



RIP-WATCH

ANALYSIS OF THE REGIONAL DIMENSIONS OF INVESTMENT IN RESEARCH

CASE STUDY REGIONAL REPORT: WIELKOPOLSKIE (POLAND)

**Authors: Jacek Kucinski, Institute of Fundamental Technological Sciences of
the Polish Academy of Sciences,
Wanda Gaczek and Marek Urbaniak, Poznan University of Economics**

Date: December 2006

ERAWATCH Network asbl: Project management: Logotech S.A., Project team: Institute of Fundamental Technological Sciences of the Polish Academy of Sciences and Poznan University of Economics

Disclaimer: The views expressed are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.

ERAWATCH® is a registered Trade Mark.

Reproduction of content is authorised provided the source is acknowledged.

© European Communities, 2007.

Website: <http://cordis.europa.eu/erawatch/>

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 Estudos Sociais e Economicos (PT), Joanneum Research InTeReg (AT), Nomisma (IT), Poznan University of Economics (PL), Technology Centre of the Czech Academy of Sciences (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.

Table of Contents

1	Introduction.....	6
2	Regional Knowledge Base	7
2.1	Description of the regional knowledge base	7
2.2	Policy context	12
2.2.1	Policy framework and stakeholders.....	12
2.2.2	Policy objectives and instruments	15
2.3	Conclusions.....	22
3	Regional economic structure.....	25
3.1	Description of the economic structure	25
3.2	Policy context	30
3.3	Conclusions.....	35
4	Conclusions	37
4.1	Assessment of the Regional Innovation System	37
4.2	Assessment of policies.....	41
4.3	Challenges and trends of the knowledge economy.....	41
Annexes	.....	44
Annex 1:	Definition of policy mix typology	44
Annex 2:	Description of key indicators used in the summary graphs	46
Annex 3:	Tables and Figures	47

Exhibits

Exhibit 1:	RTDI policy mix affecting the region – Wielkopolska (Poland, 2005)	20
Exhibit 2:	Effects of policies complementary to RTDI instruments on R&D and innovation capacity in Wielkopolskie– Poland (2005)	33
Exhibit 3:	Matching of knowledge and economic specialisation in Wielkopolska – Poland	39
Exhibit 4:	Strengths and weaknesses of the Regional innovation system	40
Exhibit 5:	Identification of policy challenges in Wielkopolska – Poland	42

Figures

Figure 1:	Map of Poland	6
Figure 2:	Key indicators on Wielkopolskie’s knowledge base development in comparison with Poland	23
Figure 3:	Key indicators on Wielkopolskie’s economic structure and development	37

Abbreviations

ANBERD	Analytical Business Enterprise Research and Development Database
ATT	Agency for Technics and Technology
BERD	Expenditure on R&D in the business enterprise sector
EPO	European Patent Office
FTE	Full-Time Equivalent
GBAORD	Government budget appropriations or outlays for R&D
GDP	Gross domestic product
GERD	Gross Domestic Expenditure on R&D
GRP	Gross Regional Product
GUF	General university funds
GUS	Central Statistical Office of Poland
HEI	Higher Education Institution
HERD	Expenditure on R&D in the higher education sector
IPTS	Institute for Prospective Technological Studies, Seville, Spain
ISIC	International standard industrial classification
KBN	State Committee for Scientific Research. See MNiI
MC	Management Committee
MNiI	Ministry of Scientific Research and Information Technology. Formerly KBN (the new name is the Ministry of Science and Higher Education)
N.E.C.	Not elsewhere classified
NACE	General Industrial Classification of Economic Activities within the European Communities
NSS	National System of Services
PAN	Polish Academy of Sciences
PARP	Polish Agency for Enterprise Development
PHARE	Poland–Hungary Aid for the Restructuring of the Economy
PM	Project Management
PPP	Purchasing Power Parity
RIS	Regional Innovation Strategy
SMEs	Small and Medium Enterprises
SOP–HRD	Sectoral Operational Programme – Human Resources Development
SOP–ICE	Sectoral Operational Programme – Improvement of the Competitiveness of Enterprises
ToR	Terms of Reference
ZPORR	Integrated Regional Operational Programme

1 Introduction

Wielkopolskie voivodship¹ is located in Western Poland. In 2005, its population was 3.36 million, i.e. 8.8% of Poland's total population.² The province has been regarded for years as a relatively wealthy one – with the economy producing about 9.0% of Poland's GDP (after Mazowieckie and Śląskie). The gross value added in 2003 amounted to €12 000 per employee, which put Wielkopolska in 7th position among the 16 voivodships.

Figure 1: Map of Poland



In 2004, there were 1.2 million people employed in Wielkopolska. The rate of unemployment in the voivodship amounted to 15.9% whereas in Poland it was 19.0%. The employment structure in the province was as follows: agriculture – 17.4%, industry and construction – 32.9%, services – 49.7%. An important role in the economy is played by industry, which in 2004 accounted for 11% of Poland's employment and provided 11.2% of the country's sold production of industry.

In the 1990s, Wielkopolska's economy was in transition to a market economy but that process did not significantly strengthen its RTDI institutions: both in Wielkopolska and in Poland the innovation system has improved over the last 2-3 years thanks to regional policy (and funds) undertaken on the back of accession to the European Union.

The economy of Wielkopolska is mainly based on small and medium-sized enterprises (SMEs). The most important branches of manufacturing are food processing and motor car, trailer and semi-trailer production – both with a long tradition. The role of foreign direct investment is increasing: up to 2003, the number of companies with foreign capital accounted for 7.7% of Poland's national value. These investors had allocated their capital to the following sectors - food, chemicals, pharmaceuticals, transport, machinery and equipment.

In 2004, expenditures on R&D activities in Wielkopolska amounted to 7.2% of Poland's total. The value of R&D expenditures is growing but calculated per capita this indicator was still lower than in the country as a whole. Between 1995-2003, expenditures on R&D in the Gross Regional Product were lower in Wielkopolska than in Poland, and in 2004 they reached only 0.48%, which is well below the targets of the Lisbon Strategy.

The R&D potential of Wielkopolskie is concentrated in Poznań (570 800 inhabitants), which is the 3rd largest academic centre in Poland (after Warsaw and Cracow). There are 33 HEIs in Poznań with nearly 130 000 students.³ In 2004, there were 12 100 people⁴ in Wielkopolska participating in R&D activities, i.e. 9.5% of Poland's R&D sector. There were 3.6 per 1000

¹ In the report we use terms province and voivodship alternatively. They mean for us the region within its administrative borders (level NUTS2).

² The present area and management of the voivodship are the result of the administrative reform carried out in Poland in 1999. The province's population exceeds the population of several EU countries, for example Lithuania - 3.4 million, Latvia – 2.3 million, Slovenia – 2.0 million and Estonia – 1.13 million.

³ In 2004, the number of students per 1000 inhabitants was highest in Poznań (227.3) among the large academic centres in the country.

⁴ In Wielkopolska the number of people working in R&D, in absolute numbers, reached 12 100 thousand people and - using FTE – only 5 500.

employees working in the R&D sector (of which there were only 2.8 per 1000 scientific research workers) – that indicator was lower than the national one. In Wielkopolska, as in the country as a whole, the innovation system is being created. Over the last 2-3 years the pace of consolidation of the system has accelerated.

2 Regional Knowledge Base

The knowledge base in the area of Wielkopolska has been developing for several decades. Up to the mid-1990s, initiatives had been conducted by the central authorities but over the last few years the role of the local authorities has increased. HEIs are important: in R&D Wielkopolska's strong scientific tradition produces high skills amongst its scientific staff (for example, in agricultural sciences, chemistry, metallurgy and machine theory). There are also R&D units, and scientific units of the Polish Academy of Sciences (PAN). In some larger enterprises there are development units.

The potential of the R&D sector is strongly dependent on RTDI infrastructure, the condition of which is still not satisfactory. The decline in this sector was not reversed during system transformation because of the lack of reform in the R&D sector and inadequate financing (expenditures from the budget as a share of GDP allocated to the R&D sector were much lower in Poland than in well-developed countries). The innovation system in Wielkopolska is fragmentary but it started to improve significantly in 2004 with the advent of the Regional Innovation Strategy "Innovative Wielkopolska".

2.1 Description of the regional knowledge base

2.2.1 Knowledge creation capacity

The potential of the R&D sector in Wielkopolska is particularly significant in Poznań, which concentrates over 90% of the workforce employed in the R&D sector. In 2004, 71 entities⁵ were carrying out R&D activities in Wielkopolska. The following are the most important features of the types of R&D entities in Wielkopolska:⁶

- **PAN scientific units:** there were 7 in Wielkopolska in 1999 and 6 in 2004. In 2004, 102 people, including 72 scientific research workers, were employed per unit. PAN scientific units employed 11.1% of people involved in R&D activities in the voivodship, engaged 6.5% of Wielkopolska's professors and used 30.3% of the province's expenditures on R&D activities. In these units basic research dominated: the main fields of study were biology, chemistry and humanities. Transformation of PAN is still in progress: financing from the central budget is limited whereas the value of funds from enterprises is gradually increasing, which means that the significance of applied research and development activities is greater.
- **HEIs:** there were 33 HEIs in Wielkopolska in 2005, of which only 9 provided education for students at the same time as carrying out R&D activities.⁷ In 2004, they employed 65.3% of R&D workers and spent 32.1% of Wielkopolska's R&D expenditures.

⁵ The number of units in this sector has been decreasing since the mid-1990s. In 1999 R&D activities were carried out by 95 units and up to 2004 their number had decreased by 25.3%.

⁶ There are four types of R&D entities in Poland: HEIs, PAN scientific units, R&D units, development units (within companies). In entities of a particular type there is a certain kind of prevalent activity: HEIs and PAN scientific units usually carry out basic research, whereas the activities of development units are closer to the economy.

⁷ In 2005, there were 13 state and 20 private HEIs in Wielkopolska. The number of private entities was growing rapidly but they did not conduct R&D activities. Only 9 HEIs provide education and carry out R&D activities at the same time (all of them in Poznań). The most important state HEIs are: Adam Mickiewicz University (50 700 students); Poznań Technical University (19 400 students in the academic year 2004/2005); University of Agriculture (12 900 students); Poznań University of Economics (11 000 students); and the University of Medical Sciences (6 200 students).

Professors accounted for 8.3% of the total number of R&D workers in Wielkopolska, persons with a post-doctoral degree (habilitated doctor degree: assistant professor – this academic degree is not common in the UE) – for 9.1%, and doctors – for 31.3%. Therefore, the scientific potential of HEIs is significant. They are the largest entities as regards the number of R&D employees – 402 people were employed per HEI, including 325 R&D workers. The organisational structure of HEIs is complex, embracing chairs, institutes, laboratories and numerous small research teams. Concerning R&D expenditures, basic research dominated in 2004 in Wielkopolska (60.3% of HEIs current expenditures), followed by applied research (27.2%) and development activities (12.4%). Fields of research are diversified, matching the profiles of the institutions in which they are conducted;

- **(branch) R&D units:** these are under the control of the central government, mainly the Ministry of Economy (in 1999 there were 20 units and in 2004 – 13). In 2004, they employed 15.6% of R&D workers and used 21% of Wielkopolska's R&D expenditures. The average size of these units by number of employees was rather small – 66 people were employed per unit, including 43 R&D workers. Professors involved in these units accounted for only 3.2% of professors in Wielkopolska. These units were mainly involved in applied research (43.2% of their current expenditures on R&D) and development activities (41.7%);
- **development units (in companies):** their numbers decreased significantly – from 57 in 1999 to 38 in 2004. In 2004, they employed only 5.1% of R&D workers and used 16% of Wielkopolska's R&D expenditures. Neither professors nor persons with a post-doctoral degree were employed. Development units are modest in size and in their range of activities: in 2004, 12 people were employed per unit, including 8 scientific research workers. As regards the structure of current R&D expenditures, 87.2% were allocated for development activities compared with 3.7% for basic research.

Wielkopolska's R&D sector depends heavily on the central budget and focuses on basic research. Public financing is not sufficiently concentrated on applied research and development activities. Difficulties in the R&D sector are to some extent due to small-scale funding from the central budget and also from the business sector. In absolute numbers, total expenditure on R&D activities in Wielkopolska grew: from €67.9 million in 1999, i.e. 6.1% of the value for Poland, to €82.1 million in 2004, which accounted for 7.9% of the country's expenditure (Table 4). The increase in Wielkopolska was 29.6% compared with 7.5% in Poland, which indicates the increasing relative importance of the R&D sector in Wielkopolska.⁸ On the other hand, R&D expenditures in relation to GDP in the province did not exceed 0.5% and were lower than in the country. This negative difference for Wielkopolska was greatest in 1997 but it subsequently gradually decreased and in 2003 it was 8 percentage points. In 2003, the GERD/GDP ratio was higher only in Mazowieckie (1.19%) and Małopolskie (0.89%). The R&D expenditures per capita in Poland in 2004 amounted to €29.8 and were gradually increasing. In Wielkopolskie these expenditures reached €24.5, which was the 5th highest after Mazowieckie (the 1st-placed voivodship with €97) (Table 3).

R&D activities in HEIs received more funds than the business or the government sector: for example, in 2000 the business sector in Wielkopolska used slightly over 28% of R&D expenditures (8 percentage points less than in Poland), the government – 23.5% (nearly 9 percentage points less) and the higher education sector – 48% (nearly 16 percentage points more – compare Table 4). Up to 2004 the sectoral structure of R&D expenditures in Wielkopolska had changed, becoming similar to the country's structure: the business sector

⁸ Calculations were made on values in PLN (Polish zloty).

used 28%, the government 39.5% and higher education 32.1%.

In 1999, expenditures on R&D activities in the government sector (GBAORD) in Poland accounted for 58.5% of total R&D expenditure and for 61.7% in 2004. In Wielkopolska this ratio was higher (in 1999 – 64.1% and in 2004 – 63.8%). The situation was similar in Mazowieckie. In Poland, R&D expenditure in the business sector (BERD) in 1999 amounted to 30.6% and in 2004 to only 22.6%. In voivodships the share of funds from enterprises varied: in Wielkopolska in 1999 their share was lower than in the country (by nearly 9 percentage points) and in 2004 it came close to the value for Poland. Foreign investors are moderately significant among the sources of R&D expenditures. In 1999 in Poland they accounted for only 1.7% of R&D expenditures - 2.2% in Wielkopolska. By 2004, their share in Poland had grown to 5.2%, whilst in Wielkopolska it reached 4.6% (Table 4).

There have been changes concerning the kinds of R&D activities conducted in Wielkopolska and in Poland. In 2000, basic research in Wielkopolska consumed 44.9% of current expenditures on R&D activities (6 percentage points more than in the country) and in 2004 – 50.2% (nearly 11 percentage points more).⁹ The share of expenditure on applied research in the province fluctuated slightly – in 2000 its value was a little above 22% (3 percentage points less than in the country) and in 2004 – only 20.3% (5 percentage points less). The share of expenditure on development activities in Wielkopolska decreased: in 2000 it was 32.8% (4 percentage points less than in Poland) and in 2004 – 29.5% (6 percentage points less). Observed trends in Wielkopolska were similar to those in those voivodships with large academic centres (e.g. in Mazowieckie and Małopolskie).

In 2004, the R&D sector in Wielkopolska employed 12 136 people, i.e. 9.5% of the total employment in this sector in Poland. In the years 1999-2004, this number increased by 5.7% (in Poland – by only 1.1%). Since 2001, there have been slightly more R&D workers in Wielkopolska than the Polish average. However, their numbers have been significantly lower than, for example, in Mazowieckie (Table 6, 7).¹⁰ In 2004, R&D workers made up 0.82% of the province's total workforce whereas in Mazowieckie the figure was 1.49%. The ratio of R&D workers to employees in Wielkopolskie was 1.0%, and in Mazowieckie – 1.7% (country average = 0.91%).

The number of patents applications filed and obtained illustrate minor effects of activities in the R&D sector and its cooperation with the business sector.¹¹ Between 1990 and 2002, these figures decreased in Poland before gradually increasing again in subsequent years. Wielkopolska's share in the number of patents granted by Poland's Patent Office is noticeably low: in 2004, there were 43 patents obtained by entities from Wielkopolska, i.e. 5.5% of the total number of patents granted in Poland, which put the voivodship in 6th position (Table 10). The number of patents per 1 million people in the province in 2002 was close to the Polish average, but Wielkopolska was in 7th place. Since 2003, this indicator has been lower than in the country and in 2004 it amounted to 12.8 patents granted per 1 million people (10th position in Poland).

Statistics of patents applied for from Poland (and also from Wielkopolska) to EPO indicate weaker international results of R&D activities (Table 11):

- in the field of biotechnology only 10 patent applications were submitted to EPO in 2002

⁹ Current expenditures dominate in the total expenditures of the R&D sector: in 2004 in Wielkopolska they accounted for 77.8% (in Poland – 80.2%). Therefore, the share of investment outlays is relatively modest. Labour costs constitute a large part of current expenditures in the R&D sector (for example, in 2004 in Wielkopolska they consumed 43.6% of the total value).

¹⁰ Information is based on the real number of people employed in this sector, not on FTE.

¹¹ An application for a patent from Poland's Patent Office involved high expenses and many bureaucratic obstacles up to 2004. There are still a small number of applications filed with Poland's Patent Office which are also filed with EPO. The reason for that was a small number of patent paths for innovators: up to 2004 they had no access to RE and RPE procedures. Poland has been a member of EPO since March 2004.

(in 2001 the figure was 5.9): about 44% of applications were from Mazowieckie, 30% from Dolnośląskie and 7% from Wielkopolskie;¹²

- in the field of information and communication technologies, 32.6 patent applications were submitted from Poland in 2002, including 2.5 applications concerning consumer electronics (from Łódzkie, Lubuskie and Dolnośląskie), 11.4 – computers, office equipment, 6 – telecommunication, 12.6 – other types of ICT. As regards the number of applications in the field of ICT, Wielkopolskie voivodship ranked 5th in Poland (Mazowieckie, Małopolskie, Dolnośląskie and Śląskie were better);
- in the field of high technologies, in 2002 there were 22.5 patent applications submitted to EPO from Poland; these concerned computers and automated business equipment, microorganisms and genetic engineering, communication technologies, semi-conductors (from Mazowieckie, Małopolskie, Dolnośląskie), and lasers (from Mazowieckie). As regards the number of patent applications in high technologies, Wielkopolskie voivodship ranked 5th in the country, after Dolnośląskie, Mazowieckie, Śląskie, and Małopolskie. However, it ranked 3rd as regards applications for microorganisms and genetic engineering.

Statistics from EPO and Poland's Patent Office show the weak position of Poland and Wielkopolska as regards patents and may to some extent reflect the poor competitiveness of its R&D activities.

2.1.2 Knowledge diffusion capacity of the region

At the beginning of the 1990s, Poland had no state-independent (private) entities supporting the flow of knowledge between the R&D sector and the business sector. They were centralised, controlled by the central authorities and served particular branches. Up to the mid-1990s, diffusion of knowledge to business had been initiated by independent entities from the R&D sector, without enough support from the government. Many contacts between R&D entities and companies broke down after the introduction of the market economy (companies had difficulties in surviving whilst funds for R&D activities from the central budget were reduced). R&D sector entities which functioned quite well under the planned economy (being fully financed from the central budget) found it difficult to obtain funds from the business sector. Enterprises operating under changing and difficult economic conditions showed little interest in using scientific achievements. They tried to gather and use knowledge which supported their present existence (for example, concerning management, marketing), concentrating to a lesser degree on costly technological innovations. Companies with a share of foreign capital entering the Polish market did not participate in the dissemination of knowledge. Instead, they often used their own technological solutions. Moreover, HEIs put the emphasis on providing tuition (as a result of the rapid growth in the number of students). Since the mid-1990s, the market has enforced product and process innovations. Attempts were made (individual initiatives, coordinated neither by central nor by regional authorities) to establish institutions which would support knowledge dissemination in the economy. These institutions have now been established in Poland, particularly since 2003.

In both Poland and Wielkopolska, technology transfer infrastructure is underdeveloped. In 2004, there were 507 business-supporting entities in Poland, of which 55.2% were of a training and consultancy nature and merely 7.9% of an innovation-supporting nature. In Wielkopolska, there were 48 entities (9.5% of the total number in Poland), including one science and technology park (1st in Poland, start-up in 1995), 5 technology transfer centres

¹² The regional distribution of patent applications is assigned according to the inventor's country or region of residence. If an application has more than one inventor, the application is divided equally among all of them and subsequently among their countries of residence, thus avoiding double counting.

(established in 2004-2005), 4 entrepreneurship incubators (recently initiated, of which 2 are academic), 5 regional loan funds and 3 loan guarantee funds. In 2004, there were no innovation-supporting entities in Wielkopolska accredited within the National System of Services (a network of entities supporting SMEs and coordinated by the Polish Agency for Entrepreneurship Development: PARP, see section 2.2.1). These numbers are inadequate for the needs of the economy: surveys among entrepreneurs revealed that the range of support was restricted and that the means at the disposal of particular entities were limited. In HEIs conducting R&D activities there are units supporting the transfer of scientific results to companies. However, they were evaluated negatively.

In Wielkopolska there is Poznań Science and Technology Park, created in 1995 by Foundation UAM, the first initiative of this kind in Poland. It conducts technological audits for SMEs and scientific research institutions, and cooperates with various national and foreign institutions (interested in technology transfer). Poznań Science and Technology Park played an essential role in establishing the Wielkopolska Network of Innovation in 2004: the aim of this initiative is to help ensure high-quality services and provide innovation support for institutions' personnel.

In 2004-2005, 5 centres supporting technology transfer started functioning in Wielkopolska: the Centre of Innovation and Technology Transfer Ltd in Leszno, Eurocentre of Innovation and Entrepreneurship in Ostrów Wielkopolski, Agency for Development of Northern Wielkopolska in Piła, UAM Centre of Innovation and Technology Transfer, and the Chief Technical Organisation in Konin.

Technology transfer from the R&D sector to the business sector may be improved in the near future thanks to the creation within existing R&D entities of Centres of Excellence (CEs). There have been 22 CEs established recently in Wielkopolska - for example, CE for advanced information technologies (coordinator – Poznań Technical University), CE for food biotechnology (coordinator – University of Agriculture), CE CENAT (Centre of Excellence for Nucleic Acid-based technologies, coordinator – Institute of Bioorganic Chemistry of The Polish Academy of Sciences), CE for innovative technologies CITech (Centre of Excellence for Innovative Technologies, coordinator – BioInfoBank Institute in Poznań).

Centres of Advanced Technologies are also being set up, e.g. the Centre for Advanced Chemical Technologies, Centre for Advanced Information Technology, and the Wielkopolska Centre for Medical Biotechnology. These institutions conduct ground-breaking research in the field of food biotechnology, genetics and biochemistry, environmental protection, and IT systems. In principle, the Centres of Excellence and Centres for Advanced Technologies should cooperate with economic entities. However, they have not yet operated long enough for the effects of their cooperation with industry to be evaluated.

2.1.3 Knowledge absorption capacity of the region

In 2005, there were 33 HEIs, of which 15 offered bachelor degree courses. Since the end of the 1990s the number of HEIs has increased (in the year 2000 there were only 25). In the academic year 2004/2005 the number of students in Wielkopolska reached 168 400, which was 8.7% of the total number of students in Poland (there were more students in Mazowieckie, Śląskie, Małopolskie and Dolnośląskie). As in the country, the number of students in Wielkopolska is growing. Between 2000 and 2005 the growth in Wielkopolska was 33.5%, which was higher than in Poland (21.5%). On the other hand, the number of students per 1000 inhabitants in Wielkopolska in 2004 (47.9) was low in comparison with the country.

The province's HEIs offer tuition in many fields but are dominated by students of economic sciences (management, marketing, finance) followed by humanities (law, history, linguistics). Students of technical and natural sciences are in a minority: Poznań Technical

University has 11.5% of the province's total number of students, and the University of Agriculture – 7.6%. The number of technical science students is gradually increasing but Poznań Technical University accounted for only 5.7% of those studying at technical universities in Poland.

Only 4 HEIs in Wielkopolska conduct doctorate courses and nearly all HEIs offer post-graduate studies. Doctor's degrees were conferred by Adam Mickiewicz University (2004/2005 – 130 and 2005/2006 – 140), Poznań Technical University (61 and 62 respectively), the University of Agriculture (90 and 70), and Poznań University of Economics (60 and 66). Moreover, 4 PAN research institutes have the right to confer doctor's degrees (they conferred 7 and 10 respectively).

The ratio of Human Resources for Science and Technology (HRST) to Wielkopolska's population in the years 1999-2004 was lower than for Poland. HRST as a percentage of Wielkopolska's workforce was also lower than in Poland – in 2004 this ratio for Wielkopolska amounted to 26.8% (the country's value being 31%) (Table 8).

In Wielkopolska, as in Poland, the structure of the economically active population's education is changing. In 1999, tertiary education (isced 5, 6) in Wielkopolska had 10.8% of the economically active population, upper secondary education (isced 3, 4) – 74.4% and lower secondary or less (isced 1, 2) – 14.8%. In 2004, the structure changed: tertiary education had 15.2%, upper secondary education – 73.7% and lower secondary or less – 11.1% (Table 9). The percentage of people with higher education is growing, which means a higher quality of human resources on the labour market. As regards the share of people with tertiary education, Wielkopolska occupied 4th position in Poland in 2004, and 3rd for upper secondary education.

Since the mid-1990s, the role of lifelong learning in Poland has been increasing: in 2004, almost 4.97% of people aged 25-64 participated in forms of lifelong learning, in Wielkopolska – 4.4% and the voivodship was ranked 13th. This share has been rising since 2001, especially in the years 2003–2004, which may be attributed, among other things, to EU programmes helping to increase the number of active people on the labour market.

2.2 Policy context

2.2.1 Policy framework and stakeholders

Poland does not have a long tradition of strong regional government. Under the socialist system production and distribution were controlled by the central authorities. The RTDI infrastructure was centrally managed and financed. In the 1990s much of Poland's innovation policy remained centralised.

In Poland, the R&D sector became weaker during the period of system transformation. The central government limited financing of R&D and did not introduce any other forms of support. The difficulties of the R&D sector increased because of the weak demand of domestic firms due to their inadequate resources and capacities, and increased foreign competition. Existing R&D structures partly collapsed, and some branch R&D units were closed down. Negative phenomena affected the hi-tech industry, e.g. liquidation of the branch conglomerate UNITRA (including firms manufacturing electronic equipment) led to serious difficulties in this area of industry. There was some technology inflow into the economy thanks to foreign investment, but no significant participation on the part of entities from the national or regional innovation system. Moreover, after companies were privatised R&D units were not involved in relations with the new owners, especially foreign investors, who often used technical solutions and knowledge from their countries of origin, making cooperation with the regional R&D sector limited.

The national innovation system is fragmentary and links are lacking between the R&D sector (innovation-supporting institutions) and the economy. The central authorities failed to develop a coherent concept of RTDI policy, which has repercussions on regional conditions (there is still no National Innovation Strategy).

There are some obstacles to improving innovativeness, including the poor state of the R&D sector. Public expenditure on R&D did not significantly increase during system transformation: the small central budget was a source of funds (distributed especially within the section "Science") for inexpensive basic research whereas (co-)financing of more expensive applied research and development was neglected. As a result, R&D units had to decrease the number of workers and limit their activities (see also information on marginal State aid in support of R&D activities – section 3.2.3). Funds from the central budget in Poland are currently scant (€0.6 billion in 2004 –, 2005 – €0.72 billion, 2006 – €0.86 billion). Expenditure on R&D activities in relation to GDP is low (0.70%). This is mainly public funding (2/3 of total expenditure); and business sector funding is low (1/3 of total value).

The central government plays a significant role in RTDI policy. Most important are 2 Ministries: the Ministry of Scientific Research and Information Technology (MNII, up to 2003 the State Committee for Scientific Research – KBN, which was the non-governmental body dealing with science and technology policy) and the Ministry of Economy.

The task of KBN was to determine the direction of R&D activities and to devise a plan for financing science from the central budget (it was then approved by the government). KBN allocated funds for:

- core funding for statutory R&D activities, i.e. institutional financing provided selectively to designated research establishments, units and university departments for their own activities;
- investments in R&D infrastructure, such as buildings and equipment;
- research grants based on research proposals, presented by small research teams or individual researchers;
- subsidies for R&D programmes of national importance commissioned by enterprises, state bodies or regional authorities;
- subsidies for international scientific and technological cooperation resulting from intergovernmental agreements;
- subsidies for selected R&D activities (for example, information services).

In Poland, funds from the central budget were scant, and allocated mainly (about 70%) for statutory and investment activities of scientific entities and for own research activity of HEIs, only about 30% going to research and targeted grants. The central authorities did not allocate more funds to development.

RTDI policy conducted by the central government was reflected in activities of the Ministry of Economy. However, the Ministry made inadequate efforts to coordinate RTDI policy, and thus improve the links between the R&D sector and business. Emphasis was placed mainly on initiatives supporting SMEs. Any initiatives concerning innovations lacked consistency with those of the State Committee for Scientific Research, mainly because of a lack of division of responsibilities between these institutions.

The Agency for Technics and Technology (ATT), which operated in the years 1997-2002, was the only government body established during system transformation by the Ministry of Economy to deal with innovation policy. Its tasks were as follows:

- support for innovation in manufacturing companies, particularly in SMEs;
- transfer of technology from the R&D sector to industry;
- organisation of the "Polish Product of the Future" competition;

– providing information on RTDI initiatives, innovative firms, sources of capital, etc. The idea of creating a network of technology transfer centres came from within ATT. No costly initiatives were undertaken because ATT had limited funds from the central budget. For example, in 1999 ATT received €1.6 million, in the year 2000 – €1.8 million.

The Polish Foundation for Promotion and Development of SMEs was created by the central authorities in order to support SMEs. It was established in 1995 and in 2001 was changed into the Polish Agency for Entrepreneurship Development (PARP), which in 2002 took over the tasks of ATT and the Polish Agency for Regional Development. Every year PARP had a budget of about €70 million and supported companies by issuing quality certificates, providing training and consultancy services, increasing environmental protection and safety at work, and helping to prepare for entry to the capital market. Financial assistance per SME was small. For a few years now, PARP has undertaken activities relating to implementation of the state innovation policy. However, its allocated funds are limited (in 2004 – €0.6million). One of the tasks of PARP is to administer some of the EU programmes, offered in 2004-2006, concerning increased entrepreneurship and development of human resources.

At PARP's initiative, in 1996 the National System of Services (NSS) for SMEs was set up as a network of institutions supporting SMEs in their various aspects at three levels: national, regional (Regional Funding Institutions) and local (accredited non-governmental organisations). In 2004 there were 206 accredited centres in the NSS (including consultancy, training, information, financial and pro-innovation centres), of which 21 were located in Wielkopolska (10.2%). Accreditation in the field of pro-innovation services was granted to only 6 entities in Poland, none of them in Wielkopolska (Table 12).

During system transformation some government strategies concerning RTDI policy were formulated, but they did not take into account the particular needs of the regions. The regional policy conducted by the central authorities was dominated by the need to counteract unemployment, with standardisation of instruments. The scope of the regional level of governance increased following a new territorial division in 1999, which contributed to the emergence of stronger voivodships: new self-governmental authorities (Marshall, Regional Parliament) were established holding responsibility for regional development, including regional innovation policy.¹³ However, there is no designated department dealing with RTDI policy in Wielkopolska (in Marshall's Office).

Since the year 2000 voivodships have become more independent with respect to the creation and implementation of regional policy. In that year new rules for regional development support were established, based on the "National Strategy for Regional Development", and contracts were concluded between the central government and the regional self-governments for co-financing projects of mutual interest. Unfortunately, there were significant obstacles to the accomplishment of contracts due to the difficult situation of the central budget and the economic recession. In addition, the contracts took very little consideration of improvement of the regional innovation system.

Many initiatives aimed at enhancement of the innovative infrastructure have recently started, e.g. science and technological parks and clusters. They are determined to a great extent by EU policy (and funds) because of inadequate national influence. Programmes of a horizontal and regional nature are currently more important, but they are not focused on any particular branches or technologies.

Recent documents, taking into account the regional dimension, were partly justified by

¹³ The voivod (provincial governor appointed by the Prime Minister) performs supervising functions and represents the interests of the central government.

Poland's accession to the European Union (there is a need to fulfil the requirements of the Lisbon Strategy and to absorb EU funds). Consequently, the regional authorities acquired some power over allocation of EU funds and the central government left appropriate funds in the regional budgets, thus making for a regional contribution to projects co-financed by the European Union. On the other hand, funds from the central budget are still not distributed in relation to the needs reported by the regional authorities.

Creation in mid-2004 of the Regional Innovation Strategy "Innovative Wielkopolska" (financed under the 5th EU Framework Programme) made the concept of a regional innovation system more of a possibility. This document provided a set of strategic goals and included an Action Plan aimed at establishing innovation-supporting institutions. These initiatives are implemented to a large extent by structural funds, which are a source of financing that helps to improve RTDI infrastructure, increase competitiveness of companies and raise the quality of human capital. It is impossible to estimate the results of initiatives which have mostly not yet been completed (according to the n+2 rule, the consequences should be observable in a few years time).

An important role in support of RTDI policy in Wielkopolska should be played by innovation-supporting institutions, which have encountered many problems, including financial and organisational ones.¹⁴ Many of them have been established recently and surveys conducted within the business sector show that their impact has been slight.

2.2.2 Policy objectives and instruments

2.2.2.1 Policy objectives

During system transformation in Poland no state structural support was introduced. There is no National Innovation Strategy. The government's documents concerning innovations turned out to be divergent, mostly expressing political declarations. Many programmes were of a general nature and did not put any emphasis on specific branches or technologies. For example, "The supplement to The Basis for the National Science and Technology Policy" highlighted 55 preferred areas of interest, classified into 5 groups, without sufficiently justifying that choice. Technology foresight might be a solution to determine preferred technologies (branches) and conditions of innovativeness, but it is still unfinished.

Furthermore, many activities mentioned in various documents were not carried out. For example, the KBN's proposals concerning R&D policy came to nothing because of, among other things, the lack of political goodwill and as a consequence – modest financing. This also happened to the government programme "Raising innovativeness in Poland's economy by 2006" developed in 2000. Recently the significance of EU funds has been emphasised, for example, in a 2004 document entitled "Strategy of increasing expenditures on R&D in order to meet the criteria of the Lisbon Strategy".

National policy objectives particularly concerning RTDI were presented in the "National Development Plan for 2004-2006", which targeted five priorities:

- support for competitiveness of the industry and service sectors;
- creation of conditions to stimulate investment and promote sustainable development and spatial cohesion;
- human resource development and increase in employment;
- structural changes in agriculture and fisheries;

¹⁴ There were efforts to consolidate and coordinate activities within the Association of Organisers of Centres of Innovation and Entrepreneurship in Poland, the Association of Agencies and Foundations for Regional Development, the Association "Free Entrepreneurship", and the National Association of Guarantee Funds. There is the National System of Services (established by the Polish Foundation for Promotion and Development of SMEs, now the Polish Agency for Development of Entrepreneurship), which is to some extent an integrating initiative.

- enhancement of the development capacity of regions and countering the marginalisation of particularly affected areas.

Regional RTDI policy objectives were determined on the basis of an assessment of the strengths and weaknesses of the R&D sector and the economy, prepared during the Regional Innovation Strategy for Wielkopolska. The four main objectives are as follows:

- integration of the socio-economic communities of the province (raising the regional communities' innovation culture, supporting less-developed areas in the province, implementation of the RIS);
- enhancing the capacity of enterprises to introduce innovation (overcoming mental barriers to innovation and cooperation, improving the quality of personnel in enterprises, development of the technological base, development of inter-regional cooperation between firms);
- using Wielkopolska's research potential to increase the competitiveness of the economy (creating entrepreneurial attitudes in science, improving the skills of personnel in companies, growth of profits for science resulting from cooperation with enterprises, adjustment of the educational system to the needs of the regional economy);
- creating modern innovation infrastructure (developing business environment institutions supporting innovation), improving the quality of services and adjusting services to companies' needs, improving the structure and availability of services, development of financial instruments for innovation adjusted to companies' needs).

2.2.2.2 Policy instruments

Preparation and implementation of RTDI policy may be considered at international, national and regional level. Particular dimensions of the impact on Wielkopolska's innovation system are presented in the following paragraphs.

During system transformation RTDI policy remained centralised, particularly as regards the financing of the R&D sector. Funds from the central budget served mainly scientific needs. There were changes in the approach of the central authorities concerning instruments supporting innovations (in accordance with economic conditions):

- in the years 1990-1994 there were few instruments;
- in the years 1995-1999 some solutions were introduced, mainly financial;
- in the years 2000-2004 financial support was limited.

The document which had the strongest impact on introducing RTDI instruments during system transformation was "Guidelines for innovation policy in Poland" prepared by KBN in 1994. Financial incentives were introduced, e.g. a 50% reduction of revenues by expenditures for investments, including patents, licences, know-how and results of research conducted nationally. The level of revenue deduction had been reduced by 5% every year. Moreover, up to 2000 it had been possible to take advantage of:

- guarantees of bank loan repayments (from state budget) for investments aimed at implementing domestic technologies (preferential loans were offered only in the year 2000) or for innovative export contracts;
- corporate income tax (CIT) relief on donations for R&D activities, on value-added tax and excise tax for technical services offered to research institutions, faster R&D assets depreciation.

After 2000, these incentives were removed and a lower corporate income tax rate was introduced. In 2005-2006 some instruments were re-introduced by an Act on financing science (the Ministry of Scientific Research and Information Technology) and an Act on forms of supporting innovation activities (the Ministry of Economy).

Poland's experience of instruments of economic policy used at central level and adjusted to the needs of particular regions is modest. Financial support aimed at fighting

unemployment was offered, from the Labour Fund among others, as were subsidies for public works in voivodships with high structural disturbances.

In the period of system transformation the PHARE programme (Poland–Hungary Aid for the Restructuring of the Economy) was available. This aimed to create the conditions for better social and economic cohesion in the chosen voivodships (usually excluding Wielkopolska) by enhancing the competitiveness and effectiveness of SMEs. It included, among other things, subsidies for investments and consultancy/training services. In the years 1999-2002, Poland received €74.8 million; in subsequent years it received less.

An important activity at EU level is the participation of research teams from Poland in Framework Programmes. In the years 1999-2003, funds received from the EU alongside those from the central budget (related to Poland's participation in the 5th FP) amounted to €217 million (the balance of participation was €26 million). Poorer results may be expected in the 6th FP (which finishes in 2006). Poland may obtain only half of its contribution because of the need to be part of large consortia and difficulties in coping with complex management criteria.¹⁵

Since 2004 and accession to the European Union, Poland has had the opportunity to make use of structural funds. In the years 2004-2006, of the €15 billion in EU funds for Poland, those financing R&D activities amounted only to about €240 million.¹⁶ There were some initiatives within a number of priorities which supported innovativeness, e.g. improving the economic and social environment and co-financing companies' investments. There were some important programmes for increasing competitiveness in Poland and in Wielkopolska, e.g. the Sectoral Operational Programme – Improvement of the Competitiveness of Enterprises (SOP–ICE), the Sectoral Operational Programme – Human Resources Development (SOP–HRD) and the Integrated Regional Operational Programme (ZPORR). These programmes used 25,9% of EU funds for Wielkopolska in 2004-2006 (Table 13).

The “bottom-up” approach to regions, which emphasises the importance of the regional authorities, was applied in Poland. The starting point for regional RTDI policy was to determine what were the most important objectives and instruments in the voivodships. This issue was developed in 2004 and resulted in the Regional Innovation Strategy for Wielkopolska. Moreover, an Action Plan for 2004-2006 was prepared, which set out 34 actions submitted by economic and social partners. In the years 2004-2005, 18 projects were initiated in Wielkopolska within Action 2.6 of the Integrated Regional Operational Programme, amounting in total to €2.2 million (including 75% from the European Social Fund and 25% from other sources of financing) (Table 14). Since 2004, Wielkopolskie, in common with other voivodships, has been applying for structural funds and financing from the Cohesion Fund. These programmes may help to raise the level of RTDI infrastructure, which is currently underdeveloped. The effects of these initiatives will be observable in a few years time.

1. Improve innovation and R&D governance

RTDI governance at central level has dominated Poland for several years: the main players were the Ministry of Scientific Research and Information Technology (formerly KBN) and the Ministry of Economy. Recently Poland initiated a foresight study on innovativeness but the results of this are expected to be delayed. There was a measure of

¹⁵ Ministry of Science and Computerisation: "The policy of the Ministry as regards the participation of Polish scientific teams in the EU Framework Programmes", September 2005.

¹⁶ Ibidem.

coordination of the initiatives concerning support for innovation.

There has been some improvement in RTDI governance at regional level thanks to the preparation of the regional innovation strategies in voivodships: the representatives of science, the economy and the administration had the opportunity to develop out important issues concerning innovations. Since 2005, monitoring has been initiated in Wielkopolska to ensure that appropriate initiatives are carried out in a proper manner. Moreover, in October 2006, the Council for Innovation within the Marshall's Office was created. There are also plans to conduct regional technology foresight.

2. Creation of an innovation and entrepreneurial friendly environment

There are a number of initiatives at EU level concerning the creation of an appropriate environment (e.g. the PHARE programme and the Framework Programme), and also at central level (e.g. SPO-ICE in the years 2004-2006 and PARP activities in the field of access to information and services supporting entrepreneurship).

Protection of intellectual property in Poland is inadequate, although since 2004 the functioning of the Polish Patent Office has been improved (there is less bureaucracy, and the cost of patenting has been reduced). However, there are no appropriate regulations concerning patents financed using state infrastructure and funds (e.g. HEIs). Such a situation makes cooperation difficult between the R&D sector and the economy.

In 2006, the National Capital Fund (a financial scheme to increase access to venture capital) was introduced as the fund of funds.

For 2 years there has been intensive activity at regional level on the preparation of the Regional Innovation Strategy. The Wielkopolska Network of Innovation, which aims to bring together regional business-supporting institutions to consolidate their capacity and improve staff qualifications, was established by the Poznań Science and Technology Park. Some new innovation-supporting institutions were created with funds from the Integrated Regional Operational Programme.

Poznań is an important trade fair centre. Each year events are held comprising over 40 specialised exhibitions and addressing over 140 industries. For a few years now hundreds of new products and technologies have been presented by national and foreign entrepreneurs during the event "Innovations – Technologies – Machines". Numerous conferences, workshops and meetings concerning innovations are also organised at the same time.

3. Development of human capital

During the period of system transformation there were no national programmes for the development of human capital in the R&D and business sectors. Up to 2003, it had been possible to deduct personal income tax from a certain proportion of expenditure on paid education and training and scientific aids. This instrument was later removed.

HEIs receive financial support from the central budget to cover students' education, scholarships, investments and grants. Funds are not sufficient for these needs. Moreover, the mobility of R&D workers is evaluated as low. However, EU programmes, e.g. Socrates, Erasmus, Leonardo da Vinci and Marie Curie, are playing an increasing role.

In the years 2004-2006, SOP-HRD appeared to be a significant source of financing to help improve the quality of human capital.

At regional level there is an increasing role for:

- traineeships in companies for university graduates and researchers, designed to transfer knowledge from research centres to industry;
- scholarships for PhD students to promote research geared towards the needs of the regional economy.

4. Networking, co-location and clustering measures

Although government documents emphasised the role of clusters, the central authorities had no policy in this respect. For example, special economic zones (a unique form of enterprise support offered by the central and regional authorities in some regions with high unemployment and industry undergoing restructuring – see section 3.2.3) did not embrace the high-tech industry. As a result, many enterprises are constrained by short-term thinking and an unwillingness to cooperate with potential regional partners.

Recently, Polish Technological Platforms (a consortia including companies and R&D entities) have been established, and this may ensure more effective cooperation when applying for funds within the EU Framework Programme and the National Framework Programme (expected to begin in 2007).

As regards activities at regional level, the chemical cluster, furniture cluster and boiler-making cluster, which set out to develop networks spanning enterprises, the R&D sector and other stakeholders, were created in 2005-2006.

5. Knowledge and technology transfer to enterprises

Transfer of technology to enterprises was not significantly supported at central level and financing was inadequate. There were almost no mechanisms to encourage contacts between the R&D sector and business. The activities of existing technology parks were too small in comparison with the intellectual potential of the R&D sector in Poland and in Wielkopolska. A number of technology incubators and centres for technology transfer have recently been created. In 2000, Innovation Relay Centres (funded under the 5th FP) began to function. There are 4 regional consortia covering Poland (west, south, north-east, and centre). The main objective of IRCs is to offer consultancy services to SMEs with reference to international transfer of technology.

Within the regional innovation system, the Wielkopolska Information Platform started operating in 2005 (www.wpi.poznan.pl). This is an Internet portal presenting information concerning technology transfer. 5 centres of technology transfer (see section 2.1.2) were established in Wielkopolska in the years 2004-2005.

6. Research cooperation between public research organisations and the private sector

Support at central level mainly includes access to information on cooperation opportunities. Grants for applied research have been relatively small. At national and regional level there were no permanent mechanisms in support of the establishment of contacts between the R&D and business sectors. Cooperation between regional companies with the R&D sector was considered unsatisfactory.

7. Support for public research

Public support for the R&D sector is provided mainly through subsidies from the central budget, which are mostly spent on basic research. Innovation-support institutions are also inefficient and poorly enhanced by national and regional authorities' initiatives.

8. Financial R&D measures for the private sector

The volume of financial support for business from the central budget was inadequate, and this may be one of the reasons why enterprises have poor cooperating skills (and possibilities), which makes it impossible to effectively conduct complex R&D projects. The role of the Polish Agency for Entrepreneurship Development (PARP) is mostly limited to providing information on alternative sources of financing innovations, etc.

The tax system in Poland has been changing. In the years 1995-2000, financial incentives

were offered (see section 2.2.2.2.). These were removed after 2000, whereas the CIT rate was reduced (from 27% to 19%) to enhance entrepreneurship in general. From 2006 some financial incentives in the tax system were restored (as a result of the Act on forms of support for innovation activities).

Provinces are unable to introduce regional tax regimes concerning, for example, taxes on companies (CIT) and persons (PIT), value-added tax, excise tax. Most of the recent financial support available to the regions is related to the introduction of structural funds.

Mix of instruments

The choice of instruments was not appropriate to the needs of the R&D sector and the economy. As regards the number of instruments, financial ones dominated while other types (for example organisational, supporting technology transfer) were of lesser importance. Funding from the central budget was inadequate. In addition, too great an emphasis was placed on scientific research and insufficient attention was paid to applied research and development.

To date, the instruments of RTDI policy used have not focused or concentrated on particular branches, clusters or technologies. Public initiatives did not adequately shape institutions supporting innovations due, amongst other reasons, to the small volume of available funds.

A recent warming of the political climate in favour of supporting a knowledge-based economy has made for the more widespread introduction of RTDI policy in Poland and voivodships. Several initiatives in favour of innovation (particularly based on EU structural funds) were introduced in Poland in 2004. The effects of these may gradually appear in the national and regional economy.

Exhibit 1: RTDI policy mix affecting the region – Wielkopolska (Poland, 2005)

Policy Areas	Policy objectives and instruments at EU level affecting the region	Policy objectives and instruments at National* level affecting the region ¹⁷	Policy objectives and instruments at Regional* level ¹⁸
Improve innovation and R&D governance		MNiI: Forecasting of needs concerning innovations (foresight)	Supporting pro-innovative policy of regional government: - creating and monitoring the Regional Innovation Strategy - ZPORR Measure 2.6: Regional innovation strategies and transfer of knowledge
Creation of an innovation and entrepreneur-friendly environment	PHARE 2002: - Paths from Innovation to Business: Support for SMEs through creating equal economic and social conditions for their growth (subsidies for consultancy, investment grants, loans innovative investments); - Access to innovation advisory	PARP: - advisory services for enterprises (free offer in consultancy points); - system of providing pro-innovation services (National System of Services); - organisation of competitions promoting best products and technologies (for example “Polish Product of the Future”). SOP-ICE: - Measure 1.1: Strengthening of business support institutions; - Measure 1.3: Creation of Favourable Conditions for	Widening information database about innovations and services. Promoting good examples concerning innovations in companies: - identifying innovation leaders through periodically organised competitions and through the usual activities of support institutions. Support for the establishment of an academic entrepreneurship model ZPORR Measure 1.5: Infrastructure of information society

¹⁷ See also Reports concerning Poland in European Trendchart on Innovation.

¹⁸ Source: Innovative Wielkopolska, Final Report, Marshal Office of Wielkopolska voivodship, Poznań 2004; Academic and Science Strategy for the City of Poznań, Poznań City Office, Poznań 2005

	services: improving competitiveness of SME sector through increasing innovation potential in manufacturing and services.	Companies Development; - Measure 1.5: Development of a system of entrepreneur access to information and public services on-line; - Measure 2.2: Improvement of competitiveness of SMEs through advice; - Measure 2.3: Improvement of competitiveness of SMEs through investments.	
Development of human capital	Scholarships for pupils and students (Leonardo, Socrates, Erasmus)	SOP-HRD: - Measure 2.1: Adjustment of educational offer of schools, academies and vocational training centres to the labour market needs - Measure 2.2: Enhancing lifelong learning system for adults - Measure 2.3: Development of personnel of modern economy and entrepreneurship	Developing education and training programmes matching companies' needs: - traineeships for students with practical application of knowledge in an enterprise; - PhD scholarships for research contributing to the growth of strategic areas of the region. ZPORR: Measure 2.1: Development of skills related to the regional market's needs and opportunities of lifelong learning in the region
Networking, co-location and clustering measures		Creation of special economic zones. Setting up Technological Platforms (initiated in Poland in 2004 – R&D units participate in activities of Polish platforms). SOP-ICE Measure 1.3. Creation of favourable conditions for enterprises development.	Creating Wielkopolska innovation network connecting regional business support institutions which provide information and consultancy services to SMEs related to innovations and technology transfer Establishment in 2005-2006 of the chemical cluster of the R&D units and enterprises, furniture cluster, boiler-making cluster (funded in part using EU funds).
Knowledge and technology transfer to enterprises	PHARE 2002: Paths from Innovation to Business (investment grants) Innovation Relay Centres	PARP (Regional Development Agency): - Consultancy and information support for setting up technology parks and incubators and their activities; - Bank of technologies and designs. SOP-ICE: - Measure 1.3: Creation of favourable conditions for enterprises development - Measure 1.4: Strengthening cooperation between R&D sector and the economy - Measure 2.2: Support for product and technological competitiveness of enterprises - Measure 2.3: Improvement of competitiveness of SMEs through investments	Promotion of technologies developed by scientific institutions among SMEs (Wielkopolska Information Platform): - maintaining databases with technological offers, offer catalogues; - improving availability of consultancy services related to transfer of technologies. Creation of centres of innovation and technological transfer in Wielkopolska in the years 2005-2006.
Research collaboration of public research organisations with private sector	Poland's participation in the 5th, 6th, 7th FP	PARP: Offering wider access to necessary information: - coorganising new technologies cooperation exchange, dissemination of information on undertakings, issuing thematic publications for entrepreneurs, etc. - integration between the community of innovative entrepreneurs and scientific circles, e.g. Club of Innovative Enterprises	Enhancing cooperation between local stakeholders in the innovation system in order to utilise the potential of the sub-regions: - organisation of meetings of entrepreneurs, local governments and business support institutions as local economic forums - establishing scholarships for temporary assignment of academic personnel and students to companies.

		<ul style="list-style-type: none"> - Database of technologies and designs, innovation-supporting institutions. The Information Processing Centre: Database of people employed in R&D sector, R&D projects financed by MNiI. MNiI: Grants for projects concerning applied research. SOP-ICE: <ul style="list-style-type: none"> - Measure 1.3. Creation of favourable conditions for enterprises development; - Measure 1.4. Strengthening cooperation between R&D sector and the economy. 	
Support for public research		<p>MNiI:</p> <ul style="list-style-type: none"> - statutory activity in the field of research; - grants for research projects - creating infrastructure, for example in the sphere of scientific equipment.¹⁹ <p>MNiI: establishing legal regulations and initial financing of centres of excellence</p> <p>Financing of PAN, R&D units by different ministries</p>	Support for investments of higher education institutions in the form of land contribution, reduction of local tax. Co-financing from ZPORR of investments in higher education (since the year 2004).
Financial R&D measures for the private sector	<p>PHARE 2002:</p> <ul style="list-style-type: none"> - Paths from Innovation to Business (subsidies for consultancy services, investment grants, loans for innovative investments) - Development and Modernisation of Companies Based on New Technologies (subsidies for consultancy services and investments) 	<p>PARP: advisory and financial assistance as regards obtaining venture capital, emission of shares on the stock market, finding a strategic investor</p> <p>From the year 2006 changes are expected in R&D financing in the private sector²⁰</p> <p>SOP-ICE:</p> <ul style="list-style-type: none"> - Measure 1.2: Improvement of access to external alternative sources of financing for enterprises investments - Measure 2.2: Support for product and technological competitiveness of enterprises - Measure 2.3: Improvement of competitiveness of SMEs through investments 	Supporting the modernisation of devices and processes in companies (mentioned in strategies, no instruments till 2005) Improved access of companies to financial instruments for innovative investments: <ul style="list-style-type: none"> - information and financial consultancy related to the selection of the appropriate financial instruments; - increasing seed capital funds and credit funds (planned from 2006).

2.3 Conclusions

Wielkopolska has lower expenditures on R&D in relation to GDP than in Poland as a whole (some R&D indicators concerning section 2 are presented in Table 1, see also Figure 2). One of the reasons for this might be the diversity of expenditures on R&D in voivodships: the share of Mazowieckie was about 45% of total expenditures while Małopolskie, Śląskie, Wielkopolskie, Łódzkie and other voivodships (12% and less) posted lower figures. Another reason is that Wielkopolska has a significant value of the gross regional product in Poland.

¹⁹ Act on financing science proposed from 2007 National Framework Program as a form of financing integrated, multidisciplinary research projects in priority thematic areas of science and technology.

²⁰ It will be possible to obtain financial support from the National Capital Fund (Krajowy Fundusz Kapitałowy S.A.) (Act on the National Capital Fund, adopted on 4 March 2005) and under the financial instruments proposed in the Act on Supporting Innovation Activities (adopted on 29 July 2005)

In the years 2002-2004, the sectoral structure of R&D expenditures in relation to GDP in Wielkopolska changed and became similar to the national structure: there was a relative increase in BERD/GDP and GOVERD/GDP, and a decrease in HERD/GDP. Companies in the province were more interested in conducting R&D activities as a way of creating competitive advantage. Government expenditure on R&D appears to be equal across voivodships. The significance of HERD in 2000 was a result of the role of Poznań as an academic centre. However, it may be seen that in 2004 HEIs from other voivodships received relatively more funds for R&D activities.

Table 1: Wielkopolska and Poland indicators concerning the R&D sector

	Poland 2000	Wielkopolska 2000	Poland=100 X = Wielkop.	Poland 2004	Wielkopolska 2004	Poland=100 X = Wielkop.
Total intramural R&D expenditure as a percentage of GDP (GRP)						
GERD	0.64	0.49	76.6	0.56	0.43	76.8
BERD	0.23	0.14	60.9	0.16	0.12	75.0
GOVERD	0.21	0.12	57.1	0.22	0.17	77.3
HERD	0.20	0.23	115.0	0.18	0.14	77.8
PNPRD	0.00	0.00	-	0.00	0.00	-
R&D personnel as a percentage of total employment (R&D personnel in FTE)						
Total	0.52	0.41	78.8	0.60	0.46	76.7
Business	0.12	0.08	66.7	0.10	0.07	70.0
Government	0.12	0.08	66.7	0.15	0.09	60.0
Higher education	0.28	0.25	89.3	0.35	0.30	85.7
Private non-profit	0.00	0.00	-	0.0	0.0	-
Human resources in S&T as a percentage of labour force						
HRST % act*	26.38	25.96	98.4	30.99	26.82	86.5
Patent applications at EPO per million inhabitants						
Total**	0.70	0.36	51.6	1.87	4.44	235.3
Students in tertiary educations (ISCED 5+6) per thousand inhabitants						
Total	40.69	36.4	89.5	50.1	47.9	95.6
Lifelong Learning: Participation of adults aged 25-64 in education and training as a percentage of population						
Total***	4.08	3.19	78.3	4.1	4.3	104.9

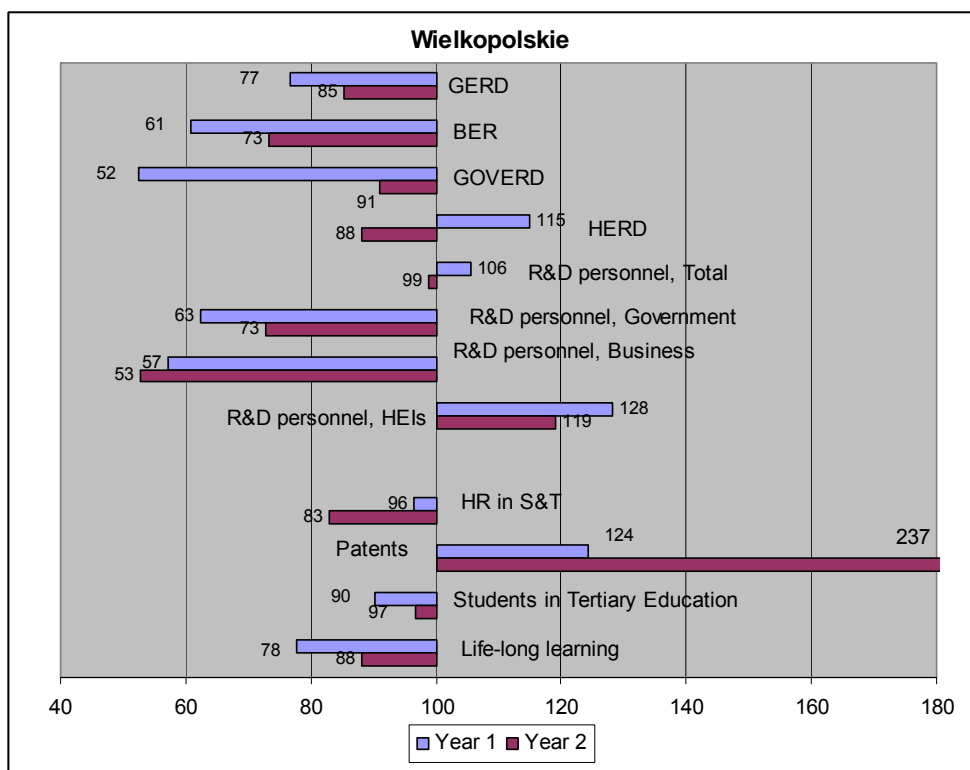
* 1998; ** 1995 and 2003

*** 2001 and 2004

The proportion of R&D personnel as a percentage of total employment was lower in Wielkopolska than in Poland (this was true of all sectors). One explanation for this lies in the relatively high concentration of employment in Wielkopolska. As a percentage of the labour force HRST was lower in Wielkopolska than in Poland. The dynamics of an increase in that indicator is stronger in Poland, and this contributed to a relatively major difference between Wielkopolska and Poland.

In Wielkopolska there was an increase in the number of students, but student density is higher in Poland than in the province: there are also other essential academic centres, e.g. in Warsaw, and in Krakow. The role of lifelong learning both in Poland and in Wielkopolska has been growing. This situation may be due to EU programmes increasing the number of active people on the labour market.

Figure 2: Key indicators on Wielkopolskie's knowledge base development in comparison with Poland



Source: Eurostat.

Note: See Annex 2 for explanation of indicators

It can be seen that the volume of financial support from the central budget has been insufficient while R&D teams have been dispersed. One of the reasons may be poor skills (and possibilities) in cooperating, which make it difficult to implement costly and complex research projects. The Wielkopolska scientific sector depended on the central budget and focused on basic research, and the R&D sector did not receive enough funds from the business sector. The structure of innovation-supporting institutions and the range of cooperation between the R&D sector and the business sector is not adequate. Entrepreneurship-stimulating services were offered, which mainly concerned training and consultancy but not innovation creation and diffusion. Technology transfer services were not satisfactory because of the lack of specialised institutions and financing. The political climate for supporting a knowledge-based economy in Poland and in the voivodships is gradually improving, which makes it possible to employ instruments to accomplish RTDI policy objectives, e.g. the Wielkopolska Network of Innovation created in 2005 may improve conditions for cooperation and conduct of R&D activities.

3 Regional economic structure

Wielkopolska is a voivodship with a traditional economic structure: agriculture and its supporting branches (food processing and production of agricultural machinery) and the electro-mechanical industry. Industry's sales production in Wielkopolska is one of the highest in the country. Moreover, the significance of services is growing, but their share in the regional gross value added is still not enough. Foreign investors have played an important role in the modernisation of Wielkopolska's economy.

3.1 Description of the economic structure

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

Regional product

Wielkopolskie has a relatively high level of gross regional product. In 2003, 9.2% of Poland's GDP was produced in Wielkopolska. Only Mazowieckie (20.8%) and Śląskie (13.5%) bettered this. The previously mentioned voivodships of Dolnośląskie and Małopolskie accounted in total for 58.6% of Poland's GDP in and 53.5% of the Polish workforce. The role of Wielkopolska in generating GDP in Poland has increased (from 8.5% in 1995 to 9.2% in 2003).

In 2003, the country's GDP per capita was €5 013, with Wielkopolska exceeding this value by 4.9% (in 3rd place in Poland). The highest value, 55%, above Poland's national value, was registered in Mazowieckie (Table 3, Figure A2). In 2003, GDP per capita in Wielkopolskie voivodship, as a percentage of the European average, amounted to 24.2% (while in Poland it was 23.1%). This indicator adjusted for PPP was 49.3% in Wielkopolskie (47% in Poland). The best voivodship was Mazowieckie (Tables 3, 15). In the years 1995-2003, gross regional product per capita, as a percentage of the European average, increased in all voivodships (for Poland from 17.8% to 23.1%) whereas for Wielkopolskie it went from 17.5% to 24.2%. Only in Mazowieckie was there a greater upward change (from 22.7% to 35.7%).

Regional gross value added

Between 1995 and 2003, Wielkopolska experienced changes in the sectoral structure of regional gross value added: there was a decrease in agriculture²¹ (from 13.3% to 7.2%), industry (from 28% to 26.2%) and construction (from 7.4% to 6.1%). At the same time the share of services increased from 51.2% to 60.4%. This may indicate the gradual modernisation of the Wielkopolska economy (Tables 16, 17):

- In 2003, the services sector generated 60.4% of regional gross value added, but this was the lowest share in Poland. The highest was in Mazowieckie (74.3%) and the average for Poland was 66.9%.
- Wielkopolska is among the more industrialised voivodships in Poland: the share of industry in regional gross value added reached 26.2%, which was the 4th highest in Poland. The manufacturing industry provided 23.3% of gross value added in the voivodship (the 2nd highest in Poland).
- Agriculture reached 7.2% of regional gross value added (Polish average – 4.3%). The higher share of agriculture was observed only in the less industrialised voivodships
- The construction sector's share of the regional gross value added in Wielkopolska (6.1%)

²¹ „Agriculture” refers in the report to the whole sector, which is agriculture, forestry, hunting and fishing.

was higher than in the country as a whole (5.5%).

Gross fixed capital formation

In 2003, gross fixed capital formation in Wielkopolska accounted for 11.4% of the outlays in Poland (3rd overall). It was highest in Mazowieckie (22.9%) (Tables 17, 18 and 19). More information about industrial sections is given in Table 20). In the years 1995-2003 gross fixed capital formation in Wielkopolska showed a more significant increase (140%) than in Poland (85%)²².

The sectoral structure of gross fixed capital formation in Wielkopolska almost reflects the structure of the sectors which contribute to regional value added, and was as follows:

- The service sector concentrated 53.4% of gross fixed capital formation in Wielkopolskie (60.4% in Poland), which put the voivodship in 15th position, last but one.
- Industry's share (excluding the construction sector) in gross fixed capital formation in Wielkopolska was 30.1% –8th in Poland (the country average was 28.9%). However, in the manufacturing industry Wielkopolska occupied 4th position (24.9%, as against the Polish average of 21%).
- The construction sector accounted for 9% of gross fixed capital formation in the voivodship (Poland – 5.5%), ranking Wielkopolska 1st in Poland.
- Agriculture had the lowest share in the structure of gross fixed capital formation in Wielkopolskie (7.5%) (Poland – 5.3%), putting it 6th in the country.

Industrial production

There was a high level of sold production of industry in Wielkopolska (in 2004 Wielkopolska's share of this was 10.2%). Only Mazowieckie and Śląskie performed better. The structure of sold production of industry in the voivodship is dominated by the manufacturing of foodstuffs and beverages: in 2004 this accounted for 26% of Wielkopolska's sold production of industry (Poland - 18%) (Table 21). The growth of this branch is based on the regional tradition of well-developed agriculture, which provides raw ingredients for the production of meat, dairy, sugar, milling, alcoholic beverages, food concentrates, etc.

The level of sold production in Wielkopolska was also significant in the manufacture of cars, trailers and semi-trailers (16.2% of Wielkopolska's sold production of industry in 2004), the production and provision of electricity, gas and heating (6.7%), the manufacture of furniture and other commodities (6.4%), machinery and electrical equipment n.e.c. (6.4%), rubber goods and plastics (5.1%, Table 21).

In 2004, the Polish high-tech industry accounted for 3.5% of the manufacturing industry's sold production, whereas in Wielkopolska the figure was only 0.9%. The situation was different as regards medium and high-tech branches: their share in sold production of manufacturing industry amounted to 27.9% in Poland and to 34.9% in Wielkopolska – (manufacturing of cars, trailers and semi-trailers appeared to be significant). In 2004, the electro-mechanical industry (branches 29-35.1)²³ played a significant role in the sold production of the manufacturing industry in Wielkopolskie (29%), (Poland – 20.9%). However, high-tech branches of the electro-mechanical industry were of lesser importance in the province. The share of the medium and high-tech sectors in sold production of manufacturing industry in Wielkopolska was lower than the national figure (Poland – 28.5%, Wielkopolska – 16.5%). On the other hand, the share of low-tech sectors in Wielkopolska was

²² Calculations were made using values in euro.

²³ Including manufacturing of machinery and equipment, i.e. office machinery and computers, electrical machinery and apparatus, i.e. radio, television and telecommunication equipment and apparatus, medical, precision and optical instruments, watches and clocks, motor vehicles, trailers and semi-trailers, other transport equipment.

higher than in Poland (40.1% in Poland, 47.6% in Wielkopolska). This share in Wielkopolska is the result of the significance of foodstuffs and beverage manufacturing.

Employment

In 2003, the working population of Wielkopolska accounted for 9.5% of the total workforce in Poland. This share was only bigger in Mazowieckie and Śląskie (Table 22). In the years 1998-2003 Poland's working population decreased by 18%, whereas in Wielkopolska it went down by 10.9%. Lower employment is the result, among other things, of changes in the structure of the economy, caused, for example, by unfavourable market conditions for many branches of industry, and steady replacement of obsolete technologies and machinery. The biggest decline in working population numbers in Wielkopolska occurred in agriculture (albeit less in Wielkopolska than in Poland), and in the construction sector. The only increase was in service sector employment (by 4.7%).

In 2003, the structure of employment in Wielkopolska as regards types of activity reflected the structure in the country. Agriculture employed 17.5% of the total workforce in the voivodship, industry – 26.1%, construction sector – 5.8%, services – 50.6% (of which market services – 34.9%) (Table 22).

The structure of employment differs from the gross value added sector structure, which is expressed by the workers' productivity indicator. In Wielkopolska in 2003 one working person produced €12 700 of the regional gross value added (in Poland – €13 100), placing it 7th in Poland (Mazowieckie was 1st). In Wielkopolska, the gross value added per employee was lowered by agriculture (€5 300 per person employed in this sector) although this value was high (3rd in Poland). As regards the gross value added per employee in industry, the voivodship occupied 6th position in Poland, 8th in the construction sector and 7th in services (Tables 1, 2, 3).

Structure in entities of the national economy

In 2005, 9.4% of entities in the national economy were registered in Wielkopolska (3rd after Mazowieckie and Śląskie, Table 23). In the years 1995-2005, the number of economic entities in Wielkopolskie increased by over 66%. A similar trend was observed in other voivodships, while in Poland growth reached 71%. The increase in the number of entities in the national economy can be attributed to the higher growth in some voivodships, which initially had a smaller number of such entities, but also to the rate of growth in Mazowieckie.

In Wielkopolska, 97.1% of entities in the national economy were in the private sector; the situation was similar in Poland. As regards the size of enterprises, in 2003, micro-companies, employing up to 9 workers, dominated – they accounted for 94.6% of the total number of enterprises in the voivodship, while small firms (10-49 workers) accounted for only 4.3%; medium-size ones (50-249 workers) – 0.9%; large ones (over 249 workers) – 0.15%. The role of SMEs may reflect their high elasticity in adjusting to the rules of market competition but also possible difficulties in obtaining technology (Tables 24, 25, 26).

Expenditures on innovation activities of industry

In 2004, Wielkopolska concentrated 9% of expenditure on innovation activities in industry in Poland (with €306 million Wielkopolskie is 3rd after Mazowieckie – 27% and Śląskie – 17%). The share of eleven voivodships was lower than 5%. There were considerable fluctuations in expenditures in Poland (partly because of the business cycle), and it is impossible to recognise a permanent trend in voivodships, but in most regions there was a drop in expenditures on innovation activities in industry in 2001. The highest expenditures on innovation activities in industry in Wielkopolska were in 1999 when the voivodship concentrated 16.2% of Poland's expenditure (€583.5 million); the lowest – in 2001 (€303

million) (Tables 1, 2, and 3).

An analysis of the structure of NACE sectors where expenditures on innovation activities in industry were incurred may indicate specialisation of Wielkopolska's industry. In 2004, the higher share in Wielkopolskie than in Poland was in manufacturing of foodstuffs and beverages (23.8%, in Poland – 14.9%), cars, trailers and semi-trailers (14.1%, in Poland – 9.7%), goods from non-metallic raw materials, machinery and electrical equipment n.e.c. (Table 28). The share of expenditures on innovation activities in the electro-mechanical industry (sectors 29-35.1) in Wielkopolskie was one of the highest of the voivodships (28.3%), whereas for Poland it amounted to 20.8% (Tables 28, 29).

The expenditure on innovation activities in industry in Poland was to a large extent for the purchase of machinery and equipment. The situation was similar in Wielkopolska where, in 2004, 70% of expenditure was on acquiring capital goods (instruments, equipment and means of transport). In a number of branches investments in capital goods covered more than 50% of expenditure on innovation activities, e.g. in manufacturing of food products and beverages (54%), electrical machinery and apparatus n.e.c. (58%), other transport equipment (58%), motor vehicles, trailers and semi-trailers (70%), pulp, paper and paper products (97%), and in publishing, printing and reproduction of recorded media (99%).

To a lesser extent expenditures on innovation activities in industry were allocated to R&D activities (in Wielkopolska in 2004 they accounted for 8.7% of the total expenditures). Less significant was technology creation within companies and its acquisition in the form of disembodied technology or know-how (Table s29, 30). In Wielkopolska a considerable proportion of expenditures on R&D activities went towards innovation activity in industry in the following: manufacturing of basic metals (76%), other transport equipment (40%) and machinery and equipment n.e.c. (16%), chemicals and chemical products (29%), medical, precision and optical instruments, watches and clocks (17%).

Common Innovation Survey (2002-2004)

In the years 2002-2004, innovative enterprises in industry in Wielkopolska accounted for 21.1% of the number of enterprises in Poland. This indicator was lower than the value for Poland (25.9%) and Wielkopolskie voivodship occupied the last but one place. In the period under analysis, large enterprises were the most innovative, both in Poland and in Wielkopolska.²⁴ As with Poland in general, Wielkopolska experienced a downswing in companies of all sizes: it was worst for medium-size firms (5.1 percentage points worse than in Poland as a whole), the smallest difference being for large enterprises (worse by 3.6 percentage points).

In the years 2002-2004, technological innovations, mainly scientific-technological, were introduced by 13% of small enterprises in Wielkopolska (17.7% – in Poland), and by 40.4% of medium and large enterprises –(45.6% – in Poland). Only three other voivodships fared worse than Wielkopolska.

In the same period, 39% of innovative enterprises in Wielkopolska said that the main effect of the innovations was a greater range of products and 45% higher quality products (for Poland the figures were lower and amounted to 37.5% and 41% respectively). 27.5% of Wielkopolska's innovative enterprises entered new markets or increased their market share (29% in Poland). This may mean that in Wielkopolska it is relatively difficult for new or improved products to enter the market.

The results of this CIS should be considered carefully. They may suggest that enterprises

²⁴ CIS studies embrace industrial firms employing over 9 employees, dividing them into small (10-49 employees), medium (50-249) and large (over 250). "Innovation activities in industrial enterprises in Poland in 2002-2004" ("Działalność innowacyjna przedsiębiorstw przemysłowych w latach 2002-2004"), Warsaw 2006, Central Statistical Office.

in Wielkopolska were more sceptical or cautious in evaluating the effects of innovations. Equally, the effects could have been reflected to a lesser extent in the voivodship than in Poland.

Among the sources of information on innovations, enterprises' own sources dominated in Poland: for 46.8% of enterprises internal sources of information were significant; in Wielkopolska the figure was 44.8% (in Mazowieckie – 56.5%). On the one hand, this may prove that enterprises had extensive resources but, on the other hand, that they had no possibility or were unable to use the external sources of information on innovations. Among the market sources of information, the most important role was played by customers, including recipients of manufactured semi-products. In Poland, 35.6% of enterprises regarded this source as significant; in Wielkopolska – 30.4%. The least important for Polish enterprises was information from other institutions. In Wielkopolska, however, these sources of information were more significant than in Poland. For example, in Wielkopolska HEIs were a source of information about innovations for 7.1% of innovative enterprises (in Poland – 4.6%), consulting firms – for 6.3% (in Poland – 4.7%), R&D units – for 5.6% (in Poland – 4.6%), scientific units of the Polish Academy of Sciences – for 4.5% (in Poland – 3%), and foreign public research entities – for 4.4% (in Poland – 2.6%). In comparison with the previous CIS (1998-2001), the institutional sources of information on innovations have become more important for Wielkopolska's enterprises. This may indicate that the relations between the R&D sector and industry were gradually improving.

3.1.2. Systemic characteristics of the region

No initiatives were implemented concerning clusters at central level in Poland, although their role was highlighted in government documents. In addition, high-tech branches were not clustered (see information on special economic zones in section 3.2). As a result, many enterprises were constrained by short-term thinking and unwillingness to cooperate with potential regional partners.

The first initiative in Wielkopolska as regards regional clusters was the creation of a boiler-making cluster in 2003 (embracing SMEs manufacturing boilers and heating stoves), targeting the home market, Russia and Ukraine. In Wielkopolska, the chemical and furniture clusters were established in 2005-2006. All three clusters were co-funded by the European Social Fund as a result of implementation of Wielkopolska's Innovative Strategy. Clusters are being formed, but it is not yet possible to evaluate their effectiveness.

3.1.3. The regional economy in the international context

In 2003, the initial capital of companies with foreign capital in Wielkopolska accounted for 7.7% of Polish initial capital (2nd after Mazowieckie with 58.4% of the total value in Poland). This figure does not correspond to the geographical structure of companies with foreign capital: many of them have headquarters in Mazowieckie, but plants in different voivodships. The situation can be partly confirmed by the number of people employed in companies with foreign capital: the differences between these voivodships as regards that indicator are smaller than for initial capital. Mazowieckie concentrated 37.8% of the employees in companies with foreign capital, Wielkopolskie – 11% (Table 30).

Foreign capital appears in many sectors of Wielkopolska's economy. There are companies functioning with foreign capital in the food processing sector, e.g. Nestle, Bestfoods, Kraft, Unicom Bols and Wrigley. Volkswagen/Skoda, MAN, Neoplan occupy an important role in automotive and transport equipment manufacture. Moreover, thanks to companies with foreign capital there is growth in manufacturing of rubber (vehicle tyres – Bridgestone/Firestone), pharmaceuticals (GlaxoSmithKline) and cosmetics (Nivea-Beiersdorf). Germany is the predominant country of origin of capital, but there is also a

significant proportion of British, American, Irish and Swedish capital. Over 80% of companies with foreign capital operate in Poznań and the sub-region of Poznań.

It is not possible to analyse the structure of exports from Wielkopolska in detail. The only accessible information concerns Wielkopolska's SMEs, which in 2003 accounted for 15.8% of the total exports of this sector in Poland. This made it the 2nd province in the country after Mazowieckie. The most important export markets for Wielkopolska's SMEs were: Germany (about 50%), Holland (about 9%), France (over 6%) and Belgium (over 5%).

3.1.4. The local financial market

Numerous entities operate in the financial market, but the financing they offer to companies' innovative activities is scant. Financial market entities are not generally regionally specific.

Banks in Poland have shown little interest in funding R&D activities that entail high risk and cost intensity. More often than not, they have focused on servicing the fiscal needs of the central budget and maintained high interest rates on loans. Many innovative firms may not have enough creditworthiness to take up bank offers.

The capital market in Poland does not offer any significant support for R&D activities. Capital for innovations is rarely sought through the Warsaw Stock Exchange. This way of raising capital is suitable for large firms, which must fulfil a number of economic requirements.

Sources of funds such as venture capital and seed capital are lacking in the country. Venture capital (only 0.07% of GDP in Poland in 2003) invested mainly in mature companies, not allocating funds for the early stages in a firm's growth (that is pre-seed and seed phase). In 2004, venture capital investments amounted to €135 million, in 2003 – to €177 million; in 2004 no pre-seed and seed capital was invested, and in 2003 it amounted to only €3 million. Most high-tech investments went to telecommunication, companies which had usually undergone restructuring or were spin-offs from their companies of origin as a result of restructuring.

Business angels have recently started operating in Poland: there is the Polish Network of Business Angels PoIBAN, the Accelerator of Technology operating under the Foundation Centre of Innovation FIRE and the Lewiatan Business Angels (a network set up by the Polish Confederation of Private Employers Lewiatan).

The offer of loan funds does not meet the needs of innovative entrepreneurs. In 2005, loan funds in Poland had capital of €138.2 million and, from the beginning of their activity, they granted 112 200 loans, amounting to €400 million (Table 31). In the years 2003-2005 there was dynamic growth in Poland, both in loan capital and in loans granted. In that period, loans of up to €7 000 were granted to entrepreneurs involved in trade and services. The value of the average loan in 2005 in Wielkopolskie was €12 700 (for Poland it was €3 700 because of Mazowieckie having a significant share in the number of loans and a low value of average loan – only €2 100 per loan granted).

A few guarantee funds operate in Wielkopolskie, e.g. Poznań Credit Guarantee Fund (Poznański Fundusz Poręczeń Kredytowych), which is one of the most active in the country. In 2005, it provided 187 of the 3 101 guarantees granted in Poland. The guarantee funds in Poland mainly supported trading activity (41.4% of the total volume in Poland) and services (31.7%), and to a lesser extent the manufacturing sector (18.8%). At that time, the Poznań Credit Guarantee Fund granted about 27.5% of guarantees in the manufacturing sector and services, 34.2% in trade and over 10% in other sectors.

3.2 Policy context

3.2.1. Governance structure and actors

The governance structure is as presented in section 2.2.1. There are similar actors at national (ministries of the central government) and regional level (Marshall, Regional Parliament). During system transformation the central authorities did not pay enough attention to the needs of the voivodships. The economy suffered significant impacts from decisions taken centrally, especially concerning macroeconomic policy. Other policies, e.g. industrial and labour, were not sufficiently region-orientated.

Poland's regional policy had many shortcomings.²⁵ Autonomy of the regional authorities was determined by the ministries and limited by funds left over after obligatory tasks had been completed. The results of the "National Strategy for Regional Development" conducted in the years 2001-2006 were marked by the following deficiencies:

- neglect of the need to harmonise sectoral policies with regional policy;
- not enough effective consultation with voivodships;
- over-generalised priorities maladjusted to specific socio-economic conditions, in particular voivodships;
- no coherence between spatial planning and allocation of tasks and activities for regional development.

3.2.2. Policy objectives (in Wielkopolska)

Among its four main objectives, the Strategy for Wielkopolska's development²⁶ aims to increase the competitiveness of its economy vis-à-vis other regions of Europe. Operational objectives depend, among other things, on modernisation of the economy and development of its effectiveness (i.e. increase in the share of the high-tech industry and services, and improved transfer of technology). This is also a priority of "Strategy for Wielkopolska's development for the years 2007-2013". The number of national and regional sources of financing to accomplish the assumed priorities is, however, inadequate. On the other hand, an increasing role is played by EU funds.

3.2.3. Policy instruments (in Poland and Wielkopolska)

Fiscal, labour and tax regimes affecting overall growth, labour flexibility, access to capital, investment decisions of firms, especially with respect to risky and innovative projects

The state of public finances in Poland can be regarded as unhealthy: the share of fixed expenditures in the central budget is significant and there is persistent social pressure (concerning social care, health care, fighting unemployment, and support for declining industries). The central government is obliged to reduce the central budget deficit and public debt in order to, among other things, meet the euro zone criteria. There is a need to improve the structure of expenditures: those on R&D are too low in terms of current expenditures. For the last few years the conditions of conducting economic activity have been improving, for example, as regards labour market flexibility. The main obstacles are relatively high tax and other burdens in labour costs (the so-called tax wedge), including those connected with social insurance, and a shortage of funds for innovators.²⁷

²⁵ See Ministry of Economy and Labour: "Report on regional policy" (MGiP: "Raport o polityce regionalnej"), Warsaw 2004 where National Strategy of Regional Development for the years 2001 – 2006 was assessed.

²⁶ „The Development's Strategy of the Wielkopolskie Voivodeship”, Regional Parliament (Strategia rozwoju województwa wielkopolskiego, Sejmik Województwa Wielkopolskiego), Poznań 2000.

²⁷ See OECD publication: "Taxing wages", 2005 edition.

Competition policy, especially the “innovation-friendly” interpretation of competition policy and State aid regimes affecting R&D and innovation

Expenditures on R&D activities within the State aid regime were low: in 2004 they amounted to €25.2 million, i.e. 2.6% of total State aid. State aid in support of R&D activities was marginal in the sectoral policy and dominated by assistance for firms in economic difficulties and for declining industries. Since 2000, the importance in Poland of a horizontal and regional approach to the economy²⁸ has increased. R&D expenditures, however, will only slightly increase: their value in the years 2005-2010 is expected to be about €260 million.

In 1994, a unique form of enterprise support offered by the central and regional authorities was introduced in Poland. – Special economic zones were established in some regions with high unemployment and industry under restructuring.²⁹ Companies located in these special economic zones are not usually high-tech ones. Companies from the medium-tech industry (manufacturing motor vehicles, plastics), medium-low and low-tech industry (dealing with wood and goods produced from non-metallic raw materials)³⁰ predominate.

For a long time in Poland the system of intellectual property rights protection had been marked by bureaucratic procedures, relatively high fees and a small number of patent paths. In March 2004, Poland joined the Convention on issuing European patents. The procedures for considering applications and granting property rights are being simplified.³¹ However, legal regulations concerning relations between the innovator and the employer (e.g. within HEIs) have not yet been introduced.

Policies affecting (de)regulation and liberalisation of markets and the creation of lead markets (e.g. via public procurement policies or the creation of “technology platforms”)

During economic transformation Poland implemented reforms aimed at deregulation and market liberalisation. In Poland, trading norms and standards pursuant to WTO regulations are maintained. On the other hand, licensing of economic activity is important in some areas in the interest of the state and for social needs.

State aid focused to a large extent on support for mature branches and the central government did not support the creation of lead markets. Only since 2005 have Polish Technology Platforms been established to improve the gathering of funds from the EU Framework Programme and (ultimately) the National Framework Programme. In Wielkopolska the Wielkopolska Information Platform was set up in 2005; this is an internet portal created to give information about technology transfer from the R&D sector to the business sector.

Initiatives directed to cluster development and SMEs

Until 2004 there had been no national and regional initiatives to create clusters. In 2005-2006 there were initiatives in Wielkopolska aimed at establishing chemical, furniture and boiler-making clusters (the latter was initiated earlier, in 2003, based on EU funds).

Support for entrepreneurship was ensured by the Polish Agency for Entrepreneurship Development (PARP), which every year had a budget of about €70 million, used, for example, to help companies receive quality certificates, to increase environmental protection and safety at work, to help prepare entry to the capital market, and to provide training and

²⁸ „State aid policy program in 2005-2010” (“Program polityki w zakresie pomocy publicznej na lata 2005 – 2010”), Warsaw: Ministry of Economy and Labour, Office of Competition and Consumer Protection, 2005.

²⁹ On the basis of Act from 20 October 1994 on special economic zones (Journal of Laws RP from 1994 nr 123, item 6).

³⁰ Ministry of Economy and Labour: “Special economic zones, state as at 31 march 2004”, Warsaw 2004, p. 35. The Government recently decided to widen the range of activities for which it grants permission to modern services sector (Business Process Offshoring).

³¹ According to the document “Strategy for shortening of application examination” (“Strategia skrócenia czasu rozpatrywania zgłoszeń”).

consultancy. On average financial assistance was meagre. The National System of Services (NSS) for SMEs was established: in 2004 206 centres were accredited (including consultancy, training, information, financial and pro-innovation centres), 21 of them (10.2%) in Wielkopolska.

Balance of instruments, coordination of instruments, dilemmas created by policy choices and conflicts and synergies between objectives of different instruments

Regional policy at central level in Poland was relatively modest: for a long time the objectives of regional policy and instruments to implement them were of secondary importance and decisions often of a provisional, uncoordinated nature (e.g. using the Labour Fund to counteract unemployment and subsidies for public works targeting mostly provinces with high structural unemployment). The central budget was unable to meet the regions' needs for better infrastructure and public assistance.

Financial support from the central budget to voivodships is defined by the Act on local finances. In 2004, almost half of the public revenues of Wielkopolska came from special subsidies (including those for education – 30% of public revenues). The contribution of Wielkopolska to the central budget was bigger than the subsidies the voivodship received. Nowadays regional development in Poland is to a great extent based on the absorption of European funds. However, distribution of structural funds to the regions in 2004-2006 was made centrally using an algorithm.³²

As regards the coordination of economic growth, voivodships had little responsibility, but this is on the increase with the recently adopted European approach to regional policy: horizontal and regional initiatives are becoming more important whereas the role of sectoral policy is diminishing. The share of regional budgets in the central budget has increased since 2005 in order to gather EU funds (because of the need for a minimum share of the regions' own funds). Moreover, voivodships may to some extent decide to allocate funds for particular actions within their development programmes, but the need for improved technical infrastructure is often emphasised..

Contribution of the Community Support Framework

Pre-accession EU funds³³ were only used to a small extent in Wielkopolska because most of those funds were given to less developed provinces. The Sectoral Operational Programmes and the Integrated Regional Operating Programme (ZPORR) put the emphasis on technical infrastructure, which was poorly developed. Structural funds (in the years 2004-2006) were distributed to some extent centrally across voivodships (using an algorithm biased towards the least developed areas, mainly those in the eastern part of Poland) (see also section 2.2.2.2).

Exhibit 2: Effects of policies complementary to RTDI instruments on R&D and innovation capacity in Wielkopolskie– Poland (2005)

Policy Areas	Policies complementary to RTDI instruments affecting policy area*	Effects on R&D and innovation capacity of the region
Improve innovation	Regional and local	Devising the Strategy for the voivodship's development (2000), Regional Innovation Strategy

³² The algorithm was used to allocate funds among regions from the Integrated Regional Operating Programme: most of the funds (80%) were allocated according to the size of population, another 10% according to the level of GDP per capita (to the regions below 80% of the value for Poland) and the remaining 10% supplemented transfers to sub-regions whose rate of unemployment more than 150% of the value in Poland.

³³ Special Accession Programme for Agriculture and Rural Development (SAPARD), Instrument for Structural Policies for Pre-Accession (ISPA), Poland–Hungary Aid for the Restructuring of the Economy (PHARE).

and governance	R&D policy	(2004), Academic Strategy for the city of Poznań (2005), Plan for the Development of the city of Poznań for the years 2005-2010, Wielkopolska's Regional Operational Programme for the years 2007-2013
	Increasing the role of civil society	Facilitating access to public information (a significant role of the Bulletin of Public Information) Raising social and political awareness through consultations with the non-profit sector (e.g. Association Centre for Promotion and Development of Civic Initiatives PISOP)
Creation of an innovation and entrepreneur-friendly environment	Budget and monetary policy	Budget difficulties – a considerable budget deficit and a large scale of fixed expenditures Attempts to increase budget expenditures in the sphere of education and science (level still not enough to meet the needs) Simplification of the social security system: reducing ineffective social transfers, among others, pre-retirement benefits Reform of the tax system: subsequent reduction of corporate income tax (along with liquidation of tax relief as regards investments) Activities in the banking sector, including preparation to enter the euro zone (decreasing inflation, reducing interest on loans, ensuring a stable exchange rate)
	Policy in the area of SMEs	Facilitating economic activity: simplification and shortening the process of registration of economic activity (“one stop-shop” initiative – e-administration initiative ³⁴), reduction of bureaucratic burden (for example, in the process of public procurement ³⁵) Support of Polish Agency for Entrepreneurship Development for SMEs through subsidies for: ³⁶ training, preparation to participate in the capital market, consolidation, cooperation between enterprises, initiatives promoting the growth of entrepreneurship; and through access to advisory services (consulting points of PARP, National System of Services) Coordination of distribution of EU funds by chosen public institutions
	Policy of sustainable growth	Shaping environment-friendly demand, introduction of production methods/standard of environmental protection in accordance with new regulations encouraging material- and power-saving technologies
	Regional and local policy	Support in regional discussion forums for exchanging ideas Public-private partnerships (from 2005)
Development of human capital	Labour market policy	Introduction of new regulations in Labour Law, flexible working hours, reduction of labour costs, improving the hire and fire policy Introduction of active methods to curb unemployment, offering possibilities to change one's qualifications ³⁷
	Educational policy	Reform of the education system in 1999: improvement of the quality of education, compliance with standards in other countries, lengthening of the period of education, increased importance of lifelong learning ³⁸ Development of two-cycle studies and the system of credit points ECTS (Bologna process): establishment of the State Accreditation Commission, fostering students' mobility, for example, through Socrates/Erasmus programmes Offering tax deductions when purchasing educational aids, for example, computers and for raising vocational qualifications (up to 2004). Promoting behaviour concerning innovations and entrepreneurship through education programmes: introduction of some elements of economic education to curricula at the level of secondary education (subject: Basic Entrepreneurship). Scholarships from the Ministry of National Education and Sports and non-public institutions, co-financing of participation in scientific conferences, for example, Batory Foundation, Friedrich Ebert Stiftung. Scholarships for students granted by the Marshall's Office, public and private institutions in Wielkopolska.
Networking, co-location and clustering measures	Regional policy	Fostering the creation of infrastructure and organisational conditions for cooperation networks (difficult because of inadequate measures)
Knowledge and technology transfer to enterprises	Trade policy	Lifting restrictions on foreign trade (according to WTO regulations) Imposing the norms and standards when introducing products onto the common market
	Protection of intellectual property rights	Adjustment of regulations and organisational structures to European standards: Increased range of information on inventions for innovators provided by the Polish Patent Office (PPO), PPO joining the European structure of patent offices.
Research collaboration of	Tax policy	Tax reduction for enterprises purchasing new technologies (in personal income tax since 2006)

³⁴ Among others, “ePoland. Action Plan for the development of the information society in Poland for the years 2001-2006” „E-Wielkopolska. Strategy for the creation and development of the information society in Wielkopolskie”, Poznań 2004.

³⁵ “Act on public procurement”, 1994 (with further changes).

³⁶ Document “Directions of Government actions in relation to small business from 2003 to 2006”, 2003.

³⁷ “National strategy for the growth of employment and development of human resources in the years 2000-2006”. For subsequent years other documents were prepared: “National Action Plan for Employment for 2005”, “National Employment Strategy for 2007 – 2013”, 2005.

³⁸ „Strategy for the development of lifelong learning”, 2003.

public research organisations with private sector	Regional policy	Introduction of regulations on public-private partnership (from 2005)
Support for public research	Sectoral policy	State aid for branches in difficult economic situations (did not foster innovation activity)
	National, regional and local policy	Subsidising infrastructure of HEIs
Financial R&D measures for the private sector	Industrial policy	State aid for enterprises (dominated by sectoral assistance for firms in difficulties and for declining industries)
	Special economic zones	Increasing economic activity and employment in the chosen areas (on the basis of tax relief and exemptions from some charges) ³⁹
	Support for foreign investments	Public, state and regional assistance to develop infrastructure in the prepared areas, subsidising investments ⁴⁰

3.3 Conclusions

GDP per capita in Wielkopolska in 2004 was higher than in Poland, which may prove that the province has economic potential (a number of indicators concerning the economy of Wielkopolska are presented in Figure 3). In the years 2000-2004 the relative growth of gross regional product per capita was higher in Wielkopolska than in Poland.

Poland's working population decreased during system transformation to a greater degree than in Wielkopolska. The biggest decline in the number of working population in Wielkopolska occurred in agriculture (although less so than in Poland as a whole), and in the construction sector. Employment increased only in services. Since 2004, unemployment in Wielkopolska has been lower than in Poland. However, there is significant long-term unemployment as a result of changes in the structure of the economy.

The regional gross value added shows the specialisation of the province's economy: the value of this indicator in agriculture was higher in Wielkopolska than in Poland because of the traditions in the region. Low gross value added in mining and quarrying was due to the lower efficiency of lignite mining (dominant in Wielkopolska) and higher efficiency of hard coal in Poland. Wielkopolska is one of the more industrialised voivodships in Poland (manufacture motor cars, trailers, semi-trailers and chemicals). The construction sector is also significant. Lower gross value added in the electricity, gas and water sectors is the result of deficiencies in the infrastructure and the need for investment. There is lower gross value added in services, which may be the consequence of the traditional structure of the economy. Moreover, services in subregions are underdeveloped.

Wielkopolskie is an industrialised voivodship. Its contribution to Polish industry's sold production is one of the highest. Agriculture is also important with its high effectiveness (as for Poland as a whole). Within the differentiated structure of Wielkopolska's industry, manufacturing of foodstuff and beverages dominates, using high-quality raw materials from the voivodship, which in Wielkopolska is an example of a traditional economic activity. Many enterprises in this branch require financial support to improve their manufacturing processes. On the other hand, there are significant companies with foreign capital which use efficient production technologies.

In the medium to high-tech industry automobile production is of great importance, together with the manufacture of trailers and semi-trailers (to a large extent based on foreign investments). The high-tech industry is relatively small: because of the lack of regional tradition and the decline during economic transformation the situation in some cases is unfavourable. For example, there are some poorly developed branches in the electro-technical industry, which need more complex technological processes. In many areas of industry companies in Wielkopolska have to cope with strong competition from imported goods.

³⁹ Note: Special economic zones do not exist in Wielkopolska.

⁴⁰ Act on financial support for investments, 2002.

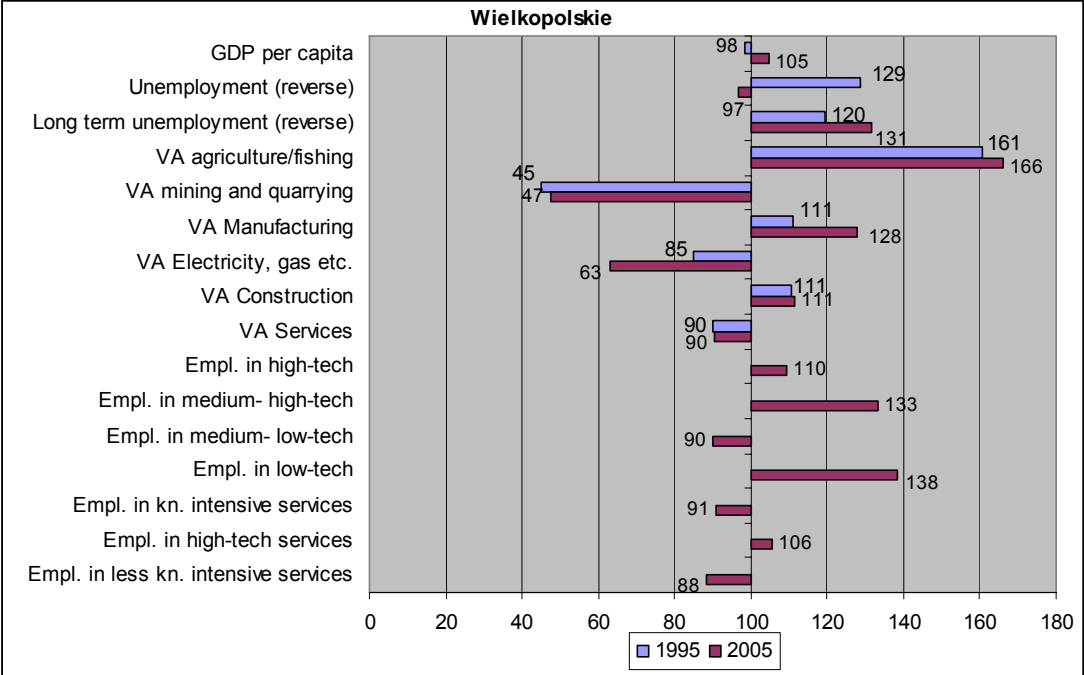
In the food and electro-technical industry in Wielkopolska there is relatively high expenditure on innovation activities. In the chemical and rubber industries expenditure is low. To a significant extent funds are spent on machinery and equipment, and to a lesser extent on R&D activities. The lack of self-funding and the high cost of obtaining funding (without support from the capital market) act as barriers to innovativeness.

The structure of employment in Wielkopolska reflects the importance of economic specialisation: in the production of foodstuffs and beverages and the electro-mechanical industry (medium to high-tech), an important role is played by the production of cars, trailers and semi-trailers).

Traditional branches of the economy may not require knowledge-intensive services. Moreover, companies with foreign capital can use services offered by their headquarters or mother companies (often outside Wielkopolska). However, high-tech services, e.g. computer-based ones, play a significant role.

Until 2004 there were limited possibilities for the regions to shape their economic conditions. Decisions made at central level were more influential. Central initiatives were unsatisfactory because of the high central budget deficit and public debt in addition to the ineffective nature of State aid (restructuring of the sectors in decline has taken many years and is still unfinished). The central government established special economic zones, improved conditions for entrepreneurship, and the functioning of the labour market, education system, etc. This was not regionally-orientated. Recently the significance of voivodships has increased: to obtain EU funds the regional authorities produce strategic documents designed to diminish differences in regional development and enhance the technical infrastructure.

Figure 3: Key indicators on Wielkopolskie’s economic structure and development



Source: Eurostat
 Note: See Annex 2 for explanation of indicators

4 Conclusions

4.1 Assessment of the Regional Innovation System

The regional innovation system is fragmentary, with a moderately functioning research sector, inadequate development units and poor innovation-supporting institutions. Entities facilitating cooperation in, for example, technology transfer are few, and their activities do not reflect the intellectual potential of the R&D sector in Wielkopolska.

In relation to the national situation there is essential human capital in Wielkopolska. Poznań is an academic and scientific research centre and its scientific disciplines are a potential source of knowledge for the economy. There are diverse fields of research conducted, *inter alia*, in natural sciences, including agricultural sciences and biotechnology, chemistry, and machine theory. In addition, research in social sciences, including economics, may be of significance for raising the usefulness of voivodship’s human capital.

Wielkopolska has weak links between the R&D sector and the economy. Companies and R&D entities have too little experience in cooperating with each other. Innovation-supporting institutions still need strengthening. The relationships between enterprises are considered to be inadequate; up to 2003, for example, there had been no formalised and supported clusters in Wielkopolska. A number of companies with foreign capital operate in the voivodship and play an important role in the economy. These firms mostly use the technical solutions and knowledge from their countries of origin and their cooperation with the regional R&D sector is limited. The regional innovation system is improving, thanks to the Regional Innovation Strategy and the initiation of some of the activities included in it (see also section 4.2).

The branch structure of the region’s manufacturing industry is traditional and dominated

by low and medium to low-tech branches, which in 2004 accounted for 64.1% of industry's sold production. The structure of the region's economy is gradually changing and is linked with adjustments to the requirements of the modern economy: there is a lower share of agriculture in gross value added and a higher share of services. At the same time, compared with other voivodships, industry is still important in Wielkopolska's economy.

Amongst the low and medium to low-tech branches of major importance in Wielkopolska's manufacturing is foodstuffs and beverages processing using raw materials of a relatively productive agricultural sector and building on achievements in the fields of biotechnology, electro-mechanical engineering and the chemical industry. The R&D share of expenditure on innovative activity in this branch is relatively low. An important role is played by funds allocated for the purchase of machinery and equipment. In addition, foreign investments in this branch (Nestle, Bestfoods, Kraft, Unicom Bols, Wrigley) improved efficiency and product quality.

Another essential branch for raising the level of the region's innovativeness is the chemical industry with its well-developed traditional production (inorganic compounds, artificial fertilizers). In 2004 Wielkopolska's chemical industry allocated 28.7% of its expenditures on innovation-based to R&D activities. The structure of production in the chemical industry is not yet modern enough: specialisation in chemistry may be improved through cooperation between R&D entities and companies within the recently created chemical cluster (2005).

Manufacture of motor vehicles, trailers and semi-trailers is also important for Wielkopolska's innovativeness. The structure of production in this branch is based on traditional activities (production of locomotives, railway carriages and agricultural machinery) and on the manufacture of motor vehicles by companies with foreign capital (Volkswagen, MAN, Neoplan). In 2004, this branch allocated only 11.6% of expenditure to innovations in R&D activities. This may indicate that it is difficult to combine the needs of companies with what the R&D sector has to offer. At the same time there is significant manufacturing of rubber goods (car tyres) and accumulators in Wielkopolska, which complements vehicle manufacture.

Exhibit 3: Matching of knowledge and economic specialisation in Wielkopolska – Poland

Knowledge area	Economic sector	Economic specialization	Conclusions
Agricultural science and biotechnology (natural, not GMO)	Agriculture Foodstuffs and beverages production	Raw materials for food processing Ecological agriculture (including agri-tourism) (cultivation of plants, pig and cattle breeding adjusted to natural conditions) Animals, plants crossbreeds	Good fit Need to strengthen links with mechanical and chemical industries, food biotechnology and environmental protection
Chemistry	Industrial manufacturing Agriculture	Non-metallic raw materials – glass industry Production of cosmetics and domestic detergents Rubber industry (processing of rubber) Building materials industry, furniture	Good fit Need to create closer links with food processing industry
New materials (materials with specific properties)	Manufacturing Construction sector	Technology of concrete, finishing materials for construction industry (paints, lacquers, etc.) Metallurgy iron foundries, aluminium production Electroplating (Production of accumulators)	Good fit Need to intensify education of specialists Not enough expenditures in the field of nano-technology and polymers, need to increase expenditure in the future
Electro-machines	Industrial manufacturing Agriculture Construction sector	Production of machines: passenger cars and trucks, towing vehicles, public transport vehicles, railway carriages Production of electrical household equipment (refrigerators, freezers, gas cookers, electric cookers)	Good fit Need to increase innovative and development potential of universities and R&D institutes, improve links of companies with the R&D sector
IT in management	Cross-sector technology		Lacks respective economic specialisation IT Staff and scientific potential in Wielkopolska is highly valued in Poland and in the world but there are still not many spin-offs
Bioorganic chemistry (combination of chemistry, biology, computer science)	Industrial processing Medicine (drugs)		There is a need to strengthen scientific specialisation, including application of specific methods of treatment in the selected areas of medicine (oncology, allergology)
Modern Technologies of production, transmission of energy	Power industry, protection of the environment		Scientific potential is not sufficient to respond to the needs of the economy

The SWOT analysis conducted during work on the Regional Innovation Strategy in 2004 identified the main strengths and weaknesses of the regional innovation system. Included in this analysis were: the R&D sector, innovation-supporting institutions and enterprises. As a result, some strengths were noted, but weaknesses were more numerous.

Exhibit 4: Strengths and weaknesses of the Regional innovation system

	Strengths	Weaknesses
<i>Knowledge creation capacity</i>	<p>R&D SECTOR</p> <ul style="list-style-type: none"> - large intellectual potential (the existence of a strong academic centre in Poznań) <p>ENTERPRISES</p> <ul style="list-style-type: none"> - relatively modern machinery and equipment 	<p>R&D SECTOR</p> <ul style="list-style-type: none"> - dispersion (small teams and budgets, no coordination of activities) - focusing on basic research as separate from the current needs of the economy <p>ENTERPRISES</p> <ul style="list-style-type: none"> - low innovativeness (in SMEs, low level of investment outlays) - lack of sufficient access to financial resources enabling the transfer of technology
<i>Knowledge diffusion capacity</i>	<p>ENTERPRISES</p> <ul style="list-style-type: none"> - ability to adjust to modern technological solutions <p>INTERMEDIARY INSTITUTIONS</p> <ul style="list-style-type: none"> - increasing potential - gradual development of cooperation network 	<p>R&D SECTOR</p> <ul style="list-style-type: none"> - lack of necessary structures and procedures in scientific units to cooperate with companies (no technology transfer centres, liaison offices, regulation of the protection of intellectual property rights, lack of exchange of personnel with the economy) <p>ENTERPRISES</p> <ul style="list-style-type: none"> - lack of skills and will to cooperate with companies, support institutions and research units - technological dependence (purchase of machinery and equipment, not conducting R&D activity on one's own) <p>INTERMEDIARY INSTITUTIONS</p> <ul style="list-style-type: none"> - not enough institutions and programmes for the transfer of technologies, both domestic and international
<i>Knowledge absorption capacity</i>	<p>ENTERPRISES</p> <ul style="list-style-type: none"> - sound intellectual capital, particularly in larger companies <p>LESS DEVELOPED AREAS</p> <ul style="list-style-type: none"> - large, not expensive labour supply 	<p>R&D SECTOR</p> <ul style="list-style-type: none"> - deficiency of highly qualified specialists in the fields of technology and management <p>ENTERPRISES</p> <ul style="list-style-type: none"> - lack of highly qualified specialists in the field of technology - lack of employee training in technologies, advanced management techniques <p>INTERMEDIARY INSTITUTIONS</p> <ul style="list-style-type: none"> - inadequate staff qualifications <p>LESS DEVELOPED AREAS</p> <ul style="list-style-type: none"> - differences and deficiencies in technical infrastructure and in the quality of market services (including banking)
<i>Interactions of main actors</i>	<p>ENTERPRISES</p> <ul style="list-style-type: none"> - ability to adjust the influence of environmental factors and to survive in difficult economic conditions <p>INTERMEDIARY INSTITUTIONS</p> <ul style="list-style-type: none"> - increasing potential - large percentage of centres accredited to National System of Services for SMEs 	<p>R&D SECTOR</p> <ul style="list-style-type: none"> - lack of experience in solving corporate problems through research studies and the custom of delegating scientific personnel to work in industry - limited skills in obtaining funds to conduct research from sources outside the central budget <p>ENTERPRISES</p> <ul style="list-style-type: none"> - too much confidence in one's own management skills (particularly in SMEs) <p>INTERMEDIARY INSTITUTIONS</p> <ul style="list-style-type: none"> - insufficient number of local and regional support centres - offer of support institutions not tailored to the needs of companies - no flow of information on services between various support institutions, between institutions and companies
<i>RTDI governance capacity</i>	<p>GOVERNANCE</p> <ul style="list-style-type: none"> - preparation of Regional Innovation Strategy 	<p>GOVERNANCE</p> <ul style="list-style-type: none"> - lack of coordination of intermediary institutions <p>LESS DEVELOPED AREAS</p> <ul style="list-style-type: none"> - limited involvement of local government in support of innovative local economy

The structure of industry in Wielkopolska reflects regional tradition and the gradual improvement in the past (before 1990s) of the R&D sector was in response to the needs of manufacturing. The R&D base may not be fully suited to the needs of the modern economy because

of the inability to conduct the more advanced R&D activities that enterprises want due to weaknesses in infrastructure and the inadequacy of the funds received by the R&D sector. This may be the reason why Wielkopolska makes insufficient use of its intellectual capital. In addition, the inflow of foreign capital connected with the introduction of modern technologies from abroad was not accessible for regional R&D.

4.2 Assessment of policies

Before 2004, Wielkopolska had no specific regional RTDI policy. The R&D situation in Wielkopolska was determined by the general (unfocused) approach of the central government. However, there had been no significant activities designed to create a regional innovation system that took account of regional areas of specialisation and the respective needs. The main instrument offered to the R&D sector was financial support from the central budget (within the section „Science”): its size was too small and it was inadequately concentrated on particular branches or technologies. Moreover, within the structure, public expenditures on R&D dominated outlays on basic research and their share increased, whereas expenditures on applied research and development were not adequate. State aid predominantly supported mature branches: R&D activities were considered as marginal. The central authorities did not use adequate incentives to enhance innovation activity in the economy, which resulted in a low level of BERD. There were no adequate instruments for the creation of innovation-supporting institutions and improvement of the links between business and the R&D sector, e.g. technology transfer. The involvement of enterprises' developed too slowly in relation to the requirements of competitiveness.

Fulfilment of needs occurring in the regional economy was possible because of the centrally defined rules of non-RTDI policy. Budget deficit and public debt limited the ability of the central authorities to introduce instruments to improve economic conditions. At the same time the decision-makers had to deal with numerous difficulties: unemployment, income inequalities and poverty, inefficient economic structure (existence of mature branches not fully restructured and requiring State aid). R&D activities were influenced by a lack of venture capital, including for spin-offs.

The process of constructing a regional innovation systems in Poland is in its initial stages. The possibility of initiating regional RTDI policy in Wielkopolska appeared in 2004 by way of the Regional Innovation Strategy. During this process, an attempt was made for the first time to integrate stakeholders working on improvement. This resulted in an Action Plan, which included a number of initiatives to be activated in the years 2004-2006, e.g. centres of excellence, centres of technology transfer, technological incubators, clusters and technological platforms. These initiatives may be successful thanks to the possibility of co-financing from EU funds. Until now, only a small part of the funds has been used to support innovativeness, but in the years 2007-2013 much more structural funding will be available for innovation.

4.3 Challenges and trends of the knowledge economy

Poland made a tremendous effort to meet the requirements of the market economy. However, Wielkopolska's economy still cannot be regarded as knowledge-based: the changes in the traditional structure of the economy, which started several years ago, have not yet been achieved. There are constant difficulties in Poland as regards coordination of RTDI policy and improving the functioning of the fragmentary national innovation system. Initiatives of the central authorities did not put enough emphasis on modernisation of the economy as regards innovativeness.

Assuming that the necessary conditions have been created to make Wielkopolska's economy knowledge-based, Wielkopolska would appear to have significant intellectual potential, compared with most voivodships. However, it is important to link this with the needs of the economy, which requires adjustment of educational and lifelong learning programmes and better cooperation between HEIs and the economy.

The relatively high productivity in certain significant branches of industry in Wielkopolska is a

result of both strong tradition and the importance of companies with foreign capital. However, expenditures on innovations (particularly on R&D activities) in the manufacturing industry are still not sufficient to improve the competitiveness of Wielkopolska's economy. Making the R&D sector and innovation-supporting institutions stronger will be an important challenge for the regional authorities. The shortage in Wielkopolska of appropriate links between the R&D sector and the economy is troublesome and it is important to integrate regional, national and international initiatives.

The level of innovativeness of the voivodship's economy may rise with access to EU funds in the years 2007-2013, the introduction by the central authorities of new instruments (proposed in the Act on financing science, an Act on some forms of promoting innovation activities), and implementation of both the regional innovation strategy and the Regional Operational Programme for Wielkopolskie for the years 2007-2013.

Challenges for innovation policy are presented in **Exhibit 5**.

Wielkopolska will find it difficult to fulfil the criteria of the Lisbon Strategy within the next 5 or 10 years. Social and fiscal upheavals will make it equally impossible to achieve GERD of at least 3% of GDP. The condition that 2/3 of GERD should come from the private sector also seems difficult to meet. Regional innovation strategies in Poland have been started, and increasing the effectiveness of how they function will require intensive support from both the central and the regional authorities.

Exhibit 5: Identification of policy challenges in Wielkopolska – Poland

Policy challenge	Corroborating indicator	Inducement mechanisms	Effective approaches
Weaknesses of innovation system governance	<ul style="list-style-type: none"> - Lack of formalised comprehensive innovation strategy for Poland - No chosen strategic disciplines of R&D activities - Public assistance is not enough and often accidental - Regional government focuses on current activities (mainly improvement of technological infrastructure), - Dominance in certain years (up to 2000, since 2005 reintroduction) of financial instruments and slight role of other forms, e.g. organisational, bigger share of supply instruments over demand 	<ul style="list-style-type: none"> - Need to coordinate decisions of different ministries concerning R&D sector - Increased importance of EU policy approach, emphasising the role of regions in socio-economic development - Introduction of structural funds facilitating changes in the sphere of innovation - Importance of public incentives for the growth of BERD - Preparation of strategic programme documents determining the concept of region and local units activities 	<ul style="list-style-type: none"> - Conducting of technological foresight research by the Ministry of Scientific Research and Information Technology - Preparation of National Plan of Development 2004-2006 and 2007-2013 as a way to coordinate public activities as regards innovations - Increasing independence of local government authorities as regards finance and decision-making process - Implementation and monitoring the effects of Regional Innovation Strategy
Fragmentation of supporting entities in the innovation system	<ul style="list-style-type: none"> - Little influence, inadequate number of institutions and programmes, for the transfer of technologies - Dominance of advisory services, services providing and loan granting entities, etc., without direct involvement in technology creation and transfer - Lack of coordination of actions of particular supporting institutions 	<ul style="list-style-type: none"> - Implementation of national and EU initiatives to improve the structure of the innovation support system 	<ul style="list-style-type: none"> - Organisation of network of accredited entities supporting SMEs (National System of Services) - Accessibility of information (knowledge base) on technology - Improve effectiveness of the existing and creating new centres of technology transfer, technology parks
Insufficient cooperation: - within R&D sector	<ul style="list-style-type: none"> - Fragmented, small entities⁴¹ - Lack of privatisation, consolidation of R&D units - Inadequate State aid as regards R&D activities, insufficient investments in equipment - Lack of objective ways of evaluating R&D sector - Excessively high labour costs in the structure of R&D expenditures - Low mobility of scientific research 	<ul style="list-style-type: none"> - Need to introduce financial mechanisms encouraging scientific research workers to undertake innovation activities - Need to increase the range of cooperation between different units of the R&D sector - Need to ensure evaluation of effectiveness of R&D activities (taking into account applied research and implementation) 	<ul style="list-style-type: none"> - Gradual transformation in the structure of management and financing R&D sector, further restructuring of R&D units (need to approve and implement the Act on R&D units) - Development of R&D consortia with participation of scientific units (Framework Programmes), to foster the links between R&D entities (they can join Centres of Excellence and Technological Platforms)

⁴¹ The average number of employees in development units in Wielkopolskie in 2004 was 12 people. HEIs are larger but research teams are small and cooperation (within and with other HEIs) is not significant.

Policy challenge	Corroborating indicator	Inducement mechanisms	Effective approaches
- between R&D sector and business sector	workers	- Prevention against excessive dispersion of measures for particular projects (research grants)	
	<ul style="list-style-type: none"> - Lack of structures and procedures supporting cooperation - No exchange of personnel between the science and the business sectors - A small number of formalised cluster structures - Weak links between firms with foreign capital and Polish companies and regional R&D units - Poor managerial skills of staff in R&D sector; insufficient staff qualifications as regards technology in companies - Difficulties in using EU funds in industrial research in cooperation with R&D - Need to modify the evaluation system of universities: to increase the importance of applied research - Not enough capital and lack of focus towards R&D activities (lack of seed capital for spin-off) 	<ul style="list-style-type: none"> - Need to ensure (by decision-makers) incentives facilitating BERD: effective use of fiscal facilities in cooperation between R&D and business (since 2006) - Need to improve effectiveness of R&D sector cooperation with business using institutional mechanisms - Need to introduce grants for research projects, wider exchange of scientific research workers between business and R&D sector, adjustment of solutions as regards protection of intellectual property rights and distribution of profits from the inventions implemented to the scientific unit and the innovator 	<ul style="list-style-type: none"> - Creation of information forum, fostering the establishment of regional clusters, technological and innovation platforms - Promotion of positive experiences as regards cooperation (benchmarking) - Improvement of enterprises' conditions by reducing income tax from legal persons (replacement of tax relief and exemptions abolished in 2001) - Implementation of the Act on some forms of promoting innovation activity, including restoration of tax relief for entrepreneurs (since 2006) - Creation of the National Capital Fund (commencing its activities in 2006 as the fund of funds) in order to increase venture capital - More measures to co-finance cooperation projects will be accessible within structural funds for the years 2007-2013
Education inadequate for the needs of knowledge-based economy	<ul style="list-style-type: none"> - Entrepreneurs' complaints about the lack of specialists with technical education, knowledge of foreign languages and communication skills - Threat of emigration of top specialists - Still insufficient range of lifelong learning, particularly technical (training, post-graduate studies) 	<ul style="list-style-type: none"> - Structural funds for the improvement of the quality of human capital - Educational policy ensuring an increase in the number of people with secondary technical education, growth in the number of technical university graduates - A wider offer of doctoral and post-graduate studies 	<ul style="list-style-type: none"> - Special scholarship systems at regional and national level - Support for investments of higher education institutions - Increased public assistance for the chosen fields of science and implementation - Grants for doctoral and post-doctoral dissertations from the Ministry of Scientific Research and Information Technology

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: Description of key indicators used in the summary graphs

Period of coverage: Two periods are used, i.e. 1995 and 2004 or the closest possible years

Index: Country=100

Source: Eurostat, 2006

Summary Graph 1: Key indicators on Wielkopolskie's knowledge base development in comparison to Poland

1. Total intramural R&D expenditure as a percentage of GDP
 - GERD
 - BERD
 - GOVERD
 - HERD
 - PNPERD
2. R&D personnel as a percentage of total employment
 - All sectors
 - Business
 - Government
 - Higher education
 - Private non-profit
3. Human resources in S&T as a percentage of labour force
4. Patent applications at EPO per million inhabitants
5. Students in tertiary education (ISCED 5+6) per thousand inhabitants.
6. Lifelong learning: Participation of adults aged 25-64 in education and training as a percentage of population

Summary Graph 2: Key indicators on Wielkopolskie's economic structure and development

1. GDP per capita at current market prices.
 2. Long-term unemployment rate (of total unemployment).
 3. Unemployment rate (%).
 4. Value-added at basic prices (€ million): Share (%) of sectors to total.
 - Agriculture/fisheries
 - Mining and quarrying
 - Manufacturing
 - Electricity, gas and water supply
 - Construction
 - Services (excl. extra-territorial organisations and bodies)
 5. Annual data on employment in technology and knowledge-intensive sectors at regional level: Percentage of total employment
 - High technology manufacturing: NACE Rev. 1.1 codes 30, 32 and 33
 - Medium-high technology manufacturing: NACE Rev. 1.1 codes 24, 29, 31, 34 and 35
 - Medium-low technology: NACE Rev. 1.1 codes 23 and 25 to 28
 - Low technology: NACE Rev. 1.1 codes 15 to 22 and 36 to 37
 - Total knowledge-intensive services: NACE Rev. 1.1 codes 61, 62, 64 to 67, 70 to 74, 80, 85 and 92
 - Knowledge-intensive high-technology services: NACE Rev. 1.1 codes 64, 72, 73
- Total less-knowledge-intensive services: NACE Rev. 1.1 codes 50, 51, 52, 55, 60, 63, 75, 90, 91, 93, 95 and 99

Annex 3: Tables and Figures

Tables

1. Important indicators concerning voivodships in Poland in 1999
2. Important indicators concerning voivodships in Poland in 2001
3. Important indicators concerning voivodships in Poland in 2003
4. Gross domestic expenditures on R&D activity in Poland and chosen voivodships
5. Current expenditures on R&D activity by type of activity (%)
6. Employment in R&D activity, total and by sectors of performance, in Poland and chosen voivodships
7. Employment in R&D development activity by educational level in Poland and chosen voivodships
8. Human resources for science and technology in Poland and chosen voivodships
9. Economically active population by highest level of education attained in Poland and chosen voivodships
10. Patents applications filed at the Patent Office of the RP in Poland and chosen voivodships
11. Patent applications to the EPO by priority year at regional level in Poland and chosen voivodships
12. Number of organisations within NSS and type of services in Poland and chosen voivodships (2004)
13. EU funds for Poland and Wielkopolska in 2004-2006
14. Activities co-financed in Wielkopolska within measure 2.6 Integrated Regional Operational Programme in 2004-2006 (European Social Fund in PLN)
15. GDP *per capita* in percentage of the EU average (2003) in Poland and chosen voivodships
16. Gross value added by kind of activity in Poland and chosen voivodships (2003)
17. Gross value added by sections of the NACE in 2003 in million PLN in Poland and chosen voivodships
18. Gross fixed capital formation in € million in Poland and chosen voivodships
19. Gross fixed capital formation in Poland and chosen voivodships (2003)
20. Gross fixed capital formation by sections in million PLN (Poland and chosen voivodships)
21. Sold production of industry by sections and branches (divisions) of NACE (2004)
22. Employment by kind of activity in Poland and chosen voivodships (2003)
23. Entities of the national economy recorded in the REGON register by ownership sectors in Poland and chosen voivodships (2005)
24. Entities of the national economy recorded in the REGON register by kind of activity in Poland and chosen voivodships (2005)
25. Entities of the national economy recorded in the REGON register (units) in Poland and chosen voivodships
26. Entities of the national economy recorded in the REGON register by sections of the NACE in 2005 (units) in Poland and chosen voivodships
27. Expenditures on innovation activities in industry in Wielkopolska (2003)
28. Expenditures on innovation activities in industry in Wielkopolska (2004)
29. Expenditures on innovation activities in the sector of enterprises by sections and branches (divisions) of NACE (2004)
30. Companies with foreign capital participation in Poland and chosen voivodships
31. Loan capital, value and number of loans in selected voivodships as at 31.12.2005

Figures:

- A1. Population in Poland and voivodships (2003)
- A2. GDP *per capita* in Poland and voivodships (2003)

Table 1: Important indicators concerning voivodships in Poland in 1999

	GDP		GDP per capita in thousand PLN	Gross value added per 1 employed in PLN	Entities of the national economy recorded in the REGON register	Gross domestic expenditures on R&D activity per capita in PLN	Employment in R&D activity		Expenditures on innovation activities in industry	
	in million PLN	Poland = 100					persons	Poland = 100	in million PLN	Poland = 100
Poland	666308.3	100.00	16.88	36065	3 041 403	118.8	126 000	100.0	16295,6	100,0
Dolnośląskie	53381.7	8.01	17.23	41475	202 399	95.1	9 452	7.5	690,9	4,2
Kujawsko-pomorskie	31835.8	4.78	15.01	35244	502 589	56.9	4 862	3.9	576,9	3,5
Lubelskie	27399.0	4.11	11.88	22995	242 795	74.8	6 774	5.4	1483,5	9,1
Lubuskie	15939.5	2.39	15.38	38279	371 359	18.1	1 283	1.0	188,9	1,2
Łódzkie	41466.5	6.22	15.45	32122	129 132	99.9	8 590	6.8	662,0	4,1
Małopolskie	48276.3	7.25	14.94	29802	123 969	134.0	15 091	12.0	938,7	5,8
Mazowieckie	134900.7	20.25	25.28	46932	80 072	398.0	36 094	28.6	3318,4	20,4
Opolskie	15668.9	2.35	14.23	34204	81 157	34.1	1 817	1.4	928,1	5,7
Podkarpackie	26355.3	3.96	12.25	23081	84 792	67.2	3 339	2.7	391,6	2,4
Podlaskie	15579.3	2.34	12.40	25819	280 273	34.7	2 399	1.9	149,1	0,9
Pomorskie	38205.3	5.73	17.27	41969	166 931	89.6	6 774	5.4	685,2	4,2
Śląskie	89553.0	13.44	18.50	42550	263 522	81.1	10 523	8.4	2656,2	16,3
Świętokrzyskie	17630.9	2.65	13.10	24679	72 527	72.7	1 343	1.1	596,6	3,7
Warmińsko-mazurskie	19685.8	2.95	13.17	33812	158 113	35.8	2 139	1.7	138,0	0,8
Wielkopolskie	60591.0	9.09	17.65	36532	185 014	85.7	11 643	9.2	2466,6	15,1
Zachodniopomorskie	29839.4	4.48	17.09	42875	96 759	40.0	3 877	3.1	424,9	2,6

Table 2: Important indicators concerning voivodships in Poland in 2001

	GDP		GDP per capita in thousand PLN	Gross value added per 1 employed in PLN	Entities of the national economy recorded in the REGON register	Gross domestic expenditures on R&D activity		Employment in R&D activity		Expenditures on innovation activities in industry	
	in million PLN	Poland = 100				per capita in PLN	in % GDP	persons	Poland = 100	in million PLN	Poland = 100
Poland	779204.7	100.00	19.88	44841	3 325 539	126	0.70	123 840	100.0	11501.4	100.0
Dolnośląskie	60173.7	7.72	20.38	52767	222 365	115	0.57	9 355	7.6	718.4	6.2
Kujawsko-pomorskie	38617.0	4.96	18.17	44115	527 626	62	0.37	4 975	4.0	1127.4	9.8
Lubelskie	31921.9	4.10	14.09	27743	265 987	66	0.55	6 942	5.6	372.7	3.3
Lubuskie	18196.1	2.34	17.88	48857	403 004	17	0.23	1 380	1.1	240.5	2.1
Łódzkie	48214.4	6.19	17.95	38744	142 691	113	0.70	8 210	6.6	581.2	5.1
Małopolskie	55305.4	7.10	16.97	36682	133 838	142	0.86	14 569	11.8	773.5	6.7
Mazowieckie	162981.2	20.92	30.22	58306	90 528	422	1.59	33 922	27.4	2207.5	19.2
Opolskie	17789.8	2.28	16.48	42470	94 597	36	0.26	1 650	1.3	202.9	1.8
Podkarpackie	30174.0	3.87	14.29	27908	92 755	48	0.46	3 496	2.8	517.9	4.5
Podlaskie	19108.9	2.45	15.27	32476	309 215	73	0.23	2 400	1.9	256.7	2.2
Pomorskie	43447.5	5.58	19.66	51805	188 311	92	0.52	6 425	5.2	436.4	3.8
Śląskie	104245.2	13.38	21.76	53338	281 880	84	0.41	11 760	9.5	1959.4	17.0
Świętokrzyskie	20153.3	2.59	15.39	29610	81 850	15	0.12	1 280	1.0	683.1	5.9
Warmińsko-mazurskie	22079.1	2.83	14.88	41170	175 840	35	0.29	2 053	1.7	129.5	1.1
Wielkopolskie	72377.2	9.29	21.02	46500	210 712	100	0.53	11 696	9.4	1110.7	9.7
Zachodniopomorskie	34419.8	4.42	20.04	54679	104 340	37	0.23	3 727	3.0	183.6	1.6

Table 3: Important indicators concerning voivodships in Poland in 2003

2003	GDP		GDP per capita		Gross value added per 1 employed in PLN	Gross fixed capital formation		Entities of the national economy recorded in the REGON register	Gross domestic expenditures on R&D activity		Employment in R&D activity		Expenditures on innovation activities in industry	
	in million PLN	Poland = 100	in thousand PLN	% UE average		in million PLN	Poland = 100		per capita in PLN	in % GDP	persons	Poland = 100	in million PLN	Poland = 100
Poland	842120.4	100.00	21.37	23.1	54741	153758	100.00	3 581 593	119	0.58	126 241	100.0	15890.2	100.0
Dolnośląskie	65560.2	7.79	21.99	23.6	60421	12133	7.89	241 440	89	0.45	9 482	7.5	1338.7	8.4
Kujawsko-pomorskie	40886.9	4.86	19.17	20.7	51889	6266	4.08	575 598	49	0.29	4 552	3.6	459.1	2.9
Lubelskie	34143.7	4.05	10.02	16.3	38780	8423	5.48	287 816	63	0.44	6 600	5.2	279.9	1.8
Lubuskie	19223.7	2.28	18.40	19.9	55424	5265	3.42	424 031	33	0.14	1 275	1.0	458.1	2.9
Łódzkie	52938.6	6.29	19.50	21.3	48247	3560	2.32	154 849	106	0.62	7 683	6.1	462.0	2.9
Małopolskie	61493.2	7.30	18.52	19.8	47629	13000	8.45	142 682	160	0.87	16 910	13.4	1038.8	6.5
Mazowieckie	175351.1	20.82	32.72	35.7	69662	35174	22.88	96 938	389	1.25	34 221	27.1	3525.7	22.2
Opolskie	18527.4	2.20	17.17	18.3	52123	3019	1.96	103 679	27	0.17	1 538	1.2	406.8	2.6
Podkarpackie	32723.6	3.89	15.44	16.3	40300	6339	4.12	97 313	55	0.39	3 291	2.6	732.0	4.6
Podlaskie	20180.3	2.40	16.11	17.5	42945	3702	2.41	335 573	32	0.20	2 307	1.8	276.7	1.7
Pomorskie	47453.3	5.63	20.93	22.7	58268	8120	5.28	200 626	90	0.38	6 566	5.2	431.7	2.7
Śląskie	113455.8	13.47	23.72	25.1	61165	17640	11.47	305 888	80	0.32	12 869	10.2	2938.9	18.5
Świętokrzyskie	22273.8	2.64	16.91	18.0	42381	3666	2.38	87 412	10	0.07	1 320	1.0	681.1	4.3
Warmińsko-mazurskie	24811.5	2.95	16.50	18.2	51943	4265	2.77	191 029	37	0.26	2 285	1.8	203.8	1.3
Wielkopolskie	77608.8	9.22	22.26	24.2	52933	17483	11.37	226 329	107	0.46	12 031	9.5	2407.5	15.1
Zachodniopomorskie	35488.4	4.21	20.36	21.9	49721	5703	3.71	110 390	34	0.26	3 311	2.6	249.3	1.6

Table 4. Gross domestic expenditures on R&D activity in Poland and chosen voivodships

	Expenditures on R&D total		Expenditures on R&D by sectors			of which funds from			
	in million PLN	Poland = 100	enterprise sector	government sector	schools of higher education	budget	enterprises	scientific units of the Polish Academy of Science and research & development units	private non-profit institutions and foreign funds
1996									
POLAND	2761.4	100.0	40.9	31.3	27.8	.	.	.	.
Mazowieckie	1152.5	41.7	39.1	46.0	14.9	.	.	.	.
Podkarpackie	89.3	3.2	72.9	16.6	10.5	.	.	.	.
Wielkopolskie	192.0	7.0	42.8	22.4	34.8	.	.	.	.
1997									
POLAND	3361.0	100.0	39.4	32.0	28.6	.	.	.	.
Mazowieckie	1421.9	42.3	36.2	48.9	14.9	.	.	.	.
Podkarpackie	160.2	4.8	56.4	#	#	.	.	.	.
Wielkopolskie	179.7	5.3	31.3	28.7	40.0	.	.	.	.
1998									
POLAND	4005.3	100.0	41.6	30.8	27.6	.	.	.	.
Mazowieckie	1726.2	43.1	38.6	47.9	13.5	.	.	.	.
Podkarpackie	128.9	3.2	73.8	#	#	.	.	.	.
Wielkopolskie	243.3	6.1	39.9	25.9	34.2	.	.	.	.
1999									
POLAND	4590.5	100.0	41.4	30.8	27.8	58.5	30.6	7.5	1.7
Mazowieckie	2015.8	43.9	38.5	46.8	14.7	63.3	23.6	10.4	1.7
Podkarpackie	142.6	3.1	76.4	13.9	9.7	18.6	80.3	0.8	0.1
Wielkopolskie	287.4	6.3	29.8	27.9	42.3	64.1	21.4	10.5	2.2
2000									
POLAND	4796.1	100.0	36.3	32.2	31.5	63.4	24.5	8.1	1.8
Mazowieckie	2163.8	45.1	35.6	48.0	16.4	66.8	18.8	11.2	2.0
Podkarpackie	122.9	2.6	58.8	27.8	13.4	21.2	78.3	0.4	0.0
Wielkopolskie	337.3	7.0	28.4	23.5	48.1	64.2	20.7	5.5	1.1
2001									
POLAND	4858.1	100.0	35.9	31.3	32.8	64.8	24.3	6.5	2.4
Mazowieckie	2141.4	44.1	34.3	47.9	17.8	68.5	18.9	8.5	3.2
Podkarpackie	101.6	2.1	80.0	#	#	31.9	67.4	0.2	0.0
Wielkopolskie	345.2	7.1	24.3	34.0	41.7	70.7	16.2	4.8	2.3
2002									
POLAND	4582.7	100.0	21.5	44.9	33.6	61.1	22.7	8.2	4.8
Mazowieckie	1994.3	43.5	11.3	70.9	17.8	63.1	8.7	9.5	7.7
Podkarpackie	119.0	2.6	84.5	#	#	22.8	75.0	1.0	0.1
Wielkopolskie	324.7	7.1	16.7	45.5	37.8	71.2	17.6	6.0	2.2
2003									
POLAND	4558.3	100.0	27.4	40.9	31.7	62.7	23.5	5.9	4.6
Mazowieckie	1997.4	43.8	23.7	59.5	16.8	64.7	18.8	8.0	5.9
Podkarpackie	115.4	2.5	83.3	1.2	15.5	26.5	71.8	0.2	0.2
Wielkopolskie	358.2	7.9	23.8	44.4	31.8	68.3	21.4	5.7	2.8
2004									
POLAND	5155.4	100.0	28.7	39.4	32.0	61.7	22.6	7.5	5.2
Mazowieckie	2261.7	43.9	27.1	56.9	16.0	62.2	17.7	11.7	6.7
Podkarpackie	104.0	2.0	65.8	11.0	23.3	35.5	61.9	0.3	0.6
Wielkopolskie	372.6	7.2	28.0	39.9	32.1	63.8	23.2	6.6	4.6

– data may not be published due to the need to maintain statistical confidentiality in accordance with the Law on Public Statistics.

. – data not available or not reliable

Source: Statistical yearbook of the regions – Poland, Central Statistical Office, Warsaw 2000-2005

Table 5. Current expenditures on R&D activity by type of activity (%)

	Research		Experimental development
	basic	applied	
2000			
POLAND	38.5	24.9	36.6
Wielkopolskie	44.9	22.3	32.8
2001			
POLAND	37.9	25.7	36.4
Wielkopolskie	.	.	.
2002			
POLAND	38.8	25.7	35.5
Wielkopolskie	48.1	10.3	41.6
2003			
POLAND	38.8	25.7	35.5
Wielkopolskie	50.9	18.9	30.2
2004			
POLAND	39.5	25.2	35.3
Wielkopolskie	50.2	20.3	29.5

Source: Central Statistical Office Poland, Warsaw 2000-2005

Table 6. Employment in R&D activity, total and by sectors of performance, in Poland and chosen voivodships

	employment in R&D activity total		employment in R&D activity by sectors			Share of R&D employees in population	
	in person	Poland = 100	enterprise sector	government sector	schools of higher education	professionally active	total employees
1996							
POLAND	128211	100.00	24.5	18.9	56.5	0.75	0.85
Mazowieckie	39235	30.60	28.3	37.7	34.0	1.67	1.84
Podkarpackie	3502	2.73	44.8	19.9	35.4	0.36	0.42
Wielkopolskie	10607	8.27	13.7	10.9	75.3	0.71	0.79
1997							
POLAND	128396	100.00	23.5	18.2	58.2	0.75	0.84
Mazowieckie	37609	29.29	28.3	38.6	33.0	1.58	1.72
Podkarpackie	3466	2.70	45.6	#	#	0.38	0.43
Wielkopolskie	11035	8.59	12.1	10.4	77.5	0.75	0.80
1998							
POLAND	128228	100.00	22.4	18.1	59.4	0.75	0.84
Mazowieckie	37932	29.58	28.3	38.8	32.9	1.57	1.73
Podkarpackie	3352	2.61	44.4	#	#	0.39	0.44
Wielkopolskie	11465	8.94	12.6	10.1	77.4	0.81	0.88
1999							
POLAND	126000	100.00	20.9	17.6	61.4	0.73	0.86
Mazowieckie	36094	28.65	26.9	39.2	33.9	1.59	1.81
Podkarpackie	3339	2.65	45.0	15.4	39.4	0.58	0.43
Wielkopolskie	11643	9.24	12.7	10.2	77.1	0.75	0.87
2000							
POLAND	125614	100.00	19.2	17.4	63.3	0.73	0.86
Mazowieckie	35259	28.07	26.4	39.7	33.8	1.49	1.71
Podkarpackie	3045	2.42	40.9	14.2	44.8	0.36	0.44
Wielkopolskie	11638	9.26	11.0	10.3	78.7	0.72	0.83
2001							
POLAND	123840	100.00	18.1	16.3	65.5	0.72	0.88
Mazowieckie	33922	27.39	25.7	39.2	35.0	1.43	1.69
Podkarpackie	3496	2.82	36.6	#	#	0.43	0.53
Wielkopolskie	11696	9.44	11.5	9.2	79.3	0.76	0.92
2002							
POLAND	122987	100.00	9.2	23.2	67.5	0.72	0.89
Mazowieckie	33486	27.23	7.0	56.2	36.7	1.44	1.74
Podkarpackie	2944	2.39	45.6	#	#	0.33	0.40
Wielkopolskie	11847	9.63	5.5	12.3	82.1	0.78	0.95
2003							
POLAND	126241	100.00	11.9	20.1	67.9	0.74	0.92
Mazowieckie	34221	27.11	14.2	47.8	37.8	1.46	1.72
Podkarpackie	3291	2.61	1.1	53.1	46.3	0.34	0.41
Wielkopolskie	12031	9.53	8.6	10.8	80.6	0.79	0.95
2004							
POLAND	127356	100.00	13.2	18.5	68.2	0.74	0.91
Mazowieckie	34702	27.25	17.9	43.3	38.6	1.49	1.70
Podkarpackie	2975	2.34	37.9	1.1	60.8	0.37	0.47
Wielkopolskie	12136	9.53	8.9	10.7	80.2	0.82	1.00

– data may not be published due to the need to maintain statistical confidentiality in accordance with the Law on Public Statistics.
Source: Statistical yearbook of the regions – Poland, Central Statistical Office, Warsaw 2000-2005

Table 7. Employment in R&D development activity by educational level in Poland and chosen voivodships

	Total			Education higher											
				with title of professor			with scientific degree of						with other university degrees below PhD level (master, bachelor and equivalent)		
							habilitated doctor (HD)			doctor (PhD)					
	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004
POLAND	122987	126241	127356	8917	9139	9454	9893	10212	10424	35622	37390	39146	45065	46246	46368
Dolnośląskie	9057	9482	9620	747	763	766	778	793	821	3490	3540	3523	2916	3246	3364
Mazowieckie	33486	34221	34702	2431	2515	2646	2429	2546	2451	7891	8455	8781	11783	12106	12710
Podkarpackie	2944	3291	2975	117	121	139	164	181	186	511	654	748	1537	1628	1480
Śląskie	11237	12869	12692	640	740	713	798	900	941	3813	4136	4340	3743	4056	3953
Warmińsko-Mazurskie	2256	2285	2277	236	235	240	230	246	254	862	890	962	596	634	562
Wielkopolskie	11847	12031	12136	847	927	906	942	956	963	3089	3209	3342	4372	4354	4320

Source: Statistical yearbook of the regions – Poland, Central Statistical Office, Warsaw 2000-2005

Table 8. Human resources for science and technology in Poland and chosen voivodships

	1998	1999	2000	2001	2002	2003	2004
Human resources for science and technology % population							
POLAND	19.64	20.41	19.92	20.01	20.07	21.45	22.39
Mazowieckie	24.74	25.14	24.9	26.18	25.62	27.1	29.33
Podkarpackie	19.92	20.73	19.52	18.67	17.66	19.77	21.41
Wielkopolskie	18.9	20.05	17.6	19.04	18.68	20.2	19.82
Human resources for science and technology % active population							
POLAND	26.38	27.44	26.8	27.09	27.51	29.63	30.99
Mazowieckie	31.72	32.68	31.29	32.96	33.16	35.65	39.39
Podkarpackie	25.62	27.22	25.54	24.53	23.2	26.44	29.6
Wielkopolskie	25.96	26.93	23.85	26.02	25.79	27.34	26.82
Human resources for science and technology – education % population							
POLAND	10.68	11.27	11.4	11.66	12.18	13.87	15.35
Mazowieckie	14.81	14.56	14.44	15.26	16.19	18.34	20.42
Podkarpackie	10.08	11.47	11.25	10.46	10.58	12.09	13.25
Wielkopolskie	9.84	10.46	9.19	9.75	10.54	12.46	13.27
Human resources for science and technology – occupation % population							
POLAND	15.77	16.16	15.9	15.63	15.28	16.07	16.18
Mazowieckie	18.89	19.66	20.13	21.08	19.91	20.25	21.33
Podkarpackie	16.1	16.63	15.14	15.13	13.36	14.88	16.62
Wielkopolskie	15.4	15.75	13.9	14.93	14.85	15.96	14.18
Human resources for science and technology – core % population							
POLAND	6.8	7.02	7.38	7.28	7.4	8.48	9.13
Mazowieckie	8.96	9.08	9.68	10.16	10.49	11.49	12.43
Podkarpackie	6.26	7.37	6.87	6.93	6.28	7.19	8.46
Wielkopolskie	6.34	6.16	5.5	5.64	6.7	8.22	7.63

Source: Eurostat regio

Table 9. Economically active population by highest level of education attained in Poland and chosen voivodships (2004)

	Total	Pre-primary, primary and lower secondary education	Upper secondary and post-secondary non-tertiary education	Tertiary education
	t,y15_max,total,	t,y15_max,iscsed0_2,	t,y15_max,iscsed3_4	t,y15_max,iscsed5_6
POLAND	17024.1	2136.2	11918.6	2969.4
Dolnośląskie	1263.8	139.8	897.4	226.6
Mazowieckie	2299.5	262.1	1508.9	528.5
Podkarpackie	881.8	135.7	616.8	129.2
Śląskie	2013	158.1	1500.8	354
Warmińsko-Mazurskie	601.3	109	402.6	89.7
Wielkopolskie	1531.4	170.8	1128.5	232.1

Source: Eurostat regio

Table 10. Patents applications filed at the Patent Office of the RP in Poland and chosen voivodships

	patent applications			patents granted			patent applications per 1 million population			patents granted per 1 million population		
	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004
POLAND	2313	2268	2381	834	613	778	60,5	59,4	62,4	21,8	16,1	20,4
Dolnośląskie	250	230	259	82	83	62	86,1	79,4	89,5	28,2	28,6	21,4
Mazowieckie	579	519	509	169	142	241	112,9	101,1	98,9	33,0	27,7	46,8
Podkarpackie	86	66	65	21	11	16	40,9	31,5	31,0	10,0	5,2	7,6
Śląskie	356	375	409	129	121	120	75,2	79,5	87,0	27,3	25,7	25,5
Warmińsko-Mazurskie	23	31	27	8	4	3	16,1	21,7	18,9	5,6	2,8	2,1
Wielkopolskie	201	172	222	72	31	43	59,9	51,2	66,0	21,5	9,2	12,8

Source: Central Statistical Office, Patent Office of the RP

Table 11. Patent applications to the EPO by priority year at the regional level in Poland and chosen voivodships

	ICT Consumer electronics	ICT Computer, office machinery	ICT Telecommunications	Other ICT	Total ICT
	coe,nb tot	com,nb tot	tel,nb tot	oth ict,nb tot	tot ict,nb tot
POLAND	2.50	11.4333	6.0667	12.6336	32.6336
Dolnośląskie	1.00	1.2775	0.4170	2.0540	4.7484
Mazowieckie	:	3.0504	3.0501	4.0297	10.1302
Podkarpackie	:	1.0736	0.0222	0.2643	1.3601
Śląskie	:	1.8998	0.4036	0.0453	2.3487
Warmińsko-Mazurskie	:	:	:	:	:
Wielkopolskie	:	0.8193	0.3518	1.0426	2.2138

Source: Eurostat regio

Table 12. Number of organisations within NSS and type of services in Poland and chosen voivodships (2004)

	Number of organisations within NSS	Services				
		advisory	training	information	financial	pro-innovative
POLAND	206	146	182	125	55	6
Dolnośląskie	14	11	14	7	4	1
Mazowieckie	23	16	20	12	4	1
Podkarpackie	14	10	11	10	4	0
Śląskie	28	21	22	16	8	1
Warmińsko-Mazurskie	9	3	9	5	6	0
Wielkopolskie	21	18	20	15	2	0

Source: PARP after: Ministry of Economy and Labour: "Entrepreneurship in Poland in 2004", Warsaw 2005

Table 13. EU funds for Poland and Wielkopolska in 2004-2006

No	Programme	Poland in PLN	disposable in Wielkopolska	
			in PLN	% in Poland
1.	SOP Improvement of the competitiveness of enterprises	4 879 000 000	393 300 000	8.03%
2.	SOP Human resource development of which measures available for Wielkopolskie	5 733 000 000	189 200 000	3.30%
		2 609 640 000	189 200 000	7.25%
3.	SOP Restructuring and modernisation of the food sector and rural development of which measures available for Wielkopolskie	4 651 500 000	567 900 000	11.90%
		4 549 500 000	567 900 000	12.40%
4.	SOP Fisheries and fish processing of which measures available for Wielkopolskie	787 100 000	7 800 000	1.00%
		125 600 000	7 800 000	6.20%
5.	SOP Transport	5 733 000 000	473 700 000	8.30%
6.	Integrated Regional Operational Programme	11 577 000 000	764 400 000	7.10%
7.	Cohesion Fund	16 296 540 000	1 714 700 000	10.50%
8.	Rural Development Plan	10 555 100 000	388 000 000 (distributed funds are less than 30% of disposable ones)	3.60%
9.	Direct farming subsidies		2004 year 791 100 000 2005 year 653 900 000	
	Total		5 944 000 000	

Calculated according to the rate of exchange 1 € = 3.9 PLN

Source: Department of Regional Development Marshall's Office of the Wielkopolska Region

Table 14. Activities co-financed in Wielkopolska within measure 2.6 Integrated Regional Operational Programme in 2004-2006 (European Social Fund in PLN)

Project	Beneficiary	Total project value	European Social Fund	State budget
Wielkopolska Information Platform	Poznań City Office	165000	123750	41250
Development of Innovation and Technology Transfer Academic Centre	Adam Mickiewicz University	394300	295725	98575
Creation and development of Wielkopolska Innovation Network	Poznań Science and Technology Park	1043601.2	782700.86	260900.29
Wielkopolska's chemical cluster of the R&D units and enterprises	Adam Mickiewicz University	605300	453975	151325
Support for Wielkopolska furniture cluster development	Wielkopolska Agency for Enterprise Development	335954	251965.5	83988.5
Wielkopolska cooperation network as regards innovative methods of software creation	Poznań Technical University	331654.56	248740.92	82913.64
Establishing and strengthening of SME cooperation network in boiler-making cluster	Innovation and Entrepreneurship Eurocentre in Pleszew	513193.49	384895.12	128298.37
Creation of Innovation and Technology Transfer Centre	Innovation and Technology Transfer Centre in Leszno	642333.33	481750	160583.33
Monitoring of Regional Innovation Strategy for Wielkopolskie	Poznań Science and Technology Park	299800	224850	74950
Southern Wielkopolska's Centre of Innovations and Innovative Knowledge	Southern Wielkopolska's Chamber of Industry and Trade in Ostrowie Wielkopolskim	431890	323917.5	107972.5
Capacity increasing of agricultural and food processing companies from Wielkopolska for participation in R&D EU projects	Wielkopolska Regional Chamber of Agriculture and Industry	229701.66	172276.25	57425.42
Scholarships for the best PhD candidates in Wielkopolska within areas of science contributing to the development of strategic disciplines	Poznań Science and Technology Park	1140000	855000	285000
Regional Centre of Logistic Innovations Transfer	Institute of Logistics and Warehousing in Poznań	712789.75	534592.31	178197.44
Development of model of academic entrepreneurship support in Wielkopolska	Poznań City Office	491384.94	368538.71	122846.24
Central Database	University of Agriculture	280500	210375	70125
Innovation – from vision to practice –promotion in Wielkopolska	Poznań Academic Incubator of Entrepreneurship	182205.99	136654.49	45551.5
Training linked to practical usage of knowledge and innovations in companies	Poznań Technical University	1755520.2	1316640.1	438880.04
Northern Wielkopolska Centre of Information and Promotion	Pila Chamber of Industry	318480	238860	79620
TOTAL		9873609	7405206.8	2468402.3

Source: "Regional Innovation Strategy for Wielkopolska" and "Action Plan in 2004-2006 –evaluation of the preliminary stage of activity implementation", Poznań Science and Technology Park, Poznań 2006

Table 15. GDP per capita in percentage of EU average (2003) in Poland and chosen voivodships

	2003
POLAND	23.1
Dolnośląskie	23.6
Mazowieckie	35.7
Podkarpackie	16.3
Śląskie	25.1
Warmińsko-Mazurskie	18.2
Wielkopolskie	24.2

Source: Eurostat regio

Table 16. Gross value added by kind of activity in Poland and chosen voivodships (2003)

	Total	Agriculture, hunting and forestry, fisheries	Industry		Construction	Services	
			total	of which manufacturing		market	non-market
in million PLN							
POLAND	743321.3	32284.5	172989.3	135674.3	40966.6	381048.0	116032.9
Dolnośląskie	57868.6	1627.3	15200.4	11499.3	3349.9	28272.3	9418.7
Mazowieckie	154778.6	5548.0	27203.8	20408.5	7089.2	95628.8	19308.9
Podkarpackie	28884.4	824.4	7752.7	6898.1	1574.3	13071.1	5662.0
Śląskie	100145.0	1372.4	31427.2	19592.4	5786.5	48796.7	12762.2
Warmińsko-Mazurskie	21900.6	1845.5	4711.3	4227.1	1059.5	10083.4	4201.0
Wielkopolskie	68503.6	4947.5	17944.1	15971.7	4204.4	31663.5	9744.3

Source: Eurostat regio

Table 17. Gross value added by sections of the NACE in 2003 in million PLN in Poland and chosen voivodships

	Sections																
	total	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
POLAND	743321.3	32026.2	258.4	13449.2	135674.3	23865.9	40966.6	150577.2	8070.7	53268.8	30411.8	103212.6	47043.1	36537.0	32452.8	31109.3	4397.6
Dolnośląskie	57868.6	1611.9	15.4	2005.0	11499.3	1696.1	3349.9	11411.2	657.7	3369.4	2110.3	8122.2	3699.5	2808.3	2910.9	2267.4	334.0
Mazowieckie	154778.6	5544.2	3.8	63.2	20408.5	6732.1	7089.2	30256.0	1548.6	16868.0	10616.9	25874.7	8563.4	5759.6	4985.9	9873.9	590.7
Podkarpackie	28884.4	820.1	4.3	197.6	6898.1	656.9	1574.3	5907.2	270.3	1582.3	866.2	3235.1	2244.9	1839.8	1577.3	968.6	241.4
Śląskie	100145.0	1365.6	6.8	7981.0	19592.4	3853.8	5786.5	20020.1	994.2	6270.4	3137.5	14416.6	4665.7	4040.0	4056.5	3414.2	543.7
Warmińsko-Mazurskie	21900.6	1824.6	20.9	29.2	4227.1	455.0	1059.5	4013.7	279.0	1263.5	677.0	2870.4	1870.3	1305.2	1025.4	815.3	164.4
Wielkopolskie	68503.6	4937.0	10.5	588.5	15971.7	1383.9	4204.4	13880.9	687.5	4121.1	2336.8	8017.0	3788.1	3355.3	2600.9	2233.8	386.4

Source: Central Statistical Office Poland, Regional Database

Table 18. Gross fixed capital formation €million in Poland and chosen voivodships

	1995	1996	1997	1998	1999	2000	2001	2002	2003
POLAND	18841.6	24448.9	31080.8	36939.1	38429.8	44094.4	43919.6	39267.9	34948.2
Dolnośląskie	1590	2029.9	2538.9	2978.2	3281.2	3308.7	3819.1	3269.8	2757.8
Mazowieckie	4666.2	6090.6	7930.1	9662.3	10549.5	13634.3	13490.9	9699.8	7994.8
Podkarpackie	780.6	1026.8	1288.7	1512.8	1273.4	1308.1	1341.5	1463.2	1440.8
Śląskie	510.3	659.5	816.6	951.9	908.1	939.3	852.9	1075.1	833.3
Warmińsko-Mazurskie	451.7	582.1	739.1	869.9	810.9	927.6	969.2	1025.3	969.4
Wielkopolskie	1652.7	2162.6	2773.8	3293.3	3461	4010.5	4272.2	3853.9	3973.8

Source: Eurostat regio

Table 19. Gross fixed capital formation in Poland and chosen voivodships (2003)

	Total	Agriculture, hunting and forestry, fisheries	Industry		Construction	Services	
			total	of which manufacturing		market	non-market
	in million PLN						
POLAND	153758	8088	44418	32288	8386	75435	17431
Dolnośląskie	12133	434	4494	2639	688	4816	1701
Mazowieckie	35174	1084	7430	5656	1377	21996	3287
Podkarpackie	6339	264	2024	1546	389	2854	808
Śląskie	17640	305	7521	5211	687	7301	1826
Warmińsko-Mazurskie	4265	575	1191	965	215	1694	590
Wielkopolskie	17483	1313	5263	4352	1569	7833	1505

Source: Central Statistical Office Poland, Regional Database

Table 20. Gross fixed capital formation by sections in million PLN (Poland and chosen voivodships, 2003)

	total	a to p	a b	a	b	c d e	c to f	c	d	e	f	g to p	g h i	g
	All NACE branches – Total													
	All NACE branches – Total (excluding extra-territorial organisations and bodies)													
	Agriculture, hunting, forestry and fisheries													
	Agriculture, hunting and forestry													
	Fisheries													
	Total industry (excluding construction)													
	Industry													
	Mining and quarrying													
	Manufacturing													
	Electricity, gas and water supply													
	Construction													
	Services (excluding extra-territorial organisations and bodies)													
	Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods; hotels and restaurants; transport, storage and communication													
	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods													
POLAND	153758	153738	8088	8075	13	44418	52804	2324	32288	9806	8386	92866	32110	17113
Dochośląskie	12133	12133	434	433	1	4494	5182	395	2639	1460	688	6517	1906	1122
Mazowieckie	35174	35174	1084	1084	0	7430	8807	55	5656	1719	1377	25283	9920	3515
Podkarpackie	6339	6339	264	264	0	2024	2413	78	1546	400	389	3662	828	586
Śląskie	17640	17640	305	304	1	7521	8208	1052	5211	1258	687	9127	3094	1784
Warmińsko-Mazurskie	4265	4265	575	573	2	1191	1406	7	965	219	215	2284	613	394
Wielkopolskie	17483	17483	1313	1313	0	5263	6832	179	4352	732	1569	9338	3977	2578

	h	i	j k	j	k	l to p	l	m	n	o	p			
	Hotels and restaurants													
	Transport, storage and communication													
	Financial intermediation; real estate, renting and business activities													
	Financial intermediation													
	Real estate, renting and business activities													
	Public administration and defence, compulsory social security; education; health and social work; other community, social and personal service activities; private households with employed persons													
	Public administration and defence; compulsory social security													
	Education													
	Health and social work													
	Other community, social, personal service activities													
	Activities of households													
	market services													
	non-market services													
POLAND	1295	13702	36087	4495	31592	24669	9515	4942	2974	7238	0	75435	17431	
Dochośląskie	72	712	2399	297	2102	2212	960	426	315	511	0	4816	1701	
Mazowieckie	437	5968	10947	2415	8332	4416	1730	990	567	1129	0	21996	3287	
Podkarpackie	33	209	1564	106	1458	1270	393	259	156	462	0	2854	808	
Śląskie	151	1159	3319	280	3039	2714	1036	447	343	888	0	7301	1826	
Warmińsko-Mazurskie	41	178	816	76	740	855	264	191	135	265	0	1694	590	
Wielkopolskie	87	1312	3080	253	2827	2281	787	446	272	776	0	7833	1505	

Source: Central Statistical Office Poland, Regional Database

Table 21. Sold production of industry by sections and branches (divisions) of NACE (2004)

	POLAND	Wielkopolska
	in million PLN	
TOTAL	690634.0	70499.2
Mining and quarrying	32766.0	1029.1
of which		
Mining of coal and lignite, extraction of peat	22895.0	847.1
Manufacturing	591499.0	64242.1
of which		
Manufacture of food products and beverages	124020.0	18280.3
Manufacture of tobacco products	3483.0	
Manufacture of textiles	10575.0	1128.7
Manufacture of wearing apparel and furriery	8995.0	1079.6
Processing of leather and manufacture of leather products	3335.0	119.7
Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	20513.0	1827.1
Manufacture of pulp, paper and paper products	14768.0	1464.3
Publishing, printing and reproduction of recorded media	20401.0	1952.0
Manufacture of coke, refined petroleum products and nuclear fuel	35714.0	
Manufacture of chemicals and chemical products	41677.0	2231.9
Manufacture of rubber and plastic products	32105.0	3564.5
Manufacture of other non-metallic mineral products	28066.0	2030.9
Manufacture of basic metals	32389.0	1439.6
Manufacture of fabricated metal products, except machinery and equipment	40144.0	3504.3
Manufacture of machinery and equipments not elsewhere classified (n.e.c.)	31323.0	3602.8
Manufacture of office machinery and computers	1347.0	66.0
Manufacture of electrical machinery and apparatus n.e.c.	21000.0	4485.4
Manufacture of radio, television and communication equipment and apparatus	13564.0	112.3
Manufacture of medical, precision and optical instruments, watches and clocks	5541.0	426.6
Manufacture of motor vehicles, trailers and semi-trailers	59791.0	11430.1
Manufacture of other transport equipment	11528.0	534.4
Manufacture of furniture; manufacturing n.e.c.	27671.0	4509.6
Recycling	3549.0	
Electricity, gas and water supply	66369.0	5228.1
Of which Electricity, gas, steam and hot water supply	60340.0	4698.7

Source: Statistical yearbook of the regions – Poland, Central Statistical Office, Warsaw 2000-2005

Table 22. Employment by kind of activity in Poland and chosen voivodships (2003)

	Total	Agriculture, hunting and forestry, fisheries	Industry		Construction	Services	
			total	of which manufacturing		market	non-market
	persons						
POLAND	12954.9	2327.5	2922.7	2482.4	705.0	4725.3	2274.4
Dolnośląskie	917.3	85.7	232.5	184.7	54.0	367.5	177.6
Mazowieckie	2094.2	327.3	356.6	326.8	121.8	939.3	349.2
Podkarpackie	697.8	208.2	153.1	137.2	29.3	188.2	119.0
Śląskie	1591.3	99.3	492.0	320.8	105.3	624.0	270.8
Warmińsko-Mazurskie	394.4	69.4	91.2	82.9	19.0	134.6	80.1
Wielkopolskie	1226.3	214.5	320.3	294.1	70.9	428.3	192.4

Source: Eurostat regio

Table 23. Entities of the national economy recorded in the REGON register by ownership sectors in Poland and chosen voivodships (2005)

	Sector (in units)		
	total	public	private
POLAND	3 615 621	137 597	3 478 024
Dolnośląskie	249 459	7 445	242 014
Mazowieckie	88 915	3 183	85 732
Podkarpackie	102 070	5 860	96 210
Śląskie	302 615	16 947	285 668
Warmińsko-Mazurskie	187 231	6 567	180 664
Wielkopolskie	226 421	9 947	216 474

Source: Central Statistical Office Poland, Regional Database

Table 24. Entities of the national economy recorded in the REGON register by kind of activity in Poland and chosen voivodships (2005)

	Total	Agriculture, hunting and forestry, fisheries	Industry		Construction	Services	
			total	of which manufacturing		market	non-market
units							
POLAND	3615621	88762	383587	377712	358018	2510981	274273
Dolnośląskie	302615	6486	27694	27178	29153	218774	20508
Mazowieckie	601721	11798	63555	62818	58080	427381	40907
Podkarpackie	139059	3467	14719	14460	13621	94399	12853
Śląskie	426266	5226	43166	42647	42945	305506	29423
Warmińsko-Mazurskie	110087	4908	10021	9739	9900	74402	10856
Wielkopolskie	341257	12674	39632	39092	37046	225321	26584

Source: Central Statistical Office Poland, Regional Database

Table 25. Entities of the national economy recorded in the REGON register (units) in Poland and chosen voivodships

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
POLAND	2 112 704	2 414 182	2 599 039	2 844 256	3 041 403	3 186 704	3 325 539	3 468 218	3 581 593	3 576 830	3 615 621
Dolnośląskie	147 705	166 345	180 642	193 880	202 399	211 442	222 365	232 317	241 440	244 715	249 459
Mazowieckie	50 728	60 878	67 580	73 671	80 072	85 896	90 528	94 531	96 938	90 982	88 915
Podkarpackie	64 071	71 744	78 790	81 221	84 792	87 941	92 755	95 631	97 313	99 031	102 070
Śląskie	172 382	202 997	226 344	246 537	263 522	269 650	281 880	295 069	305 888	304 474	302 615
Warmińsko-Mazurskie	108 374	114 994	132 969	146 245	158 113	168 761	175 840	184 560	191 029	185 175	187 231
Wielkopolskie	117 336	135 697	152 944	167 004	185 014	199 352	210 712	216 280	226 329	223 046	226 421

Source: Source: Central Statistical Office Poland, Regional Database

Table 26. Entities of the national economy recorded in the REGON register by sections of the NACE in 2005 (units) in Poland and chosen voivodships

	total	Section																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
POLAND	3615621	86710	2052	2209	377712	3666	358018	1185282	114842	261520	129366	583777	25694	91967	156612	235964	179	51
Dolnośląskie	302615	6447	39	263	27178	253	29153	96801	9086	21073	10786	61866	1402	6866	12240	19151	7	4
Mazowieckie	601721	11745	53	338	62818	399	58080	195751	13434	48819	21218	108384	3535	15085	22287	39699	62	14
Podkarpackie	139059	3446	21	78	14460	181	13621	47466	3963	9677	4591	18426	1695	4889	6269	10274	1	1
śląskie	426266	5176	50	222	42647	297	42945	150137	14511	31244	16817	65650	1688	10972	16763	27135	10	2
Warmińsko-Mazurskie	110087	4780	128	64	9739	218	9900	32658	3425	7481	4264	18562	1134	3285	6437	8010	1	1
Wielkopolskie	341257	12609	65	225	39092	315	37046	109007	8511	22011	10988	53152	2652	8429	15503	21632	16	4

Source: Source: Central Statistical Office Poland, Regional Database

Table 27. Expenditures on innovation activities in industry in Wielkopolska (2003)

	Total	Of which expenditures			
		on R&D activity	on the acquisition of disembodied technology and know-how	capital – on the acquisition of instruments and equipment and means of transport	of software
	in thousand PLN				
TOTAL	2407541.5	728638.8	13922.1	1292821.7	15947.6
Public sector	238454.3	12670.0	6510.4	117347.9	3305.2
Private sector	2169087.2	715968.8	7411.7	1175473.8	12642.4
Mining and quarrying	6522.0	3007.5	-	1643.1	385.0
Manufacturing	2313806.9	725057.3	7350.7	1241698.8	13116.4
Of which					
Manufacture of food products and beverages	137116.1	21095.5	155.8	82869.9	1115.8
Manufacture of tobacco products	7624.9	-	-	4490.9	81.9
Manufacture of textiles	22817.2	574.2	4.0	11532.4	36.1
Manufacture of wearing apparel and furriery	1426.1	-	-	1003.3	80.6
Manufacture of wood and products of wood and straw and wicker products	6395.9	-	-	5040.1	46.9
Manufacture of pulp, paper and paper products	13435.9	-	-	10706.9	547.0
Publishing, printing and reproduction of recorded media	83609.7	-	-	76518.5	242.0
Manufacture of chemicals and chemical products	119627.2	23534.3	9.4	24959.6	5052.3
Manufacture of rubber and plastic products	56799.8	1528.3	-	47011.7	2330.7
Manufacture of other non-metallic mineral products	170813.4	677.4	5.0	99418.7	149.4
Manufacture of basic metals	664703.8	638035.1	-	24298.1	136.7
Manufacture of metals products	10190.0	452.0	86.0	6321.5	53.8
Manufacture of machinery and equipments n.e.c.	57680.6	12757.1	13.0	22553.2	1108.8
Manufacture of electrical machinery and apparatus n.e.c.	65733.7	7838.8	-	55467.3	530.2
Manufacture of radio, television and telecommunication equipment and apparatus	103.8	88.6	-	6.1	-
Manufacture of medical, precision and optical instruments, watches and clocks	10380.7	1785.0	-	4822.4	250.6
Manufacture of motor vehicles, trailers and semi-trailers	830105.4	12536.3	6731.5	731927.9	866.0
Manufacture of other transport equipment	11858.7	2855.4	-	8810.5	-
Manufacture of furniture; manufacturing n.e.c.	43384.0	1299.3	346.0	23939.9	487.6
Electricity, gas and water supply	87212.6	574.0	6571.4	49479.8	244.2

Source: Statistical yearbook of Wielkopolska, Regional Statistical Office, Poznań 2004

Table 28. Expenditures on innovation activities in industry in Wielkopolska (2004)

	Total	Of which expenditures			
		on R&D activity	on the acquisition of disembodied technology and know-how	capital – on the acquisition of instruments and equipment and means of transport	of software
in thousand PLN					
TOTAL	1374370.2	119535.5	49999.2	819425.0	30754.9
Public sector	71379.0	6141.8	637.1	48656.1	18335.6
Private sector	1282991.2	113393.7	49362.1	770768.9	12419.3
MINING AND QUARRYING	21335.2	120.0	-	13371.3	209.9
MANUFACTURING	1293669.3	118741.0	46935.5	777858.7	12334.1
Of which					
Manufacture of food products and beverages	326910.0	21438.3	34421.5	177690.6	1435.8
Manufacture of tobacco products	19392.6	-	-	14798.1	-
Manufacture of textiles	37353.8	1070.4	-	26059.2	1338.0
Manufacture of wearing apparel and furriery	2222.2	-	-	538.8	53.2
Manufacture of wood and products of wood and straw and wicker products	11786.5	-	-	10322.7	48.2
Manufacture of pulp, paper and paper products	22734.5	3.4	-	22062.5	51.0
Publishing, printing and reproduction of recorded media	66906.7	38.4	-	66135.1	272.9
Manufacture of chemicals and chemical products	119881.7	34433.6	-	17264.0	1032.3
Manufacture of rubber and plastic products	34827.1	1969.4	12.7	26331.5	1462.7
Manufacture of other non-metallic mineral products	135776.6	434.6	477.0	111884.7	231.7
Manufacture of basic metals	2440.9	1859.8		224.2	227.6
Manufacture of metals products	58984.2	2321.7	1.4	40962.3	1345.7
Manufacture of machinery and equipments n.e.c.	66011.1	10728.8	1984.9	22062.5	808.2
Manufacture of electrical machinery and apparatus n.e.c.	99864.5	11917.3	335.0	58475.4	534.3
Manufacture of medical, precision and optical instruments, watches and clocks	11185.4	1899.9		4805.5	65.7
Manufacture of motor vehicles, trailers and semi-trailers	194423.5	22529.0	9544.0	136603.8	2472.1
Manufacture of other transport equipment	16936.9	6854.8		9805.7	82.4
Manufacture of furniture; manufacturing n.e.c.	63589.7	17.0		31518.2	782.3
Electricity, gas and water supply	59365.7	674.5	3063.7	28195.0	18210.9

Source: Statistical yearbook of Wielkopolska, Regional Statistical Office, Poznań 2005 products

Table 29. Expenditures on innovation activities in the sector of enterprises by sections and branches (divisions) of NACE (2004)

	POLAND	Wielkopolska
	in million PLN	
TOTAL	15417.0	1374.4
Public sector	1936.3	91.4
Private sector	13480.7	1283.0
Mining and quarrying	429.9	21.3
Manufacturing	13653	1293.7
of which		
Manufacture of food products and beverages	2289.9	326.9
Manufacture of tobacco products	144.8	19.4
Manufacture of textiles	303.6	37.4
Manufacture of wearing apparel and furriery	55.1	2.2
Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	605.9	11.8
Manufacture of pulp, paper and paper products	409.1	22.7
Publishing, printing and reproduction of recorded media	260.3	66.9
Manufacture of chemicals and chemical products	1776.8	119.9
Manufacture of rubber and plastic products	650.6	34.8
Manufacture of other non-metallic mineral products	852.5	135.1
Manufacture of basic metals	290.9	2.4
Manufacture of fabricated metal products, except machinery and equipment	480.2	59.0
Manufacture of machinery and equipments not elsewhere classified (n.e.c.)	892.4	66.0
Manufacture of electrical machinery and apparatus n.e.c.	438.1	99.9
Manufacture of medical, precision and optical instruments, watches and clocks	145.7	11.2
Manufacture of motor vehicles, trailers and semi-trailers	1500.2	194.4
Manufacture of other transport equipment	231.2	16.9
Manufacture of furniture; manufacturing n.e.c.	428.7	63.6
Electricity, gas and water supply	1334.1	59.4

Source: Statistical yearbook of Wielkopolska, Regional Statistical Office, Poznań 2005

Table 30. Companies with foreign capital participation in Poland and chosen voivodships

	2003					2004				
	employment	stock capital	of which		new companies	employment	stock capital	of which		new companies
			national capital	foreign capital				national capital	foreign capital	
[persons]	[million PLN]	[million PLN]	[million PLN]	[units]	[persons]	[million PLN]	[million PLN]	[million PLN]	[units]	
POLAND	1 023 427	120925.5	20954	97020.7	962	1 112 341	128225.9	21246.1	104002.1	1 316
Dolnośląskie	80 659	5654.5	401.4	5189.5	120	90 922	7458.6	531.8	6834.6	186
Mazowieckie	386 730	70638.5	13803.7	54326.1	299	398 678	69839.5	12651.7	54592.5	405
Podkarpackie	33 907	1758.8	164.9	1537.9	17	34 570	2221.8	140.8	2033.1	27
Śląskie	86 719	8068.1	831.5	7065.9	107	109 176	10645.1	1751.1	8842.4	121
Warmińsko-Mazurskie	20 771	1104.2	312.9	767.7	10	19 988	955.5	266.6	663.2	10
Wielkopolskie	112 254	9324.9	775.9	8540.9	90	132 777	10489.2	822.6	9643.6	97

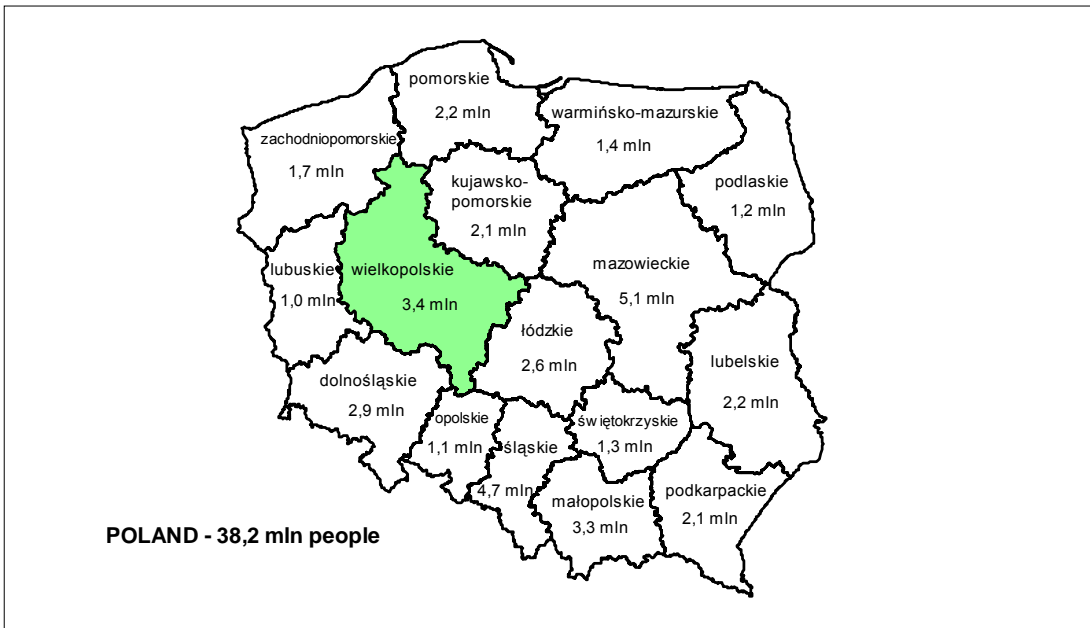
Central Statistical Office Poland, Regional Database

Table 31. Loan capital, value and number of loans in selected voivodships

	Loan capital				Value of loans				Number of loans				Average loan			Number of loan funds	
	cumulative to		increase/ decrease in 2005		cumulative to		increase/ decrease in 2005		cumulative to		increase/ decrease in 2005		as at	as at	in 2005	as at	as at
	million PLN	%	million PLN	%	million PLN	%	million PLN	%	units	%	units	%	thousand PLN	thousand PLN	thousand PLN	units	units
POLAND	558.2	100.0	120.3	27.5	1611.9	100.0	240.8	17.6	112180.0	100.0	16005.0	16.6	14.3	14.4	15.0	74	75
dolnośląskie	22.8	4.1	1.1	5.2	83.8	5.2	7.7	10.1	1410.0	1.3	161.0	12.9	60.9	59.4	47.6	5	5
mazowieckie	120.0	21.5	26.9	28.9	788.6	48.9	111.2	16.4	92052.0	82.1	12971.0	16.4	8.6	8.6	8.6	8	8
podkarpackie	8.6	1.5	2.2	34.0	19.7	1.2	4.8	31.8	502.0	0.4	84.0	20.1	35.8	39.3	56.7	4	5
śląskie	104.2	18.7	22.4	27.4	108.7	6.7	16.6	18.0	2114.0	1.9	309.0	17.1	51.1	51.4	53.6	9	9
warmińsko-mazurskie	26.7	4.8	6.9	35.1	33.6	2.1	8.5	33.6	1204.0	1.1	207.0	20.8	25.2	27.9	40.9	9	9
wielkopolskie	19.1	3.4	2.6	15.7	23.8	1.5	9.2	62.8	912.0	0.8	180.0	24.6	20.0	26.1	51.0	4	4

Source: Polish Association of Loan Funds: "Raport o Funduszach Pożyczkowych w Polsce – stan na 31.12.2005"

Fig. A1. Population in Poland and voivodships (2003)



Selected indicators presenting the share of Wielkopolska in Poland

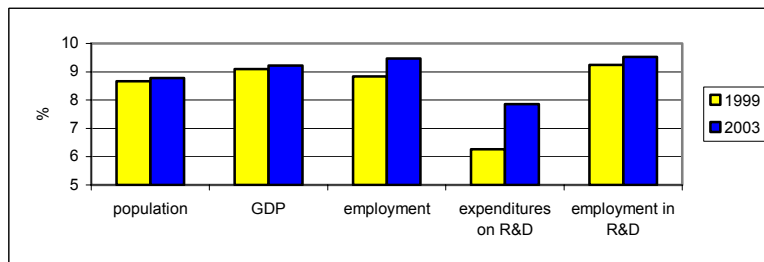


Fig. A2. GDP per capita in Poland and voivodships (2003)

