RIP-WATCH

ANALYSIS OF THE REGIONAL DIMENSIONS OF INVESTMENT IN RESEARCH

CASE STUDY REGIONAL REPORT: JIHOZÁPAD (CZECH REPUBLIC)

Authors: Daniela Vachova, Lenka Hebakova and Miroslav Kostic, Technology Centre of the Academy of Sciences of the Czech Republic

Date: December 2006

ERAWATCH Network asbl: Project management: Logotech S.A., Project team: Technology Centre of the Academy of Sciences of the Czech Republic

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Case Study Regional Report on the Regional Dimensions of Investment in Research

OBJECTIVE

The main objective of this regional case study report is to provide a better understanding of the structural techno-economic characteristics of the analysed European region, to present the key factors conducive to increased investment in R&D and to identify key R&D policy challenges the region is facing.

BACKGROUND

In partnership with DG Research, the Institute of Prospective Technological Studies of the Joint Research Centre (JRC-IPTS) has been implementing a watching brief on policy developments aimed at promoting both private and public investment in R&D (RIP-WATCH). A stated aim of this policy watch activity is to take stock of developments aimed at increasing investments in R&D in the European regions.

In the design phase of the activity, a typology of the European regions was produced. A balanced mix of twenty regions was selected from each of the nine identified regional types representing fifteen member states of the European Union.

COVERED REGIONS

Phase 1		Phase 2	
1. Andalusia (ES)	2. Catalonia (ES)	11. Bavaria (DE)	12. Corsica (FR)
3. Carinthia (AT)	4. Crete (EL)	13. Emilia-Romagna (IT)	14. Etelä-Suomi (FI)
5. Dél-Dunántúl (HU)	6. Jihozápad (CZ)	15. Balearic Islands (ES)	16. Lorraine (FR)
7. Norte (PT)	8. Sicily (IT)	17. Midi-Pyrénées (FR)	18. Saxony (DE)
9. Styria (AT)	10. Wielkopolskie (PL)	19. Scotland (UK)	20. Västsverige (SE)

THE REPORTS

The regional reports are structured according to the following two interrelated dimensions of regional techno-economic systems:

- **Regional knowledge base**, including the research, technological development and innovation (RTDI) infrastructure, human resources, RTDI efforts and outcomes and knowledge transmission mechanisms in the region

- **Regional economic structure**, including the productive structure, regional clusters and networks, international position and financial capacities and instruments

Each report examines these dimensions from two points of view: their current state as reflected in a selected set of regional indicators and their policy context (i.e. policy framework, actors, objectives and instruments).

In addition to the regional case study reports, a **synthesis report** will be produced that combines and interprets the information contained in the case study reports, presents the strengths and weaknesses of the regions covered and the factors that determined the trajectories of development of their R&D and innovation capacities, and discusses the main R&D and innovation challenges identified.

JRC-IPTS launched the first phase of the activity in June 2006 with the contribution of the ERAWATCH Network. The work has been undertaken between June and December 2006 by a project team led by LOGOTECH S.A. (EL) with the participation of iDeTra (ES), IKU Innovation Research Centre (HU), Institute of Fundamental Technological Sciences of the Polish Academy of Sciences (PL); Instituto de Estudios Sociais e Economicos (PT), Joanneum Research InTeReg (AT), Nomisma (IT), Poznan University of Economics (PL), Technology Centre of the Academy of Sciences of the Czech Republic (CZ), The Bigger Splash (ES) and Transdanubian Institute of Centre of Regional Studies of Hungarian Academy of Sciences (HU).

A first set of ten regional case study reports is now available on the ERAWATCH web-site at http://cordis.europa.eu/erawatch/index.cfm?fuseaction=intService.home

The second phase of the activity was launched in December 2006. A second set of ten regional case study reports and a synthesis report are expected to be available on the ERAWATCH web-site by October 2007.

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Abbreviations

BERD	Expenditure on R&D in the business enterprise sector
EPO	European Patent Office
GBAORD	Government budget appropriations or outlays for R&D
GDP	Gross domestic product
GERD	Gross domestic expenditure on R&D
HERD	Expenditure on R&D in the higher education sector
NACE	Statistical Classification of Economic Activities in the European Community

1. Introduction

The Jihozápad (South-West) region shares its borders with the Czech regions of Severozápad (North-West), Středni Čechy (Central Bohemia) and Jihovýchod (South-East); the Austrian regions of Lower Austria (Niederösterreich) and Upper Austria (Oberösterreich); and the German regions of Lower Bavaria (Niederbayern), Oberpfalz and Oberfranken. With an area of 17 617 sq. kilometres, the region covers 22.3% of Czech territory, while the 1 175 330 inhabitants of the region (1 January 2005) correspond to 11.5% of the country's total population. Jihozápad is therefore the largest NUTS 2 region with the sparsest population (66.7 inhabitants per sq. km) in the Czech Republic. Density of population corresponds to 50% of the country's average population density and to 84% of average population density in the EU-25.

The region is divided into two self-governing NUTS 3 regions (Jihozápad does not itself constitute a self-governing region): Plzeňský kraj (Pilsen region) and Jihočeský kraj (South Bohemian region). The Administrative centres of these regions – Plzeň (Pilsen) (162 600 inhabitants) and České Budějovice (94 600 inhabitants) are also the biggest population, economic and cultural centres of the Jihozápad region.

NUTS 2 and NUTS 3 level regions in the Czech Republic

Jihozápad belongs to the less urbanised regions of the country – urban population accounts for only 65.0% of total population (compared with 70.2% at national level). A significant part of the population lives in small municipalities with less than 500 inhabitants. Generally, Jihozápad belongs to the rural rather than the industrial regions of the Czech Republic, although several large economic centres with a long industrial tradition are located there – primarily Plzeň, the fourth biggest city in the country. Thanks to these industrial "islands", the unemployment rate is significantly below the national average and the economic performance of the region is relatively good (compared with the rest of the Czech Republic), although it was affected by the restructuring of heavy engineering. Heavy engineering is the largest branch of industry in the region, concentrated especially in Plzeň and the surrounding area. Other important industrial branches are light engineering, metallurgy and the food industry. The Southern part of the region constitutes agricultural territory with a well developed wood industry and fishpond cultivation. Manufacturing industry in this part of the region did not develop significantly until the 20th century. The most positive aspect is the quality of the environment in the countryside, while the negative side is the remoteness and bad traffic links between the peripheral parts of the region and the most important economic centres of the country.

As regards regional GDP per inhabitant, Jihozápad is below both the national and the EU average (91.5% of the national and 63.0% of the EU average in 2004), as well as that of the other Czech regions except Prague. However, Jihozápad ranks third among the eight NUTS 2 regions of the country. The disparity between the region's share of the country's GDP (10.4%) and of total R&D expenditure (5.6%) reflects the strong concentration of resources in the capital city of Prague, which is a characteristic feature of the Czech economy.

2. Regional knowledge base

2.1. Description of the regional knowledge base

2.1.1 Knowledge creation capacity of the region

Higher Education Institutions (HEIs) still play a key role in forming the regional knowledge creation capacity, although the number of private R&D institutions in the region has been rapidly growing as well as their financial resources. The most important HEIs in the region are two universities located in the two biggest industrial and administrative centres of the region (Plzeň, České Budějovice).

HEIs and public sector

The number of academic staff in HEIs in the region stood at 3 860 persons in 2004, and of these, there were 1 770 R&D employees (head counted), representing 43% of all the R&D personnel in the region – see Table_6. This percentage is well above the national average (only 33% of the R&D personnel are employed in HEIs in the Czech Republic). The private sector employs roughly 41% of R&D personnel in the region (in comparison with 44% in the CR) and the public sector share is more than 15% (33% in the CR). The higher number of R&D employees in HEIs in the region is therefore compensated for by the smaller number of R&D employees in the public sector.

The situation is similar when we look at R&D expenditure. The HEIs' share of R&D expenditure in the region (19% in 2004) is higher than the national average (15% in 2004), whereas the public sector share of R&D expenditure in the region (18% in 2004) is lower than the national average (21% in 2004) – see Table_8.

The contribution of the private non-profit sector is almost negligible (there were only three establishments with less than 1% of R&D employees in the region in 2004).

There were 18 public research institutes and the same number of HEIs (including all faculties of both universities in the region) in 2004 – Table_5. There are two regional universities – the University of West Bohemia in Plzeň and the University of South Bohemia in České Budějovice. Together they provide education and research at 12 different faculties (four of them awarding science and engineering degrees) and a few specialised institutes. Additionally, there are two other dissociated faculties in the region, belonging to the universities based in Prague (the Medical faculty of the Charles University in Plzeň and the Management faculty of the University of Economics in Jindřichův Hradec), and a few private post-secondary or tertiary education institutions with local or, in a particular case, even national importance (Private Film School in Písek). Students (ISCED level 5 and 6) in the region represent 9% of all students in the country – see Table_1. The percentage of enrolled students among the entire population of the region is 2.4%, which is under the national average (3.1%).

The percentage of R&D personnel in HEIs (seemingly above the average) would seem to suggest that students participate widely in R&D activities, but the percentage of doctorates awarded in 2004 among all enrolled students in the region was only 0.3% in comparison with 0.6% at national level. The ratio of doctorates awarded in 2004 per professor in the region (0.025) was also lower than the national average (0.043) – see Table_1. The majority of doctorates in the region have been awarded in *science and engineering* fields (63% in 2004 in comparison with 50% at national level), but the percentage of students enrolled in these fields of study in the region (23%) is lower than the national average (34%) – see Table_4 and Table_3.

Higher education in the region is mainly oriented towards the practical subjects that are needed for providing the essential living and administrative functions of the region, i.e. *health, economics, education* and *law*. *Agriculture* and *fisheries* are the important traditional fields of study in the southern part of the region. The western part of the region is more industry oriented. Nevertheless, there are fields of education needed in the region but not covered by any local HEI, such as *architecture* or *civil engineering*.

České Budějovice is the centre for *life sciences* studies and research in the region. There is a *Faculty of Biology* with 694 students (2004) and a group of *Czech Academy of Sciences* (CAS) institutes specialised in this field – *Parasitological Institute (162 employees in 2006)*, *Institute of Molecular Biology of Plants (65 employees), Entomology Institute (167 employees), Hydrobiology Institute (60 employees)* and *Institute of Soil Biology (46 employees)*. A further two CAS institutes are located in the nearby town of Třeboň – *Microbiology Institute* (52 employees) and *Botanical Institute (65 employees)*. There is also the *Academic and University Centre in Nové Hrady* providing the research infrastructure for developing pilot projects. One of its goals is to connect educational and research activities with private sector activities in the region in the field of biological sciences and related subjects.
The University of West Bohemia in Plzeň is more oriented towards *technical and engineering studies*. In 2005 the University consisted of 1 808 employees including 1 010 research staff. Education in science and engineering is provided by the *Faculty of Mechanical Engineering* (1 550 students in 2004), the *Faculty of Electrical Engineering* (2 138 students in 2004) and the *Faculty of Applied Sciences* (1 571 students in 2004). This orientation is a good indication of cooperation with local industry.

Private sector
The number of R&D institutions in the private sector has been rapidly growing in the region (from 59 in 2001 to 123 in 2004), but the growth of R&D personnel in this sector is far slower (from 1 291 in 2001 to 1 667 in 2004) – see Table 5 and Table 6. The HEIs are dominant in terms of the number of R&D personnel, whereas the private sector is best placed in the region from the point of view of budget size – see Table 8. The private sector spent €38.5 million on R&D in 2004 - that is a 62% share of all R&D expenditure in the region. Most of the financial resources came also from the private sector – the share in financing R&D activities in the region was 56% in 2004 – see Table 10.
In the Plzeňský region, **Škoda Research** in Plzeň, with private capital of €1.5 million, ranks among the biggest private R&D facilities. It is a private R&D company exploiting a long tradition in the development of *energy* and *transport machinery*. **Matsushita**, at its Plzeň consumer electronics plant, also has significant R&D capacities in the field of *electronics, mechanics* and *software design*. In Plzeň, there is also the **Research Centre for New Technologies** that started in 2000, with about 45 employees engaged in applied research oriented towards the *mechanics of technology processes, dynamic systems and materials*. In the Jihočeský region, the largest private research institution is the **Institute of Nuclear Energy Research**, which prepares, conducts and coordinates work connected with the functioning of the nuclear power plant in Temelín. The research carried out there is in the field of *natural and technical sciences*. In České Budějovice, the **Energy Research Institute** conducts research in the field of the *production and distribution of electrical energy*.
In the Jihozápad region, the largest share of financial resources within business expenditure on R&D (€7.9 million; see Table 14) is concentrated in the *Manufacture of motor vehicles* (20.4% of total BERD in 2004), although the sector receives more support at national level (26.2% of total BERD in 2004). Manufacture of motor vehicles is followed by the sector of *Machinery* (14.5%, compared with 6.9% at national level), *Information technologies* (9.1%, compared with 8.6% at national level), *Transport equipment excluding motor vehicles* (6.2%, compared with 3.5% at national level), *Electrical machinery & apparatus* (6.1%, compared with 3.5% at national level) and *Radio, TV & communication equipment* (5.8%, compared with 3.4% at national level). The share of BERD intended for Manufacturing industry (65.3% of total BERD) in 2004 was larger than in the Czech Republic as a whole (61.2% of total BERD). In contrast to most manufacturing branches, the Manufacture of chemical products is significantly below the national level of BERD (0.9% in the region, compared with 7.0% in the Czech Republic).
The most rapid increase in BERD in Jihozápad in the period 2001-2004 took place in the sector of Information technologies (from 3.1% to 9.1%) and Radio, TV & communication equipment (from 2.4% to 5.8%). Significant growth in BERD also occurred in the Manufacture of rubber and plastic products (from 0.3% to 2.2%). On the other hand, the sharpest fall in BERD was in the sector of *fabricated metal products* (from 11.2% to 2.8%) and *transport equipment* excluding motor vehicles (from 15.6% to 6.2%).

Quantity and quality output

As part of the regional analysis of publications and patents in the CR (elaborated by the Technology Centre AS CR), numbers of publications and citations (Web of Science ISI Thomson) and numbers of patents (UPV CR) were examined in the time period 1994 – 2004. In the Jihozápad region there were 4 405 publications with an average number of 5.5 citations per publication. 261 Czech patents were also awarded during this period.

According to the number of publications (see Table 15), the most important groups are in *botany and zoology* (23.4%), in *microbiology* (13.4%) and in *biology/biochemistry* (11.1%). Most of the citations (see Table 16) also relate to these fields (24.7% to *botany and zoology*, 13.8% to *microbiology* and 12.1% to *biology and biochemistry*). Most of the publications in these fields are produced by the academic institutions in České Budějovice. In the western part of the region (Plzeň), two other scientific fields are important - *clinical medicine* (8% of publications and 6.8% of citations in the region) and *material sciences* (3.2% of publications and 3.7% of citations in the region).

Between 2000 and 2003, there were 33.2 EPO patent applications registered in the region (see Table 17), i.e. an average of 8.3 applications per year. In 2000 – 2005, 115.6 patents were awarded by the UPV (Czech patent authority), i.e. an average of 19.3 patents per year (see Table 18). The field of *performing operations and transporting* (40.4%) tops the number of EPO applications in the region, the field of *mechanical engineering, lighting, heating, weapons and blasting* is in second place (17.7%) and the field of *fixed constructions* in third place (12.2%). In the category of awarded UPV patents, the field of *performing operations and transportation* is in first place (30.2%), the second place belongs to the field of *chemistry and metallurgy* (19.5%) and *human necessities* are in third place (5.9%). The number of EPO patent applications in the region per million euros of regional GDP reached the level of 0.6 per mille in 2003, which was significantly lower than the national average (0.9 per mille). But in a longer time period (2000 – 2003), the comparison was rather more auspicious for the regional R&D sector (1.1 per mille in the region in comparison with 1.4 per mille at national level).

Trends

Unfortunately, data concerning RTDI in the Jihozápad region are not available for the 1990s. Nevertheless, from the available time lines for 2001-2004, there are some notable development trends. The importance of private profit making R&D institutions in the region is increasing. The number of private R&D institutions has been growing as well as the R&D spending and number of R&D staff in the private sector. Financial resources have been rising in the public sector as well, but the number of R&D staff in the public sector remains stable. The HEI sector does not show significant changes either in R&D budget size or in the number of R&D staff.

The Jihozápad region is keeping up with the national average with respect to the number of students in HEIs - 9% of all HEI students in the country are enrolled in the region and this share has been stable since 2001. The region has a bigger share of doctorates awarded in the science and engineering field than the national average, but the share of students in this field is lower than the national average. It is possible to infer from these facts that HEIs in the region have very good potential for educating numerous high quality R&D staff in the science and engineering field in future, if there is adequate demand.

The leading positions in the region are steadily occupied by *technical sciences* (45% of R&D staff and 63% of R&D expenditure in the region in 2004) and *life sciences* (22% of R&D staff and 26% of R&D expenditure in the region in 2004) – see Table 7 and Table 12. R&D expenditure in both of these fields is constantly increasing as well as R&D staff in the *technical sciences* domain. On the other hand, the number of R&D staff in *life sciences* in 2001-2004 is decreasing.

2.1.2 Knowledge diffusion capacity of the region

Private institutions engage in R&D activities for their own purposes or in response to a direct order from a customer. The links that HEIs and public sector institutions have with enterprises are gradually improving, but they are still weak. In fact there are no technology transfer offices

directly connected to the universities and public R&D institutions. In contrast with the national average, more financial resources are spent on basic research than on applied research in the region (26% for basic and 28% for applied research at national level and 33% for basic and 27% for applied research at regional level).
The University of West Bohemia, the Plzeň municipality and the Business and Innovation Centre (BIC) of Plzeň have cooperated since 1996 on building the *Science and Technology Park* to support business innovation in the region. The first completed stage of the project was the business incubator to support the creation and early growth of new technological companies. Since 2001, a Technology Centre has also been operational in the Science and Technology Park, offering its offices and laboratories to established companies interested in advanced technologies, research and development.
BIC Plzeň Science and Technology Park hosts a wide range of innovation companies. Most of the 18 companies in the park are involved in *software development* (8 companies), development of *energy systems* and development of systems for the *automotive industry*. The other innovation centre in the region situated in Třeboň is oriented mainly towards the exploitation of *alternative energy resources*, i.e. *solar and biogas technology*.

2.1.3 Knowledge absorption capacity of the region

The region has a higher percentage of the economically active population with upper secondary and post-secondary education (81% in 2004) than the country average (79% in 2004) – see Table 21. On the other hand, the HRST percentage of the economically active population in the region (34%) is lower than the country average (35.7%) and the same is also true for the HRST percentage of the total population (17.1% in the region and 17.9% in the Czech Republic in 2004) – see Table 23. However, the percentage of the economically active population with tertiary education in the region is gradually growing (11.6% in 2004) as well as the percentage of lifelong learning participants aged 25 – 64 (4.5% in 2004) – see Table 22.
Licence fees in the region are increasing as well as the share of licence fees in total R&D expenditure – see Table 20. In 2004 they accounted for 19.8% of total R&D expenditure in the region, which is 3.4 percentage points more than at national level (16.4% in 2004). The difference between the share of patent fees in total R&D expenditure at regional and national level is even greater. The share of patent fees in total R&D expenditure in the region in 2004 was 8.2% and at national level it was only 1.6%. It can be inferred from this that there is a big demand for practically oriented R&D results in the region.

2.2 Policy context

This chapter covers the main stakeholders in the Czech RTDI system as well as the main national and regional policy objectives and instruments in the field of RTDI.
The RTDI objectives and measures under the relevant policies and programmes mentioned below started in the current decade.
In the 1990s, there was a lack of strategically targeted initiatives regarding future RTDI development in the Czech Republic. Due to the basic restructuring of the whole system, including the industrial base, a turbulent environment in the first half of the 1990s brought about frequent changes in the positions of managers and practically no strategic policy documents existed. Most of the initiatives were short term and targeted at coping with urgent problems and preventing serious social dissatisfaction. The situation began to change at the end of the decade, when the Government decided to prepare the first National Research and Development Policy of the Czech Republic as a key strategic document defining the state's relationship with research and development.[1]

[1] Klusáček, K. (2004). 'Technology Foresight in the Czech Republic'. *Int. J. Foresight and Innovation Policy*, Vol. 1, No. 1/2, pp. 89-105.

2.2.1 Policy framework and actors

The main government and legislative bodies in the Czech RTDI system are listed below. Most of them operate at national level. The regional dimension is included where relevant. The most important institutions and their roles in the context of the RTDI system are the following:

- The *Office of the Government of the Czech Republic* deals directly with innovation policy issues – especially its two divisions falling under the responsibility of the Deputy Prime Minister for Economic Affairs: a section for Research, Development and Human Resources and a section for Economic Policy.
- The *Research and Development Council (R&D Council)* is an advisory body to the Government of the Czech Republic in the area of R&D. Its responsibilities include preparing R&D-related documents (proposals for long-term R&D directions, annual analyses and assessments of Czech R&D, mid-term outlooks for support to R&D, proposals on total R&D expenditures to be covered from the state budget and proposals on R&D budget allocation to individual providers), organising meetings with EC advisory bodies in the R&D field and the R&D councils of other countries, and administering the R&D information system. In fulfilling its tasks the R&D Council cooperates with central administration bodies and institutions involved in R&D.
- The *Ministry of Education, Youth and Sports* has a unique position among other departments concerning publicly supported R&D: it is responsible for formulating the National R&D Policy for international cooperation in R&D, and it administers research programmes at universities as well as other specific research programmes. The Ministry of Education coordinates the National Research Programme (NRP I: 2004-2009, NRP II: 2006-2011) and provides institutional financing related to research proposals/plans submitted by both public and private legal entities (as opposed to project financing on the basis of research programmes).
- The *Ministry of Industry and Trade* plays a central role in innovation policy matters - this issue will be dealt with by the Government in 2006-2008 as stipulated in the National Innovation Policy 2005-2010. It is the central body of the government administration responsible for the following areas: national industrial policy, trade policy, foreign economic policy, domestic trade and protecting consumer interests, foreign trade and supporting exports, issues related to small and medium-sized companies, technical standardisation, metrology and quality control, *industrial research*, engineering and *technology development*. There are a number of institutions set up by the Ministry, fully or partly financed from the state budget.
- The main knowledge institution is the *Academy of Sciences of the Czech Republic* (ASCR). It was established in 1992 by the Czech National Council. The ASCR is the leading non-university public research institution in the Czech Republic. It carries out both fundamental and applied research to create scientific knowledge that contributes to strengthening the nation's position in key areas of science and to finding up-to-date solutions to contemporary social problems. In the Jihozápad region, there are seven institutes of the ASCR located in České Budějovice and Třeboň.
- Of the institutions under the responsibility of the Ministry of Industry and Trade, the most closely related to innovation is *CzechInvest - Investment and Business Development Agency*. Its main objective is to advise and support existing and new entrepreneurs and foreign investors in the Czech Republic. CzechInvest has a network of 13 regional offices, simplifying communication among the central government administration, entrepreneurs and the EU and providing detailed information on business support in the Czech Republic. There are two regional branches of CzechInvest within the region of Jihozápad – in Plzeň and České Budějovice. The other institution is *CzechTrade - Czech*

Trade Promotion Agency. Its main objective is to promote international trade and cooperation between Czech and foreign companies. CzechTrade's professional information, assistance and consulting services help Czech exporters penetrate foreign markets, and the agency is a contact partner for enterprises entering the Czech market and seeking promising and reliable business partners and suppliers.

- The *Economic Chamber of the Czech Republic* is an association of large, medium and small businesses in regional chambers and trade associations. It is an independent legal entity. The Chamber's main task is to support the entrepreneurial climate and the development of trade through its branches in all the 14 NUTS 3 regions including the Plzeňský and Jihočeský regions.
- The *Association of Innovative Entrepreneurship of the Czech Republic* (AIE CR) is a union of businessmen delegated by the members of AIE CR: the Science and Technology Parks Association of the Czech Republic, the Society for Technology Transfer Support, the Czech Society for New Materials and Technologies and possibly other domestic or foreign entities involved in the development of innovative entrepreneurship in the Czech Republic. Its objective is to help develop innovative entrepreneurship, i.e. research, development and innovation, technology transfer, new materials and technologies, by setting up science and technology parks and supporting innovative firms. The *Science and Technology Parks Association* (STPA) is a union of individuals and legal entities supporting the innovation process from research to the application of research results in practice, assisting in setting up innovative SMEs and technology transfer.
- The *Centre for Regional Development* of the Czech Republic (CRD CR) is a state organisation, founded by the Ministry for Regional Development with the objective of actively supporting the Government's regional policy. Its services are provided through a national network of CRD branches in all the NUTS 2 regions such as Jihozápad and they are used both by the highest state administrative bodies and by potential applicants for support from the European Union, small entrepreneurs and representatives of businesses and also students looking for study-related information.
- One of the main financial bodies is the *Grant Agency of the Czech Republic* (GA CR) - Czech Science Foundation. It was established in April 1993 to promote progress over the whole range of scientific and technological development in the Czech Republic. Grants are provided to Czech public and private research and development institutions and to individual scientists who are Czech citizens and reside permanently in the Czech Republic.
- The *Czech-Moravian Guarantee and Development Bank* (CMZR Bank) is a development bank of the Czech Republic, established in 1992. In accordance with government economic policy it supports SMEs in their development, the development of infrastructure as well as other economic sectors needing public support. The bank, which operates at national level, has two regional branches in the Jihozápad region: in Plzeň and České Budějovice. The *Czech Export Bank* is a specialised banking institution whose ownership is split between the State (69.7%) and the state-owned Export Guarantee and Insurance Corporation. The CEB's mission is to support Czech exports: its principal goal is therefore not to generate maximum profits, but a maximum volume of state-supported export.

2.2.2 Policy objectives and instruments

Policy objectives are described in the most important policy documents. Policy instruments responding to these objectives are listed below. The interaction of objectives and instruments is presented schematically in Exhibit 1.

Policy objectives

There are two key documents setting out Czech RTDI policy objectives: the *National Research and Development Policy* (2004-2008) and the *National Innovation Policy* (2005-2010).

The *National R&D Policy* broadly defines the current policy goals/priorities.

The following are systemic priority areas:

- *Human resources* – increasing the number and quality of R&D employees and support for young researchers to develop a more functional system of R&D in future;
- *International cooperation* in research and development – increasing the number of Czech research teams in international R&D projects;
- *Regional aspects* of research and development – developing more functional regional R&D institutions and regional authority experts dealing with R&D issues;
- *Application of research results* in practice;
- *Research evaluation* – creation of a fully functional system of evaluation of all aspects of R&D.

The following are thematic priority areas:

- Safe, reliable and ecological engineering for the future;
- Information and the knowledge-based society;
- Quality of life and safety;
- New materials and technologies;
- Needs of the Czech Republic in the field of economic and social affairs.

The *National Innovation Policy* (2005-2010) is focused especially on innovation and applying R&D results in practice. This Policy aims at creating an optimal environment in the Czech Republic by establishing favourable legal and institutional conditions for enterprises, removing barriers to innovation activities, and creating tools (both direct and indirect) supporting R&D and innovation from both national and European structural funds.

The main strategic goals of the Policy are as follows:

- strengthen research and development as sources of innovation (including support for spin-offs);
- establish working public-private partnerships;
- promote sufficient and qualified human resources for innovation;
- ensure more effective performance of the central government administration in research, development and innovation.

Both Policies are aimed at meeting the objectives of the *Lisbon strategy*. As the Innovation Policy was elaborated later, it is more up-to-date in this respect. Since both Policies are interconnected, they overlap in their focus and goals. Increased efforts towards coordination across different policy areas are observable in the Czech Republic, although these efforts are in their initial stage of implementation.

Regional Innovation Strategies co-funded by the EU have been developed for the following regions of the Czech Republic: Prague, Plzeň, North and North-West Bohemia, Southern Moravia.

The *objectives* set out in the *Regional Innovation Strategy for Plzeň* (as one of the NUTS 3 regions within NUTS 2 Jihozápad) are the following:

- Create conditions for the development of promising and emerging sectors (development of clusters and cooperation networks);

- Improve the infrastructure for innovative firms (development of physical infrastructure; development of services for investors in high-tech industries);

- Build new and strengthen existing R&D capacities in relation to the business sector (development of R&D capacities in the region; enhancement of R&D marketing);

- Develop human resources (lifelong learning in line with the needs of emerging industries, businesses and new trends; development of technical skills; development of creativity and entrepreneurship in students; promotion of technical studies and increasing their attractiveness; development of collaboration between educational institutions and businesses);

- Secure funding for innovation projects (greater use of existing sources of funding and new sources from the Structural Funds; incorporating innovation as an important criterion for programmes of public support; studying the feasibility of establishing a regional innovation fund);

- Enhance the region's technology-friendly image and create an innovative environment (system of promoting successful work in the field of innovation and R&D at regional level; promotion of the region, marketing activities; making research, technologies and innovation more attractive to the public).

Cross-sectional measures

- Communication platform – establishing a working structure to facilitate the implementation of the Innovation Strategy and to act as a partner for regional and municipal administrative bodies;
- Inter-regional collaboration – cross-border collaboration with neighbouring German regions, with partner regions of the BRIS project and of the Plzeňský Region and with other European regions in order to link up activities in the fields of enterprise development and R&D collaboration;
- Involvement in European networks – involvement of business, innovation and R&D support organisations in the Plzeňský region in European networks – transfer of successful methods, application of good practices and utilisation of the experience of partners in such networks.

Policy instruments

Individual programmes/schemes within the *OP Industry and Enterprise* provide extensive support especially to SMEs while making use of the EU Structural Funds. The most innovation-oriented schemes are those aimed at creating industrial development infrastructure, especially science and technology parks, business incubators and technology transfer centres; establishing and developing clusters; enhancing technology standards/equipment and improving processes in SMEs; increasing the technical and utility value of products and services, and increasing the effectiveness of production processes.

Individual programmes/policy instruments fulfilling the relevant policy objectives at national level are the following (the main problem identified in the National Innovation Policy is the lack of national instruments supporting RTDI at regional level and regional instruments supporting RTDI):

1. For improving innovation and R&D governance, several studies and analyses have been carried out by experts and financed by the Ministry of Industry and Trade within the Technical Assistance part of the OP Industry and Enterprise as well as by other relevant ministries implementing OPs, e.g. the Ministry of Labour and Social Affairs within the OP Human Resources Development or the Ministry of Regional Development within the Community Support Framework Technical Assistance. Their main goal is to improve the central government administration objectives and instruments by identifying key problems and formulating relevant solutions. Other analyses and strategies are developed by the relevant R&D institutes or directly at regional level by the relevant expert teams involved, e.g. the *Regional Innovation Strategy for Plzeň* (RIS).

2. Creation of an innovation- and entrepreneur-friendly environment is mainly supported by the activities of the *Business Environment Development Council*, one of the institutions of the Ministry of Industry and Trade. The BEDC's purpose is to progressively improve the conditions for business in the Czech Republic through the implementation of clearly formulated steps. In order to find generally acceptable solutions to previously existing and newly identified shortcomings in the business environment and achieve a recognisable improvement, all relevant entities, whether from the public or the private sphere, have been included in the overall process. Instruments helping the creation of an innovation- and entrepreneur-friendly environment are represented by the *START* and *KREDIT* programmes, which provide financing to new enterprises and enterprises that have recently entered the market.

3. Concerning the development of human capital, the most relevant instrument is the research programme on *Human Resources* which has been launched by the Ministry of Education under the *National Research Programme II* (2006-2011). The main goal is to motivate researchers to stay in the R&D field, to increase international mobility so as to widen experts' experience, and to support further vocational training in research. This is also a priority of the OP Human Resources Development – a measure supporting development of human capital in R&D financed by the EU Structural Funds and implemented in 13 NUTS 3 regions with the exception of Prague.

4. Networking, co-location and clustering measures are supported through the programme within the Operational Programme Industry and Enterprise called *KLASTRY* (CLUSTERS) – this programme supports the establishment and development of sectoral groupings at regional and cross-regional level. Three projects have been approved in the Jihozápad region.

5. Knowledge and technology transfer to enterprises is the main focus of support under the programme within the Operational Programme Industry and Enterprise called *PROSPERITA* - supporting the creation and operation of technology transfer centres, technology incubators, and science and technology parks in the next planning period 2007-2013.

6. Research collaboration between public research organisations and the private sector is supported mainly by two national programmes implemented by the Ministry of Industry and Trade: *TANDEM* (2003-2010) – focused on R&D cooperation between research institutes and business entities. As a condition for financing there has to be assurance that results of the projects will be further developed so that they are finally incorporated into new products, technologies and materials. The demand for support in this programme exceeds the means of the available state budget; and *IMPULS* (2003-2010)

– focused on R&D projects close to practical applications – tangible results capable of bringing financial benefits that come from their immediate commercialisation are to be achieved – these may take the form of a tested sample, working model, prototype, semi-operational, pilot or testing equipment. The programme is very popular with enterprises.

7. Support for public research is secured mainly by the *National Research Programme I* (2004-2009) and the *National Research Programme II* (2006-2011). The National Research Programme specifies concrete support targets for the focused financing of research priorities in the Czech Republic. The objective is to achieve the priorities of the National Research and Development Policy through four thematic and three cross-cutting programmes. Other support is provided by the Ministry of Education, Youth and Sports through a national programme called *Centres for Basic Research* - support for cooperation between top-level research establishments in the Czech Republic in order to increase their competitiveness in the European research area and to assist young researchers in their education. At European level, the Czech Republic participates in the 6th Framework Programme and will also take part in the R&D activities supported through the *7th Framework Programme*.
8. Financial incentives for R&D in the private sector are covered by the national programme implemented by the Ministry of Education, Youth and Sports – *National Research Programme II*. Ministries also launch their own research programmes within their areas of responsibility. The *INOVACE* (Innovation) programme (*OP Industry and Enterprise*) seems to be an effective tool for financing R&D in the private sector. Its support is targeted at the implementation of business development plans focused on commercialising R&D results (the support target was reduced compared to the original scope, which also covered support for implementing advanced management methods, executing significant changes in the organisation structure, changes in strategy or other non-technical innovation).

Public research funding for the private sector is provided in the form of targeted funding, i.e. bottom-up financing through grants provided mainly by the National Research Programme II and grants by the Czech Science Foundation. The private sector is also supported via the industrial research and development programmes (e.g. TANDEM, IMPULS). The private sector can also participate in the EU Framework Programmes and EU Structural Funds. These programmes are currently implemented at national level.

Exhibit 1: RTDI policy mix affecting the NUTS 2 region – Jihozápad

<table>
<tr><th>Policy areas</th><th>Policy objectives and instruments at national level affecting the region = RTDI programmes</th><th>Policy objectives and instruments at regional level = RTDI programmes</th></tr>
<tr><td rowspan="2">Improving innovation and R&D governance</td><td><u>Objectives</u>:
NIP: boost the performance of central government administration in RTDI
NRDP: create a fully functional system of evaluation of all aspects of R&D, develop more functional regional R&D institutions and regional authority experts dealing with the field of R&D</td><td><u>Objectives</u>:
RIS: improve the infrastructure for innovative firms</td></tr>
<tr><td colspan="2"><u>Instruments</u>:
Technical Assistance projects within OPs 2004 – 2006 – €131.5m</td></tr>
<tr><td rowspan="2">Creating an innovation- and entrepreneur-friendly environment</td><td><u>Objectives</u>:
BEDC: progressively improve the conditions for business in the Czech Republic</td><td><u>Objectives</u>:
RIS: enhance the region’s technology-friendly image and create an innovative environment</td></tr>
<tr><td colspan="2"><u>Instruments</u>:
Activities provided by the BEDC; START (€14.9m), KREDIT (€26.5m), OP INDUSTRY AND ENTERPRISE - OPIE</td></tr>
<tr><td>Developing human capital</td><td><u>Objectives</u>:
NIP: promote sufficient and qualified human resources for innovation
NRDP: increase the number and quality of R&D employees and support for young researchers to develop a more functional system of R&D in future</td><td><u>Objectives</u>:
RIS: develop human resources (lifelong learning in line with the needs of emerging industries, businesses and new trends)</td></tr>
</table>

	Instruments: HUMAN RESOURCES (NAT.RESEARCH PROGRAMME) – 2006 – 2011 (€306m)	
Networking, co-location and clustering measures	Objectives: NRDP: increase the number of Czech research teams in international R&D projects	Objectives: RIS: create conditions for the development of promising and emerging sectors (development of clusters and cooperation networks)
	Instruments: KLASTRY (OPIE) – €9m	
Knowledge and technology transfer to enterprises	Objectives: NIP: support the creation of spin-offs SRD: apply the results of science and research for the development of regions	Objectives: RIS: build new and strengthen existing R&D capacities in relation to the business sector
	Instruments: PROSPERITA (OPIE) – €55.6m	
Research collaboration between public research organisations and the private sector	Objectives: NIP: establish working public-private partnerships NRDP: apply research results in practice	Objectives: RIS: build new and strengthen existing R&D capacities in relation to the business sector
	Instruments: TANDEM – €135m IMPULS (Ministry of Industry and Enterprise) – €161.2m	
Supporting public research	Objectives: NIP: strengthen research and development as source of innovation NRDP: support public research capacities	-

	Instruments: CENTRES FOR BASIC RESEARCH (Min. of Education) – €91m NAT. RESEARCH PROGRAMME - €652.5m	
Financial incentives for R&D in the private sector	Objectives: NIP – support PPPs and financial and tax incentives for R&D in the private sector	Objectives: RIS: secure funding for innovation projects (greater use of existing sources of funding and new sources from the Structural Funds; incorporating innovation as an important criterion for programmes of public support; studying the feasibility of establishing a regional innovation fund)
	Instruments: NATIONAL RESEARCH PROGRAMME – €652.5m INOVACE (OP INDUSTRY AND ENTERPRISE - OPIE) – €48.1m	

BEDC: Business Environment Development Council

NIP: National Innovation Policy (2005-2010)

NRDP: National Research and Development Policy (2004-2008)

OPIE: Operational Programme Industry and Enterprise (2004-2006) – Min. of Industry and Trade

RIS: Regional Innovation Strategy for Plzeň

SRD: Support for Regional Development – Min. of Regional Development

2.3 Conclusions

The RTDI policy framework and stakeholders influencing the Jihozápad region still operate mainly at **national** level.

1. The governmental stakeholders are:
   - Office of the Government of the CR;
   - Research and Development Council – advisory body of the Government;
   - Ministry of Education, Youth and Sports – responsible for National R&D Policy issues;
   - Ministry of Industry and Trade and two of its agencies – CzechInvest and CzechTrade – responsible for National Innovation Policy issues.
2. The main public research stakeholder at national level is currently the Academy of Sciences of the CR with about 60 research institutes and 6 000 employees. Its branches and institutes are located mainly in Prague and Brno, but seven of them are situated in the Jihozápad region.
3. The Association of Innovative Enrepreneurship of the CR at national level and regional branches of the Economic Chamber of the CR in the Plzeňský and Jihočeský regions support the business environment in the 14 NUTS 3 regions.
4. Regional branches of the Centre for Regional Development at NUTS 2 level (one branch for Jihozápad) support the regional policy and implement the EU Structural Funds through regional operational programmes.

5. The main financial body supporting RTDI is the Czech Science Foundation at national level and branches of the Czech-Moravian Guarantee and Development Bank at regional level.

The main RTDI policy objectives are set out in the following documents at national level:

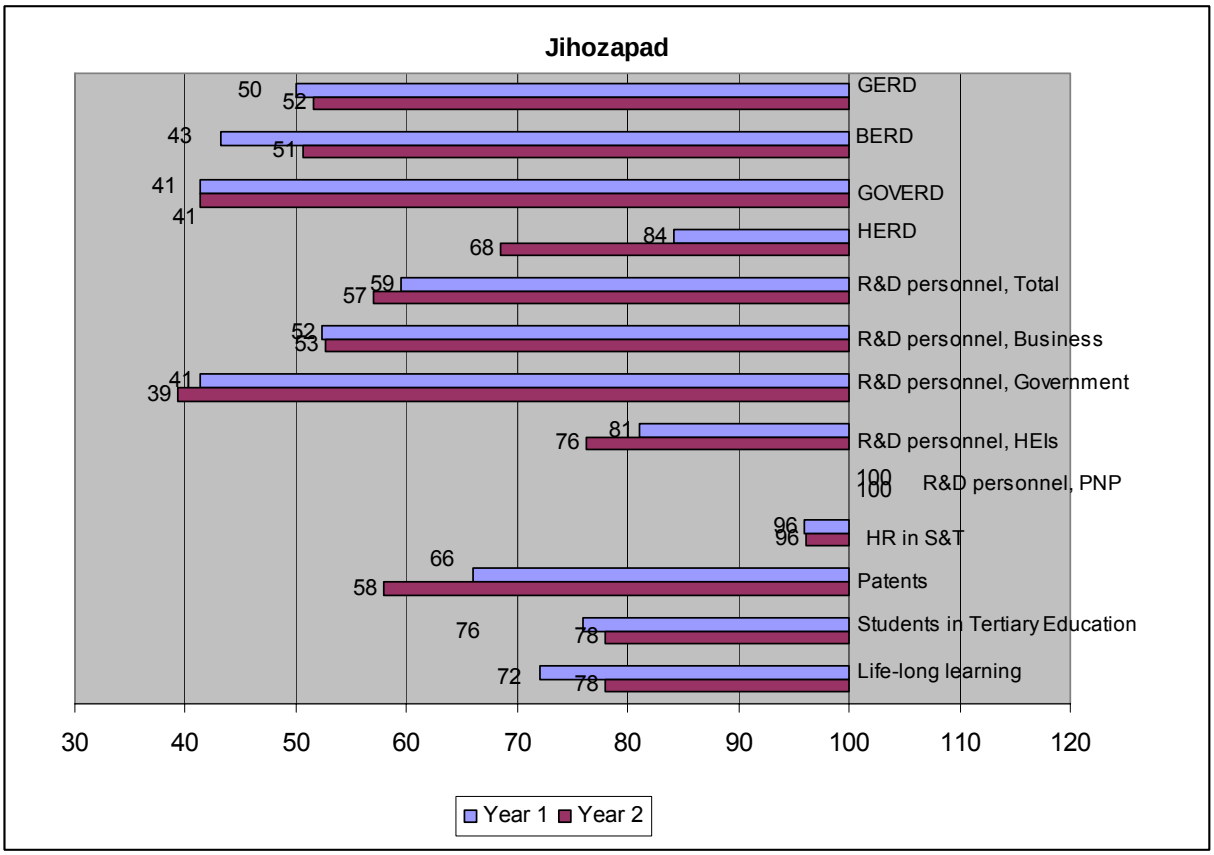
- *National Research and Development Policy* 2004 - 2008
- *National Innovation Policy* 2005 – 2010.

Regional RTDI policy objectives are currently established in the *Regional Innovation Strategy* for Plzeň, which is one of the two NUTS 3 regions of the Jihozápad region. There is still no RIS for the Jihočeský region.
The following objectives are mentioned in all the relevant documents and relevant instruments covering all the aspects contributing to a better RTDI system at national and regional level:

- The National Innovation Policy (NIP) includes the objective of boosting the effectiveness of the central government administration. There is a need to create a fully functional system of R&D evaluation. The Regional Innovation Strategy for Plzeň (RIS) identifies the improvement of infrastructure for innovative firms as an objective at regional level. These objectives are being fulfilled by public analysis financed mainly within the Technical Assistance part of various OPs – €131.5 million).
- The creation of an innovation- and entrepreneur-friendly environment is mainly supported by the activities of the *Business Environment Development Council* and also by the *START* (€14.8 million) and *KREDIT* (€26.5 million) programmes 2004 - 2006 providing financing for start-up enterprises and enterprises that recently entered the market. This instrument responds to the RIS's objective of enhancing the region's technology-friendly image and creating an innovative environment.
- The development of human capital is being addressed mainly by the research programme on *Human Resources* that has been launched by the Ministry of Education under the *National Research Programme II* (2006-2011). The overall budget for this programme is €306 million. This responds to the NIP's objective of promoting sufficient and qualified human resources for innovation.
- Networking, co-location and clustering measures are supported through the programme called *KLASTRY* (CLUSTERS) within the Operational Programme Industry and Enterprise – the overall budget is €9 million. Three projects have been approved in the Jihozápad region. This fulfils the RIS's objective of creating conditions for the development of promising and emerging sectors.
- Knowledge and technology transfer to enterprises is the main support aim of the *PROSPERITA* programme – €55.6 million. It also responds to the NIP's objective of supporting the creation of spin-offs and the RIS's objective of building new and strengthening existing R&D capacities in relation to the business sector.
- R&D collaboration between public research organisations and the private sector is supported mainly by two national programmes implemented by the Ministry of Industry and Trade: *TANDEM* (2003-2010) – €135 million and *IMPULS* (2003-2010) – €161.2 million. This is identified as one of the objectives in the National R&D Policy.
- Supporting public research is one of the NIP objectives: strengthening R&D as a source of innovation. This is being addressed mainly by the *National Research Programme I* (2004-2009: €652.5 million) and the *National Research Programme II* (2006-2011: €306 million). Other support is provided by a national programme called *Centres for Basic Research* (€91 million).

- Financial incentives for R&D in the private sector are covered by the *National Research Programme II*. The *INOVACE* (Innovation) programme (*OP Industry and Enterprise*) seems to be an effective tool for financing R&D in the private sector – €48.1 million. These programmes respond to the RIS's objective of securing funding for innovation projects (greater use of existing sources of funding and new sources from the Structural Funds; incorporating innovation as an important criterion for programmes of public support; studying the feasibility of establishing a regional innovation fund).

Figure 1: Performance of the Jihozápad region in relation to the national average



Year 1 = 2001; Year 2 = 2004

Source: Eurostat

Key: GERD, BERD, GOVERD, HERD = R&D expenditure as a percentage of GDP, R&D personnel = percentage of total employment, HR in S&T = human resources in S&T as a percentage of labour force, Patents = Patent applications at EPO per million inhabitants, Students in Tertiary Education = Students in tertiary education (ISCED 5+6) per thousand inhabitants, Life-long learning = Participation of adults aged 25-64 in education and training as a percentage of population

(Czech Republic = 100)

As shown by the above graph, when compared with the national average, the Jihozápad region is not in a very good position with regard to most of the chosen indicators. Even if the share of total R&D expenditure in regional GDP increased from 2001 to 2004 as well as the share of R&D expenditure in the business sector, the region still only reaches around 50% of the national level. The share of public sector expenditure in GDP stayed the same during 2001-2004 and the share of higher education sector expenditure decreased from 84 to 68% compared with the national average.

Concerning the share of total R&D personnel in total employment, the region reaches 57% of the national level in 2004, which is even less than in 2001 (59%). The business sector is half of the national average and the public sector is even lower (39% in 2004). The higher education sector is 76% of the national level, while only the private non-profit sector reaches the national level. A similar situation applies to the share of human resources in the science and technology

fields of the labour force. The share of patent applications at EPO per million inhabitants fell to 58% of the national level, while the share of tertiary students and lifelong learning participants in the total population increased to 78% of the national level.

3. Regional economic structure

3.1. Description of the economic structure

3.1.1 Characteristics of the productive structure of the region's economy

In general, Jihozápad belongs to the rural rather than to the industrial regions of the Czech Republic, although several large economic centres with a long industrial tradition are located there – primarily Plzeň, the fourth biggest city in the country. The most important industrial branches in the region are: heavy engineering, light engineering, metallurgy and the food industry. In the southern part of the region, agriculture, fishpond cultivation and the wood industry occupy a stronger role.

Regional product, value added and capital formation

With a regional GDP of 16 841 million *Purchasing Power Parities* (in 2004), the Jihozápad region ranks fifth among the eight NUTS 2 regions of the Czech Republic (see Table_24). The Region's share of the country's GDP decreased from 10.9% in 1995 to 10.4% in 2004, while its share of the country's population remained stable at 11.5% during that period. With regard to regional GDP in PPS per inhabitant (€13 467 in 2004), Jihozápad reaches 63.0% of the EU-25 average (compared with 65.4% in 1995) and 91.5% of the national average (compared with 95.1% in 1995). The region ranks third among the Czech NUTS 2 regions (after the capital city of Prague and the region of Central Bohemia, surrounding Prague). The decrease in relative figures was caused by the faster economic growth in Prague and other advanced European regions.

The most important *NACE sectors* of the regional economy, with regard to gross value added (see Table_27), are the following: Manufacturing (which grew from 23.7% of the regional economy in 1995 to 29.0% in 2004), Transport (11.2% in 2004), Wholesale, retail trade and repairs (10.8%), Real estate, renting and business activities (9.7%), Construction (7.6%) and Public administration (6.9%). The relatively high share of Agriculture declined from 8.5% in 1995 to 5.3% in 2004. While Jihozápad's share of the country's total gross value added is 10.5% (i.e. €7 764 million), sectors with the highest share of the national figures are: Agriculture (16.9%) and especially Fishing (23.0%), which has a long tradition in the region.

Gross fixed capital formation (GFCF) reached the highest levels in Manufacturing (21.5%), Real estate, renting and business activities (18.9%), Electricity, gas and water supply (15.9%) and Transport (15.1%). In 2003, the region accounted for 11.5% (i.e. €2 481 million) of the country's GFCF, while the highest share of the country's GFCF was registered in the sector of Fishing (57.4%), Electricity, gas and water supply (26.6% - mainly due to the newly built nuclear power plant in Temelín and several big water power plants in the region) and Agriculture (16.9%) – see Table_28.

Employment, productivity and knowledge intensity

The ratio of total *regional employment* to total national employment increased from 11.5% in 2000 to 12.0% in 2005. Besides manufacturing (181 100 employees; 31.7% of total employed in 2005), the largest number of people is employed in Construction (54 900; 9.6%), Public administration (40 500; 7.1%), Retail trade & Repairs (39 600; 6.9%), Health & Social work (37 100; 6.5%), Education (33 100; 5.8%), Land transport (24 900; 4.4%), Hotels & Restaurants (22 600; 4.0%) and Agriculture (24 400; 4.3%). Within manufacturing (31.7% of total employed in 2005), the largest branches are Metal products (23 500 employees; 13.0% of total manufacturing employment), Machinery (21 200; 11.7%), Food products and beverages

(20 200; 11.2%), Motor vehicles (16 600; 9.2%), Electrical machinery (14 200; 7.9%) and Wood products (13 700; 7.6%).
The ratio of *Total Value Added/Total Employment* (see Table_30) shows that the economy of Jihozápad only reached 89% of the national level in 2003. Compared with the national level, the most productive sectors in the region are Agriculture (112% of the national level in 2003) and Fishing (108% of the national level in 2003, but 265% in 2000). Financial intermediation is the least productive sector compared with the national level (59%); The productivity of Manufacturing reaches 93% of the national level.
Besides Research & Development and Computer & related activities, the most *knowledge-intensive sectors* (i.e. sectors with the highest BERD/Value Added ratio) are represented by the following manufacturing branches: Other transport equipment, Motor vehicles, Radio, TV & communication equipment, Machinery and Textiles. A significant growth in knowledge intensity occurred particularly in the sector of Computer & related activities.

Structure of companies
In 2004, there were 267 861 companies registered in the region of Jihozápad, of which 36 007 (13.4%) were operating in the *manufacturing sector* (compared with 13.0% at national level). Within manufacturing, the greatest number of companies were involved in: Basic metals and fabricated metal products (8 562; 23.8%), Wood and wood products (8 534; 23.7%), Electrical and optical equipment (4 603; 12.8%), Textiles and textile products (4 338; 12.0%) and Food products, beverages & tobacco (1 828; 5.1%). These branches are also the most represented at national level. Compared with the same data at national level, two of the abovementioned manufacturing branches are more significant in the Jihozápad region than in the Czech Republic as a whole: Manufacture of wood and wood products (18.1% of manufacturing companies at national level) and Manufacture of food products, beverages & tobacco (4.7% of those at national level). The region also has a significantly higher share of companies involved in Agriculture & forestry (21 465; 8.0% of all companies in the region compared with 5.7% of all companies at national level).
In most sectors, the proportion of small companies with 0-9 employees exceeded 90% of all companies in the sector (in 2004). In the region there are only a few manufacturing branches with more than ten large companies (250 or more employees): Electrical and optical equipment (27 large companies), Machinery & equipment (16), Transport equipment (15), Basic metals and fabricated metal products (14), Food products, beverages & tobacco (14) and Rubber and plastic products (12). Compared with the national level, the size distribution of companies is very similar – a higher share of medium and large companies is a feature of the same sectors.

High-technology and medium/high-technology sectors and innovativeness of companies
The region has a smaller share of companies in *high-technology and medium/high-technology* sectors (6 456; 17.9% of manufacturing companies) than the Czech Republic as a whole (21.1%) – see Table_31. The most represented high-tech & medium/high-tech sector in the region is Manufacture of electrical machinery & apparatus. However, the number of companies in the sector of total manufacturing decreased from 10.1% in 2000 to 8.4% in 2005. In contrast to its smaller share of high-tech and medium/high-tech companies, the region has above-average employment in the sector. The share of employment in high-tech and medium/high-tech is 37.4% (i.e. 67 384 employees) of total manufacturing employment (compared with 34.7% in the Czech Republic) – see Table_32. The only higher employment in the sector is in the Central Bohemia region (42.4%) and Prague (41.4%). Data on value added are not available in the detailed breakdown into high-tech and medium/high-tech.
According to data from the *Community Innovation Survey* (CIS), from 2003 (see Table_33), 23.9% of 2 415 surveyed companies in the region were innovating companies. The share of innovating companies is lower than the national average (25.9%), and the region ranks sixth among Czech NUTS 2 regions. The percentage of innovating companies in industry (Jihozápad 23.4%; ranking: seventh; national average 28.1%) is lower than in services (Jihozápad 24.9%; ranking: second; national average 22.8%).

3.1.2 Systemic characteristics of the region

Initiatives that can be considered as functioning clusters are quite rare in the Czech Republic and also in the region of Jihozápad. *Cluster initiatives* in the region have arisen in the following *sectors*:[2]

- Manufacture of tracked vehicles is a medium/high-technology sector with a long tradition and strong innovation in the region. A cluster initiative of six mainly large companies is still embryonic. The cluster has a centre in the city of Plzeň, where relevant supportive infrastructure is developing – e.g. Department of Tracked Vehicles at the University of West Bohemia. The sector has high potential for regional exports, since the need for public city transport will increase with the global shortage of oil resources.
- Mechatronics is another traditional sector with its centre in Plzeň. The high concentration of automation & software technology companies along with the strong university infrastructure in the fields of mechanical engineering, electrical engineering and applied sciences create good conditions for cluster initiatives. The high-technology mechatronics cluster is predominantly an initiative of dynamic companies settled in the Borska pole industrial zone in Plzeň. The cluster has high potential for the region, because of the sector's high value added and the presence of a qualified workforce and specialised departments of the University of West Bohemia.
- Technologies for renewable energy sources represent a traditional sector in the region, with new and innovative elements – e.g. new technologies. A cluster of 15 smaller companies is still embryonic. The cluster has support especially through the innovation capacities of the Technology and Innovation Centre in Třeboň and the University of South Bohemia in České Budějovice and cooperates with a similarly oriented cluster in Austria – the Oekoenergie cluster. The importance of the cluster for the regional economy (and exports) is not high, since products manufactured by the sector are very specialised.
- A water and environmental technology cluster was legally founded in February 2006. Eight companies within the cluster, mainly specialised in waste water treatment, cooperate with research and educational institutions from the Czech Republic and abroad (Slovakia, Germany, and UK). The cluster functions through cooperation between all sorts of firms - suppliers of chemicals, producers of components, system designing, assembly and servicing companies, waste processing, combustion facilities production, etc. Its importance for the regional economy is lower.

Type of links between firms and universities

The most relevant link is the cooperation between the private and higher education sectors in the region - an example of which is the University of West Bohemia, specialised – among other things – in science & technical disciplines. The most interested firms are big, well-established companies such as Škoda Auto, Panasonic or companies that settled in Plzeň partly because of the presence of the university. Testing of materials, measurements, calculations and analysis are the most frequent types of services provided by the university. The low technical standard of a large number of companies in the region (including foreign companies, serving as assembly units of multinationals) is a common barrier to cooperation with the private sector.

In 2004, the University of West Bohemia earned about €1 million through "complementary activities in R&D", i.e. mainly from cooperation with the private sector. The rest of its R&D resources (about €5 million) originated from institutional and specific funding granted to the university. In terms of financial profit for the higher education sector, the most productive cooperation with the private sector in recent years has been in the field of machinery and electroenergetics. The main partners are big machinery and energy companies, operating at

[2] Statistical Identification of Clusters.

national level (Škoda Auto, Škoda Energo, CEZ, etc.), big foreign companies (from Slovakia and Germany), and about ten SMEs also located in the region.[3]
The University of South Bohemia and its biological, agricultural and socioeconomic faculties cooperates mainly with other universities and research institutes in the Czech Republic and abroad. Links with the private sector are less frequent.[4]

Type of links between firms and private research
There are several types of research agencies cooperating with the private sector in the region. Škoda Vyzkum (Škoda Research) constitutes a strong research and industrial tool with a long history, active in accredited testing, research and development in the field of materials and machinery, and providing services not only to companies within the Škoda group but also to a wide range of firms inside and outside the region. Škoda Vyzkum operates also as a regional contact organisation for the 6th Framework Programme, which includes providing assistance in the preparation of projects. Another example of research activity is the existence of technology centres established through the participation of foreign companies (Panasonic, Mercedes-Benz). Major customers of these centres are their parent companies abroad, but they cooperate with other clients in the region as well. There are also many smaller Czech companies whose main activity is R&D, cooperating with other firms from their sector and often with other Czech and foreign R&D agencies.[5]

Type of links between firms and intermediaries
Cooperation between firms and intermediaries mainly takes the form of services provided by intermediaries (business incubators, technology parks, etc.): incubation services for newly established SMEs, provision of information about Structural Funds and domestic grant programmes, helping companies to obtain grants, provision of advisory services, helping companies with their business plan and project management, facilitating contacts with the research sphere, etc.[6]
BIC Plzeň Science and Technology Park hosts 18 innovation companies and is the largest intermediary organisation in the region. The largest proportion of hosted companies is involved in software development.

3.1.3 The regional economy in the international context

The total amount of *foreign direct investments* (FDI) in the region to 31 December 1999 was €1 384 million (7.9% of total FDI in the Czech Republic). The figure more than doubled to €2 913 million (6.9% of total FDI in the CR) during the subsequent five years (to 31 December 2004). However, the total amount of FDI in the region is still the third lowest of the Czech NUTS 2 regions – see Table_35.
Foreign-controlled companies (i.e. more than 50% ownership) represent 4.8% of all companies in the region (see Table_34). The percentage is very close to the national average (5.1%), which is, however, only 3.8%, considering the Czech Republic without Prague.
The region belongs to the more *export-oriented* regions of the Czech Republic. Significantly, the share of national exports in 2004 (€8 150 million; 13.5%) exceeds the share of national GDP (16 841 million of PPS; 10.4%) in the same year. The ratio of exports to GDP is the third highest in the country – see Table_36. The strongest exporting sector according to the SITC classification is the sector of Machinery and transport equipment, with 55.5% of regional exports – especially the sub-sectors of Electrical machinery & apparatus (SITC 77), Telecommunications & sound-recording/reproducing (SITC 76), Road vehicles (SITC 78) and

[3] Analysis of Applied R&D Potential in the Plzeňský region and the Czech Republic; Technological Profile of the Jihočeský region.
[4] University of South Bohemia: Annual Report 2005.
[5] Analysis of Applied R&D Potential in the Plzeňský region and the Czech Republic; Technological Profile of the Jihočeský region.
[6] Ditto.

General industrial machinery & equipment (SITC 74). Other important export sub-sectors are mainly Manufactures of metals (SITC 69) and Furniture & parts thereof (SITC 82).[7]

3.1.4 The local financial market

The *banking system* of the Czech Republic is very much centralised – there are no bank headquarters in the region of Jihozápad, only subsidiaries of banks operating at national or international level. The most important development bank in the region is the *Czech and Moravian Guarantee and Development Bank* (its subsidiary in Plzeň), providing for example soft loans for start-up businesses (see below) and other financial products.
Compared with other EU Member States, the Czech venture capital (VC) market is very small and even shrank in 2004. The majority of VC funds are members of the *Czech Venture Capital Association*. During the last decade, there were only two VC investments in the region. Concerning business angels' activities, the Czech Republic is also lagging behind. The issue is not relevant for the region, since business angels have not engaged in any investment activities during the present period.[8]
Financing for the early stages in the life of local firms is available from two programmes of the Czech and Moravian Guarantee and Development Bank, which are components of the Operational Programme Industry and Enterprise. The aim of the *START* programme is to help launch business plans of individuals and firms entering business for the first time or after a long period through the provision of soft loans. During the period from 1 July 2004 to 30 June 2006, 71 loans totalling €1.2 million (10.5% of loans provided in the Czech Republic) were provided to start-up businesses in the region of Jihozápad – see Table_37. The *KREDIT* programme, operated by the same bank, supports the launch of business plans of small firms that have recently entered the market through the provision of soft loans. From 1 July 2004 to 30 June 2006, 140 soft loans totalling €9.4 million (18.4% of loans provided in the Czech Republic) were provided to newly created businesses in the region of Jihozápad. The share of loans provided in the Jihozápad region within the *KREDIT* programme is the highest of the Czech NUTS 2 regions – see Table_37. The *DEVELOPMENT* programme, another component of the Operational Programme Industry and Enterprise, is implemented by the Ministry of Industry and Trade and helps SMEs to boost their competitiveness as they grow, i.e. enhances their technology level and processes. The present number of approved subsidies in the Jihozápad region is 26 (out of 213 approved in the Czech Republic).

3.2. Policy context

3.2.1 Governance structure and stakeholders

Development of the regional administration in the Czech Republic
During the 1990s, the Czech Republic was divided into 77 districts. This meant that no regional administrative level existed between districts and central government. Measures by the central government were considered the best solution for transforming the country into a market economy. Regional policy was clearly oriented towards supporting small and medium-sized enterprises and improving the infrastructure and can thus be regarded as regional industrial policy. The role of the central government remained essential even though it did not include proper coordination of the relevant ministries on regional issues. In 1996, the newly formed Ministry for Regional Development was awarded a coordinating role in pursuing the regional policy of the central government. A major change came about in 2000, when 14 regions were constituted as units of public administration on the basis of Constitutional Act No 347/1997 on the creation of higher territorial self-governing units. A number of organisations were devolved

[7] Statistical Identification of Clusters.
[8] Analysis of Early-Stage Financing Possibilities in the Czech Republic with Emphasis on Venture Capital Financing.

from the central government ministerial level to regions. The territorial division into regions corresponds to the NUTS 3 level of statistical territorial units. The NUTS 2 regions have been created to meet the needs for coordinating and implementing the strategy for economic and social cohesion. There are no self-governing units at the level of NUTS 2 regions such as Jihozápad. Jihozápad is made up of two self-governing regions – the Plzeňský region (Plzeňský kraj) and the Jihočeský region (Jihočeský kraj).

Regional governance competences

In the Czech Republic, the policy-making process and policy competences are quite highly centralised. Sectoral policies (taxation, industry, trade, labour, etc.) affecting overall economic growth are the responsibility of the relevant central government ministries. The competences of 14 self-governing regions (NUTS 3) lie mainly in the areas of primary and secondary education, labour affairs, the social sphere and public health, road transport, the environment, tourism, culture and regional development. The principal administrative authorities of the self-governing regions are the *Boards of Representatives*, which submit proposals for laws to the Parliament, approve development programmes and ensure that they are implemented, approve the regional budget, decide on subsidies from the regional budget, etc.[9]

In 2005, revenues of the Jihočeský region reached about €30 billion, while revenues of the Plzeňský region stood at around €25 billion. About 40% of both budget revenues came from tax revenues, about 60% from subsidies. The highest proportion of subsidies (over 80%) is granted by the Ministry of Education, Youth and Sports, whilst significant shares of subsidies are granted by the Ministry of Public Health and the Ministry of Finance.[10]

Main stakeholders

Regional policy in the Czech Republic is implemented at national level (NUTS 1), at the level of cohesion regions (NUTS 2), self-governing regions (NUTS 3), districts (NUTS 4), and districts of commissioned municipalities and municipalities (NUTS 5).

At central government level, programmes are in place to support business and competitiveness, trade and industrial cooperation, industrial investments, investment incentives and structural investments. Along with the *Ministry for Regional Development*, an umbrella institution, the main regional policy institutions are represented by the *Ministry of Industry and Trade*, the *Ministry of Agriculture*, CzechInvest (Investment and Business Development Agency), etc. The role of the central government consists in the conceptual and executive activities of state legislative and executive bodies, including the provision of resources from the state budget and adequate legal measures. At central government level, the concept of regional policy is defined, regional disparities and problem regions are identified and analysed and the extent and orientation of state support to problem regions is specified.

Regional policy at the level of the eight NUTS 2 regions (which do not have the competences of self-governing regions) consists in implementing the *Joint Regional Operational Programme* (2004-2006) and the *Regional Operational Programme for Jihozápad* in the next programming period (2007-2013). The present programme is implemented by the *Regional Cohesion Council of the Jihozápad Region*, constituted by members of Boards of Representatives of the Jihočeský region and the Plzeňský region.

The role of administrative (NUTS 3) regions consists in conceptual and executive activities of self-governing *Regional Authorities*, which coordinate the development of its territories, cooperate with the central authorities of the state administration and coordinate the interests of municipalities in the field of regional development. Regional Authorities frame internal development policies, prepare and implement development programmes, identify regional development priorities, decide on financing regional development programmes from their own budget, influence regional development in order to reduce disparities within the region, cooperate with other regions and central administration bodies on regional development, ensure partnership among public sector, private sector and non-governmental organisations, etc. In the Jihozápad region, regional policy is implemented by the Regional Authorities of the Jihočeský and Plzeňský regions, mainly through the *Regional Development Programmes*. The objectives

[9] Strategy for the Regional Development of the Czech Republic 2000-2006, 2007-2013.

[10] Account Statement of the Jihočeský region 2005, Account Statement of the Plzeňský region 2005.

and priorities of both programmes were established separately, according to the development needs of both NUTS 3 regions, and approved, implemented and monitored by two separate Boards of Representatives. The Regional Development Programmes are based on the Regions Act No 129/2000, assigning regions the task of ensuring extensive territorial development, and the Regional Development Support Act No 248/2000, establishing the appropriate structure and content of the programme and responsibilities at national and regional level.[11]

3.2.2 Policy objectives and instruments

The RTDI and non-RTDI policies relevant for the region of Jihozápad have two principal "meeting points":

- Support for innovative, technology-oriented entrepreneurship, which uses the outputs of research and boosts the competitiveness of the regional economy. This priority area includes direct financial support and indirect support for business and innovation infrastructure as well.
- Support for the education system in order to enhance the qualifications of the local population and ensure sufficient human resources for research, development and innovation.

Policy instruments implementing the relevant non-RTDI policies consist of European programmes (Operational Programmes), national programmes and measures, as well as specific financing and grants from the regional budgets of the Jihočeský and Plzeňský regions.

Policies and instruments supporting industry, entrepreneurship and RTDI

Competition policy

The *Economic Growth Strategy of the Czech Republic* (2005-2013), a conceptual "umbrella" document identifying the Czech Republic's development priorities, stresses – among other things – the need to support commercial sources of financing, such as private equity and venture capital, since there is as yet no programme focused on financing the early-stage development of innovative and start-up companies by means of venture capital in the CR. Support for venture capital is also planned in the new *Operational Programme Enterprise and Innovation* for the next programming period (2007-2013).

Industrial policy

The *Concept of Industrial Policy* 2001-2006 defines four principal priorities for Czech industry:

- Support for industrial enterprises and industrial service enterprises
- Restructuring of the industrial production base
- Raising competitiveness of industrial production
- Human resources development in industry.

The non-RTDI programmes and instruments implementing the aims of competition and industrial policy are the following:

National programmes supporting SMEs, operated by the *Ministry of Industry and Trade* and the *CzechInvest* agency (preferential guarantees, preferential loans, support for industrial zones, support for business premises and infrastructure). The programmes are complementary to other programmes and instruments under the responsibility of the Ministry that are aimed at supporting RTDI – namely to the Operational Programme Industry and Enterprise.

During the period 1998-2005, nine industrial zones were supported in Jihozápad under the relevant programme (out of 92 industrial zones in the Czech Republic). The support amounted to €40 million.

[11] Strategy for the Regional Development of the Czech Republic 2000-2006, 2007-2013.

Programme supporting creation and development of technology centres and centres for strategic services, operated by the *Ministry of Industry and Trade*. The programme supports projects working with advanced technologies, activities with high value added and high export potential, helping to boost the Czech Republic's international competitiveness and create new jobs for highly qualified workers.
During the years 2001-2006, investment support was provided to 8 companies in the region (out of 85 companies supported in the Czech Republic). Investment support in the Jihozápad region totalled €28 million and created 560 new jobs. All the supported companies are involved in the electronics or automotive industry.

Investment incentives
To improve competitiveness, the Czech government introduced a system of investment incentives for foreign and domestic investors in 1998 under the responsibility of the Ministry of Industry and Trade. Investment incentives for manufacturing industry include total income tax relief for 10 years in the case of the construction of a new plant or partial income tax relief in the case of the extension or modernisation of existing production capacities. Tax relief is intended for investments higher than CZK 200 million/€7 million (CZK 100 million in economically disadvantaged regions). From 1998 to 2006, investment incentives were provided to 31 (mainly foreign) companies in the region (out of 322 investment incentives in the Czech Republic during the same period). Investment incentives in the Jihozápad region amounted to €817 million and created 6 900 new jobs. The biggest investments (over €50 million) were carried out in the sectors of electrical engineering (Daikin Industries), electronics (Panasonic AVC) and the automobile industry (Metal Progres).

Tax incentives
The Czech government has introduced indirect support for R&D through a new tax rule which has been in force since 1 January 2005. This amendment to the Revenue Act enables business entities to deduct expenditure on R&D from their tax base. R&D-related costs may be applied twice in the accounting – first as expenses proper and then separately as an amount to be deducted from the tax base before taxation.[12]

Policies and instruments supporting human resources development

Employment policy
The *National Employment Action Plan* 2004-2006 identifies the *Development of human capital and lifelong learning* as one of its priorities. Under this priority, the Action plan specifies objectives that should be achieved by 2010 in compliance with the *European Employment Policy* (85% share of higher secondary educated among population older than 22 years; 12.5% share of lifelong learning participants among population in productive age, i.e. 25-64 years).

Education policy
The *National Programme for the Development of Education* (2001-2005) focused on several strategic guidelines, including:

- Implementation of lifelong learning for all
- Adaptation of educational and study programmes to the needs of life in a knowledge-based society (new educational programmes meeting the demands of the information society; linking study programmes with research and development, etc.).

The non-RTDI objectives of the employment and education policy are implemented through the Operational Programme Human Resources Development, operated by the *Ministry of Labour and Social Affairs*.
Within the priority "*Development of lifelong learning*", three measures are implemented:

- Improving quality of education and developing support systems in education
- Supporting tertiary education, research and development
- Developing vocational training.

[12] Annual Innovation Policy Trends and Appraisal Report.

So far, 14 projects have been approved under this priority in the region of Jihozápad, representing a total of €1.55 million.
Within the priority "*Adaptability and entrepreneurship*", two measures are implemented:

- Increasing employers' and employees' adaptability to changes in economic and technological conditions; supporting competitiveness
- Specific education.

Up to now, 13 projects have been approved under this priority in the region of Jihozápad, totalling €0.75 million.

The Operational Programme, dealing with a wide range of issues related to human resources development, is complementary to the National Research Programme II, which deals (among other things) with a more specific issue – support for human resources in R&D.

Regional policies and instruments

The Strategy for Regional Development (2000-2006) is a conceptual document with broadly defined strategic objectives and strategic directions. Implementation of individual activities is shared among the main regional development stakeholders (regional authorities, Ministry for Regional Development, other ministries, regional development agencies, economic chambers, etc.). Concrete and binding objectives and measures in line with the Strategy for Regional Development are laid down in sectoral and regional policies (i.e. Regional Development Programmes – see below).

Regional Development Programmes

The *Regional Development Programme of the Jihočeský region* defines seven priority areas:

- Infrastructure (transport, water management, power engineering, communication, information technologies)
- Tourism, culture and external relationships
- Supporting and developing entrepreneurship
- Agriculture, forestry and fishing
- The social sphere and public health
- Environment and utilisation of natural resources
- Education, the school system and science.

Within the priority area "*Supporting and developing entrepreneurship*", three measures are proposed:

- Creating favourable conditions for the development of entrepreneurship, job opportunities and incoming domestic and foreign investment
- Regional aspects of support for small and medium-sized enterprises
- Support for advanced technologies, innovation activities and the use of quality systems.

The priority area "*Education, the school system and science"*, also includes measures for:

- Developing lifelong learning
- Developing education in line with labour market needs and EU trends
- Developing and integrating research.

The *Regional Development Programme of the Plzeňský region* defines five priority areas:

- Economy
- Human resources
- Territorial development
- Countryside
- Environment.

Within the priority area "*Economy*", six measures are proposed:

- Preparing and implementing a competitive economic regional strategy
- Capital resources for company growth
- Creating conditions for localisation of industrial investment
- Supporting small, medium and innovative enterprises

- Supporting the creation and introduction of new products by the tourism sector
- Creating and maintaining new jobs.

One of the measures, proposed under the "*Human resources*" priority area is also connected with the sphere of RTDI:

- Introducing a lifelong learning system.

The budget for the *Regional Development Programmes* is approved by the *Boards of Representatives in Jihozápad* (Board of Representatives of the Jihočeský region, Board of Representatives of the Plzeňský region) every year. Resources are allocated via specific financing or via grants. The biggest proportion of regional budget expenditure is directed to primary and secondary education (over 50%), transport (about 20%) and the social sphere & public health (over 10%). The amount intended for regional policy represents only a small part of regional budget expenditure (3-5%).[13]

The priorities and measures of the Regional Development Programmes are also implemented through regional grant schemes under the Joint Regional Operational Programme 2004-2006. The grant schemes support entrepreneurship in selected parts of regions, the development of regional infrastructure, the development of human resources in regions and the development of tourism. During 2004-2006, the regional grant schemes for supporting entrepreneurship in Jihozápad allocated a total of €8.4 million, while the minimum share provided by the regional budget was about 55%.

[13] Account Statement of the Jihočeský region 2005, Account Statement of the Plzeňský region 2005.

Exhibit 2: Effects of policies complementary to RTDI instruments on R&D and innovation capacity in the region

Policy areas	Policies complementary to RTDI instruments affecting policy area	Effects on R&D and innovation capacity in the region
Improving innovation and R&D governance	- Strategy for Regional Development - Regional Development Programme of the Jihočeský region	- extending regional governance capacities - improving the monitoring of regional development - developing and integrating regional research, consolidating links between research and private sector
Creating an innovation- and entrepreneur-friendly environment	- National programmes supporting SMEs - Support for technology centres - Investment incentives - Joint Regional Operational Programme	- enhancing the innovativeness and technology level of local companies, raising the competitiveness of the regional economy
Developing human capital	- Operational Programme Human Resources Development - National Programme for the Development of Education - National Employment Action Plan	- improving the qualifications of the regional workforce, raising the number of specialised experts needed in R&D
Networking, co-location and clustering measures	- Support for technology centres	- strengthening links between research and private sector - enhancing the innovativeness and technology level of local companies
Knowledge and technology transfer to enterprises		
Research collaboration between public research organisations and the private sector		
Supporting public research		
Financial incentives for R&D in the private sector	- Tax incentives	- increasing investment in R&D, stimulating the establishment of new in-house R&D facilities

3.3. Conclusions

The relative decline in GDP per capita, comparing the Jihozápad region with the national average, was caused mainly by the rapid growth of the capital city, Prague (in contrast with the slower growth of other Czech regions) between 1995 and-2003. Although the region is below the national average, it has the third highest GDP per capita among Czech NUTS 2 regions. Moreover, the region enjoys a better position compared with the national average as regards the lower proportion of unemployment within the total labour force.

The economic sectors' shares of total value added and total employment in the region indicate:

- the strong position of agriculture and fishing in the region in terms of value added;
- the very low importance of mining and quarrying for the economy of the region;
- above-average value added creation in the sectors of Manufacturing, Electricity & Gas Production and Construction;
- above-average employment in Manufacturing, especially in High-tech industries;
- below-average value added creation in the Services sector and below-average employment in the Services sector, especially in High-tech services.

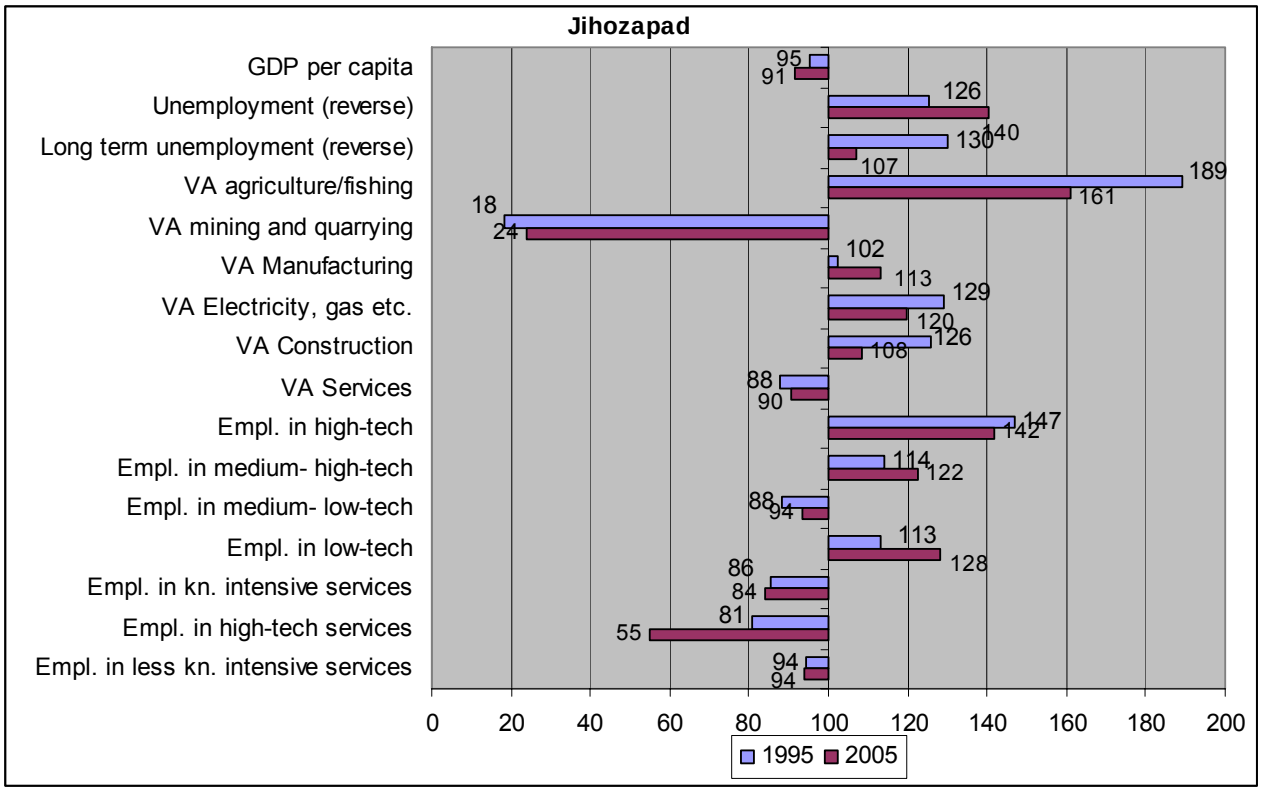
The following table summarises the indicators describing the regional economic structure of Jihozápad. The graph below shows the region's shares of the main national indicators.

Jihozápad region: Selected indicators of regional economic structure

Territory (square kilometres)	17 617
Population (1 January 2005)	1 175 330
GDP in millions of PPS (2004)	16 841
GDP in PPS per inhabitant (2004)	13 467
GDP in PPS per inhabitant (2004) as % of the national average	91.5
GDP in PPS per inhabitant (2004) as % of the EU-25 average	63.0
Gross value added in € million (2003)	7 764
Gross fixed capital formation in € million (2003)	2 481
Total employment (2005)	570 500
Value added/Employment as % of the national average (2003)	89.0
Companies registered (2004)	267 861
High-tech and medium/high-tech companies (2004)	6 456
Share of high-tech and medium/high-tech companies in manufacturing companies in % (2004)	17.9
Share of high-tech and medium/high-tech in total manufacturing employment in % (2005)	37.4
Foreign direct investments in € million (31 December 2004)	2 913
Exports in € million (2004)	8 150

(Source: Eurostat, Czech Statistical Office, Czech National Bank)

Figure 2: Performance of the Jihozápad region in relation to the national average



(Czech Republic = 100)
Source: Eurostat
Key: GDP per capita – year 1 is 1995, year 2 is 2003, Unemployment data – year 1 is 1998, year 2 is 2001, values above 100 indicate a better position compared with the country as a whole (the indicator is reverse), VA = share of total value added, year 1 is 1995, year 2 is 2003, Empl. = share of total employment, year 1 is 2002, year 2 is 2005

In the Czech Republic, the policy-making process and policy competences are quite highly centralised. Sectoral policies (taxation, industry, trade, labour, etc.) affecting overall economic growth are the responsibility of the relevant central government ministries. Most of the important non-RTDI programmes and instruments also exist only at national level. Moreover, the region of Jihozápad is composed of two self-governing regions – the Plzeňský region (Plzeňský kraj) and the Jihočeský region (Jihočeský kraj) – with separate regional policies. Regional policy at the level of NUTS 2 (Jihozápad) consists in implementing the Joint Regional Operational Programme (2004-2006) and the Regional Operational Programme for Jihozápad in the next programming period (2007-2013).

The non-RTDI policies having an influence on the RTDI sphere consist of:

- national policies supporting enterprises and industry (Competition policy, Industrial policy);
- national policies supporting human resources (Education policy, Employment policy);
- regional policies of the Jihočeský and the Plzeňský regions, as set out in the Regional Development Programmes (and broadly in line with the Strategy for Regional Development).

Policy instruments implementing the relevant non-RTDI policies consist of:

- European programmes (Operational Programme Human Resources Development, under the responsibility of the Ministry of Labour and Social Affairs; Joint Regional Operational Programme, under the responsibility of the Ministry for Regional Development);

- o national programmes and measures (support programmes and investment incentives under the responsibility of the Ministry of Industry and Trade; tax incentives for private R&D);
- o specific financing and grants from the regional budgets of the Jihočeský and the Plzeňský region, implementing measures and priorities of the Regional Development Programmes.

4. Conclusions

4.1. Assessment of the RIS

As a small country with 10.2 million inhabitants, the Czech Republic is not very regionally diversified, and this applies not only to RTDI policies and programmes. RTDI activities are financed from the state budget via grants and targeted support and from the EU Structural Funds. Currently, the most important RTDI objectives, programmes and instruments (as described above) are therefore mostly decided at national level.
As the Jihozápad region is not a self-governing unit, there is no authority creating the regional innovation system. The regional innovation systems are currently being created at the level of self-governing (NUTS 3) regions. At present, the basic documents concerning RTDI are drawn up at *national* level – the National Innovation Policy and the National Research and Development Policy. The main instrument for fulfilling these policy objectives is the National Research Programme.
The Czech Republic has been addressing some of the RTDI challenges with the financial support of the EU Structural Funds – namely through the Operational Programme Industry and Enterprise and the Operational Programme Human Resources Development 2004-2006. More extensive support for RTDI issues in the CR is planned in the next programming period of 2007-2013 – namely under the Operational Programme R&D for Innovation and the Operational Programme Enterprise and Innovation and on the NUTS 2 level: the Regional Operational Programme for Jihozápad. The main RTDI problems should receive more support in the next programming period with greater emphasis on the regional dimension – e.g. business incubators, clusters, technology transfer, cooperation between business and R&D public institutions and HEIs etc.

Cooperation between *firms and intermediaries* mainly takes the form of services provided by intermediaries (business incubators, technology parks, etc.): incubation services for newly established SMEs, provision of information about Structural Funds and domestic grant programmes, helping companies to obtain grants, provision of advisory services, helping companies with their business plan and project management, facilitating contacts with the research sphere, etc. The most relevant example of cooperation between the *private and higher education sectors* in the region is the University of West Bohemia, specialised – among other things – in science & technical disciplines. The most interested firms are big, well-established companies like Škoda Auto or Panasonic. Testing of materials, measurements, calculations and analysis are the most frequent types of services provided by universities. The low technical standard of a large number of companies in the region is a common barrier to cooperation with the private sector. There are several types of *research entities cooperating with the private sector* in the region. Škoda Vyzkum (Škoda Research) constitutes a strong research and industrial tool with a long history, active in accredited testing, research and development in the field of materials and machinery, and providing services not only to companies within the Škoda group but also to wide range of firms inside and outside the region. Another type of research entity is technology centres established through the participation of foreign companies. The founding companies of these centres are their main customer, but they cooperate with other clients in the region as well. There are also many smaller Czech companies whose main activity is R&D, cooperating with other firms from their sector and often with other Czech and foreign R&D centres.

Knowledge and economic specialisation of the region

The most important university education and research fields in the region, according to the number of academic staff and R&D personnel (and excluding social sciences & humanities) are represented by the following faculties:

- Faculty of Mechanical Engineering, Faculty of Electrical Engineering and Faculty of Applied Science of the University of West Bohemia (in Plzeň)
- Faculty of Medicine in Plzeň (part of Charles University in Prague)
- Faculty of Biology and Faculty of Agriculture of the University of South Bohemia (in České Budějovice).

Compared with the situation at national level, the allocation of *R&D personnel* and *R&D expenditure* by scientific field differs particularly in the case of medical science, where the share of personnel and expenditure is significantly lower in Jihozápad than in the Czech Republic as a whole. This is due to the weak links between medical education & science and the economic specialisation of the region.

Higher R&D expenditures on technical science in the region than at national level reflect the role of technical education (Faculty of Mechanical Engineering, Faculty of Electrical Engineering) in the region and the importance of the related sectors for the regional economy. In terms of the share of employment, machinery and electrical machinery belong to the leading manufacturing branches in the region. General industrial machinery and electrical machinery are also among the largest exporting sectors in the region.

Besides machinery (14.5% of BERD in the region in 2004) and electrical machinery & apparatus (6.1% of BERD), high amounts of BERD were also allocated to the manufacture of motor vehicles (20.4%), information technologies (9.1%), transport equipment excluding motor vehicles (6.2%) and radio, TV & communication equipment (5.8%). Improvement of links between knowledge creation (research and education) and the private sector should be an objective for the region, mainly in the fast growing sectors with potential from the standpoint of knowledge creation: ICT, nanotechnologies and biotechnologies.

In terms of financial revenue for the higher education sector, the most productive cooperation with the private sector in recent years has been in the field of machinery and electroenergetics. This cooperation consists mainly in research projects, conducted by the relevant faculties of the University of West Bohemia, focusing on technical and engineering studies. The main partners of the university are big machinery and energy companies, operating at national level (Škoda Auto, Škoda Energo, CEZ, etc.), big foreign companies (from Slovakia and Germany), and ten or so SMEs located in the region as well.[14]

The main indicator of scientific excellence in the region is the high number of publications and citations specialised in biology and agriculture (tens of publications by each biology-oriented research institute in the region per year), which is consistent with the exceptional position of biology and agriculture in the university education system in the region. BERD allocated to the sectors related to biology and agriculture is very low due to the lesser importance of these sectors for industry. Links with the private sector are also less frequent than in the case of the University of West Bohemia. However, university education and research in these specialisations (mainly in biology) is well connected to several public research institutes (i.e. seven institutes of the Academy of Sciences of the CR) in the region. A wide range of possibilities for knowledge utilisation exists in the field of agriculture (which partly overlaps with biology). Agriculture and fishing, together with the traditional sectors of the food industry in the region, show a relatively high level of value added, employment and productivity compared with the same figures for the Czech Republic as a whole. As long as the majority of research institutes in the field of biology form part of the Academy of Sciences of the CR, their activities and links with other institutes and organisations will have a mainly national dimension.[15]

[14] Analysis of Applied R&D Potential in the Plzeňský region.

[15] Technological profile of the Jihočeský region.

Exhibit 3: Matching of knowledge and economic specialisation

Knowledge production in the region	Related economic sectors	Specialisation of the region's economy	Conclusions
Mechanical engineering	Machinery Transport equipment	Machinery Motor vehicles	Traditional industrial sector with established links between knowledge creation and regional economy
Electrical engineering, Electroenergetics	Electrical machinery	Electrical machinery	Traditional industrial sector with established links between knowledge creation and regional economy
Applied science	Machinery Nanotechnologies ICT	Machinery Metal products	Need for better utilisation of knowledge creation in nanotechnologies and ICT
Biology	Agriculture Medicine Biotechnologies	Agriculture	Strong field of education and research, better utilisation of knowledge creation could be achieved by promoting companies in the biotechnologies sector and supporting joint projects linking public R&D and these companies
Agriculture	Agriculture & forestry Biotechnologies	Agriculture & fishing Food production	Traditional low-tech sector with established links between knowledge creation and the regional economy
Medical science	Medicine Pharmaceutical industry	–	Weak linkages with the regional economy

Exhibit 4: Strengths and weaknesses of the regional innovation system

	Strengths	***Weaknesses***
Knowledge creation capacity	+ presence of strong industrial players with research capacities, especially in the city of Plzeň + high research potential of the regional universities, with emphasis on the orientation of the regional economy + increase in financial resources for both private and public research	- share of students in science and engineering fields of study below the national average - decreasing number of R&D staff in life sciences
Knowledge dissemination capacity	+ cooperation between the University of West Bohemia and the Business Innovation Centre in building the Science and Technology Park in Plzeň	- no technology transfer offices directly connected to the universities and public R&D institutions
Knowledge absorption capacity	+ growing percentage of population with tertiary education + demand for practically oriented results of R&D, affecting the share of licence and patent fees in total R&D expenditure	- human resources in S&T below the national average
Interactions between main stakeholders	+ cooperation between the University of West Bohemia and strong industrial players in and outside the region + strong links between the University of South Bohemia and biology-oriented public research institutes in the region	- weaker linkages between the University of South Bohemia and private sector - technology centres of big foreign companies cooperate mainly with their parent companies abroad - low technical standard of a large number of companies in the region (including foreign companies, serving as assembly units of multinationals) is a common barrier to cooperation between universities and the private sector
RTDI governance capacity	+ operational programmes for the new programming period will be more focused on supporting RTDI	- lack of competences and resources at regional level for conceptual and coordinated support of regional R&D base - the region of Jihozápad is formed by two separate self-governing regions

The presence of universities, public and private research institutions and growing investments in research has undoubtedly had a positive impact on the growth of the regional economy. However, factors connected with economic and political transformation over the last 17 years

play a major role in the region's economic growth. Closeness to economically more developed regions of the EU (Bavaria and Upper Austria), together with a relatively low-cost workforce and the orientation of the local industry create favourable conditions for foreign investors, especially in the automotive industry and electronics. Although Jihozápad's share of total foreign direct investments in the Czech Republic is lower, the presence of strong industrial players is leading to the creation of a major development pole in Plzeň with a significant influence on regional prosperity.

The region's potential to increase R&D investment contributing to economic growth is rather low due to the fact that public expenditure on R&D is highly centralised in the Czech Republic. Regions could include priorities and objectives supporting R&D in their Regional Development Programmes (see the Programme of the Jihočeský region, one of the two self-governing regions within Jihozápad) or regional innovation strategies (see the RIS of the Plzeňský region, the other self-governing region within Jihozápad). Resources for financing R&D are also available via grants from the regional budgets (of the Jihočeský and Plzeňský regions). However, the financial resources available for such grants are insignificant compared with other sources of R&D financing.

4.2. Assessment of policies

Since practically no strategic policy documents existed at national or regional level in the Czech Republic in the 1990s, the history of strategically targeted initiatives regarding future RTDI development is very short – it started with the preparation of the first National Research and Development Policy (2000-2004) of the Czech Republic, a key strategic document defining the state's relationship with research and development.[16]

At national level, the main RTDI-related policies are spelled out in the *National Research and Development Policy 2004-2008* and the newer *National Innovation Policy* 2005-2010, which are fully complementary. Both policies respect the goals highlighted in the basic European documents concerning RTDI – the Lisbon Strategy and the Barcelona Objectives. At regional level (NUTS 3), the key RTDI document for the Plzeňský region is the *Bohemian Regional Innovation Strategy for Plzeň*. The goals of the BRIS should be achieved mainly by the regional authority of the Plzeňský region within its priorities for regional development. However, the priorities and measures of the *Regional Development Programme* of the Plzeňský region are not directly and explicitly aimed at supporting R&D, in contrast to the *Regional Development Programme* of the Jihočeský region (the second NUTS 3 region of Jihozápad). Both Regional Development Programmes are aimed at supporting enterprise and human resources, the two key preconditions for a competitive regional RTDI system. On the other hand, the Programmes are more broadly oriented towards regional development issues and therefore identify such priorities as the environment, the countryside, agriculture, tourism, infrastructure, etc. The *Joint Regional Operational Programme*, implemented by the Regional Cohesion Council of the Jihozápad region, also addresses RTDI only in very general terms.

The most important practical policy instruments for RTDI are the responsibility of the Ministry of Education, Youth and Sports – the *National Research Programme I* and *II* (namely measures supporting research), the *Centres for Basic Research* programme – and the Ministry of Industry and Trade. The latter Ministry implements programmes aimed at collaboration between public research and the private sector (*TANDEM, IMPULS*), but most programmes address the wider sphere of innovation and enterprise. Programmes constituting the *Operational Programme Industry and Enterprise* (namely INOVACE, PROSPERITA, KLASTRY, START, KREDIT) are the most relevant policy instruments for innovative enterprise support in the Czech Republic. The programmes are complemented by other programmes and instruments under the responsibility of the Ministry, aimed at providing general support for entrepreneurship and the business environment. For the next programming period, the Czech programmes within the Community Support Framework will be more focused on the RTDI sphere – namely the

[16] Klusáček, K. (2004). 'Technology Foresight in the Czech Republic'. *Int. J. Foresight and Innovation Policy*, Vol. 1, No. 1/2, pp. 89-105.

Operational Programme Enterprise and Innovation (that will be implemented by the Ministry of Industry and Trade) and the Operational Programme Research and Development for Innovation (that will be implemented by the Ministry of Education).
Concerning human resources, the *National Research Programme II* is the most relevant RTDI policy instrument aimed at supporting human resources in R&D. On the non-RTDI side, the programme is complemented by the more general measures of the *Operational Programme Human Resources Development* (implemented by the Ministry of Labour and Social Affairs), which in addition to supporting human resources in R&D are aimed at fostering different levels of education and qualification of employees.
From a general standpoint, the role of regional policies, programmes and instruments in supporting RTDI is marginal, with RTDI support under Regional Development Programmes playing a rather complementary role and low amounts being intended for this sphere from the regional level via grants, compared with the national (European) level. The national level is crucial for support of RTDI in the Czech Republic, comprising primarily research policies, programmes and instruments under the responsibility of the Ministry of Education, Youth and Sports, and innovation and enterprise-related policies, programmes and instruments under the responsibility of the Ministry of Industry and Trade. The Structural Funds (OP Industry and Enterprise, OP Human Resources Development) and the Framework Programmes also play a very important role in supporting RTDI in the Czech Republic.

4.3. The knowledge economy: challenges and trends

The main trends in the knowledge economy identified in sections 2 and 3 are the following:

1. The importance of private profit making R&D institutions in the region is increasing. The number of private R&D institutions has been growing as well as the R&D spending and number of R&D staff in the private sector.
2. Financial resources have been rising in the public sector as well, but the number of R&D staff in the public sector remains stable. The HEI sector does not show significant changes either in R&D budget size or in the number of R&D staff.
3. The Jihozápad region is keeping up with the national average in terms of the number of students in HEIs - 9% of all HEI students in the country are enrolled in the region and this share has been stable since 2001. The region has a bigger share of doctorates awarded in the science and engineering field than the national average, but the share of students in this field is lower than the national average.
4. The leading positions in the region are steadily occupied by *technical sciences* and *life sciences*. R&D expenditure in both of these fields is constantly increasing as well as R&D staff in the *technical sciences* domain. In contrast, the number of R&D staff in *life sciences* is decreasing.
5. The region has a smaller share of companies in high-technology and medium/high-technology sectors than the Czech Republic as a whole. The most represented high-tech and medium/high-tech sector in the region is Manufacture of electrical machinery & apparatus. In contrast to the smaller share of high and medium/high-technology companies, the region has above-average employment in the high and medium/high technology sector.
6. The links that HEIs and public sector institutions have with enterprises are gradually improving, but they are still weak.

Linking and aligning the regional R&D base more closely with the economy of Jihozápad should be one of the main priorities of the regional authorities. This relates especially to the public research institutes, which create stronger links at national than at regional level. The presence of R&D institutes in the region could be better utilised by increasing the support provided for R&D from the regional budgets of the Plzeňský and Jihočeský regions, in line with stronger emphasis on R&D support in the Regional Development Programmes of those regions.

The links that HEIs and public sector institutions have with the private (application) sphere are the weak spot of the regional innovation system, complicating the utilisation of university and public research outputs in practice.[17] This problem relates to the absence of technology transfer offices directly connected to universities and public R&D institutions in the region. The establishment of such infrastructure is one of the main challenges of the National Innovation Policy as well as the BRIS and should be supported by the Operational Programme R&D for Innovation that will be implemented by the Ministry of Education in the next programming period (2007-2013).

Increasing the number of students in science and technical fields of study should be one of the main objectives of the region, given the importance of these fields for the quantity and quality of human resources in regional R&D, as well as the industrial and research potential of the region in specific sectors (i.e. machinery, electronics), and the smaller share of S&T students in the region than at national level. The challenge for Plzeň and České Budějovice universities consists also in effectively utilising the programmes within the OP Human Resources Development that support the S&T fields of study.

Financing the early-stage development of innovative and start-up companies by means of venture capital is very rare in the region, and there is as yet no programme focused on financing companies through venture capital. Introducing a measure to support SME financing by means of venture capital is one of the challenges of the Operational Programme Enterprise and Innovation in the next programming period.

[17] Bohemian Regional Innovation Strategy for Pilsen, Analysis of Applied R&D Potential in the Plzeňský region.

Exhibit 5: Identification of policy challenges

Policy challenge	Corroborating indicator	Inducement mechanisms	Effective approaches
1. Conceptual and coordinated support for RTDI at regional level	Marginal position of RTDI support in the Regional Development Programmes and low amounts intended for RTDI support from the regional budgets	Regional Development Programmes	
2. Improve linkages between private and public sector in R&D	No technology transfer offices connected to universities or public R&D	National Innovation Policy, BRIS	OP R&D for Innovation – support for TT and coop. between business and public R&D sector - Offices for TT, incubators
3. Increase the number of students in S&T	Number of students in S&T in the region lower than the country average; Excess demand	OP HRD: measure to support tertiary education in the CR	Plzeň and České Budějovice Universities - increase the size of the relevant S&T faculties
4. Support for financing early-stage development of innovative and start-up companies with venture capital	Almost no VC investment in the region; No programme focused on financing companies through VC	OP Enterprise and Innovation (2007-2013): measure to support SME financing by means of venture capital	

The best example of good practice in the regional knowledge economy is the Science and Technology Park in Plzeň, built up thanks to cooperation between the City of Plzeň, the Plzeň Business and Innovation Centre and the University of West Bohemia. This cooperation is an instance of successful interaction between local government, an intermediary infrastructure and a university. The project was developed in two stages. A business incubator, helping new, technology-oriented SMEs to start their business, was opened in 1997. A technology centre, intended for high-tech companies and companies dealing with commercialisation of R&D, was opened four years later, in November 2001. The Science and Technology Park is located within the “Borska pole” Municipal Industrial Park in Plzeň, one of the most successful industrial parks in the Czech Republic, hosting Panasonic, Matsushita (electronics), etc. The S&T park thus also helps to attract foreign investors and create new qualified jobs in the region (it currently hosts 18 companies).

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Annexes

Annex 1: Definition of policy mix typology

- **Improving innovation and R&D governance capacity.** Technical assistance-type funding used by public authorities, regional agencies and public-private partnerships in developing and improving policies and strategies in support of R&D investments and innovation. This could include changes in the organisation of decision making, national and regional forecasting, measures for improving evaluation, etc.
- **Creating an innovation- and entrepreneur-friendly environment.** This category covers a wide range of actions which seek to improve the overall environment in which enterprises, universities and research organisations innovate. This includes the following measures:
    - Promoting an entrepreneurial and innovation culture in the private sector by undertaking awareness initiatives and changing regulations and disincentives that discourage entrepreneurship;
    - Regulations and initiatives addressing intellectual property rights either by improving legislation dealing with cases where the results of public or collaborative research are commercialised or by covering protection costs;
    - Direct or indirect support for spin-offs and new technology-based firms (NTBFs). Direct support includes public financial schemes such as pre-seed and first stage capital, while indirect measures include funding of incubators, training related to entrepreneurship, etc.
- **Developing human capital.** This category includes measures aimed at upgrading human resources in R&D and innovation-related activities, such as helping science and technology graduates to follow research and innovation-oriented careers; training researchers in enterprises or research centres; intra- and inter-national mobility of scientists; curriculum development in higher education aimed at developing science and technology; orientated under- and post-graduate courses, etc.
- **Networking, co-location and clustering measures.** Policies under this category focus on remedying deficiencies in innovation systems by promoting cooperation, networking and interaction. Measures promoting co-location of industrial and scientific organisations (e.g. innovation poles), funding for cluster infrastructure and technology- and innovation-oriented activities and support for innovation networking (e.g. information exchange clubs) are some of the possible measures in this category.
- **Knowledge and technology transfer to industry.** This category includes policies directly or indirectly supporting knowledge and technology transfer from universities and public research organisations and commercialisation of public research results. Direct support includes aid schemes for utilising technology-related services or for implementing projects transferring technology from the public or private sector to the private sector. Indirect policies include developing infrastructures facilitating technology transfer such as technology parks, innovation centres, university liaison and transfer offices.
- **Research cooperation between public research organisations and the private sector.** Measures supporting collaborative research projects and development of common research infrastructures (for use by private and public sector) are included.

- **Supporting public research.** Measures under this category include:
    - Public investments in research infrastructure and direct funding of public R&D, e.g. setting up new infrastructures or supporting centres of excellence;
    - Grants for R&D projects implemented in universities and other public research organisations;
    - Regulatory changes and incentives for universities and other public research organisations which encourage the commercialisation of research results and collaboration with industry.
- **Financial incentives for R&D in the private sector.** Two main categories of measures are included:
    - **Direct and indirect financial incentives for R&D in the private sector.** Direct measures include direct public funding of R&D in the private sector, e.g. grants, conditional loans. Indirect measures include tax incentives for firms to undertake R&D activities.
    - **Catalytic financial incentives for R&D in the private sector.** Includes instruments facilitating the access of R&D performers to external private-sector sources of finance. Typical measures of this type are measures encouraging the use of *risk capital* (e.g. venture capital funds) for both R&D and innovation-related activities and *loan and equity guarantee measures.*

Annex 2: Tables and Figures

Table 1: Ratio of doctorates to students, academic and teaching staff in higher education institutions

Territory	Category	Year		
		2002	2003	2004
Jihozápad	Doctorates *	79	74	95
	Students	25 891	25 692	28 557
	Academic staff **	4 026	3 728	3 860
	Teaching staff	2 034	2 074	2 090
	Ratio Doctorates/Students	*0.003*	*0.003*	*0.003*
	Ratio Doctorates/Academic staff	*0.020*	*0.020*	*0.025*
	Ratio Doctorates/Teaching staff	*0.039*	*0.036*	*0.045*
Czech Republic	Doctorates *	1 327	1 546	1 732
	Students	260 044	284 485	28 7001
	Academic staff **	37 037	37 207	40 239
	Teaching staff	19 460	20 194	20 514
	Ratio Doctorates/Students	*0.005*	*0.005*	*0.006*
	Ratio Doctorates/Academic staff	*0.036*	*0.042*	*0.043*
	Ratio Doctorates/Teaching staff	*0.068*	*0.077*	*0.084*

** level 6 of ISCED 97 classification*

*** Includes teaching staff (corresponds to ISCED 97 levels 5 and 6) and researchers. Technicians and other supporting staff are not included.*

Source: Institute for Information on Education (UIV)

Table 2: Number of higher education institutions awarding science and engineering degrees *

HEIs	Year		
	2002	2003	2004
Universities	2	2	2
Single faculties	4	4	4

** Science degrees: Life science (ISC 42), Physical sciences (ISC 44), Mathematics and statistics (ISC 46), Computing (ISC 48) and Engineering degrees: Engineering and engineering trades (ISC 52), Manufacturing and processing (ISC 54), Architecture and building (ISC 58).*

Source: Institute for Information on Education (UIV)

Table 3: Number of enrolled students in science and engineering programmes

Territory	Category	Year		
		2002	2003	2004
Jihozápad	Total number of HEI students	22 609	25 891	25 692
	Number of S&E students	5 318	5 818	5 953
	Percentage	*23.52*	*22.47*	*23.17*
Czech Republic	Total number of HEI students	260 044	284 485	287 001
	Number of S&E students	85 463	93 026	98 375
	Percentage	*32.86*	*32.70*	*34.28*

Source: Eurostat, Institute for Information on Education (UIV)

Table 4: Number of doctorates awarded in science and engineering programmes

Territory	Category	Year		
		2002	2003	2004
Jihozápad	Total number of doctorates	79	74	95
	Number of S&E doctorates	54	51	60
	Percentage	68.35	68.92	63.16
Czech Republic	Total number of doctorates	1 327	1 546	1 732
	Number of S&E doctorates	641	761	859
	Percentage	48.30	49.22	49.60

Source: Institute for Information on Education (UIV)

Table 5: Number of R&D units in the region by type of organisation

Type of organisation	Year			
	2001	2002	2003	2004
Private sector	59	88	104	123
Public sector	20	21	16	18
HEI sector	16	18	17	18
Private non profit sector	7	13	15	3
Total	**102**	**140**	**152**	**162**

Source: Czech Statistical Office

Table 6: R&D personnel (head count) by type of organisation

Territory	Type of organisation	Year							
		2001	%	2002	%	2003	%	2004	%
Jihozápad	Private	1 291	*34.9*	1 389	*34.1*	1 489	*39.2*	1 667	*40.6*
	Public	652	*17.6*	671	*16.5*	605	*15.9*	634	*15.4*
	HEI	1 707	*46.2*	1 992	*48.9*	1 654	*43.5*	1 770	*43.1*
	Private non profit	47	*1.3*	20	*0.5*	53	*1.4*	34	*0.8*
	Total	**3 697**	***100.0***	**4 072**	***100.0***	**3 801**	***100.0***	**4 105**	***100.0***
Czech Republic	Private	20 562	*39.6*	22 361	*41.6*	24 122	*43.3*	26 967	*44.8*
	Public	13 747	*26.5*	13 508	*25.2*	13 357	*24.0*	13 220	*22.0*
	HEI	17 361	*33.4*	17 577	*32.7*	17 877	*32.1*	19 725	*32.8*
	Private non profit	269	*0.5*	249	*0.5*	343	*0.6*	234	*0.4*
	Total	**51 939**	***100.0***	**53 695**	***100.0***	**55 699**	***100.0***	**60 148**	***100.0***

Source: Czech Statistical Office

Table 7: R&D personnel by scientific field * (head count)

Territory	Scientific field	Year			
		2001	2002	2003	2004
Jihozápad	Natural science	1 134	929	925	908
	Technical science	1 548	1 731	1 654	1 861
	Medical science	78	88	114	131
	Agricultural science	337	340	332	336
	Social science	11	709	535	604
	Humanities	589	275	241	265
	Total	**3 697**	**4 072**	**3 801**	**4 105**
Czech Republic	Natural science	13 339	12 955	11 715	13 181
	Technical science	23 641	24 868	25 342	26 578
	Medical science	5 419	5 518	6 791	7 589
	Agricultural science	3 463	3 656	3 752	4 070
	Social science	6 077	6 698	4 698	5 470
	Humanities	**	**	3 401	3 260
	Total	**51 939**	**53 695**	**55699**	**60148**

* *according to OECD classification*

** *Social science and humanities together*

Source: Czech Statistical Office

Table 8: R&D expenditure by type of organisation (€ 000)

Territory	Type of organisation	Year							
		2001		2002		2003		2004	
		€ 000	%	€ 000	%	€ 000	%	€ 000	%
Jihozápad	Private	22 553	*52.7*	27 510	*50.5*	32 574	*59.6*	38 498	*62.0*
	Public	8 119	*19.0*	9 072	*16.7*	10 229	*18.7*	11 062	*17.8*
	HEI	10 929	*25.5*	17 711	*32.5*	11 105	*20.3*	11 861	*19.1*
	Private non profit	1 214	*2.8*	133	*0.2*	705	*1.3*	698	*1.1*
	Total	42 815	*100.0*	54 426	*100.0*	54 613	*100.0*	62 119	*100.0*
Czech Republic	Private	500 308	*60.2*	585 843	*61.1*	617 636	*61.0*	700 351	*63.7*
	Public	196 990	*23.7*	220 271	*23.0*	236 308	*23.3*	232 729	*21.2*
	HEI	130 182	*15.7*	149 909	*15.6*	154 566	*15.3*	162 393	*14.8*
	Private non profit	3 932	*0.5*	3 083	*0.3*	4 145	*0.4*	4 169	*0.4*
	Total	831 412	*100.0*	959 107	*100.0*	1 012 655	*100.0*	1 099 643	*100.0*

Source: Czech Statistical Office

Table 9: R&D expenditure by type of organisation and as % of GDP (€ 000)

Territory	Type of organisation	Year							
		2001		2002		2003		2004	
		€ 000	% GDP	€ 000	% GDP	€ 000	% GDP	€ 000	% GDP
Jihozápad	Private	22 553	*0.32*	27 510	*0.33*	32 574	*0.39*	38 498	*0.43*
	Public	8 119	*0.12*	9 072	*0.11*	10 229	*0.12*	11 062	*0.12*
	HEI	10 929	*0.16*	17 711	*0.22*	11 105	*0.13*	11 861	*0.13*
	Private non profit	1 214	*0.02*	133	*0.00*	705	*0.01*	698	*0.01*
	Total	**42 815**	***0.61***	**54 426**	***0.66***	**54 613**	***0.65***	**62 119**	***0.69***
	Regional GDP	7 039 400		8 212 028		8 452 707		9 054 695	
Czech Republic	Private	500 308	*0.74*	585 843	*0.75*	617 636	*0.77*	700 351	*0.81*
	Public	196 990	*0.29*	220 271	*0.28*	236 308	*0.29*	232 729	*0.27*
	HEI	130 182	*0.19*	149 909	*0.19*	154 566	*0.19*	162 393	*0.19*
	Private non profit	3 932	*0.01*	3 083	*0.00*	4 145	*0.01*	4 169	*0.00*
	Total	**831 412**	***1.22***	**959 107**	***1.22***	**1 012 655**	***1.26***	**1 099 643**	***1.28***
	GDP of the CR	67 931 227		78 368 817		80 260 018		86 205 491	

Source: Czech Statistical Office, Eurostat

Table 10: R&D expenditure by source of funding (€ 000)

Territory	Source of funding	Year							
		2001	%	2002	%	2003	%	2004	%
Jihozápad	Private sector	20 311	*47.4*	25 221	*46.3*	30 521	*55.9*	34 840	*56.1*
	Public sector	21 787	*50.9*	28 347	*52.1*	22 289	*40.8*	25 296	*40.7*
	HEI sector	176	*0.4*	53	*0.1*	120	*0.2*	711	*1.1*
	Private non profit sector	6	*0.0*	32	*0.1*	147	*0.3*	26	*0.0*
	Foreign	534	*1.2*	773	*1.4*	1 536	*2.8*	1 246	*2.0*
	Total	42 815	*100.0*	54 426	*100.0*	54 613	*100.0*	62 119	*100.0*
Czech Republic	Private sector	436 171	*52.5*	515 254	*53.7*	520 977	*51.4*	580 805	*52.8*
	Public sector	362 380	*43.6*	403 512	*42.1*	423 565	*41.8*	460 601	*41.9*
	Other national sources *	14 465	*1.7*	14 345	*1.5*	21 857	*2.2*	17 584	*1.6*
	Foreign	18 396	*2.2*	25 996	*2.7*	46 257	*4.6*	40 653	*3.7*
	Total	831 412	*100.0*	959 107	*100.0*	1 012 655	*100.0*	1 099 643	*100.0*

** HEIs + Private non profit sector*

Source: Czech Statistical Office

Table 11: R&D expenditure by type of activity (€ 000)

Territory	Type of activity	Year			
		2001	2002	2003	2004
Jihozápad	Basic research	14 637	23 098	19 273	20 229
	Applied research	12 919	12 938	16 121	16 679
	Experimental development	15 258	18 391	19 219	25 210
	Total	**42 815**	**54 426**	**54 613**	**62 119**
Czech Republic	Basic research	208 080	233 059	254 208	289 964
	Applied research	207 875	269 992	303 417	313 190
	Experimental development	415 456	456 056	454 999	496 458
	Total	**831 412**	**959 107**	**1 012 655**	**1 099 643**

Source: Czech Statistical Office

Table 12: R&D expenditure by scientific field * (€ 000)

Territory	Scientific field	Year							
		2001	%	2002	%	2003	%	2004	%
Jihozápad	Natural science	13 743	*32.1*	13 969	*25.7*	15 271	*28.0*	16 331	*26.3*
	Technical science	23 759	*55.5*	29 747	*54.7*	33 941	*62.1*	39 084	*62.9*
	Medical science	1 233	*2.9*	1 167	*2.1*	1 599	*2.9*	1 939	*3.1*
	Agricultural science	1 858	*4.3*	2 040	*3.7*	2 103	*3.9*	2 354	*3.8*
	Social science	17	*0.0*	6 481	*11.9*	1 062	*1.9*	1 468	*2.4*
	Humanities	2 205	*5.1*	1 022	*1.9*	636	*1.2*	943	*1.5*
	Total	42 815	*100.0*	54 426	*100.0*	54 613	*100.0*	62 119	*100.0*
Czech Republic	Natural science	192 207	*23.1*	250 682	*26.1*	244 253	*24.1*	275 107	*25.1*
	Technical science	499 868	*60.1*	551 701	*57.5*	583 375	*57.7*	615 346	*56.2*
	Medical science	52 490	*6.3*	60 463	*6.3*	75 305	*7.4*	92 151	*8.4*
	Agricultural science	41 047	*4.9*	46 346	*4.8*	50 245	*5.0*	52 971	*4.8*
	Social science	45 800	*5.5*	49 916	*5.2*	27 164	*2.7*	28 210	*2.6*
	Humanities	**	**	**	**	31 403	*3.1*	31 344	*2.9*
	Total	831 412	*100.0*	959 107	*100.0*	1 011 745	*100.0*	1 095 129	*100.0*

* *according to OECD classification*

Source: Czech Statistical Office

Table 13: Budget expenditure of main universities in the region in 2005

University	Expenditures	€ 000
University of West Bohemia	Total expenditure	38 144
	R&D expenditure	3 507
	Share of total expenditure (%)	*9.2*
University of South Bohemia	Total expenditure (estimate)	26 753
	R&D expenditure (estimate)	5 116
	Share of total expenditure (%)	*19.1*

Source: University of South Bohemia - Financial Statement 2005,
University of West Bohemia - Financial Statement 2005

Table 14: BERD in the region (€ 000) by NACE sectors

NACE		Year			
		2001	2002	2003	2004
1	Agriculture	211	241	182	37
10	Mining of coal & lignite	263	2	2	2
15	Food products & beverages	..	42	4	33
17	Textiles	..	804	791	840
18	Wearing apparel; dressing	..	83	34	..
20	Wood & wood products except furniture	..	0	..	..
24	Chemicals & chemical products	272	382	414	344
25	Rubber & plastic products	58	264	855	846
26	Other non-metallic mineral products	460	271	465	486
27	Basic metals	46	509	198	233
28	Fabricated metal products, excl. machinery	2 534	3 065	1 534	1 071
29	Machinery & equipment n.e.c	3 637	4 918	4 620	5 591
31	Electrical machinery & apparatus n.e.c.	1 549	1 806	2 132	2 335
32	Radio, TV, communication equipment	549	1 828	2 969	2 231
33	Medical, precision & optical instruments, watches	318	341	868	489
34	Motor vehicles, trailers & semi-trailers	4 024	5 499	6 781	7 851
35	Other transport equipment	3 517	2 812	4 078	2 398
36	Manufacture of furniture; manufacturing n.e.c.	293	97	41	400
40	Electricity, gas, steam and hot water supply	..	0	..	..
45	Construction	..	32	18	415
51	Wholesale trade & commission trade excl. motor vehicles	..	60	297	264
52	Retail trade excl. motor vehicles; repair of personal goods	11	..	17	151
60	Land-transport; transport via pipelines	..	0	..	74
65	Financial intermediation excl. insurance & pension	..	..	..	845
67	Activities auxiliary to financial intermediation	..	6	18	..
70	Real estate activities	67	61	..	..
71	Renting of machinery & equipment	..	..	46	26
72	Computer & related activities	696	963	2 744	3 485
73	Research and development	3 327	3 104	3 153	7 445
74	Other business activities	569	168	68	187
80	Education	6	6	..	..
85	Health and social work	70	85	146	128
90	Sewage & refuse disposal, sanitation & similar activities	55	..	..	163
91	Activities of membership organisations n.e.c.	21	28	..	9
92	Recreational, cultural, sporting activities	..	..	100	118
93	Other service activities	..	30	..	0
TOTAL		22 553	27 510	32 574	38 498

Source: Czech Statistical Office

Table 15: Percentage of publications by scientific field (ISI classification)

Science field (cluster's name)	Year									
	2000		2001		2002		2003		2004	
	Number of publ.	%	Number of publ.	%	Number of publ.	%	Number of publ.	%	Number of publ.	%
Mathematics	15	*3.3*	14	*3.1*	13	*2.9*	15	*2.6*	10	*2.1*
Physics	14	*3.1*	6	*1.3*	10	*2.2*	16	*2.8*	14	*2.9*
Space Sciences	2	*0.4*	0	*0.0*	2	*0.4*	1	*0.2*	1	*0.2*
Chemistry	31	*6.8*	19	*4.2*	31	*7.0*	24	*4.2*	18	*3.8*
Geosciences	1	*0.2*	7	*1.5*	11	*2.5*	10	*1.8*	5	*1.0*
Environment/Ecology	34	*7.5*	55	*12.1*	33	*7.4*	48	*8.5*	36	*7.5*
Biology & Biochemistry	64	*14.1*	43	*9.5*	51	*11.5*	66	*11.6*	51	*10.6*
Molecular Biology & Genetics	32	*7.0*	38	*8.4*	36	*8.1*	44	*7.8*	43	*9.0*
Microbiology	46	*10.1*	72	*15.9*	60	*13.5*	56	*9.9*	60	*12.5*
Immunology	7	*1.5*	9	*2.0*	9	*2.0*	11	*1.9*	20	*4.2*
Plant & Animal Science	100	*22.0*	86	*19.0*	88	*19.8*	138	*24.3*	96	*20.0*
Agricultural Sciences	28	*6.2*	21	*4.6*	23	*5.2*	25	*4.4*	15	*3.1*
Materials Science	14	*3.1*	18	*4.0*	14	*3.1*	17	*3.0*	8	*1.7*
Computer Science	7	*1.5*	2	*0.4*	4	*0.9*	14	*2.5*	3	*0.6*
Engineering	6	*1.3*	17	*3.8*	14	*3.1*	12	*2.1*	6	*1.3*
Pharmacology	3	*0.7*	6	*1.3*	5	*1.1*	7	*1.2*	11	*2.3*
Neuroscience & Behaviour	8	*1.8*	3	*0.7*	1	*0.2*	7	*1.2*	4	*0.8*
Psychiatry/Psychology	2	*0.4*	0	*0.0*	0	*0.0*	1	*0.2*	1	*0.2*
Clinical Medicine	41	*9.0*	37	*8.2*	40	*9.0*	55	*9.7*	78	*16.3*
TOTAL	455	*100.0*	453	*100.0*	445	*100.0*	567	*100.0*	480	*100.0*

Source: Technology Centre AS CR

Table 16: Percentage of citations by scientific field (ISI classification)

Science field (cluster's name)	Year									
	2000		2001		2002		2003		2004	
	Number of cit.	%	Number of cit.	%	Number of cit.	%	Number of cit.	%	Number of cit.	%
Mathematics	38	*1.5*	46	*2.1*	21	*1.6*	3	*0.3*	3	*1.0*
Physics	82	*3.3*	12	*0.5*	29	*2.2*	19	*1.8*	6	*2.1*
Space Sciences	5	*0.2*	0	*0.0*	0	*0.0*	0	*0.0*	2	*0.7*
Chemistry	110	*4.4*	50	*2.3*	58	*4.4*	49	*4.5*	15	*5.2*
Geosciences	1	*0.0*	55	*2.5*	17	*1.3*	28	*2.6*	1	*0.3*
Environment/Ecology	299	*11.9*	301	*13.6*	129	*9.8*	160	*14.7*	27	*9.3*
Biology & Biochemistry	360	*14.3*	155	*7.0*	150	*11.4*	155	*14.3*	34	*11.8*
Molecular Biology & Genetics	259	*10.3*	195	*8.8*	144	*11.0*	106	*9.8*	37	*12.8*
Microbiology	179	*7.1*	406	*18.4*	209	*15.9*	140	*12.9*	47	*16.3*
Immunology	30	*1.2*	31	*1.4*	9	*0.7*	18	*1.7*	1	*0.3*
Plant & Animal Science	515	*20.5*	375	*17.0*	315	*24.0*	218	*20.1*	56	*19.4*
Agricultural Sciences	132	*5.3*	61	*2.8*	55	*4.2*	24	*2.2*	7	*2.4*
Materials Science	235	*9.3*	120	*5.4*	83	*6.3*	36	*3.3*	8	*2.8*
Computer Science	6	*0.2*	1	*0.0*	21	*1.6*	7	*0.6*	0	*0.0*
Engineering	17	*0.7*	21	*1.0*	3	*0.2*	7	*0.6*	1	*0.3*
Pharmacology	9	*0.4*	22	*1.0*	25	*1.9*	7	*0.6*	6	*2.1*
Neuroscience & Behaviour	29	*1.2*	0	*0.0*	0	*0.0*	35	*3.2*	4	*1.4*
Psychiatry/Psychology	1	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*
Clinical Medicine	207	*8.2*	359	*16.2*	46	*3.5*	73	*6.7*	34	*11.8*
TOTAL	2 514	*100.0*	2 210	*100.0*	1 314	*100.0*	1 085	*100.0*	289	*100.0*

Source: Technology Centre AS CR

Table 17: Number of patent applications to the EPO by IPC sections

Territory	IPC section	Year							
		2000	%	2001	%	2002	%	2003	%
Jihozápad	A - Human necessities	0.014	*0.97*	0.014	*0.12*	1.126	*7.30*	0.814	*16.26*
	B - Performing operations; transporting	0.572	*39.87*	4.280	*37.61*	8.000	*51.86*	0.594	*11.87*
	C - Chemistry; metallurgy	0.770	*53.66*	0.352	*3.10*	0.665	*4.31*	0.294	*5.88*
	D - Textiles; paper	0.007	*0.50*	0.099	*0.87*	0.252	*1.63*	0.089	*1.77*
	E - Fixed constructions	:	*:*	0.033	*0.29*	3.000	*19.45*	1.033	*20.63*
	F - Mechanical engineering; lighting; heating; weapons; blasting	0.007	*0.47*	3.500	*30.76*	1.578	*10.23*	0.783	*15.64*
	G - Physics	0.018	*1.25*	0.477	*4.20*	0.626	*4.06*	1.400	*27.95*
	H - Electricity	0.047	*3.28*	2.625	*23.07*	0.179	*1.16*	:	*:*
	Total	**1.434**	***100.00***	**11.380**	***100.00***	**15.425**	***100.00***	**5.008**	***100.00***
	GRP (€ million)	**6 370.6**		**7 039.4**		**8 203.7**		**8 446.7**	
	Patent applications/GRP	**0.000225**		**0.001617**		**0.001880**		**0.000593**	
Czech Republic	A - Human necessities	15.310	*14.36*	17.740	*15.36*	23.250	*18.99*	14.890	*19.81*
	B - Performing operations; transporting	26.870	*25.21*	26.120	*22.61*	29.750	*24.30*	15.540	*20.67*
	C - Chemistry; metallurgy	16.960	*15.91*	20.140	*17.43*	17.820	*14.56*	16.430	*21.85*
	D - Textiles; paper	8.670	*8.13*	1.330	*1.15*	4.300	*3.51*	3.330	*4.43*
	E - Fixed constructions	3.500	*3.28*	4.330	*3.75*	8.000	*6.53*	6.000	*7.98*
	F - Mechanical engineering; lighting; heating; weapons; blasting	9.830	*9.22*	17.930	*15.52*	18.340	*14.98*	8.250	*10.97*
	G - Physics	14.750	*13.84*	18.830	*16.30*	14.000	*11.44*	2.580	*3.43*
	H - Electricity	10.700	*10.04*	9.110	*7.89*	6.960	*5.69*	8.160	*10.85*
	Total	**106.590**	***100.00***	**115.530**	***100.00***	**122.420**	***100.00***	**75.180**	***100.00***
	GDP (€ million)	**60 396.6**		**67 959.8**		**78 388.2**		**80 254.4**	
	Patent applications/GDP	**0.001765**		**0.001700**		**0.001562**		**0.000937**	

Source: Eurostat

Table 18: Patents awarded by the Czech Patent and Trademark Office (UPV) in the Jihozápad region

IPC section	Year											
	2000	%	2001	%	2002	%	2003	%	2004	%	2005	%
A - Human necessities	0.50	*2.35*	4.01	*17.32*	0.20	*1.15*	1.00	*9.80*	4.70	*22.44*	4.38	*19.44*
B - Performing operations; transporting	4.67	*21.90*	6.00	*25.88*	6.00	*34.38*	2.20	*21.58*	8.87	*42.38*	7.17	*31.78*
C - Chemistry; metallurgy	2.15	*10.07*	3.33	*14.38*	2.75	*15.76*	2.00	*19.61*	1.37	*6.53*	11.00	*48.78*
D - Textiles; paper	0.00	*0.00*	1.00	*4.31*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
E - Fixed constructions	2.00	*9.38*	3.00	*12.94*	3.50	*20.06*	1.00	*9.80*	2.00	*9.55*	0.00	*0.00*
F - Mechanical engineering; lighting; heating; weapons; blasting	2.50	*11.73*	2.00	*8.63*	2.00	*11.46*	3.00	*29.41*	1.50	*7.16*	0.00	*0.00*
G - Physics	1.25	*5.86*	2.50	*10.78*	0.00	*0.00*	0.00	*0.00*	1.50	*7.16*	0.00	*0.00*
H - Electricity	8.25	*38.71*	1.33	*5.75*	3.00	*17.19*	1.00	*9.80*	1.00	*4.78*	0.00	*0.00*
Total	21.31	*100.00*	23.18	*100.00*	17.45	*100.00*	10.20	*100.00*	20.94	*100.00*	22.55	*100.00*

Source: Czech Statistical Office

Table 19: Patents awarded by the Czech Patent and Trademark Office (UPV) in the Czech Republic

	Year			
	2001	2002	2003	2004
Number of patents awarded in CR	237	254	226	284

Source: Czech Patent and Trademark Office (UPV)

Table 20: Total R&D expenditure and expenditure on licence fees (€ 000)

Territory	Category	Year	
		2003	2004
Jihozápad	Total R&D expenditure	54 613	62 119
	Total licence fees	8 174	12 290
	Licence fees for patents and used patterns in particular	3 029	5 121
	Share of total licence fees in total R&D expenditure (%)	*15.0*	*19.8*
	Share of licence fees for patents and used patterns in total R&D expenditure (%)	*5.5*	*8.2*
Czech Republic	Total R&D expenditure	1 012 655	1 099 643
	Total licence fees	65 893	180 511
	Licence fees for patents and used patterns in particular	11 478	18 136
	Share of total licence fees in total R&D expenditure (%)	*6.5*	*16.4*
	Share of licence fees for patents and used patterns in total R&D expenditure (%)	*1.1*	*1.6*

Source: Czech Statistical Office

Table 21: Economically active population by highest levels of education attained (in thousands)

Territory	Category	Year					
		1999	2000	2001	2002	2003	2004
Jihozápad	Economically active population (15 years and over)	594.2	596.5	595.1	592.4	588.8	593.0
	Tertiary education - ISCED 1997 levels 5 and 6	59.7	55.4	60.2	66.8	64.2	68.7
	Upper secondary and post-secondary non-tertiary education - ISCED 1997 levels 3 and 4	477.0	482.2	477.1	472.8	474.4	481.4
	Share of population with education of level 5 or 6 (%)	*10.0*	*9.3*	*10.1*	*11.3*	*10.9*	*11.6*
	Share of population with education of level 3 or 4 (%)	*80.3*	*80.8*	*80.2*	*79.8*	*80.6*	*81.2*
Czech Republic	Economically active population (15 years and over)	5 166.6	5 134.4	5 100.6	5 104.5	5 099.5	5 116.3
	Tertiary education - levels 5-6 (ISCED 1997)	594.0	610.1	627.0	638.9	648.8	672.3
	Upper secondary and post-secondary non-tertiary education - levels 3-4 (ISCED 1997)	4 054.7	3 990.9	3 949.1	4 024.5	4 036.5	4 042.5
	Share of population with education of level 5 or 6 (%)	*11.5*	*11.9*	*12.3*	*12.5*	*12.7*	*13.1*
	Share of population with education of level 3 or 4 (%)	*78.5*	*77.7*	*77.4*	*78.8*	*79.2*	*79.0*

Source: Eurostat

Table 22: Participants in lifelong learning programmes (in thousands)

Territory	Category	Year		
		2002	2003	2004
Jihozápad	Population	653.1	661.5	669.7
	Number of participants	25.4	24.8	30.1
	Percentage	*3.9*	*3.7*	*4.5*
Czech Republic	Population	5 718.7	5 791.2	5 858.1
	Number of participants	307.4	295.7	336.7
	Percentage	*5.4*	*5.1*	*5.7*

Source: Eurostat

Table 23: Human resources in science & technology (HRST) in thousands

Territory	Category	Year					
		2000	2001	2002	2003	2004	2005
Jihozápad	HRSTE (education)	70.2	74.0	83.7	82.8	88.3	85.9
	HRSTO (employed)	151.1	154.1	156.7	162.9	164.9	165.8
	HRSTC (education & employed)	37.1	41.4	47.9	46.4	51.6	49.7
	Total HRST (= HRSTE + HRSTO - HRSTC)	184.3	186.8	192.6	199.3	201.6	201.9
	Total population	1 178.0	1 177.2	1 174.2	1 174.5	1 175.7	1 175.3
	Economically active population	596.5	595.1	592.4	588.8	593.0	:
	Share of HRST in total population (%)	*15.6*	*15.9*	*16.4*	*17.0*	*17.1*	*17.2*
	Share of HRST in economically active population (%)	*30.9*	*31.4*	*32.5*	*33.8*	*34.0*	*:*
Czech Republic	HRSTE (education)	735.2	744.2	813.7	831.7	862.2	:
	HRSTO (employed)	1 387.7	1 403.1	1 399.0	1 436.9	1 473.1	:
	HRSTC (education & employed)	422.7	438.7	473.2	487.5	508.8	:
	Total HRST (= HRSTE + HRSTO - HRSTC)	1 700.2	1 708.6	1 739.5	1 781.1	1 826.5	:
	Total population	10 272.5	10 224.2	10 200.8	10 201.7	10 206.9	:
	Economically active population	5 134.4	5 100.6	5 104.5	5 099.5	5 116.3	:
	Share of HRST in total population (%)	*16.6*	*16.7*	*17.1*	*17.5*	*17.9*	*:*
	Share of HRST in economically active population (%)	*33.1*	*33.5*	*34.1*	*34.9*	*35.7*	*:*

Source: Czech Statistical Office

Table 24: GDP (GRP) in millions of Purchasing Power Parities (PPS)

Territory	Year									
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Jihozápad	12 012	13 056	13 116	12 911	13 147	13 857	14 312	15 254	15 837	16 841
Praha	23 760	25 210	26 934	28 925	28 502	30 397	33 490	34 400	34 954	37 175
Střední Čechy	9 128	9 818	10 081	10 417	13 146	13 882	14 512	15 445	15 797	16 841
Severozápad	11 472	12 142	11 774	11 523	11 710	12 036	12 148	13 050	13 678	14 798
Severovýchod	13 745	14 721	15 133	14 851	15 798	16 689	17 129	18 479	18 978	20 104
Jihovýchod	15 880	17 204	17 165	17 192	18 022	18 979	20 140	21 290	22 069	23 736
Střední Morava	11 242	12 080	12 335	11 914	12 285	12 796	13 169	13 791	14 529	15 516
Moravskoslezko	13 028	14 304	14 057	13 452	12 455	12 739	13 267	14 046	14 629	16 335
Czech Republic	110 267	118 533	120 596	121 185	125 064	131 375	138 167	145 754	150 471	161 346

Source: Eurostat, Czech Statistical Office

Table 25: Gross value added at basic prices (€ million)

Territory	Year									
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Jihozápad	4 311	4 926	5 029	5 387	5 344	5 836	6 439	7 536	7 764	:
Czech Republic	39 571	44 723	46 241	50 561	50 832	55 327	62 161	72 003	73 764	:

Source: Eurostat

Table 26: Gross fixed capital formation (€ million)

Territory	Year								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Jihozápad	2 001	1 970	1 686	1 802	1 573	2 075	2 268	2 006	2 481
Czech Republic	13 359	15 120	14 873	15 386	14 928	16 712	18 746	20 884	21 530

Source: Eurostat

Table 27: Gross value added at basic prices - share of the NACE sectors (in %)

NACE (level 1)	Year									
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
A) Agriculture, hunting and forestry	8.5	8.7	7.6	7.6	6.5	7.0	6.5	5.3	4.8	5.3
B) Fishing	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.0	0.0
C) Mining and quarrying	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3
D) Manufacturing	23.7	27.8	29.3	28.1	29.1	28.8	27.7	28.0	28.6	29.0
E) Electricity, gas and water supply	6.9	7.0	6.2	5.8	5.7	6.7	5.8	5.7	4.7	4.8
F) Construction	11.4	9.7	8.8	9.7	7.6	7.4	6.9	7.1	7.6	7.6
G) Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	11.3	9.8	10.0	10.4	10.4	10.4	10.6	10.2	10.5	10.8
H) Hotels and restaurants	1.4	1.5	2.0	1.6	1.5	1.2	1.5	1.9	1.9	1.7
I) Transport, storage and communication	10.4	9.8	10.2	10.0	11.2	10.5	11.1	11.5	11.6	11.2
J) Financial intermediation	2.7	2.6	2.0	2.9	2.4	1.9	2.2	2.2	1.8	1.9
K) Real estate, renting and business activities	8.3	7.6	8.6	8.7	9.5	9.9	11.1	10.8	10.1	9.7
L) Public administration and defence; compulsory social security	5.0	5.1	5.2	5.1	5.7	5.6	5.8	6.0	7.0	6.9
M) Education	3.7	3.9	3.6	3.4	3.7	3.9	4.0	4.1	4.2	4.1
N) Health and social work	3.6	3.5	3.6	3.6	3.6	3.9	4.0	4.2	4.2	4.2
O) Other community, social, personal service activities	2.4	2.3	2.4	2.5	2.6	2.3	2.4	2.3	2.7	2.7
P) Activities of households	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NACE A-P	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Czech Statistical Office

Table 28: Gross fixed capital formation - share of the NACE sectors (in %)

NACE (level 1)	Year								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
A) Agriculture, hunting and forestry	5.9	7.1	5.5	5.6	5.9	3.4	3.9	5.4	3.5
B) Fishing	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
C) Mining and quarrying	0.4	0.5	0.2	0.2	0.3	0.2	0.3	0.4	0.3
D) Manufacturing	16.3	17.7	23.8	20.1	22.9	19.7	20.3	29.1	21.5
E) Electricity, gas and water supply	33.5	17.8	18.8	20.8	26.0	19.5	19.6	12.2	15.9
F) Construction	2.2	2.6	4.3	3.2	2.3	3.4	4.3	3.8	4.8
G) Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	7.0	7.4	5.4	7.2	8.9	6.1	5.5	6.2	5.7
H) Hotels and restaurants	0.2	0.6	1.8	0.3	1.4	1.7	1.2	2.1	1.5
I) Transport, storage and communication	9.7	15.7	20.9	15.6	15.8	12.3	15.7	12.0	15.1
J) Financial intermediation	2.1	1.9	1.7	0.5	0.6	0.4	1.1	1.6	0.4
K) Real estate, renting and business activities	13.5	17.1	10.1	18.9	7.3	24.3	14.6	13.3	18.9
L) Public administration and defence; compulsory social security	4.0	7.3	5.0	3.1	2.1	2.6	2.5	2.4	2.6
M) Education	0.8	1.3	0.7	0.8	1.6	1.6	2.8	2.9	1.9
N) Health and social work	1.2	1.9	1.3	1.5	2.3	2.6	3.2	4.2	2.8
O) Other community, social, personal service activities	3.1	1.0	0.4	2.1	2.5	2.0	4.9	4.3	5.0
P) Activities of households	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NACE A-P	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Czech Statistical Office

Table 29: Total employment (in thousands)

Territory	Year					
	2000	2001	2002	2003	2004	2005
Czech Republic	4 926.7	4 955.9	4 957.0	4 937.6	4 887.6	4 764.0
Jihozápad	566.0	565.4	566.5	560.3	560.0	570.5
Share of Jihozápad (%)	*11.5*	*11.4*	*11.4*	*11.3*	*11.5*	*12.0*

Source: Czech Statistical Office

Table 30: Productivity ratio (value added/employment) of the region compared with the national productivity ratio (Czech Republic = 100)

NACE	Year			
	2000	2001	2002	2003
A) Agriculture, hunting and forestry	116	102	95	112
B) Fishing	265	245	226	108
C) Mining and quarrying	54	92	163	98
D) Manufacturing	89	90	90	93
E) Electricity, gas and water supply	129	116	120	97
F) Construction	96	92	87	96
G) Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	71	77	81	81
H) Hotels and restaurants	38	41	71	84
I) Transport, storage and communication	104	93	96	98
J) Financial intermediation	64	69	60	59
K) Real estate, renting and business activities	85	80	86	92
L) Public administration and defence; compulsory social security	86	92	95	91
M) Education	112	110	100	96
N) Health and social work	104	102	107	92
O) Other community, social, personal service activities	105	99	104	86
P) Activities of households	156	76	90	128
TOTAL	88	87	88	89

Source: Czech Statistical Office

Table 31: Share of high-tech and medium/high-tech companies* in total manufacturing companies

Territory	Category	Year					
		2000	2001	2002	2003	2004	2005
Jihozápad	Number of manufacturing companies	31 908	46 961	34 831	36 026	36 007	35 938
	Number of HT and medium/HT companies	5 483	8 745	6 353	6 512	6 456	6 411
	Share of HT and medium/HT companies	*17.2*	*18.6*	*18.2*	*18.1*	*17.9*	*17.8*
Czech Republic	Number of manufacturing companies	262 130	276 301	293 977	305 272	306 789	:
	Number of HT and medium/HT companies	53 212	58 589	62 431	64 123	64 705	:
	Share of HT and medium/HT companies	*20.3*	*21.2*	*21.2*	*21.0*	*21.1*	*:*

* *NACE 24,29,30,31,32,33,34,35*

Source: Czech Statistical Office

Table 32: Share of employment in high-tech and medium/high-tech in total manufacturing (%)

Territory	Category	Year			
		2002	2003	2004	2005
Czech Republic	HT	5.0	4.4	4.8	5.4
	Medium/HT	26.9	27.0	28.3	29.4
	HT + medium/HT	31.9	31.4	33.1	34.7
Praha	HT	6.6	6.8	6.8	12.1
	Medium/HT	30.9	31.7	34.9	29.4
	HT + medium/HT	37.5	38.5	41.6	41.4
Střední Čechy	HT	5.1	5.1	3.8	5.3
	Medium/HT	35.3	34.5	36.4	37.1
	HT + medium/HT	40.4	39.6	40.3	42.4
Jihozápad	HT	6.8	5.4	6.9	6.5
	Medium/HT	28.5	29.3	29.8	30.9
	HT + medium/HT	35.3	34.7	36.7	37.4
Severozápad	HT	3.3	2.6	3.9	2.9
	Medium/HT	23.0	23.1	22.8	24.7
	HT + medium/HT	26.2	25.7	26.8	27.6
Severovýchod	HT	6.0	5.6	5.9	5.7
	Medium/HT	26.0	27.0	29.8	30.7
	HT + medium/HT	32.0	32.6	35.7	36.4
Jihovýchod	HT	5.4	2.4	4.3	6.2
	Medium/HT	28.8	26.7	26.4	27.1
	HT + medium/HT	34.1	29.1	30.7	33.3
Střední Morava	HT	4.8	5.9	5.5	5.8
	Medium/HT	24.6	24.2	26.9	30.7
	HT + medium/HT	29.3	30.1	32.4	36.5
Moravskoslezsko	HT	1.7	2.0	1.2	1.7
	Medium/HT	20.3	22.7	23.0	23.4
	HT + medium/HT	22.0	24.7	24.2	25.1

Source: Eurostat

Table 33: Share of innovating companies (2003)

Territory	Share of innovating companies (%)		
	Industry	Services	Total
Jihozápad	23.4	24.9	23.9
Praha	38.4	28.7	31.3
Střední Čechy	22.4	22.2	22.3
Severozápad	24.2	7.5	19.9
Severovýchod	32.9	18.2	28.0
Jihovýchod	24.2	23.5	23.9
Střední Morava	30.1	21.1	27.3
Moravskoslezko	30.4	15.9	25.1
Czech Republic	28.1	22.8	25.9

Source: Czech Statistical Office (Community Innovation Survey)

Table 34: Number of foreign-controlled companies and share of total businesses (2004)

Territory	Total number of businesses	Number of foreign-controlled companies	Share of foreign-controlled companies (%)
Jihozápad	267 861	12 985	4.8
Praha	417 123	46 812	11.2
Střední Čechy	262 821	12 744	4.8
Severozápad	238 454	15 619	6.6
Severovýchod	332 839	10 240	3.1
Jihovýchod	348 322	12 308	3.5
Střední Morava	257 754	4 786	1.9
Moravskoslezko	227 427	4 924	2.2
Czech Republic	2 352 601	120 418	5.1

Source: Czech Statistical Office

Table 35: Foreign direct investment in the Czech NUTS 2 regions (€ million)

Territory	Until 31 December 1999		Until 31 December 2004	
	€m	%	€m	%
Praha	8 436 267	48.0	19 649 456	46.7
Střední Čechy	2 031 587	11.6	4 222 532	10.0
Jihozápad	1 383 870	7.9	2 912 945	6.9
Severozápad	1 793 368	10.2	2 996 252	7.1
Severovýchod	1 305 745	7.4	3 418 579	8.1
Jihovýchod	1 238 411	7.0	4 083 416	9.7
Střední Morava	701 561	4.0	2 056 763	4.9
Moravskoslezsko	695 033	4.0	2 691 292	6.4
Non-specified	-	-	3 716	0.0
Czech Republic	17 585 843	100.0	42 034 951	100.0

Source: Czech National Bank

Table 36: Ratio of Exports/GRP

Territory	Exports 2003 (CZK million)	Exports 2004 (CZK million)	Ratio (regional exports / national exports) 2003	Ratio (regional exports / national exports) 2004	GRP 2003 (CZK million)	GRP 2004 (CZK million)	Ratio GRP / GDP 2003	Ratio GRP / GDP 2004	Ratio Exports/ GDP 2003	Ratio Exports/ GDP 2004
Jihozápad	188 419	232 220	13.7	13.5	269 168	288 881	10.5	10.4	0.70	0.80
Praha	64 552	92 685	4.7	5.4	591 068	637 704	23.1	23.0	0.11	0.15
Střední Čechy	254 796	338 563	18.6	19.6	268 992	288 888	10.5	10.4	0.95	1.17
Severozápad	135 408	168 113	9.9	9.8	232 415	253 839	9.1	9.2	0.58	0.66
Severovýchod	271 648	306 231	19.8	17.8	322 634	344 856	12.6	12.5	0.84	0.89
Jihovýchod	185 690	214 585	13.5	12.4	375 599	407 173	14.7	14.7	0.49	0.53
Střední Morava	137 618	169 284	10.0	9.8	247 160	266 166	9.7	9.6	0.56	0.64
Moravskoslezko	132 798	176 774	9.7	10.3	248 746	280 210	9.7	10.1	0.53	0.63
Non-specified	0	25 276	0.0	1.5	:	:	:	:	:	:
Czech Republic	1 370 929	1 723 731	100.0	100.0	2 555 782	2 767 717	100.0	100.0	0.54	0.62

Source: Czech Statistical Office, Businessinfo

Table 37: Programmes of the Czech and Moravian Guarantee and Development Bank, 1 July 2004 – 30 June 2006

Territory	START programme			
	approved financing		total amount	
	number of loans	%	CZK million	(%)
Praha	0	0.0	0	0.0
Střední Čechy	33	4.6	15 510 000	4.9
Jihozápad	71	10.0	33 071 200	10.5
Severozápad	66	9.3	29 803 143	9.4
Severovýchod	93	13.1	40 248 900	12.8
Jihovýchod	151	21.3	69 833 809	22.1
Střední Morava	78	11.0	36 546 865	11.6
Moravskoslezsko	218	30.7	90 454 500	28.7
Czech Republic	710	100.0	315 468 417	100.0

Territory	KREDIT programme			
	approved financing		total amount	
	number of loans	%	CZK million	(%)
Praha	0	0.0	0	0.0
Střední Čechy	55	7.6	138 000 344	9.6
Jihozápad	140	19.4	264 743 910	18.4
Severozápad	65	9.0	125 413 500	8.7
Severovýchod	144	19.9	254 486 209	17.7
Jihovýchod	126	17.5	260 928 564	18.2
Střední Morava	102	14.1	207 771 307	14.5
Moravskoslezsko	90	12.5	185 723 858	12.9
Czech Republic	722	100.0	1 437 067 692	100.0

Source: Czech and Moravian Guarantee and Development Bank