instruments	• Support to modernization, construction and equipment of technology centres, parks, incubators; • support to preparation of strategies, programmes and development of services of technology parks/ centres/ incubators, technology networks, clusters.
Knowledge transfer and technology diffusion to enterprises	2 measures/ 3 instruments	• Financing of joint research & development projects, • Development of research infrastructure of centres of excellence.
Innovation poles and clusters	1 measure/ 2 instruments	• Support to preparation of strategies, programmes and development of services of technology networks, clusters. • Financing of joint research projects for clusters/ technology networks.
Support to creation and growth of innovative enterprises	1 measure/ 3 instruments	• Improvement of support environment for SMEs: voucher scheme; guarantee scheme and subsidized purchase of new technology/ equipment for SMEs.

[15] Some of the measures relate to more than one policy area.

Policy area	Number of identified measures (all programmes)[15]	Types of measures funded (possibly indicating importance)
Boosting applied research and product development	2 measures/ 2 instruments	• Financing of joint research & development projects, • Development of research infrastructure of centres of excellence.

Nb: this table is a summary of the table in appendix D.2.

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.

The implementation structure for structural policy was spelled out in the Guidelines on procedures for the use of Structural Fund resources in Republic of Slovenia. An elaborated scheme was laid down, from Managing Authority (Government Office for local self-government and regional policy) to Final beneficiaries (different ministries), Implementing bodies, Payment Authority (Ministry of Finance) and Internal Audit Unit.

The scheme proved to be so complex that it by itself contributed to slow disbursement of funds, on top of several other problems experienced by implementing bodies (preparations of the public calls, reporting processes, unclear or differently interpreted instructions as to the eligibility of certain costs, etc.). In addition, the administrative capacity of the responsible government offices was low, burdened with frequent changes in personnel and lack of experience in running these types of projects.

Initially, the disbursement of funds from ERDF was very slow. By the end of 2004, no funds were disbursed yet and only 6.7% claimed from the national resources. Since slow disbursement continued in the first months of 2005, the government decided to form a Joint Steering Committee where ministers whose offices are final beneficiaries sit together monthly and review the progress in disbursement of funds. Since then the disbursement improved significantly, according to the government. The end users still complain that processes are far too slow and complicated, making EU money “expensive”.

Exhibit 10: Absorption capacity of innovation & knowledge measures

OBJECTIVES	ALLOCATED	DISBURSED TOTAL SF	EXPENDITURE CAPACITY
Objective 1	16.059.382,87	1.254.198,96	7,8%
CODES	**ALLOCATED**	**DISBURSED**	**EXPENDITURE CAPACITY**
OBJECTIVE 1			
18 - Research, technological development and innovation (RTDI) - detailed information unavailable	16.059.382,87	1.254.198,96	7,8%
TOTAL OBJ. 1	**16.059.382,87**	**1.254.198,96**	**7,8%**

Source: Provided by ISMERI (as of 31 December 2005)

On the other hand, data obtained from Slovenian authorities show, that the priority one, to which 16.054 MEUR[16] are allocated for the period 2004-2006, has the following record in disbursement of funds by Dec.31, 2005:

Exhibit 11: Disbursement of Objective 1 funds

Calls issued	96.4% of available funds
Resources approved	91.3%
Contracts signed	64.4%
Disbursement from the national budget	35.4%
Disbursement from ERDF	29.7%

Source: Report on Disbursement of Structural funds, Joint Steering Committee, Jan. 2006

The figures reported by the Slovenian Joint Steering Committee are higher than presented in Exhibit 10, since they take on board all of the claims already approved by the EC. Still, what one can observe are several bottlenecks in the process. Even though 91.3% of the funds have been allocated to different projects, the contracts have been signed only in 64.4%. The end users often complain that the reaching of the contract is a lengthy procedure with several administrative complications, often asking for a number of different documents and certificates from all partners (even sub-contractors) in the project. The difference between disbursement from the national budget and ERDF occurs mainly due to the procedural matters.

Even though Slovenia had experience with European Commission funds during the pre-accession period and believed that implementation of the structural funds would not present a major problem, the regulations (especially those self-inflicted) proved to be a main bottleneck. The complexity of preparing and implementing projects supported by the ERDF surprised many applicants and caused several administrative complications and delays. The end users complained the rules and procedures were not laid out in advance. Instead they were changing as the process evolved. Also, different government bodies issued different explanations as to how reports should be structured and how the costs are to be reported. This caused that the reports had to be changed/ corrected over and over again. Minor discrepancies (for example in the exchange rate used by one of the 15 or 20 partners in the project in calculation of labour costs) were sufficient reason for the entire report to be returned by the Ministry of Finance. Another example, which caused problems, was the request that the labour

[16] Calculated on the basis of the current exchange rate 1 EUR = 239.64 SIT.

costs have to be documented with a photocopy of the individual salary document, which, according to the Slovenian legal provisions should be treated as private document and not disclosed without a written consent of the owner. Many more similar complaints were heard from the participants in the projects.

In particular, smaller public research institutes or higher education institutions lack the administrative capacity to follow the project and prepare the requested documentation properly. Even so, the Priority one projects, according to the source in public administration, experienced significantly less difficulties than some of the projects in other priorities.

According to the reports in the spring 2006 by the Steering Committee, the RTDI programmes financed from ERDF should succeed in spending all the available funds till the end of the planning period – by 2008. The only open issue may be in the case of some construction costs (for example Ljubljana Technology Park) where the process of building can be rather time consuming due to various permits and approvals such undertaking requires. This may prove to be an overoptimistic prediction.

What at the contextual level could be considered as a deficiency of the current measures, supported through the Structural Funds, is their insufficient integration in the overall RTDI policy system. Due to complicated scheme of coordination of the Structural Funds Programme and on-going institutional changes of the overall Slovenian R&D and innovation system in terms of distribution of responsibilities and/ or agreement on who coordinates which measure, no transparent scheme of all support measures is available. Each Ministry creates its policy within its national and international (Structural Funds) budget allocation. It was hoped that in the implementation of the SDS and the Reform Programme, this policy area would be better coordinated and thus more transparent, but observing the current on-going preparations for the next financial perspective, one can seriously doubt this.

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 interviews and additional research carried out for this study, since evaluation reports or studies concerning Structural Fund interventions were not available. Accordingly, this section does not pretend to provide an exhaustive overview of the effects or added value[17] of Structural Fund interventions but rather is based on the examination of a limited number of cases of good practice. These good practice cases can 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

[17] 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)

measures which have had a particularly important impact in terms of boosting innovation potential, jobs and growth.

Since majority of the programmes financed via Structural funds in Slovenia have only really just started in 2005 (or later), it is difficult to assess their full impact on innovation and even more so on economic performance at the national level. The new source of financing enabled launching certain new programmes like centres of excellence and co-financing of research infrastructure for technology networks, clusters and technology centres. In the past, only the subsidies to the formation of these bridging/networking institutions were provided by the government, but under the ERDF, the new support measures allowed for more ambitious projects in terms of building the research infrastructure (for example, the cluster on ventilation and heating is building a new research laboratory and testing facilities) and launch joint research projects. The ability to launch joint research projects within technology centres and clusters is an important solution for their further development, especially so for clusters, which now have new source of financial assistance. The formation of the centres of excellence was a measure well received in R&D circles, both in public R&D institutions and in business R&D units.

Slovenia: Centres of Excellence
The measure which is a novelty in Slovenian RTDI sphere and can significantly contribute to better transfer of technology and knowledge, is the establishment of Centres of excellence. It is the first measure to follow the R&D priorities, identified by NRDP, since the 8 centres of excellence have been established in the ICT, nanotechnologies, environment technologies, electronics, process and automation technologies, biotechnology and .
All centres of excellence join researchers from public as well as private research units and focus on research of common interest. The support measures are twofold: under priority 1.4 their research infrastructure can receive financial support and under priority 1.1. financing for joint research and development projects is available. Within their respective science community, the centres are seen as a very positive development, yet more needs to be done to promote their activity in general public as well. This way also the role of ERDF would be better understood and more appreciated.

Also, the new resources available on the basis of SF were important in helping launch some of the more ambitious projects which were in the pipeline for some time but could not be financed solely through the annual budget allocations. One such specific example is Ljubljana's Technology Park, where space problems have seriously limited the ability to expand its services for last three-four years. With co-financing from Structural Funds a new location is now being developed which will open the possibility for significant extension and modernisation of the park's activity.

The expansion of available finance in addition to the nationally available resources is important for Slovenian Entrepreneurship Fund. With the increased funds it is gradually easing the access to financial resources for SMEs, something which was often mentioned by SMEs as a key issue for their further growth.

As a preliminary estimate of regional impact, one could look at the structure of final recipients of the resources. As may be expected in terms of concentration of research capabilities, several projects are located in Central Slovenia, but other regions are represented as well both in the financing of centres of excellence as in the support to technology parks/ centres and clusters, university incubators, or joint research projects. So it is reasonable to expect that implementation of these projects will have an impact on the rate of innovation activity at the regional level as well. Project proposals coming from outside Central Slovenia were given a preferential treatment in a sense that the amount of required co-financing was lower.

On the other hand, the fact that the financing available through the Structural Funds is a novelty in Slovenia caused also some deficiencies. A lot of energy and time was spend on administrative issues: preparations of the public calls[18], selection and negotiation process with the project applicants, complicated procedures in signing the contracts, particularly for projects with consortium agreements[19] and even more complex reporting and claiming of funds. All these resulted in a rather negative image of the new measures, particularly in the cases where the subject of co-financing was research and not infrastructure/ equipment or construction work. The latter were a bit easier to report on since they involved few larger rather costly items, while the first had to report the costs on per hour basis for each participating researcher.

While these are important drawbacks, they still are micro issues and can possibly be eliminated with clearer and more transparent guidelines to which all adhere[20]. More problematic is the fact that the implementation of the support measures under ERDF was carried out in the period of institutional and programme changes in the field of R&D and innovation. The concept of the SPD and therefore of the Priority 1 measures to be funded by ERDF was elaborated by the team working at the time (2003) at the Ministry of Economy. The measures were one of the important segments of the rather complex scheme to support innovation activities in Slovenian business sphere. The entire matrix was composed of the national measures, the provisions to be prepared under the new Law on Entrepreneurship, the activities within Technology Agency and the measures under ERDF. The existing national measures were later subject to a split of responsibilities between the Ministry of Economy and the Ministry of Higher education, Science and Technology (MHEST), to which part of the innovation and technology department of the Ministry of Economy was moved to. This move alone caused some rather strange organisational solutions: for example, support to technology parks is provided by the Ministry of Economy and support to technology centres by the MHEST[21]. The Law on entrepreneurship was passed in

[18] The text of each call had to be checked and re-checked several times by all responsible bodies and ministries, from legal to financial aspects.

[19] Projects awarded to technology networks, clusters or centres of excellence required a very detailed consortium agreement, specifying exact number of hours for each participating institution, amounts of co-financing- not at the level of the project as such, but at the level of each activity, break-down of costs, etc. Any change in one of the participating institutions required a whole new consortium agreement to be negotiated and presented to the responsible Ministry. The amount of paper work required for networks of 30 plus partners was truly shocking.

[20] During the discussion at the Workshop it was pointed out that different government offices have different interpretation of the regulations and procedures, so the fact that the project report was cleared by one level was no guarantee it was not turned down at the other.

[21] Officially, measures are coordinated at the level of the government, but unofficial comment is that this coordination is only a formality. In practice, each department designs its own policy.

2004, but is even today lacking several of the complementary legal acts, which would enable its practical implementation[22]. The saga of Technology Agency had been described already: none of the planned programmes of support that the Agency was supposed to offer had materialised. In brief, the larger framework into which the SF measures were to be integrated was never implemented. This has no doubt affected the added value of Structural Fund support for innovation and knowledge. The expected cross-synergies had not occurred, instead what one sees today is a rather incoherent, fragmented and non-transparent "system" of policy measures, applied with no clear schedule.

At the same time this does not mean that individual measures supported by SF have not made an impact. Still, it is difficult to pass judgement at this stage as to which of the measures should be continued and in what fashion. All of the calls announced so far had attracted a lot of attention and have been oversubscribed. At the workshop, some of the participants voiced the opinion that smaller support measures such as voucher scheme could be managed easier if financed directly from the budget (since the amounts are not particularly large[23]) instead of using ERDF resources for them. No evaluation, except purely administrative, has so far taken place. In fact it would be rather premature to try to carry out evaluation of the impact on projects which only started a year ago or so. But in designing the National Development Programme and especially the Operational programmes for the period 2007-2013, the broader framework of innovation policy measures needs to be set first and then an assessment made which of these still relatively new types of measures should be extended and have the potential to expand.

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

The current experience in Slovenia with the use of Structural Fund support for innovation and knowledge can be assessed as positive, in spite of several mostly administrative problems. In terms of appropriate priorities, the programmes have addressed the right issues and even though it is premature to evaluate their overall impact on innovation and knowledge on a macro level, the participants in the projects find their experience relevant. Many of the activities, supported by SF would not be possible without these resources.

At this stage, the conclusions on the impact of the current measures must be treated with caution. They refer mainly to what is the expected outcome of the instrument itself and not of the specific projects covered by each instrument. It is too early for assessment of the later, since especially the new projects have only functioned for a year. These projects have, however, by looking at the programmes prepared in their applications, introduced certain new ideas like joint elaboration of future research strategies based on the needs of the partners and potential business opportunities in the centres of excellence or clusters, joint investments in strategic research equipment

[22] The Law was expected to regulate private-public partnerships, venture funds and possibility for a long-term financial support to innovation bridging institutions (See Trend Chart Report on Slovenia, 2005).

[23] At the level of the firm, the voucher for consultancy costs is on average worth 1,000- 1,500 EUR, yet the process and therefore the amount of paper work is the same as if the transaction would be 100,000 EUR.

within technology centres and networks as well as joint activities in internationalisation of R&D, which need to be further monitored and evaluated. It will be instructive to see how much of what was planned had been implemented, particularly since some of the goals are very ambitious. The assessment of the impact on the innovation environment beyond direct participants would be necessary as well to see if these are the correct type of measures to support in the future.

Better integration of the measures financed under ERDF within overall R&D financing regardless of the institution providing the finance, would increase the value added of the activities. This would require a more coordinated and transparent RTDI support system, which is currently lacking in Slovenia.

Exhibit 11: main outcomes of innovation and knowledge measures

Programme or measure	Capability	Added value
Measure 1.1., instrument 1: investment in modernisation, construction and equipment of technology parks	Potentially much improved innovation environment, implementation problems due to slow absorption capacity, and delays in administrative procedures etc.	New, much larger premises, enabling further growth of TP Lj.- better able to support cooperation of public and private sector in R&D; improved innovation environment
Measure 1.1., instrument 2- preparation of strategies, programmes and development of services to be provided by technology centres/ parks, incubators, clusters or technology networks	New quality in networking: more strategic planning –and additional resources for development of services in technology centres/ parks, etc.	New content, better proliferation within NIS- improved functioning of bridging institutions
Measure 1.1., instrument "Joint research and development projects"	Strengthening the R&D capacities of clusters and technology networks/ centres	New substance and support to cooperation within clusters, technology centres, incubators, etc.
Measure 1.4., instrument "Centres of Excellence"	Good absorption capacity, but difficulties in meeting all of the required procedures	Improved cooperation between public research and business sector, promotion of applied research, more focused research to national economic priorities (in line with NRDP and SDS)
Measure 1.3., instruments 2. and 3- JEF	Improved capacity of JEF to support SMEs	Increased availability of funds for SMEs
Measure 1.3., instrument 1- voucher scheme	Good management performance	Improved innovation & entrepreneurial environment, assistance to SMEs

Effectiveness → significant results achieved; good absorption and management performance, etc.
Added value of measures → reinforcement of national priorities, innovative approaches and solutions, institution building, etc.

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

Since so far Slovenian R&D and innovation policy has been designed at the level of the country, the innovation potential will be assessed at this level.

In the preparation of the National Research and Development Programme, a preliminary technology foresight was carried out. The analyses compared the research potential (quantity and quality) in main science fields with the productive sector capacities (output, export orientation and competitiveness) and preliminary assessment of long-term ability to achieve comparative advantage in global markets.[24] Following technology areas were suggested as potential future growth drivers: ICT and related technologies, nanotechnologies and new materials, biotechnology, especially pharmaceuticals, process technologies, health and life sciences and environmental technologies (NRDP, 2005). These priorities are now integrated at a rather general level in all strategic documents: NRDP[25], Slovenian Development Strategy, the National Programme of reforms for achieving the Lisbon Goals and the draft of the National development programme. Some of the measures financed from ERDF in the period 2004-2006 already included these priorities in the selection criteria, most explicitly the centres of excellence. Beyond this, little structured analysis is available as to innovation potential either at the overall level of Slovenia as a single region or at the level of proposed cohesion regions. The background analysis for NRDP and SDS focused primarily on deficiencies of the existing NIS and actions to correct them on the overall level, not on sector specific or region specific level.

The draft National Development Programme 2007-2013 (NDP) and the National Strategic Reference Framework 2007-2013 (NSRF) follow closely the Slovenian Development Strategy 2006-2013 in setting the objectives and priorities. The main objectives of the SDS (IMAD, 2005) are the following:

- Exceed the average level of the EU's economic development (as measured by GDP per capita in PPP) and increase employment in line with the Lisbon Strategy goals in the next ten years;

[24] The authors of this foresight warned that a much more detailed analysis would be needed to provide for better identification of future opportunities, including a more detailed assessment of trends in key technologies at the global level, market analyses, assessment of Slovenian educational system potential, etc.

[25] In the final text of NRDP however the formulation of priorities was significantly changed, since it opened the definition by saying that R&D priorities include also all other fields of research where a direct interest of the business sector is present or where the research contributes to social and cultural development or is important for Slovenian language and history.

- Improve the quality of living and the welfare of each individual, measured by the indicators of human development, health, social risks and social cohesion;
- Enforce the sustainability principle as the fundamental quality criterion in all areas of development, including the goal of sustained population growth;
- Develop into a globally recognisable and renowned country through a characteristic development pattern, cultural identity and active engagement in the international community.

In order for Slovenia to achieve the SDS objectives (and the Lisbon objectives as well), it must carry out structural reforms that will strengthen the competitiveness of its economy and raise its employment level. SDS defines five development priorities:

- A competitive economy and faster economic growth
- Effective generation, two-way flow and application of the knowledge needed for economic development and quality jobs
- An efficient and less costly state
- A modern social state and higher employment
- Integration of measures to achieve sustainable development.

On the basis of these development priorities, the NDP and NSRF set forth the following central development projects, which will form the core of Operational programmes[26]:

- Slovenian development network
- Integration of natural and cultural potentials
- Effective environment management
- Mobility with the objective to support economic development
- Institutional and administrative capability

The idea behind Slovenian development network is that Slovenia should pursue decentralised or polycentric development path, which would result in minimizing the regional differences in all important socio-economic indicators. To achieve this, a network of economic-developmental-logistical centres is proposed in all geographical areas of Slovenia, where sufficient critical mass of knowledge, economic development and business concentration and population is present. Such centres would combine[27] "…business-industry-logistic areas of national importance, technology parks and centres, networks of regional business incubators, university incubators with offices for transfer of technologies, and other subjects which the development of such centres will call for. These centres will link with higher education institutions, research centres and enterprise education centres into regional centres of knowledge (diversification and decentralisation of higher education system)."

[26] Both documents are currently available only in Slovenian, so it may happened that once the official translation is available some of the names will be different.

[27] Direct translation of the NSRF draft May 20, 2006: p.69.

This on one side very vague definition and on the other very broad spectrum of all different actors to be involved allows the planners the flexibility of setting up any number of such centres from three to thirty, or as some commentator observed: "We should have a technology park, an incubator and university in every local community.." While it is true that there is a high concentration of particularly public R&D in Ljubljana (Central Slovenia), this has to be expected in a country of size of Slovenia. Certain concentration of R&D and human resources is needed for scientific and technological development, if for no other reason for the purpose of affordability of research equipment. As evidence from developed countries show, cost of doing research is escalating due to increasing complexity and interdisciplinarity. This is why several measures support pooling of resources (like centres of excellence, for example) are introduced at international and national level[28]. Current small and disintegrated units with two or three full-time researchers in some research fields already are not able to produce internationally comparable research, useful for business sector.

In a document, which is briefly referred to in the NSRF, called Resolution on National Development Projects till 2023, Ministries have indicated priority development projects. The Ministry of Economy thus proposes 9 projects of a type "economic- development- logistic centre" in different regions/ cities of Slovenia. For each project an assessment is made why it should be there and which specific activity will be developed. In practically all projects, establishment of technology/ business park is planned, development of commercial infrastructure, research and development facilities, higher education institution(s), logistics, incubators, etc. No summing up at the national level is carried out or overall assessment of absorption capacity. Most of the attention is given to the infrastructure, with issue of adequate and available human resources not addressed. The last is the key deficiency of these projects.

Human resources are the key Slovenian innovation potential, but also the key bottleneck. The increased enrolment in higher education where more than 50% of the generation is involved in university studies is potentially an important resource, but with average student taking up to 8 years to complete university education, this resource will only be available for the next financial perspective! The decentralisation of higher education may increase human resource availability, but key attention must be paid to the quality of these new schools. In the absence of a credible and politically neutral higher education evaluation agency the danger of counter effect is potentially high- instead of improving current over-centralised and monopolistic universities[29], Slovenia may end up with regional higher education centres of limited academic and research potential. Such higher education units will not contribute to (regional) innovation potential.

A decentralisation of higher education and R&D institutes is especially sensitive from the human resource perspective. To increase innovation potential by decentralisation can only be achieved by simultaneous increase in the number of researchers and professors. At the same time, it is planned that innovation capacities in industrial R&D units are to be enlarged by providing special mobility schemes for researchers from public research institutes to move to industry. Both orientations call for

[28] EU's efforts to strengthen ERA are good example of pooling research resources.

[29] This critic usually applies to the University of Ljubljana, which is according to the number of students among the biggest in Europe.

additional resources for attracting young people to academic and research careers, especially in S&T areas.

With emergence of new economic growth poles, which can be noted in certain regions a gradual decentralisation of higher education institutions and research units can be expected, since business needs dictate their relocation. A good example of this can be found in Idrija, a small town, which by all traditional standards should be one of the underdeveloped locations of Slovenia. Idrija was a home of one of the largest European mines of mercury and with the decline of global consumption the mining activities stopped in the eighties. Idrija has poor logistics, it's not on the main transport line, the mine was the major job provider, yet today Idrija is a home of several outstanding globally active firms. Their business activity required increasing investment in R&D and participation in technology networks and clusters. With the resources from ERDF and the cluster, a new research institute in air ventilation and heating was built in the area. Companies participate in several other clusters, technology platforms and centres of excellence in their area of activity. They support via scholarships students and secondary and higher education in the natural science and technical studies and have their own educational programmes. This way a successful business-knowledge centre has developed.

Even though Slovenian government is proposing a formation of two cohesion regions it is very difficult to identify significant differences in regional innovation potential among the two proposed cohesion regions. There are segments of what is to be the more developed cohesion region (West) with far less innovation potential than on the other hand some of the areas within the less developed region(East). Apart from high concentration of public R&D in Ljubljana, business R&D is much more spread around and is concentrated in the areas where the big business R&D investing firms are located: for example a company Gorenje (house appliances, electric and electronic equipment) is in Velenje, to be in the Eastern cohesion region, but is one of the biggest investors in R&D. Krka, the large pharmaceutical company is in Novo mesto- also to be in the Eastern Cohesion region, accounts for nearly half of business R&D investment in chemical & pharmaceutical sector. One can go on mentioning high tech firms in the so called less developed cohesion region or finding underdevelopment problems in the developed one. The creation of the two regions has nothing to do with RTDI: it followed the logic that EU might allow Slovenia to split in two regions, one with 1 million inhabitants and the other slightly less. So bluntly speaking, the map was drawn, putting just the right number of the regions on the East (which does have an overall development level lower than the West) and on the West to meet this criterion. So far, this split has not been officially approved by EU,[30] and only very recent (June 2006) changes in the Constitution make formation of administrative regions possible.

To correctly focus national support measures in RTDI, a more comprehensive technology foresight would be the first step to take. On the basis of identified and agreed priorities, linked with business opportunities a long-term strategy of developing human resources and innovation capacities can be formulated. In

[30] Some argue for a split into three regions; East, Central and West. In terms of RTDI potential this would indeed make more sense than two regions: the central Slovenia with its high concentration of public R&D does represent a specific R&D and innovation environment. Yet such a split is not in accordance with EU, since all three regions would have less than a million population.

performing technology foresight, it is important not to overlook the service sector. Services, especially knowledge-based services have grown considerably in Slovenia, but have relatively poor record in innovation. Part of the reason lies in traditional preferential treatment of technological innovation.

Without strong empirical background on which to base the decision on priorities, it would be safer to follow the business development and support specific needs for R&D identified by productive sector than to go in large infrastructure investments in technology parks/ centres, business zones, etc. expecting business to develop consequently.

The statistical figures show low innovation activity in the firms, especially in SMEs. Factors that affect low innovation activity at the level of firm are many: they range from very broad (the structure of the business sector, motivation of small entrepreneurs, lack of understanding of innovation growth potential) to highly specific (dealing with daily survival due to low payment discipline does not allow time or room for strategic thinking, lack of financial resources for investment in new technology, no need for new products due to limited competition in certain areas, etc.). These are not adequately addressed by the proposed activities in NDP.

Slovenian RTDI actors have at their disposition everything from technology parks and centres to technology networks, university incubators, clusters, support scheme for consultancy, clusters, centres of excellence, etc. The underdeveloped network of bridging institutions could therefore not be the factor inhibiting innovation in Slovenia. One of most significant deficiencies is lack of transparency of all these institutions and measures, particularly in view of a SME. Due to a rather complex scheme of their setting up, irregularities in their financing and therefore irregularities in the type and amount of service they are able to offer, they are not what one could call “user-friendly”. It happens that sometimes they are preoccupied with their own survival. It is questionable if simple increase in their number is really the solution to improve innovation potential of Slovenian business.

Inconsistency in setting up a comprehensive and transparent national innovation support system and then to provide for the extension of this system to regional level may be one of the main innovation policy drawbacks. Follow up of diagnosed development priorities through programmes and measures not only in RTDI field but in all other related areas (the horizontality of innovation policy) has not been achieved in spite of well written development strategies and national research programmes. But, as demonstrated in earlier chapters and reflected in European Innovation Survey, Slovenia has not fared bad at all, so the urgency to change has not been felt.

Exhibit 12: Factors influencing innovation potential by type of region

Region / type of region	Main factors influencing future innovation potential
Slovenia as a single region	• Implementation of the Reform programme, creating more friendly entrepreneurship environment (lower fiscal burdens, especially on labour costs, change in labour legislation to allow for more flexibility and mobility, less bureaucracy, additional resources for SMEs, venture capita) • Higher education restructuring to achieve higher quality and follow the Bologna reforms • More dynamic technology restructuring with the help of public R&D sector[31] • Foreign investment inflow[32] • Ability to focus research efforts on selected number of priorities supported both by scientific and business community and form research- business clusters within these priorities. • Absorption capacity of business sector for new business models and practices: organisational innovation. Here key element is raising educational attainment level especially in manufacturing, but also in small and micro firms in all areas of production.
Specific for East Slovenia cohesion region	• Improvement of physical infrastructure, eliminating constraints to mobility • Stopping the brain drain by providing new investment opportunities for SMEs and better living conditions than Central Slovenia (lower cost of housing, good educational facilities, clean environment, etc.)

5.2 A prospective SWOT appraisal of regional innovation potential

Taking into account relatively small size of Slovenia, two sets of appraisal of innovation potential are prepared. One is the level of the Slovenia as a single region and elements of this SWOT apply as well to all of the regions. The other is an attempt to appraise the sub-regional innovation potential for the less developed Slovenian regions, which are to be grouped into East Slovenia cohesion region. The difficulty there is that the grouping is based solely on the development gap indicator and that the statistical regions put together in this "cohesion" region have very different specific problems and reasons for their slow(er) development. Especially in the area of innovation potential the attributes typical for a region as a whole are impossible to be clearly stated, since each of the two proposed cohesion regions have both , innovation champions and innovation-laggards.

[31] The results of R&D projects performed in centres of excellence and clusters should lead to this.

[32] Firms with foreign investment have been able to restructure faster and are more active in innovation and R&D, so ability to attract foreign investment will influence future innovation potential.

One of the significant strengths of Slovenian RTDI is the relatively high share of public and business investment in R&D. Over the past decade, several bridging institutions (technology parks/ centres, clusters, incubators, etc.) have been established, some of which are quite successful. At the strategic level, government often expresses the commitment to strengthening support to innovation and entrepreneurship, including higher public R&D expenditure (Slovenian Development Strategy). This however, can be problematic in view of past low rate of implementation of government innovation policies and continuous change of institutional setup, which accounts for lack of coordination of measures focused on the promotion of innovation and entrepreneurship. Insufficient cooperation between public research and the business community remains an important weakness of RTDI in Slovenia. This is due to the current financing scheme of public R&D, providing a relatively high level of financial security to the public R&D sector with no specific requirements for business-focused research, but also due to the low absorption capacity for innovation support schemes in the business sector, especially small enterprises. Lack of long-term fiscal and financial incentives for R&D and innovation investment may be difficult to overcome due to the increased pressure on the budget for social transfers (pension system, welfare). This may be in part overcome by the availability of EU Structural Funds to additionally support innovation potential and successful participation of R&D sector in EU Framework Programmes and EUREKA.

Successful growth of exports from Slovenia to EU NMS, contributing to higher growth rates and increased foreign investment expected due to privatization plans for several large companies (banking, telecommunications, etc.) provide for additional stimuli to business R&D. However, what remains a threat is the asymmetric impact of joining EU due to different capabilities in different regions (NUTS 3) and inactive participation of business sector[33] in regional planning, which then does not correspond fully to the economic needs/ capabilities of a particular region (NUTS 3).

Exhibit 13: Innovation and Knowledge SWOT- Slovenia as a single region

Strengths	Weaknesses
• A relatively high share of public and business investment in R&D and the government's commitment to achieving the 3% Barcelona target by 2010 • Several bridging institutions (technology parks/ centres, clusters, incubators, etc.) established, some of which are quite active • Government commitment to strengthening support to innovation and entrepreneurship, including higher public R&D expenditure • ICT infrastructure is relatively	• Insufficient cooperation between public research and the business community, also due to the current financing scheme of public R&D, providing a relatively high level of financial security to the public R&D sector with no specific requirements for business-focused research • Low rate of implementation of government innovation policies and continuous change of institutional setup • Lack of a systematic evaluation of innovation policy • Lack of coordination of measures focused on the promotion of innovation and entrepreneurship • Insufficient attention of policy makers to the

[33] During the first public disclosure of NDP and OP priorities at the Chamber of Industry and Commerce (June 19, 2006), the participation of business companies was very low.

well developed	low absorption capacity for innovation support schemes in the business sector, especially small enterprises. Lack of long-term fiscal and financial incentives for R&D and innovation investment • Inability to establish a working coordination among different institutional schemes
Opportunities	**Threats**
• The availability of EU Structural Funds to additionally support innovation potential • Successful growth of exports from Slovenia to EU NMS, contributing to higher growth rates • Increased foreign investment expected due to privatization plans for several large companies (banking, telecommunications, etc.) • Participation of R&D sector in EU Framework Programmes and EUREKA	• Increased pressure on the budget for social transfers (pension system, welfare) leading to a reduction of funds available for R&D and innovation measures. • Asymmetric impact of joining EU due to different capabilities in different regions • Inactive participation of business sector in regional planning

While the overall SWOT analysis is valid also for the East Slovenia cohesion region, there are certain specifics worth mentioning. One of the strengths in several parts of this new region is relatively low costs of land for business premises and housing construction, which may be prohibiting for new firms in the more developed central parts of the country. Current low absorption capacity for innovation support schemes in declining business activities and slow expansion of new enterprises, due to the lack of financial and human resources can be overcome by a combination of various support schemes available within EU for development of boarder regions, targeted long-term innovative support schemes for boarder regions and specific support to decentralisation of higher education and research institutes. Preferential treatment in the receipt of Structural Funds opens new opportunities, along with improved infrastructure, which may assure inflow of knowledge. For many young educated people, easier access to housing in pleasant living environment may provide sufficient incentive to return home, if appropriate employment opportunities are provided. On the other hand, brain drain and inability to close outdated facilities due to the lack of other employment options (social considerations) threaten the implementation of several new business ideas in this rather varied cohesion region, faced with unfavourable demographic statistics.

Exhibit 15: SWOT appraisal for the East Slovenia cohesion region

Strengths	Weaknesses
• Relatively low costs of land for business premises and housing construction • Quality of environment	• Low absorption capacity for innovation support schemes in declining business activities, • Slow expansion of new enterprises, due to lack of financial and human resources. • Poor ties with more developed regions to assure inflow of knowledge. • Education structure of the population
Opportunities	**Threats**
• Combination of various support schemes available within EU for development of boarder regions. • Specific support to decentralisation of higher education and research institutes • Preferential treatment in receipt of Structural Funds • In several regions, people are actively looking for new, fresh ideas to keep young educated at home.	• Lack of long-term innovative support schemes for boarder regions • Slow restructuring of economy due to brain drain and inability to close outdated facilities due to the lack of other employment options (social considerations) • Delays in infrastructure development • Demographic statistics

5.3 Conclusions: regional innovation potential

Policy headline 1: Potential to restructure economy in direction of higher value added and more dynamic growth

- On the basis of a more sophisticated and detailed technology foresight[34], the setting the research priorities for public research funding more in line with business needs and capabilities should be prepared. This would help to focus the research in the areas where more dynamic business growth is possible. Increased innovation potential could contribute to higher value added, which in turn could provide more funds for R&D.
- Better exploitation of existing R&D potential in public sector through promotion of cooperation between public R&D and business sphere on the basis of joint research and development projects, centres of excellence, clusters, networks, etc.

Policy headline 2: Potential to attract new investment in less developed regions by creation of Slovenian development network

- By providing different business & R&D & knowledge support infrastructure as proposed by NDP 2007-2013, business friendly environment should be created, lowering the barriers to formation of new enterprises or the expansion

[34] The preliminary technology foresight carried out in 2003-2004 is insufficient for coherent priorities, since the areas identified could only be very broad.

of the existing ones. With the planned improvement of the transport and communication infrastructure, the linkages with more developed regions would be strengthened and investment made more attractive.

- Provide incentives for local business to expand (subsidised credit, differentiated tax scheme) and incentives for investment from outside the region(s).

Policy headline 3: Potential to decentralise higher education and R&D capacities for more even economic development

- Planned decentralisation of higher education and R&D capacities should provide for more even distribution of qualified personnel and therefore help existing businesses with highly trained human resources. This should not occur by breaking up successful research groups or by setting up new facilities of insufficient quality standards. Instead, planned increase of budget allocations should enable recruitment of new (foreign) academics and researchers and follow the business needs and potentials in selection of new education programmes.

Policy headline 4: Potential for further development of knowledge-based services in all regions

- During the last decade one of the fastest growing sectors was service sector, and within it, knowledge-based services achieved highest value added. It is important therefore to stimulate faster growth of knowledge-based services by recognising their important role in national economy (high growth rates, high value added and export) and promote innovation and investment in this area. According to the experts in the sector, it is vital to focus on appropriate (interdisciplinary) development of human resources, who can be key competitive factor.

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

The current experience in Slovenia with the use of Structural Fund support for innovation and knowledge can be assessed as positive, in spite of several mostly administrative problems. The measures and the programmes have addressed the priorities set forth in strategic documents. Even though it is premature to evaluate the overall impact on innovation and knowledge on a macro level, the participants in the projects find their experience positive and relevant. Many of the activities, supported by SF would not be possible without these resources. Here particularly the research and development infrastructure of technology parks, centres of excellence and clusters and the joint R&D projects need to be mentioned. Less satisfactory is the integration of these support measures into the overall innovation support framework, but this must be attributed to specific internal issues of lack of coordination and poor implementation of policies.

The on-going programmes and projects in the area of ERDF for RTDI have not been differentiated according to regions[35]. To a significant extend such an approach is recommended for the future as well. Within the Operational Programme of ERDF one of the development priorities suggested is the "Development of Regions". Under this heading, support for the regional development programmes is planned. These programmes, prepared within so called "Regional Development Councils", which at the level of statistical region join together the local communities within a particular region, should be more focused on specific needs of local communities. The proposal is to allocate financial resources according to the development gap index, which would mean that regional support financing in amount of 363 MEUR will be available to East Slovenia cohesion region and for West Slovenia 142 MEUR (out of total 1,556 MEUR of this OP or 35.5%). According to the preliminary information about discussions in Regional Development Councils, the local development programmes include development of historic city centres, natural parks, thematic cultural sites, tourist sites, construction or reparation of public infrastructure, communal infrastructure, etc. These projects are less relevant from the perspective of innovation potential, except indirectly, since attractive living conditions in the local communities can be a factor in decisions made by highly trained people.

The available draft National Development Programme 2007-2013 shows that the programme is formulated in close observance of the Slovenian Development Strategy and follows same objectives and priorities. At the level of OP the drafts are still rather vague. For RTDI, the section of OP ERDF proposing the Slovenian development network is especially interesting. In finalising the document, a more explicit criteria for the creation of economic- development- logistic centres should be developed along with assessment of the capacities (especially human) to sustain the planned number of centres, particularly so where they are linked with higher education and research institutions. In terms of comparing the on-going programmes with the new proposal there is obviously a clear issue of the magnitude: the resources allocated to

[35] Except for already mentioned negative differentiation for projects coming from Central Slovenia, where co-financing was required in a higher percentage.

2007-2013 period are substantially higher. The current NDP and NSRO are still at the very general level[36], so only approximate allocation of resources to RTDI can be speculated.

All of the resources planned for development priority 1 of the OP ERDF "Slovenian development network" amount to 733 MEUR, or 47.1% of total value of the OP. Since this priority includes measures to provide broad band access and e-services to all citizens, and several measures not directly related to RTDI, one can speculate that about 25-30% of this amount may be available for innovation support measures. This still is significant amount, especially since the public calls supported by ERDF are much more focused on support to business R&D and innovation, where the government has always been short of funds[37]. Late and rather passive involvement of business and research community in the planning process[38] is not a proper approach if these communities are to be prepared on time to absorb the available resources smoothly and productively. If one adds to this rather inexplicit draft of OP, missing analytical framework for the projects proposed and no evaluation of the current experience (except for the financial monitoring), there is a real danger that some of the potential opportunities will be missed.

However limited the experience with the current projects is, one thing can be singled out already and taken up in the next phase: promotion of technology transfer and better cooperation between universities, research centres and business, seems to be more successful if the project is entrusted to business partners. In interviews this point was stressed by representatives of business, saying that joint research is more focused on the business needs. Also, taking on board the limitations of the foresight on the basis of which priority areas for eligibility criteria are set, it would be rational to maintain the support to the selected priorities as long as the business partners in these projects see potential business opportunities. The planned decentralisation of R&D and higher education should not jeopardise the concentration of research potentials in already established centres of excellence, technology networks or clusters, regardless of their physical location[39].

From the SMEs perspective, the availability of resources for investment in new technologies and the guarantee scheme through Slovenian Entrepreneurship Fund are important measures, which are still far from saturation: the valid requests have so far always surpassed the resources. With further support of ERDF additional, more focused instruments to ensure access to finance for innovative enterprises could be developed.

From the viewpoint of additionality, it would be relevant to link some of the measures with both the 7th RTD Framework Programme and the Competitiveness and Innovation Programme, both at context and documentation level.[40]

[36] At least as far as publicly available information goes.

[37] As mentioned in the previous sections, several of the bridging institutions had problems functioning because of the irregular financial support.

[38] First public presentation of the NDP and OP to research and business community was on June 19, 2006.

[39] Several centres of excellence are located in Ljubljana, but coordinate researchers across Slovenia.

[40] One of the observations of Focus group was that from administrative point of view it would be a lot easier for the potential participants if the requirements and reporting procedures, including

One of the key problems in assessing the absorption capacity seems to be the administrative capacity of the government. Slovenia had prepared a highly complex and lengthy procedure, according to participants at both ends, much more complex than other EU countries. The network of institutions and the hierarchy makes processing of requests or acceptance of any project changes extremely complicated procedure with unpredictable results. Terms of reference are likely to change throughout the project life, contributing to the administrative tasks. Personnel changes and inadequate staffing of offices in charge of monitoring projects have additionally contributed to slow and complicated processes. This suggests that improved absorption capacity depends as much on the ability of the government to organise itself and provide a coherent framework with clear and stable rules as on the ability of R&D sector and business to come up with quality projects. Current complexity in itself de-motivates especially smaller firms to apply, since they donot have the capacity to prepare report and administratively support the projects in a manner required by current schemes.

Public private partnership is a concept poorly understood and thus not widely practiced in Slovenia. Therefore the promotion of this concept via ERDF is highly recommended. Not only would such partnership be beneficial at the level of joint projects, it could have a highly positive impact if programmes, measures, instruments and rules for applying for co-financing would be developed in closer cooperation between government, research sector and business. This way certain requests, sometimes with limited added value in terms of monitoring the quality of the project, but demanding a heavy administrative input, could be avoided.

6.1 Strategic orientations for Structural Fund investments in innovation and knowledge

Key conclusion 1: Better exploitation and more focus of relatively high quality of R&D for economic and social development

Slovenia's socio economic growth needs to be more knowledge based. This can be achieved by better utilisation of R&D and innovation, but only if efforts in R&D are more closely connected to business capabilities and opportunities. This needs to be assessed by detailed technology foresight and implemented via coherent and coordinated innovation support framework.

Recommendation 1: Promote the R&D and innovation programmes in priority areas, where clear business component is present

The measures financing different forms of cooperation between public research sector and business (centres of excellence, clusters, technology networks, joint research projects) are more effective if recipients of funds are business enterprises. The selection criteria should stress the business potential of the project and not only scientific relevance. Due to very heterogeneous economic structure of both cohesion

regulations relating to the cost justification would be synchronised for ERDF and Framework Programmes.

regions, priority areas should be left open for business sector to decide, but innovation efforts both in traditional and high tech sectors should be encouraged as well as non-technical innovation. The example to be looked at is the initial promotion of business R&D in Finland in the nineties, the K plus programme (Austria)[41] as well as current experience with business-focused research in Slovenia.

Key conclusion 2: Current overriding attention to decentralisation of higher education and R&D capacities should be carefully planned

In spite of relative concentration of higher education and R&D resources in the Central Slovenia, the research capacities in several R&D fields are insufficient to carry out interdisciplinary applied research. This already limits the potential of these groups to cooperate with business sector in search of successful innovations. Further decentralisation may have harmful effects in this regard, unless additional measures to support human capital development in R&D and innovation are developed.

Recommendation 2: Support investment in human capital for R&D and innovation

The decentralisation can only be achieved if additional human resources are mobilised for higher education sector and R&D. This would require specific measures to stimulate postgraduate studies, especially in S&T area, mobility of researchers and academics within the public R&D and education sector and between business sector and public R&D sector. Increased mobility (especially if a scheme provides for an option of reverse mobility as well) would set ground for more intensive co-operation in research. Schemes like Ireland's practice of supporting Science & Technology placements at companies that have outdated or limited technological expertise to allow them to up-date their skills through technology graduates and managers under what was known as the TechStart and TechManager programmes, respectively, or Netherland's Casimir programme[42] are well worth studying and adjusting to Slovenian conditions.

Key conclusion 3: Current scheme of measures overlooks innovation in service sector as well as any non-technological innovation

Service sector contributes more than half of GDP, but less than 11% of service sector firms are innovative. To enable further growth of service sector and increase its ability to compete globally, the innovation activity of the service sector needs to be promoted. Since the innovation support system currently promotes exclusively technological innovation, an important segment of highly relevant innovation activity is lost.

[41] The K plus programme in Austria was created reacting to a gap in the Austrian National Innovation System namely bridging the gap between science and industry. The centres perform long-term pre-competitive research. The projects are defined jointly with industry. The aim of K plus is to bring together excellent researchers and companies that are active in the specific research field. (Source: Trend Chart Innovation Policy Measures database)

[42] The main objective of the Casimir scheme is to increase public-private mobility of researchers and to enhance exchanges of researchers between companies and knowledge institutes and vice versa. Such mobility of researchers can help to reduce the gap between knowledge production and knowledge application (Source: Trend Chart Innovation Policy Measures database).

Recommendation 3: Introduce special support measures for innovation in service sector

Specific attention should be paid to the promotion of innovation in services in both proposed cohesion regions. Measures supporting organisational change, marketing innovation, process innovation and other types of innovation, important in services, need to be designed and supported. Supporting innovation in service sector is a challenge at the European level as well and international experience with measures in this area is scarce. This makes this policy area especially important and challenging.

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

Key conclusion 4: Organisational structure and coordination scheme was too complex and inefficient

Already during the implementation of the current programme, the government as well as participating institutions realised that the organisational structure was too complex and time consuming. While several modifications were introduced during 2005 to simplify the procedures, some proved counter-productive, since frequent changes required continuous adaptation of the procedures and slowed down disbursement of funds.

Recommendation 4: Organise the entire process under single Agency

Instead of having several decision levels and multiple coordination schemes, it would be more efficient to combine the experienced administration staff under a single agency or Ministry and have all the ERDF projects coordinated by them. This would eliminate certain duplication of jobs, allow for better qualification of personnel and thus provide time for quality assessment of projects as well (not just the compliance with the regulations.

Key conclusion 5: The overall policy framework for (regional) innovation support was missing and thus opportunities for synergies lost

Due to several reorganisations of the government and its offices from the time of preparing the SPD to the period of its actual implementation, the planned synergies and complementarities of the instruments proposed under SPD and under other programmes of (old) Ministries never materialised. The key authors of the content of RDTI policies to be promoted via ERDF were not involved in its implementation.

Recommendation 5: Design a comprehensive set of measures and provide for close implementation monitoring

Several ministries and government agencies have programmes to support R&D, technological development, innovation activity and entrepreneurship. These need to be well coordinated and measures to be co-financed by ERDF integrated in these schemes. This way better allocation of resources will be achieved.

Key conclusion 6: Absorption capacity of government administration proved to be a restrictive factor

The implementation of the current programme proved to be very complex and required highly qualified staff. The fluctuations and promotion of trained people, responsible for monitoring of certain projects, caused delays in processing reports and financial requests.

Excessive discretion rights of some people in administration to interpret the regulations were also problematic, since it led to conflicting decisions as to the approval of reports.

Recommendation 6: Provide additional training for administrative support of SF financing

Even though several trainings have been initiated, new less experienced staff would benefit greatly from interdisciplinary training and familiarisation with best practices in other EU countries. This would lessen the administrative burden both in the government administration and in project teams and allow the latter to devote more time to project content (research).

Exhibit 14: Summary of recommendations on investment priorities

Please integrate this information into the above-mentioned recommendations.

Region or group of regions	Strategic focus	Priority measures	Indicative financial resources
Slovenia	Cooperation programmes between business and public R&D in the priority areas	Centres of excellence, technology networks, joint research projects	30%
Slovenia	Improve human resource availability for higher education and R&D prior to decentralisation	Measures to promote postgraduate studies in S&T, promote mobility within and between academic and public research organisations and business	20%
Slovenia	Support to SMEs: voucher scheme and guarantee scheme	All measures/ instruments of current SF funding for RTDI	20%
Slovenia	Support to innovation in services and non-technological innovation	Subsidies for development/ application of non-technological innovation and innovation activity in service sector	20%
Slovenia	Provide additional training for administrative support of SF financing	Transfer of best practices	10%

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.

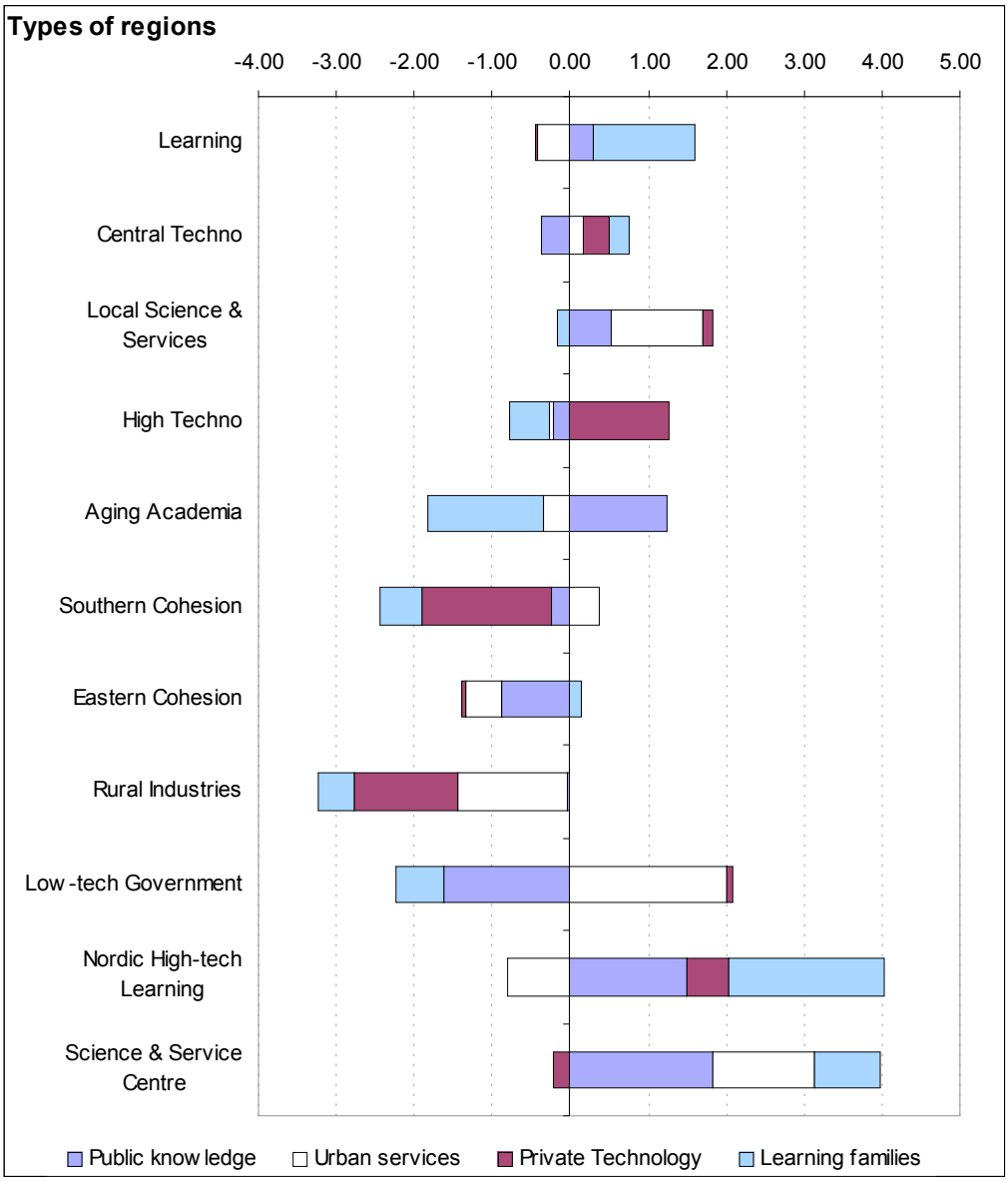
One interesting conclusion is that public and private knowledge are two different factors (F1 and F3 respectively), which for instance has implications for policy issues regarding Science-Industry linkages. Public R&D and higher education seems especially related to high-tech services, whereas Business 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 did not 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 neither 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.

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 RDTI 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.

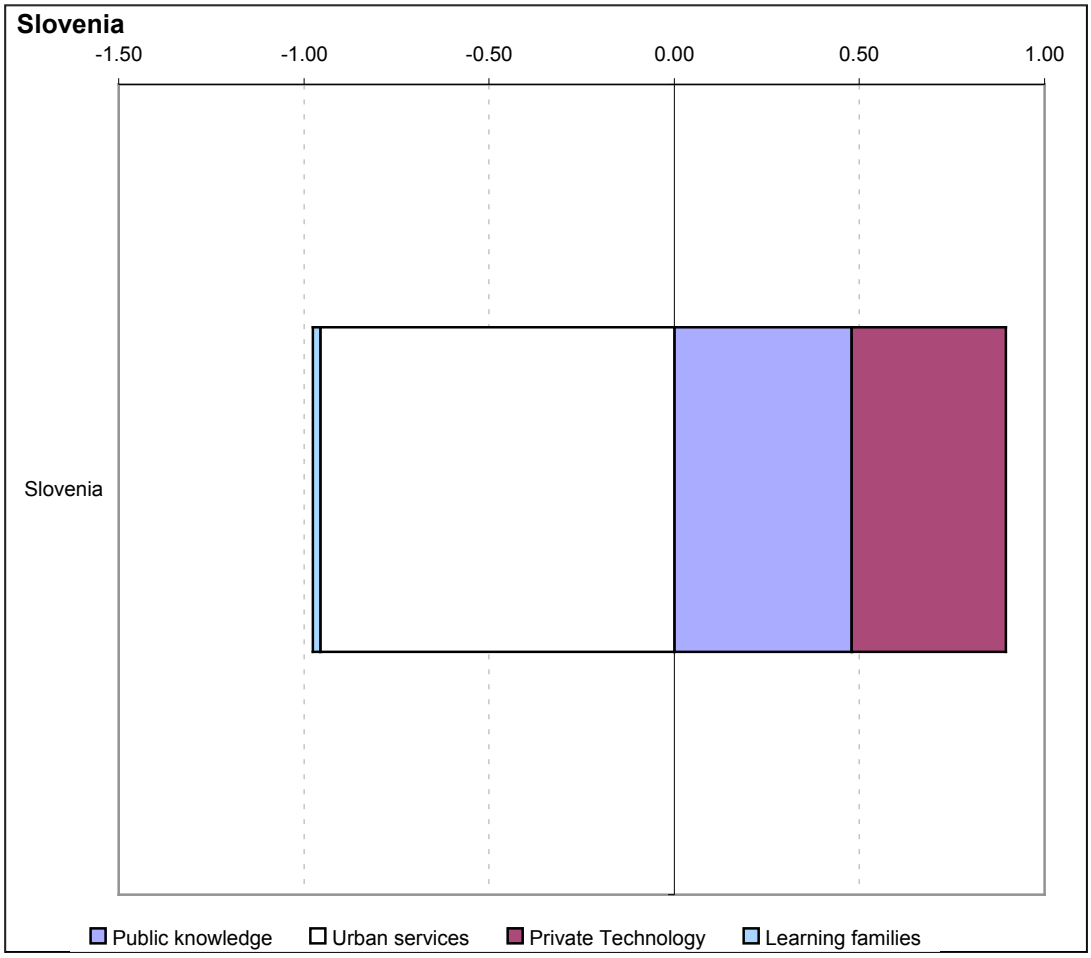
Appendix B Statistical tables and regional scorecards

B.1 Overall quantitative analysis per region

			Economic performance				Public knowledge				Urban services				Private technology				Learning families			Cluster factor scores				
		Cluster	Unemployment	GDP per capita	GDP per capita growth	Productivitity	High tech services	Higher education	Knowledge workers	Public R&D	Population density	% Value added industry	% Value 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					
Slovenia	SI		6,7	15941	6,1	2301	2,7	17,7	11,4	0,62	98	35,4	61,4	5,5	8,9	0,91	22,0	3,1	13,3	9,5	51,1					
Relative to EU25			137	75	128	50	84	86	98	90	84	131	87	74	135	73	106	150	153	88	106					
Slovenia	SI	2	6,7	15941	6,1	2301	2,7	17,7	11,4	0,62	98	35,4	61,4	5,5	8,9	0,91	22,0	3,1	13,3	9,5	51,1	0,48	-0,96	0,42	-0,02	-0,39
Learning		1	4,3	23139	4,7	4900	3,2	22,1	12,5	0,40	216	30,5	66,0	6,0	6,2	1,12	22,0	2,4	15,1	12,2	53,8	0,29	-0,41	0,04	1,30	0,56
Central Techno		2	7,5	20700	4,0	4884	2,9	18,7	10,6	0,42	182	30,0	66,8	8,2	7,5	0,84	20,7	3,1	6,7	11,2	47,6	-0,38	0,16	0,36	0,25	0,24
Local Science & Services		3	9,2	19852	6,0	3780	4,3	23,6	13,7	0,88	389	22,0	76,2	9,8	4,6	0,79	22,4	1,8	5,9	10,4	46,9	0,52	-1,19	0,12	-0,17	0,13
High Techno		4	6,1	25202	3,6	5591	3,1	17,5	10,3	0,58	288	31,7	66,7	7,3	11,9	1,31	22,8	1,6	5,6	9,7	46,4	-0,21	-0,05	1,27	-0,52	0,84
Aging Academia		5	13,3	17508	5,3	3649	2,5	27,4	13,2	0,67	185	30,1	66,9	7,6	6,7	0,57	18,8	3,0	4,8	7,4	46,0	1,24	-0,33	0,02	-1,48	0,18
Southern Cohesion		6	10,7	16213	6,3	3082	1,2	14,7	8,2	0,37	66	19,9	70,0	7,5	1,5	0,11	11,2	10,2	3,1	10,0	38,2	-0,25	0,36	1,66	0,54	-0,35

Eastern Cohesion	7	14,2	9776	5,3	1230	1,9	12,0	7,2	0,26	113	34,2	61,3	6,6	6,6	0,33	15,9	4,5	4,1	11,0	48,4	-0,88	-0,46	-0,06	0,15	-1,20
Rural Industries	8	10,3	8204	5,6	1120	1,6	14,8	7,8	0,17	62	33,6	52,0	6,0	4,5	0,18	12,9	14,5	2,6	10,1	45,3	-0,03	-1,40	-1,33	-0,46	-1,41
Low-tech Government	9	14,1	18553	4,1	4848	2,3	10,0	6,2	0,55	161	21,2	75,1	12,9	4,2	0,28	16,2	3,7	4,6	10,1	32,4	-1,62	-2,00	-0,08	-0,61	-0,04
Nordic High-tech Learning	10	6,4	23323	4,7	5202	4,5	28,5	18,7	0,41	67	29,9	67,9	5,4	7,6	3,05	30,2	2,3	25,0	11,9	58,2	1,49	-0,82	0,54	1,98	0,59
Science & Service Centre	11	6,1	34489	5,3	6663	5,6	28,5	16,8	0,98	2118	16,8	81,2	7,4	3,8	1,00	30,5	0,8	12,8	11,4	55,5	1,82	1,31	-0,22	0,85	2,06

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[43];
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.

[43] 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

D 1.1 RTDI plus business (innovation technology) support

Objective	Total cost	SF			NF	
		Total	ERDF	ESF	Public	Private
RTDI INTERVENTIONS						
Objective 1	21,715,888.57	16,059,382.87	16,059,382.87	0.00	5,656,505.70	0.00
TOTAL COHESION POLICY						
Objective 1	334,516,689.00	237,509,597.00	136,523,478.00	75,635,986.00	97,007,092.00	2,247,503.00

* the two digit code 15 was not taken into accout to avoid overestimate
** the two digit code 16 was not taken into accout to avoid overestimate

OBJECTIVES	ALLOCATED	DISBURSED TOTAL SF	EXPENDITURE CAPACITY
Objective 1	16,059,382.87	1,254,198.96	7.8%
CODES	**ALLOCATED**	**DISBURSED**	**EXPENDITURE CAPACITY**
OBJECTIVE 1			
18 - Research, technological development and innovation (RTDI) - detailed information unavailable	16,059,382.87	1,254,198.96	7.8%
TOTAL OBJ. 1	**16,059,382.87**	**1,254,198.96**	**7.8%**

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

Objective	Total cost	SF			NF	
		Total	ERDF	ESF	Public	Private
RTDI INTERVENTIONS						
Objective 1	48,145,880.77	35,654,343.46	28,241,560.78	7,412,782.68	12,491,537.31	0.00
TOTAL COHESION POLICY						
Objective 1	334,516,689.00	237,509,597.00	136,523,478.00	75,635,986.00	97,007,092.00	2,247,503.00

* the two digit code 15 was not taken into accout to avoid overestimate
** the two digit code 16 was not taken into accout to avoid overestimate
*** the two digit code 32 has been included. Figures may be slightly overestimate.

OBJECTIVES	ALLOCATED	DISBURSED TOTAL SF	EXPENDITURE CAPACITY
Objective 1	35,654,343.46	3,233,207.20	9.1%
CODES	**ALLOCATED**	**DISBURSED**	**EXPENDITURE CAPACITY**
OBJECTIVE 1			
18 - Research, technological development and innovation (RTDI) - detailed information unavailable	16,059,382.87	1,254,198.96	7.8%
32 - Telecommunications infrastructure and information society (detailed information unavailable)	12,182,177.92	1,514,215.15	12.4%
324 - Services and applications for SMEs (electronic commerce and transactions, education and training, networking)	7,412,782.68	464,793.09	6.3%
TOTAL OBJ. 1	**35,654,343.46**	**3,233,207.20**	**9.1%**

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

D 2.1. Main measures in favour of innovation and knowledge

Identified RTDI measure or major project	Focus of intervention (policy areas classification)*	Main Instruments**	Main beneficiaries***
Support to modernization, construction and equipment of technology centres, parks, incubators;	Innovation poles and clusters; Innovation friendly environment Boosting applied research and product development	Infrastructure and facilities	Networks
Support to preparation of strategies, programmes and development of services of technology parks/ centres/ incubators, technology networks, clusters.	Improving governance capacities for innovation and knowledge policies Innovation friendly environment	Aid schemes	Networks
Development of research infrastructure of centres of excellence	Knowledge transfer and technology diffusion	Aid schemes	Networks, private sector
Improvement of support environment for SMEs: voucher scheme	Support to creation and growth of innovative enterprises	Aid schemes	Private sector
Guarantee scheme and subsidized purchase of new technology/ equipment for SMEs	Support to creation and growth of innovative enterprises	Aid schemes	Private sector
Financing of joint research & development projects,	Knowledge transfer and technology diffusion	Aid schemes	Networks
Development of research infrastructure of centres of excellence	Knowledge transfer and technology diffusion	Aid schemes	Networks

* 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: Centres of excellence/ Centri odličnosti Description : the measure supports the establishment of the centres of excellence and co-finances joint research projects within the centres. Zone: the measure was introduced within measure 1.1. Promotion of innovation environment development of the priority 1 in Single Programming Document Policy framework: support to transfer of knowledge from public research institutes to business sector.
Brief history and main features
During the preparation of the Single Programming Document it was decided that Priority 1 should focus on promotion of productive sector and competitiveness. A more supportive innovation environment was one of the key objectives of this priority. For several years, the lack of cooperation between public R&D sector and business sector has been stressed as one of the major obstacles to innovation output. A formation of different types of linkages between the public and private sector was identified as one of the key measures to improve this. The initiative is partly modelled after 6th Framework Programme's "Networks of excellence". It combines research facilities at different public research units (both institutes and universities are involved) in research which is focused on the needs of business sector members of the centres of excellence. Financial resources go to research units, but co-financing must be coming from business sector for each individual project. The Centres of excellence can count on two different sources of co-financing from ERDF: the measure 1.1. provides for resources for joint research and development projects and the measure 1.4. supports the modernisation, restructuring or construction of new premises as well as purchasing of new equipment (so called research infrastructure). Under the first measure a segment of research work is more significant. Some of the projects were launched in the end of 2004 (signature of the contract) or beginning of 2005. Another call was issued in end of 2004, opening opportunity for new initiatives. While ex-Ministry for Education, Science and Sports had a measure which supported joint research projects, the key novelty of this measure is that it not only provides research funds, but financial assistance for research infrastructure. It is also one of the first measures to focus on the priority research areas (ICT, Nanotechnologies, biotechnology, pharmaceuticals, process management and environment technologies supporting sustainable development).
Main results
8 centres of excellence have been established so far. According to the interviews with project managers the centres have generated new research activity in the areas directly relevant for business sector. Cooperation with business sector is gradually increasing and business partners in the centres are getting more and more involved in directing

the research towards the questions relevant for them. In this respect, the objectives have been to a large extent fulfilled. What was pointed out as one of the obstacles however was a request from the financier that each participant in the centre of excellence has to provide for his/hers co-financing and not at the level of the centre as a whole. This can be a problem for some of the smaller research units at the University: their role may be a segment of a wider research, which is co-financed, but only the final result, not the interim phases.

In spite of several, some also rather un-expected administrative problems, the interviewed project managers as well as their contact person at Ministry of Higher education, Science and Technology felt that the projects are being implemented well and the basic objectives fulfilled. They expect that the measure should continue in the period 2007-2013.

Reasons of success and conditions for repeatability

The introduction of this measure was well received both in public research institutions and in business sector. In all priority areas centres of excellence were established and several of them have integrated research capabilities from different institutes and academia from different parts of Slovenia. A much higher degree of cooperation among researchers of different disciplines and different institutions is gradually developing, which is not typical for Slovenia.

The measure still needs to resolve certain institutional obstacles, like increased cooperation among R&D units in securing overall co-financing, not as segmented as till now. Also, strict and complicated reporting and accounting is turning some partners away. It is hoped that with more experience the rules will become on one hand more flexible and on the other, more stable with fewer additional requests during the life-time of the projects. The most important lesson in the administering of this measure is that the participation of potential applicants in the phase of designing the measure and the reporting conditions would eliminate later frustration with terms and conditions which are in conflict with everyday practice and sometimes even common sense.

The full evaluation of the completed projects would be needed to identify which aspects of the initiative would be susceptible to be transferred. The transferability would depend also on the structure of the research sector and the existing patterns of cooperation between public R&D and private sector.

Appendix E: Further reading

Bibliography of references/documents used:

European Innovation Scoreboard (2005)

IMAD (2005) Fall report

IMAD (2006) Development report

Law on research and development, 2002

Ministry of Economy, 2002, Programme to Support Entrepreneurship

National Research and Development Programme, 2005

Pečar Ana: Regije ;IMAD Working paper 9/2005

Proposal of the execution structure for measures of the Priority 1 of Single programming document 2004 – 2006 "Promotion of productive sector and competitiveness", internal document, MHEST

National Reform Programme for Achieving Lisbon Strategy Goals, Nov. 2005

National Development Programme, draft, May 2006

National Strategic Reference Framework, May 20, 2006

Report on Disbursement of Structural Funds; Joint Steering Committee on Structural Funds; Jan.2006

Single Programming Document, 2004-2006

Slovenian Development Strategy, IMAD 2005

Stare and Bučar (2005) Measuring ICT in Slovenia

SURS (2005) R&D Statistics

SURS (2006) Rapid report: R&D Statistics on Business sector

Innovation Trend Chart report Slovenia 2004-2005

List of useful websites at national or regional level

http://www.mg.gov.si/index.php?id=2159&L=1

http://www.mvzt.gov.si/index.php?id=94&L=1

http://www.mvzt.gov.si/index.php?id=380&L=1

http://www.svr.gov.si/index.php?id=874&L=1

http://www.gov.si/umar/aindex.php

http://www.gov.si/euskladi/
http://www.svlsrp.gov.si/index.php?id=558&L=1
http://www.stat.si/eng/index.asp

http://optlab.ijs.si/esrr/index.htm The Center of Excellence in Nanosciences and Nanotechnology

http://www.co-me.ijs.si/ Materials for electronics of next generation and other advanced technologies

http://en.coot.si/ Environmental Technologies Centre of Excellence

http://www.tvp.si/index.php?id=14 Center of excellence on process technologies

Appendix G: Stakeholders consulted

List of all individuals interviewed

Name	Position	Organisation
Darja Piciga	head of Office for Structural Funds	Ministry of Higher Education, Science and Technology
Damjan Kavaš	Senior researcher	Institute of Economic Research
Matej Novak	Adviser to the government	Ministry of Economy
Jaka Vadnjal	head of voucher programme	JAPTI (Slovenian Public Agency for Entrepreneurship and Foreign Investment promotion)
Iztok Lesjak	director	Ljubljana Technology Park
Janez Bešter	professor	ICT centre of excellence

Participants to focus group

Name	Position	Organisation
Darja Piciga	head of Office for Structural Funds	Ministry of Higher Education, Science and Technology
Damjan Devčič	staff, Office for Structural Funds	Ministry of Higher Education, Science and Technology
Jaka Vadnjal	head of voucher programme	JAPTI
Iztok Lesjak	director	Ljubljana Technology Park
Tanja Mohorič	programme coordinator	Hidria – Ventilation and air-conditioning cluster
Dušan Bušen	director	Automobile cluster of Slovenia
Stanko Šalamon	partner in ICT Centre of Excellence	Eurofon
Andrej Kos	project manager ICT Centre of Excellence	Faculty of Electrotechnics
Metka Stare	senior researcher	Centre of International Relations, faculty of Social Sciences