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

**Country Review Poland**

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## Introduction and Policy mix concept

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

The project is run by a consortium of 7 partners:

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

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

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

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

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

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

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

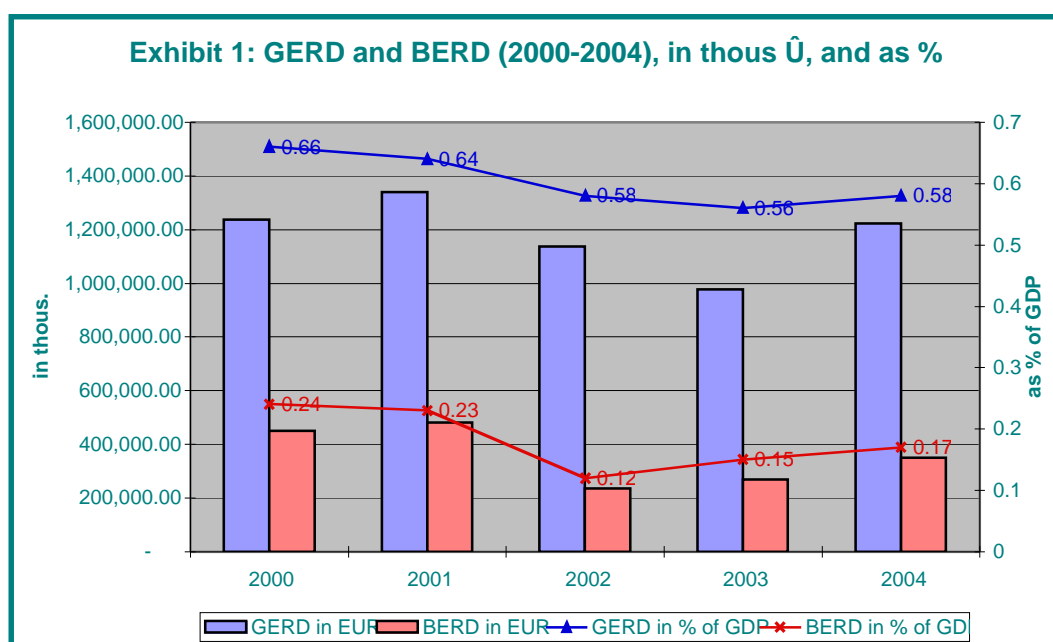
The report examines the following 10 questions:

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

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

## 1. National Innovation Systems Challenges

One of the most pressing challenges is to **develop and strengthen RTDI (research, technology, development and innovation) potential of enterprises**, which still lack to a great extent necessary capacities to innovate, and in particular to develop and commercialise R&D results. This will evidently require a lot of efforts, especially at the moment when the most recent available data on business R&D investment confirms a declining trend. During the period 2000-2004, BERD decreased from the level of 0.24% of GDP to 0.17%. It is quite worrisome because BERD has not just been more sluggish than the pace of economic growth, as it has been the case with GERD, which per capita increased during 2000-2004 period from 125 to 135 PLN (c.a. 32 EUR). In fact, business R&D investment decreased in the last five years from 1,744.0 million PLN (449.5 MEUR) to 1,478.7 million PLN (351 MEUR), which represents a decline of 15%.<sup>1</sup>



Source: GUS (2005, 2004, and 2003) "Nauka i technika".

In terms of degree of importance, the second challenge is about **improving cooperation between the R&D sector and industry**. The rationale behind this choice is that there are only few Research and Development Units (JBR), which have developed strong and sustainable links with enterprises. The recent report on Innovation potential of Polish SMEs revealed that 91.1% of surveyed SMEs do not cooperate with JBR, universities, and centres of technology transfers. More specifically, only 4.1% of SMEs responded that they were collaborating with the JBR.<sup>2</sup>

<sup>1</sup> GUS (2005, 2004, and 2003) "Nauka i technika".

<sup>2</sup> Aleksander Zolnierski (2005) "Potencjal innowacyjny polskich małych i średniej wielkości przedsiębiorstw", <http://www.pi.gov.pl/default.aspx?docId=581&newsId=193&tempId=23&str=2&mId=97148&page=1>.

Also, the contribution of private companies to R&D expenditure in the higher education is low. During the period 1998-2003, R&D expenditure in the higher education sector financed by business sector fell from 9.7% to 6%.<sup>3</sup> According to the most recent available data, the contribution of the private sector to R&D expenditure in the higher education sector accounted only for 5% at the end of 2004, whereas 82% was financed from the national budget.<sup>4</sup> In conclusion, it can be said that the R&D supply does not match particularly well with the requirements and needs of the business sector, whilst the awareness of their offer among enterprises, especially SMEs continues to be very low.

The next challenge, which appears to be crucial for the entire national innovation system (NIS) is to **undertake meaningful reforms, creating real incentives that would lead to restructuring of the current public R&D sector.** Despite earlier attempts in 2003 aimed at introducing reforms, the sector requires serious reorganisation. There are primarily two reasons why the R&D sector needs to undergo the restructuring process. First, the cooperation between the research community and enterprises remains limited. Second, the size of the sector measured in terms of the number of JBR and staff employed is significant. In 2004, the network of JBR consisted of 197 JBR, employing 22,991 staff. Interestingly, the analysis of the structure of R&D expenditure incurred by JBR in 2004, reveals that 61.7% was the contribution from the public financial resources, whereas 13.3% came from the private sector, suggesting that there is a scope for the introduction of instruments that could eventually improve this ratio.<sup>5</sup>

In common with other Member States of the EU, Poland has high concentration of R&D expenditure in few regions. The capital region of Mazowieckie accounts alone for 43.9% of total R&D expenditure in Poland, and other six regions, including (Slaskie, Wielkopolskie, Dolnoslaskie, Malopolskie, Lodzkie and Pomorskie) account for additional 43.8%.<sup>6</sup> Thus, the remaining nine regions provide only mere contribution to the total of R&D expenditure. Also, each region has different sectoral and technological specialisation. In this context, the last challenge that appears to be of the utmost importance is to **develop and implement well-tailored strategies reflecting the regional needs and future potential.** This will be very important, especially on the eve of launching the EU Structural Funds (SFs) financial perspective 2007-13, under which the Community allocation for Poland is estimated at 67 bln EUR.<sup>7</sup>

Regarding the evolution of challenges over the last five years, it can be said that there have been no major changes in this respect. In overall, enterprises continue to lack capacities to innovate and conduct R&D activities, which would be translated into new products or technologies. The level of cooperation between the R&D sector and industry is practically the same as it was five years ago. Also, restructuring the public R&D sector continues to be regarded as a major challenge of the NIS. Thus, there has been no evolution of challenges with one exception i.e. develop and implement well-

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3 <http://trendchart.cordis.lu/scoreboards/scoreboard2005/Poland.cfm>.

4 GUS (2005) "Nauka i technika", [http://www.stat.gov.pl/dane\\_spol-gosp/prod\\_bud\\_inw/nauka\\_technika/2004/doc/index.php](http://www.stat.gov.pl/dane_spol-gosp/prod_bud_inw/nauka_technika/2004/doc/index.php).

5 GUS (2005) "Nauka i technika", [http://www.stat.gov.pl/dane\\_spol-gosp/prod\\_bud\\_inw/nauka\\_technika/2004/doc/index.php](http://www.stat.gov.pl/dane_spol-gosp/prod_bud_inw/nauka_technika/2004/doc/index.php).

6 Loc. Cit.

7 <http://www.fundusze-strukturalne.gov.pl/>.

tailored strategies reflecting the regional needs and future potential. Certainly, the preparation of the EU SFs financial perspective 2007-13 was not regarded as a major priority five years ago. Given the large amount of money that is at stake, developing relevant policy mixes with the assistance of the EU SF interventions should be considered as one of the main challenges of the NIS. Therefore, there is an increasing interest of policymakers and other stakeholders in designing an optimal policy mix for the next programming period.

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

By joining the EU in 2004, Poland embraced the goal of 3% of GDP on R&D expenditure. According to the **National Development Plan (2004-2006)**, Poland should aim at bringing its R&D expenditure to the level of 1.5% of GDP by 2006, whereas the public contribution should represent 0.6% of GDP.

In March 2004, the Ministry of Scientific Research and Information Technology and the Ministry of Economic Affairs and Labour issued a joint document “**Strategy for increasing investments of R&D activities, in order to achieve the Lisbon Goals**”, according to which attaining the objective of 3% of GDP R&D expenditures (1% from public and 2% from private sources), requires about three-fold increase in GERD and seven-fold in BERD. The alternative scenario that guarantees sustainable development of Poland’s economy is to reach 2.2% of GDP expenditures on R&D by 2010 (0.8% from public and 1.4% from private sources). The falling-behind scenario would be in case Poland reaches only 1% of GDP expenditures on R&D by 2010 (0.64% from public and 0.34% from private sources).

In November 2004, the Ministry of Science and Information Technology issued a document “**Proposed directions for science and technology development in Poland until 2020**” confirmed the commitment of the National Development Plan 2004-2006 to reach the target of 1.5% of GDP on R&D expenditure by 2006.

Since GERD and BERD targets as specified by the National Development Plan (2004-2006) were unrealistic, the Council of Ministers adopted on 8 June 2006 the **Implementation document of the National Reform Programme (2005-2008)**, setting the revised targets:

- § increase BERD from 0.17% of GDP in 2004 to 0.55% of GDP by 2008;
- § increase GERD from 0.58% of GDP in 2004 to 1.65% of GDP by 2008;
- § reduce the number of the Research and Development Units (JBR) from 187 in 2004 to 130 in 2008; and
- § increase the allocation on science from 2,891.8 mln PLN (686.5 MEUR) in 2004 to 4,909 mln PLN (1,165.4 MEUR) by 2008.

It is worthwhile mentioning that the above-mentioned targets have not been included in the Implementation document of the National Reform Programme (2005-2008), which was adopted by the Council of Ministers on 13 October 2006. The main reasons for this were the budgetary constraints. The Council of Ministers is expected to take a decision shortly and provide the European Commission with relevant information.

**The Act on Principles of financing science (8 October 2004)** modified completely the system of financing R&D projects. The adoption of this Act meant strengthening the position of the Minister responsible for science and higher education. This was achieved through transformation of the State Committee for Scientific Research (known in Polish as KBN) into the Science Council, which acts now as an advisory body to the Minister, who has the final decision on financing R&D projects.

The priorities of the Act on Principles of financing science (8 October 2004) can be summarised as follows:

- § Introduction of new research projects especially development projects. The information about the results of these projects will be provided free of charge to the interested business actors;
- § Launching the National Framework Programme in the strategic fields of science and technology;
- § Setting-up programmes and initiatives that are necessary to support structural changes i.e. creation of science networks, consortiums and reorganisation of State R&D Institutes (JBR); and
- § Consolidation of the R&D sector with the industry.

Starting from 1999, the priority of the former Ministry of Science and Information Technology was to develop a system of **Centres of Excellence**. The results were particularly positive in the competition of NAS-2 (Centres of Excellence, FP5). The Commission decided to finance 85 Polish proposals (66% of all centres from the Candidate Countries) out of 264 applications, and the total financial contribution was estimated at 26 MEUR.<sup>8</sup>

## **Exhibit 2: Network of Centres of Excellence**

QuickTime™ and a  
TIFF (LZW) decompressor  
are needed to see this picture.

*Source: Krajowy Punkt Kontaktowy Programow Badawczych UE.*

In 2005, for the first time, the **Polish Framework Programme** (KPR) was established with research priorities concentrated on national strategic areas similar to FP6 priorities. It can be considered as an initial attempt in setting up a comprehensive strategy spelling out the main objectives and priorities of R&D policy. In summary, it

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<sup>8</sup> Andrzej Siemaszko (2006) "Uczestnictwo polskich zespolow w programach ramowych badan, rozwoju technologii i wdrozen UE", [http://www.6pr.pl/pliki/4143/6i7PRanaliza\\_kwie06.pdf](http://www.6pr.pl/pliki/4143/6i7PRanaliza_kwie06.pdf)

established a framework for 38 fields of research in 9 strategic research areas i.e. health; environment; agriculture and food; state and society; security; new materials and technologies; ICT technologies; energy; and transport infrastructure. The national foresight project is supposed to confirm the choice of strategic orientations. Recently, the Minister responsible for science and higher education has issued a letter inviting concerned parties to submit comments on the design of KPR by 23 June 2006, however, the results of this consultation have not been made public, yet. Moreover, preparation towards FP7 resulted in setting up a system of **Polish Technology Platforms**, integrating most dynamic and competitive companies as well as research units.<sup>9</sup>

The recent **Act on Some forms of supporting innovative activities (29 July 2005)** introduced three key instruments, notably the technology credits, status of R&D centre, and fiscal incentives. Often, they are seen as an attempt to boost R&D expenditure, especially by the private sector.

The principal objectives of **the National Reform Programme 2005-2008** (hereinafter referred to as KPR 2005-2008), which was adopted by the Council of Ministers on 27 December 2005 can be summarised as follows:

- § Consolidating public finance and improving public finance management;
- § Developing entrepreneurship;
- § Increased enterprise innovation;
- § Infrastructure development and upgrading and ensuring competitive conditions in network sectors;
- § Job creation and retention and reducing unemployment; and
- § Improving adaptability of employees and companies through investment in human capital.

The third priority “Increased enterprise innovation” includes the following four areas:

- § Development of the innovation market and of the institutional environment facilitating the cooperation between R&D area and the economy (3.1);
- § Supporting the research and development area (3.2);
- § Development of information and communication technologies in economy and administration (3.3); and
- § Facilitating the use of eco-technologies, supporting energy efficiency and cogeneration (3.4).

With regards to R&D policy, the first two areas are of particular importance. In more concrete terms, the first area envisages the following measures: supporting public-private financing for the development of a private market of R&D services; supporting the creation of new innovative companies; support of financing innovative projects through higher risk capital funds, also using the National Equity Fund; budgetary support for scientific research and development work carried out by enterprises; linking the financing of applied research and R&D with the utilisation of their results in enterprises; developing a network of bridging institutions in the area of transfer of technology to enterprises, supporting the development of science-and-technology parks, clusters and investment parks; and support for the implementation of regional innovation strategies.

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<sup>9</sup> <http://www.kpk.gov.pl/ppt/>.



The second area targets directly R&D system envisaging its reorganisation and change of status of R&D units, especially through consolidation and ownership transformation. The objectives include reorientation of research towards areas ensuring fast economic growth. Also, investment in R&D infrastructure is to be aimed at conducting R&D work generating economic benefits. There is also a mention of support for investment processes and intellectual property rights. The description promises increasing expenditure on research and development work.

Currently, there are intensive works on a number of documents, especially the National Research and Development Centre (NCBR). The establishment of NCBR has an objective to reform the system of financing R&D through the concentration of funding on a small number of large projects and improve cooperation between science and industry. According to the Implementation document of the KPR 2005-2008, the project of the act should be adopted by the Council of Ministers by the end of 2006, and the launch of the first research programmes is planned in the first quarter of 2007.

Moreover, the **Implementation document of the KPR 2005-2008** acknowledges a necessity to update the Act of 8 October 2004 on the Principles of financing science. The main rationale behind this is to streamline the application procedure of R&D grants, which should lead to more efficient and effective management of financial resources reserved for undertaking R&D activities. Starting from 2007, there will be a change made with regards to the principles of financing JBR. The planned modification will mean concentration of funding on the best JBR. Such approach may lead to the consolidation of JBR sector and strengthening of JBR with the highest potential.

Recently published **Strategy for increasing the innovativeness of economy 2007-13** sets five strategic orientations for the 2007-13 perspective i.e. human resources for modern economy; research for the needs of economy; intellectual property rights; financing innovation; and infrastructure for innovation. With respect to R&D policy, the following priorities are the most relevant:

- § Transfer of knowledge between the R&D and business sector through incentives encouraging the mobility of researchers and employees of private companies;
- § Finance R&D projects in private sector;
- § Concentrate public funding in the strategic fields;
- § Restructure the public science sector (incl. creation of the National Centre of R&D);
- § Implement foresight projects; and
- § Strengthen the cooperation between the R&D and business sector.

**The Operational Programme Innovative Economy (IE OP)** will be the main policy instrument in the financial perspective 2007-13 supporting the development of economy through innovation. It will aim at: “supporting innovativeness in a broader sense – encompassing activities of scientific, technical and organisational, as well as of financial or commercial nature. The intervention under the framework of IE OP will include not only direct support for enterprises, business supporting institutions and scientific entities providing high quality services to enterprises, but also systemic

support guaranteeing development of institutional environment for innovative enterprises”.<sup>10</sup>

In conclusion, the first observation is that the objectives and priorities of R&D policy are more clearly defined now than five years ago. There was also evidently an evolution of priorities from “governance issues” and system of financing R&D projects towards content orientation of R&D policy. At some point, the focus was placed on EU experience (development of Centres of Excellence, establishment of the KPR, and launch of the Polish Technology Platforms). The adoption of Act on Some forms of supporting innovative activities (29 July 2005) shows that the priority was to introduce fiscal incentives with the view to boost private R&D expenditure. The analysis of the Implementation document of the KPR 2005-2008 suggests that there might be even further changes in priorities and objectives of R&D policy in the nearest future, suggesting shifts towards the concentration of funding on a small number of large projects (NCBR) and simplification of principles governing the system of financing science (e.g. streamlined application procedure for R&D grants, and concentration of funding on few best performing JBR).

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

Meeting the target of 1.5% of GDP by 2006 remains unrealistic given the fact that GERD in 2004 was estimated at 0.58% of GDP. Also, attaining 0.9% of GDP spending on R&D funded by business does not seem possible, as BERD in 2004 represented only 0.17% of GDP. This situation portrays a gap between the policy statements and the actual challenges. The recent Implementation document of the KPR 2005-2008, introduced changes to BERD and GERD targets i.e. until 2008 BERD should reach the level of 0.55% of GDP, while GERD 1.65%. The newly set targets appear evidently more realistic than the previous ones.

By the adoption of the KPR 2005-2008 by the Council of Ministers on 27 December 2007, the government officially recognised the three major challenges (increase RTDI potential of enterprises, improve cooperation between the R&D sector and industry, reorganise the current public R&D sector), which were discussed in Section 1. The critics would point out, however, to the lack of strategic vision on how to reform the extensive network of JBR. Also, the cooperation between the R&D sector and industry is not translated into specific actions.

Moreover, regional R&D policies have not been discussed in great. The only strategic document that acknowledges the importance of regions in boosting R&D is the Strategy for increasing the innovativeness of economy 2007-13, which provides on with information about the competitive position of regions and the implementation of Regional Innovation Strategies. What is missing, however, is a lack of more detailed information about the regional strengths and potential for future regional development. In the forthcoming financial perspective (2007-13), the regions will gain considerable powers as far as design and implementation of the EU SF

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<sup>10</sup> Jacek Walendowski and Michal Miedzinski (2006) Trend Chart: Poland’s report.

interventions is concerned. The recent attempt by the government to adopt an Act regulating the responsibilities between the central and regional level, has met with the resistance from regional representatives. Although an agreement has been recently reached, it is more likely that the regions will continue seeking to gain real powers in formulating and implementing their regional strategies. The major risk is that regions will not adopt relevant strategies, but this will mainly depend on the experience of regions in designing and managing R&D projects.

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

The table below explains, which policy instruments are in place today aiming at affecting R&D activities.

**Table 1: Policy mix for R&D in Poland**

| Policy categories     | Policy instruments: short description and target group   |
|-----------------------|--|
| <b>R&amp;D Domain</b> |  |
| R&D policy generic    | <p>On the basis of the <b>National Framework Programme (KPR)</b>, the Minister of science and higher education launches the calls for so-called commissioned projects. One of the strengths of KPR is that it established 38 fields of research in 9 strategic research areas. The model was inspired from the experience of EU Framework Programme. According to the planned expenditure on R&amp;D for the year 2006, 8% of the total budget of science was allocated to commissioned projects. In nominal terms, it is about 268.3 mln PLN (68.7 MEUR).</p> <p>Also, <b>development and targeted research projects</b> will contribute to the goal of boosting R&amp;D activities. The development research projects allowing financing applied research and development activities aimed at practical application, whereas targeted research projects concern all areas of applied research, development activities, industrial research, and pre-competitive research indispensable to the implementation of project. The final outcome of such projects should be the implementation of product or technology as well as economic or social application. This instrument is very popular among entrepreneurs. During the period 2002-2005, 402 projects were completed. The <b>special research projects include</b> scientific research or development activities, which are part of international programme but cannot be financed from international financial resources.</p> <p>In the framework of EU Structural Funds, there is practically one instrument targeted at strengthening cooperation between the R&amp;D sector and industry (<b>Measure 1.4 Strengthening cooperation between R&amp;D sphere and economy, Operational Programme Increasing Competitiveness of Enterprises 2004-2006</b>).</p> <p>The following type of activities can receive financing:</p> <ul style="list-style-type: none"> <li>§ Research projects and development activities: industry and pre-competition research conducted by enterprises or groups of enterprises and/or in cooperation with scientific-research institutions;</li> <li>§ Investment projects relating to building up, modernisation and equipment of specialised laboratories rendering specialised services to enterprises;</li> <li>§ Investment projects relating to building up, modernisation and equipment of specialised laboratories of Advanced Technologies Centres and Centres of Excellence operating in priority areas from the perspective of development of Poland's economy;</li> <li>§ Projects performed by Centres of Advanced Technologies; and</li> <li>§ Research projects in the area of monitoring and forecasting development of technology – foresight.</li> </ul> <p>The total overall budget for the entire programming period 2004-2006 is estimated at 195.6 MEUR.</p> |

|  |  |
|--|--|
| R&D policy sectoral                      | <b>The long-term government programmes</b> can be considered as important initiatives in making some breakthrough in specific field. For example, the recent Programme on Optoelectronics is an example of success, in the framework of which 27 high-tech products have been developed (of which 12 have already been commercialised). It also provided financing for 3 laboratories and possibility of creating a team of 200 specialists working together in the area of blue optoelectronics.  |
| R&D / Innovation policy – Linkage        |  |
| R&D / Innovation policy – IPR            | <b>Pilot IPR</b> project will be launched by the Polish Agency for Enterprises Development. It is very similar to the Hungarian measure IPR protection for SMEs abroad (HU_103), which provides funding for SMEs to obtain IPR protection.   |
| R&D specific financial and fiscal policy | <p>As a general approach, there are <b>fiscal incentives</b> introduced for all public research institutions (this legislations dates back to 1990s). They are exempted from a significant part of taxes. Prior to the adoption of the Act on Some forms of supporting innovation activities (29 July 2005), there were practically no such measures available for the private sector. According to the provisions of this Act, a private entity can gain a possibility to apply for the <b>status of R&amp;D centre</b>. An entrepreneur who receives such status will be exempted from various taxes. Once the status of R&amp;D centre is granted there is also a possibility to establish an innovation fund, in order to finance R&amp;D activities. An R&amp;D Centre is allowed to make the payment to the fund up to 20% of its monthly income. The advantage is that the financial resources allocated to this fund (if used) are not considered as income, which automatically lowers the amount of taxes to be paid. There are at least three conditions, which need to be fulfilled in order to be able to receive such status. Firstly, the annual net income should be at least 800,000 EUR. Secondly, 50% of this income should be generated by its own research and development activities. Thirdly, an applicant cannot have any outstanding payments for taxes, social and health security.</p> <p>Apart from an incentive described above, notably the status of R&amp;D centre the Act on Some forms of supporting innovation activities (29 July 2005) introduced two other instruments, including <b>technology credits and fiscal incentives</b>. The technology credit fund was launched with the aim to allow entrepreneurs to finance new technology investments leading to the introduction of new products or modernisation of the existing ones. An entrepreneur who documents the sales of goods and services as a result of investment will have a possibility to apply for the annulment of the credit i.e. 50% of the credit value. The maximum value of the credit cannot be higher than 2 MEUR, whereas the credit reductions cannot exceed the value of 1 MEUR. Fiscal incentives encourage both companies and private persons to acquire new technologies (technological knowledge which allows production or modernisation of products and services, and is not used in the world longer than 5 years) through the facility of deduction of 50% of such expenditure from the taxable income. Besides, companies may use a tax deduction for R&amp;D expenditure, independently from their final results.</p> |
| R&D specific education policy            |  |
| R&D specific employment policy           |  |

|                                      |   |
|--------------------------------------|---|
| <b>Finance Domain</b>                |   |
| Financial and fiscal policy          | Specifically, in the field of public finances the government has made some attempts to ease fiscal burden faced by the private sector, but at the same time has avoided to respond to the challenge of reducing the level of public expenditure. This shows that the order of the actions is somewhat reversed. More importantly, this will affect the result of the budget deficit, which in turn might negatively influence the investment of activities related to R&D and innovation.   |
| Macroeconomic policy                 |   |
| <b>Human Capital Domain</b>          |   |
| Education policy                     | This policy field needs further improvements, in order to avoid the mismatches between the industry needs and qualifications of human resources.  |
| Employment policy                    | <b>Measure 2.3 Development of personnel of modern economy</b> , Integrated Regional Operational Programme 2004-2006 covers the cost of the following activities such as training and consulting services for employees relating to technology changes, foreign languages and application of ICT; post-graduate courses; and traineeships at research institutions. The total overall budget for the entire programming period 2004-2006 is estimated at 253 MEUR.   |
| <b>Innovation Domain</b>             |   |
| Innovation policy generic            | <b>Loan for realisation of innovative investment</b> can be used for the implementation of results of R&D projects, acquisition of machinery or physical infrastructure. The usual time scale for the repayment of loan is estimated at 6 years. The loan should cover 75% of eligible costs, whereas 25% should be represent own contribution to the investment. The maximum value of loan cannot exceed 500.000 EUR.<br><br><b>Pilot ‘technostarters’</b> project will be launched by the Polish Agency for Enterprises Development. It will be based on the Dutch measure TechnoPartner (NL_43), which aims to promote more and better technology-based start-ups ("technostarters"), through the creation of a better climate for technostarters inside and outside knowledge institutes. |
| Innovation policy sectoral           | Innovation has been recognised as horizontal policy.  |
| Other policies - industry            | In the field of unlocking business potential, especially of SMEs, the government has not achieved the goal of setting-up the so-called ‘one-stop-shop’, where a company could be registered. As a result, it was decided to postpone the day on which such facility would be operational until 1 October 2008. In order to be able design effective policy mix, it is necessary to establish an un-bureaucratic mechanism allowing independent impact assessment of the proposed legislations. At present, such mechanism is still under development, whereas the current system is not performing well enough.   |
| Other policies - trade               |   |
| Other policies - defence             | Offset is a kind of obligatory cooperation between national contractors and foreign suppliers. Offset is a compensation instrument required when a contract for supplying armaments is awarded to foreign contractor.   |
| Other policies – consumer protection |   |
| Other policies – health and safety   |   |
| Other policies - environment         |   |
| Other policies – regional            | <b>Measure 2.6 Regional innovation strategies and transfer of knowledge,</b>  |

|                                  |   |
|----------------------------------|---|
| development                      | Integrated Regional Operational Programme 2004-2006 focuses notably on creation or development of RIS, creation of the networks, development of the system of communication and information exchange, internships for higher education institutions graduates and for employees of the R&D sector, and scholarships for the best higher education graduates continuing the PhD courses in the strategic areas pre-defined by the RIS. The total overall budget for the entire programming period 2004-2006 is estimated at 59.3 MEUR. |
| Other policies - competition     | The majority of State Aids is granted to large companies and to the private sector, which disturb the competition on the market.  |
| Other policies – social security | It is also disappointing that there has been no concrete action taken to reduce indirect cost of employees, which has been advocated by the private sector for a long time. Lowering such cost would be important for companies from all sectors and subsequently savings could be used for developing new products, technologies and services.   |

To conclude, the overall opinion about the other non-R&D and innovation policies is negative. The main reason for this is that these policies do not encourage enterprises to undertake research and innovation-related activities.

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

One of the most important priorities for the R&D policy is to boost R&D expenditure. In particular, the KPR 2005-2008 calls for support to encourage enterprises to carry out scientific research and development activities. The low level of BERD and GERD explains why this priority is placed among the top priorities of R&D policy. In more concrete terms, the following instruments are designed in order to contribute to the realisation of this policy objective i.e. commissioned projects, development research projects, special research projects, and long-term governmental programmes. Despite the fact that there are some policy instruments, which correspond to the goal of increasing GERD and BERD, the main problems are low level of funding, complicated procedures and lack of concentration of funding in the areas of strategic importance.

The advocates of fiscal incentives argue that such instruments would have higher contribution to the goal of increasing R&D expenditure. Moreover, it is often pointed out that these instruments give freedom to enterprises on the focus of research activities. That is why the Act on Some forms of supporting innovative activities (29 July 2005) introduced fiscal incentives. According to the impact assessment, the intramural business expenditure on R&D will increase respectively by 376.5 mln PLN (94.6 MEUR), 660 mln PLN (165.8), and 890 mln PLN (223.7 MEUR)<sup>11</sup>. However, these calculations seem to be overestimated. If the following targets are to be met i.e. increase BERD from 0.17% of GDP in 2004 to 0.55% of GDP by 2008 and increase GERD from 0.58% of GDP in 2004 to 1.65% of GDP by 2008, it will be necessary to combine the direct system of R&D financing with tax incentives. In reality, it is most likely that these targets will be lowered.

The objective of supporting the creation of new innovative companies is supported mainly by the following measures: Loan for realisation of innovative investment, fiscal incentives and technology credits, pilot IPR project, and pilot 'technostarters' project. The actual problem of this set of instruments is their focus, which is leaning towards the modernisation and technology upgrade rather than innovation. For example, fiscal incentives encourage both companies and private persons to acquire new technologies (technological knowledge which allows production or modernisation of products and services, and is not used in the world longer than 5 years), which may lead to supporting purchase of old technologies.

The existing instruments aimed at restructuring the public science sector prove insufficient. The Competence Centres, which were created with the support of the FP5 can be considered as an interesting approach to strengthen the capacities of research teams, however, they have not led to the reform of the public R&D sector. The possibility of granting the status of R&D centres to private organisations is aimed at giving incentives to private organisations to carry R&D, which will not have direct impact on the public R&D institutions. The opinion on this instrument expressed by

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<sup>11</sup> Exchange rate: 1EUR=3.97850 PLN (Dates of validity 1/10/06-31/10/06), <http://ec.europa.eu/budget/inforeuro>.



the General Council of R&D Centres was very negative. The Council argued that the law might lead to considerable increase in a number of R&D centres instead of supporting consolidation of research potential.<sup>12</sup> There are some plans to concentrate R&D funding on the best teams through the establishment of the NCBR, which should launch the first programmes in 2007. Also, the revision of the Act on the JBR, which is expected to be completed by the end of 2006 may lead to concentration of funding on the best JBR. These would be actually the first instruments, which could contribute to a great extent to the reorganisation of the public R&D system.

The cooperation between the R&D and business sector continues to be one of the top priorities with the view to utilise the public R&D potential and increase the competitiveness of companies by making them more technologically advanced and innovative. There are two specific measures relevant to this policy objective, notably targeted research projects, and Measure 1.4 Strengthening cooperation between R&D sphere and economy (Operational Programme Increasing the competitiveness of enterprises 2004-2006). Nonetheless, only the former actually can be considered as an important contribution, because it brings together business and R&D teams around a concrete project. The final outcome of such projects should be the implementation of product or technology as well as economic or social application. Measure 1.4 Strengthening cooperation between R&D sphere and economy is mainly focused on the development and modernisation of R&D infrastructure.

Although there are two instruments, namely Measure 2.3 Development of personnel of modern economy (Operational Programme Human Resources Development 2004-2006), and Measure 2.6 Regional innovation strategies and transfer of knowledge, (Integrated Regional Operational Programme 2004-2006), which should contribute to the goal of improving the transfer of knowledge between the R&D and business sector through incentives encouraging the mobility of researchers and employees of private companies, so far their contribution is limited. The amount allocated for the mobility of researchers and scholarships for PhD students is too low under Measure 2.6, whereas Measure 2.3 is primarily focused on general training of employees of the private sector and not on promoting the mobility of employees from the private sector to research institutes.

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<sup>12</sup> <http://www.imn.gliwice.pl/rgjbr/startrgjbr.asp?id=30>.

## 6. Policy mix instruments and target groups

Promotion of the establishment of new indigenous R&D-performing firms (Route 1) is not a priority of the current policy mix, although the Polish Agency for Enterprises Development has recently announced the launch of a pilot project “Technostarters”, which would be the first Polish initiative in this direction of creating new technology-based companies. The most relevant measure that aims at stimulating R&D investment in R&D performing firms (Route 2) is the status of R&D centres. Besides, companies may use a tax deduction of R&D expenditure, independently from their final results. These two instruments have been introduced relatively recently by the Act on Some forms of supporting innovation activities (29 July 2005). The adopted approach of making the enterprises more competitive through the enhancing the existing technologies explains why stimulating R&D investment in firms non-performing R&D (Route 3) is not a specific focus of R&D policy. In particular, low attention is given to attracting R&D-performing firms from abroad (Route 4), and increasing extramural R&D carried out in cooperation with public sector (Route 5).

In 2006, the science budget was estimated at 3.34 bln PLN (856.3 MEUR), and according to the Implementation document of the KPR 2005-2008 the budget should increase to 4,909.0 mln PLN (1.16 bln EUR) by 2008. The main part of the budget is distributed on the institutional basis, notably statutory funding for research activities and infrastructure. The competitive part is distributed throughout the calls for proposal organised by the Ministry of Science and Higher Education. Thus, the statutory funding has a major impact on increasing public R&D funding (Route 6).

In overall, there are mainly two target groups to which the policy instruments are addressed. One of them consists of the public R&D institutions, which as it was mentioned above receive funding for R&D mainly through the statutory funding. Other measures that are destined to enterprises include targeted research projects, pilot IPR project, technology credits, status of R&D centres, fiscal incentives, Measure 2.3 Development of personnel of modern economy, loan for realisation of innovative investment, Pilot ‘technostarters’ project, and Measure 2.6 Regional innovation strategies and transfer of knowledge. In addition, the joint research projects may be supported via Measure 1.4 Strengthening cooperation between R&D sphere and economy. In conclusion, it is important to underline that the currently policy mix is mainly focused on technology upgrading, and modernisation of companies rather than at stimulating R&D investments.

**Table 2: Policy instruments and broad routes to increase R&D investments**

| Policy categories                        | Policy instruments  | ROUTE 1:<br>promote establishment of new indigenous R&D-performing firms | ROUTE 2:<br>stimulate greater R&D investment in R&D-performing firms | ROUTE 3:<br>stimulate R&D investments in firms non-performing R&D | ROUTE 4:<br>attract R&D-performing firms from abroad | ROUTE 5:<br>increasing extramural R&D carried out in cooperation with public sector | ROUTE 6:<br>increase R&D in public sector |
|--|---|--|--|---|--|---|---|
| <b>R&amp;D Domain</b>                    |   |  |  |   |  |   |   |
| R&D policy generic                       | National Framework Programme + statutory funding for research<br>Development and targeted research projects<br>Measure 1.4 Strengthening cooperation between R&D sphere and economy |  | n  |   |  | n   | nn  |
| R&D policy sectoral                      | The long-term government programmes   |  | n  |   |  |   | n   |
| R&D / Innovation policy – Linkage        |   |  |  |   |  |   |   |
| R&D / Innovation policy – IPR            | Pilot IPR project   |  |  |   |  |   |   |
| R&D specific financial and fiscal policy | Technology credits<br>Status of R&D centres<br>Fiscal incentives  | n  | nn   | n   | n  |   |   |
| R&D specific education policy            |   |  |  |   |  |   |   |
| R&D specific employment policy           |   |  |  |   |  |   |   |
| <b>Finance Domain</b>                    |   |  |  |   |  |   |   |
| Financial and fiscal policy              |   |  |  |   |  |   |   |
| Macroeconomic policy                     |   |  |  |   |  |   |   |
| <b>Human Capital Domain</b>              |   |  |  |   |  |   |   |
| Education policy                         |   |  |  |   |  |   |   |

| Policy categories                     | Policy instruments   | ROUTE 1:<br>promote establishment of new indigenous R&D-performing firms | ROUTE 2:<br>stimulate greater R&D investment in R&D-performing firms | ROUTE 3:<br>stimulate R&D investments in firms non-performing R&D | ROUTE 4:<br>attract R&D-performing firms from abroad | ROUTE 5:<br>increasing extramural R&D carried out in cooperation with public sector | ROUTE 6:<br>increase R&D in public sector |
|---------------------------------------|--|--|--|---|--|---|---|
| Employment policy                     | Measure 2.3 Development of personnel of modern economy                       |  |  | n   |  |   |   |
| <b>Innovation Domain</b>              |  |  |  |   |  |   |   |
| Innovation policy generic             | Loan for realisation of innovative investment Pilot 'technostarters' project | n  |  | n   |  |   |   |
| Innovation policy sectoral            |  |  |  |   |  |   |   |
| Other policies - industry             |  |  |  |   |  |   |   |
| Other policies - trade                |  |  |  |   |  |   |   |
| Other policies - defence              |  |  |  |   |  |   |   |
| Other policies – consumer protection  |  |  |  |   |  |   |   |
| Other policies – health and safety    |  |  |  |   |  |   |   |
| Other policies - environment          |  |  |  |   |  |   |   |
| Other policies – regional development | Measure 2.6 Regional innovation strategies and transfer of knowledge         |  |  | n   |  |   |   |
| Other policies - competition          |  |  |  |   |  |   |   |
| Other policies – social security      |  |  |  |   |  |   |   |

## **7. Balance within R&D policy mix**

The assessment of any policy mix requires an analysis of both relevance and effectiveness of the policy responses to the identified challenges. The most common problem with this kind of assessment is a general lack of evaluation studies. The fact that many new measures have just been launched implies that is too early to measure the impact of instruments and their contribution to R&D expenditure. Nonetheless, what is possible at this stage is to provide the reader with an independent expert opinion on the possible contributions of existing instruments aimed at boosting R&D activities.

### **Overall contribution to R&D expenditure**

On the basis of the KRP, the Minister responsible for science and higher education launches the calls for so-called commissioned projects. One of the strengths of KPR is that it established 38 fields of research in 9 strategic research areas. The model was inspired from the experience of EU Framework Programme. In our view, such instruments are expected to have high contribution to the establishment of more transparent and competitive system of financing R&D projects. In financial terms, its contribution is less important. According to the planned expenditure on R&D for the year 2006, 8% of the total budget of science was allocated to commissioned projects. In nominal terms, it is about 268.3 mln PLN (68.7 MEUR).

Also, development and targeted research projects will contribute to the goal of boosting R&D activities. The former include applied research and development activities aimed at practical application, whereas the latter concern all areas of applied research, development activities, industrial research, and pre-competitive research indispensable to the implementation of project. The final outcome of such projects should be the implementation of product or technology as well as economic or social application. This instrument is very popular among entrepreneurs. During the period 2002-2005, 402 projects were completed.

Besides, the long-term government programmes can be considered as important initiatives in making some breakthrough in specific field. For example, the recent Programme on Optoelectronics is an example of success, in the framework of which 27 high-tech products have been developed (of which 12 have already been commercialised). It also provided financing for 3 laboratories and possibility of creating a team of 200 specialists working together in the area of blue optoelectronics.

The other three instruments, notably technology credits, status of R&D centres, fiscal incentives have been all launched in the framework of Act on Some forms of supporting innovation activities (29 July 2005). Although they are relatively new measures, their contribution to increasing R&D expenditure can be substantial. Nonetheless, the critics point out that the instrument of technology credits favour big companies with strong position on the market. Also the annual budget estimated at 100 MPLN (25.43 MEUR), risks to be quickly exhausted by a small number of companies. With regards to the status of R&D Centres, the opinion on this instrument expressed by the General Council of R&D Centres was quite negative. It was argued

that the legislation might lead to considerable increase in a number of R&D centres, instead of supporting consolidation of research potential. Fiscal incentives are supporting purchase of the new technology by companies, however, the instrument is eligible for technologies introduced in the last 5 years, which given lack of sectoral differentiation may lead to supporting purchase of de facto old technologies.

In the framework of EU SFs, there is practically one instrument targeted at strengthening cooperation between the R&D sector and industry (Measure 1.4, Operational Programme Increasing Competitiveness of Enterprises 2004-2006). Despite high allocation, which for the entire programming period 2004-2006 is estimated at 195.6 MEUR, the joint research projects developed by science and private consortia are rare.

As far as gaps in policy mix are concerned, one evident gap is a lack of efficient instruments aimed at ensuring a supply of qualified researchers. Although there are two instruments, namely Measure 2.3 Development of personnel of modern economy, Operational Programme Human Resources Development 2004-2006, and Measure 2.6 Regional innovation strategies and transfer of knowledge (Integrated Regional Operational Programme 2004-2006), which should serve this purpose, but their value-added is limited. The amount allocated for mobility of researchers and scholarships for PhD students is too low under Measure 2.6, whereas Measure 2.3 is primarily focused on general training of employees of the private sector and not on promoting the mobility of employees from the private sector to research institutes. To conclude, the policy mix partially responds to the existing challenges of the R&D policy.

### **Impact on specific aspects of the NIS or R&D performers**

The two instruments, notably the KPR and Measure 2.6 Regional innovation strategies and transfer of knowledge (Integrated Regional Operational Programme 2004-2006) may have the biggest impact on NIS and R&D performers. The KPR has already introduced important changes into the system of financing R&D projects through the introduction of open calls for tenders, suggesting a shift towards choosing the best research teams on the competitive basis. Although one should not expect increasing R&D activities by one measure assisting to develop and implement RIS, this instrument is very important as it promotes the mobility of researchers to the private sector, an aspect which is rather overlooked by the current policy mix.

### **Public attention/attention by policy makers**

Next, it is important to point out to a growing interest of policymakers in reinforcing financial instruments especially fiscal incentives. The main reason behind such approach is that fiscal instruments are thought to serve better the entrepreneurs than direct grants because they are less bureaucratic and provide more freedom during the development of innovative products. Also, measures that are financed by the EU SFs draw significant attention of policymakers and public, mainly because of the size of their financial allocations.

## Public funding involved

The problem here is not so much in the availability of information on budgets, but what makes this task difficult is a lack of information on allocation of financial resources among different sub-measures. To illustrate this, the total budget of Measure 2.3 Development of personnel of modern economy is estimated at 253.3 MEUR, but it is not possible to determine what was the exact allocation for promoting mobility of researchers to industry and how much was reserved for other types of trainings, which are not relevant for R&D policy. It is also to be remembered that the main part of the science budget, which was estimated in 2006 at 856.3 MEUR is distributed mainly through the statutory funding for research activities. According to the 2006 budget, the statutory funding is estimated at 2.29 bln PLN (587.8 MEUR), which is about 68.64% of the entire budget allocated to science.

## Shift in public funding

Two major measures illustrate an important shift in public funding of R&D, including the KPR and recent measures introduced by the Act on Some forms of support innovation activates (29 July 2005). The KPR can be viewed as a first attempt to introduce the competitive open calls for tender, whilst the aforementioned Act clearly favours fiscal incentives.

**Table 3: Assessment of ‘importance’ of R&D policy instruments**

| Instruments   | Funding   | Criteria |    |    |    |    |
|---|---|----------|----|----|----|----|
|   |   | a        | b  | c  | d  | e  |
| National Framework Programme  | 68.7 MEUR<br>(annually)   | n        | nn | n  | n  | nn |
| Development and targeted research projects                              | 18 MEUR +<br>44.4 MEUR<br>(annually)                                      |          | n  | n  | n  |    |
| Long-term government programmes   | Per project (1.2<br>– 2.8 MEUR)   | n        |    |    | n  |    |
| Technology credits, status of R&D centres,<br>fiscal incentives         | 25.4 MEUR +<br>no influence on<br>the budget +<br>41.3 MEUR<br>(annually) | nn       | n  | nn | nn | nn |
| Measure 1.4 Strengthening cooperation<br>between R&D sphere and economy | 195.6 MEUR<br>(2004-2006)<br>Annually 65.2<br>MEUR                        | n        |    | nn | nn |    |
| Measure 2.3 Development of personnel of<br>modern economy               | 359 MEUR<br>(2004-2006)<br>Annually 119.7<br>MEUR                         |          | n  | nn | nn |    |
| Loan for realisation of innovative investment                           | 3.54 MEUR<br>(2004-2005)  |          |    | n  | n  |    |
| Measure 2.6 Regional innovation strategies<br>and transfer of knowledge | 59.4 MEUR<br>(2004-2006)<br>Annually 19.8<br>MEUR                         |          | nn | nn | nn |    |

## 8. Emergence of R&D policy mix

The existing R&D policy-mix was influenced by three major milestones i.e. launch of the EU SF interventions (2004-2006), the reorganisation of science funding system (2004), and the recent introduction of the Act on Some forms of supporting innovation activities (29 July 2005).

Prior to Poland's accession to the EU in March 2004, the number of instruments aiming at stimulating R&D activities was quite limited, but the SF allocations available for the 2004-2006 financial perspective allowed to launch the following measures: (i) Measure 1.4 Strengthening cooperation between R&D sphere and economy, (ii) Measure 2.3 Development of personnel of modern economy, and (iii) Measure 2.6 Regional innovation strategies and transfer of knowledge. The role of the SF interventions is meaningful, especially in terms of number of policy instruments. According to the strict definition of RTDI interventions used by the European Commission, the 2004-2006 European Regional Development Fund interventions are estimated at 217,825,776 EUR, which represents 17.8% of the 2004 GERD.<sup>13</sup>

Also, the Act on the Principles of science financing (8 October 2004) introduced important changes into the system of financing science. One of the major modifications was transformation of the State Committee for Scientific Research (KBN) into the Science Council, which acts as an advisory body to the Minister dealing with science related matters. As a result, this had clearly direct consequences on the overall importance of the Minister of Science and Information Technology. According to the provisions of the Act on Science Financing, the Minister is responsible for quality and financial control of financial resources allocated to science. Concerning the policy instruments, one of the novelties was the KPR, which observers of R&D policy view as the first attempt in setting comprehensive R&D agenda. Besides, increasing necessity of jumpstarting the cooperation between the R&D and private sector resulted in the introduction of the targeted research projects.

In parallel, the works on the Act on Some forms of supporting innovation activities (29 July 2005) were progressing with the aim to boost R&D activities, mainly by introducing the following fiscal instruments: (i) technology credits, (ii) status of R&D centres, and (iii) fiscal incentives. The main rationale for the adoption of this Act was evidently low level of BERD, but also growing interest of policymakers in experimenting with other types of support than direct grants.

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<sup>13</sup> 181 Research projects based in universities and research institutes; 182 Innovation and technology transfers, establishment of networks and partnerships between businesses and/or research institutes; 183 RTDI Infrastructure; and 184 Training for researchers.



## 9. Governance of the policy mix

According to the Act on the Principles of financing science (8 October 2004), the Minister responsible for science allocates financial resources in this field by taking a decision, which is prepared on the basis of the submitted applications, following the consultation with the relevant body of the Science Council. In comparison with the past, this is a significant change. The key decision-maker is not the State Committee for Scientific Research (KBN), but the Minister responsible for science, who works in consultation with the Science Council. That means that the Minister ensures the overall control of the implementation of financial resources allocated to science.

The implementing institution of the technology credit is the National Bank of Poland (known in Polish as BGK), which reports to the Ministry of Finance and the Ministry of Economic Affairs concerning the implementation of the technology credit fund. While the Ministry of Economic Affairs is responsible for granting the R&D status to private companies (following the consultation with the Minister responsible for science; relevant Minister – depending on the nature of activities exercised by the applying company, and relevant mayor – depending on the geographic location of applying company), the Minister of Finance is responsible for overseeing the control of fiscal incentives.

The responsibility for the implementation of Measure 1.4 Strengthening cooperation between R&D sphere and economy, Operational Programme Increasing Competitiveness of Economy 2004-2006 lies within the Ministry of Science and Higher Education. The Marshal offices are responsible for the implementation of Measure 2.6 Regional innovation strategies and transfer of knowledge, Integrated Regional Operational Programme 2004-2006. Yet the problem does not lie in the way the responsibilities are allocated to different stakeholders, but in the process of implementation, which is overcomplicated and cumbersome. The recent Implementing document of the KPR 2005-2008 acknowledges that the Act on Principles of financing science (8 October 2004) and the regulation establishing criteria and procedures of financial resources allocated to science must be updated with the view to streamline the application process. The current round of the EU SF interventions also shows a necessity to introduce adjustments to make the application process less bureaucratic.

Designing national research policy falls under the responsibility of the Ministry of Science and Higher Education. The idea of establishing high-level Innovation Council – that will be chaired by the Prime Minister – has been officially introduced by the strategic document prepared by the Ministry of Economic Affairs, entitled: Strategy for increasing the innovativeness of economy 2007-13. Yet it is still to be seen how this mechanism will be effective in reinforcing the coordination between various stakeholders working in the field of R&D policy. The policy mix issues are discussed in the working groups preparing the next programming period, however, there is formally no designated body to which the gaps in the policy system can be addressed.

## **10. Interactions between policy objectives and instruments**

The KPR 2005-2008 acknowledged that: “Since 2001, Poland has a system of regulation impact assessment in place. Actions taken are aimed at developing a system for measurement and elimination of regulatory burden, including administrative load (pilot programmes concerning the application of the Dutch Standard Cost Model), simplifying national law (e.g. the Act on freedom of enterprise)”. In this respect, the actual problem is mainly due to lack of administrative capacity for developing high-quality impact assessments (internally or via commissioning external studies). To improve the situation, the recent working document prepared by the Ministry of Economic Affairs “Analysis of regulatory barriers for business activities” (15 March 2006) calls for elaboration of guidance for the impact assessment of regulations, but omits a possibility of developing mechanisms for appraising the impact of regulations on RTDI performance.

The statutory funding needs to be reduced in order to promote competitive research funding. In the 2006 budget, the statutory funding represents approximately 68% of the entire science budget. Therefore, the present system of financing science discourages the research teams to make applications through the competitive and open calls for tender launched in the framework of the KPR.

The government finances also the so-called long-term governmental programmes, which are designed with the objective to finance research projects of strategic importance. If such projects are continued, they risk overlapping with the projects that will be supported by the KPR.

The collaborative research projects between the R&D organisations and enterprises are mainly financed from two sources i.e. the KPR and Measure 1.4 Strengthening cooperation between R&D sphere and economy (Operational Programme Increasing the competitiveness of enterprises 2004-2006). As far as the joint research projects are concerned, there is lack of complementarities and these two instruments can be viewed as topping up the initiatives from the national budget and the EU SF interventions (2004-2006).

Moreover, the complementarities between the development projects and targeted research projects should be reinforced. The reason for this is that the targeted research projects are quite similar to the development projects. Given high interest from the private sector to use the targeted research projects (during the period 2002-2005, 402 projects were completed), it would be of particular importance to find stronger interactions between those two measures.

The other two initiatives, namely technology credits and loans for realisation of innovative investments evidently overlap. For example, the former finances new technology investments leading to the introduction of new products or modernisation of the existing ones, whereas the latter provides loans for the acquisition of machinery, physical infrastructure and the implementation of results of R&D projects. On a more positive note, it can be noted that there are complementarities between

fiscal incentives and technology credits. Fiscal incentives support the acquisition of technologies, whether technology credits are destined to larger technology-based companies.

The newly introduced measures such as the status of R&D centres is interesting in itself, but does not solve the problem of restructuring vast network of JBR. The investment projects relating to modernisation and acquisition of equipment by specialised laboratories of Advanced Technologies Centres and Centres of Excellence are supported through the Measure 1.4 Strengthening cooperation between R&D sphere and economy (Operational Programme Increasing the competitiveness of enterprises 2004-2006). This can be regarded as the continuation of efforts in designing the effective network of the Centres of Excellence, but the practice shows that the focus of this measure is primarily on investment projects rather than projects enhancing cooperation between the R&D sector and enterprises. Until September 2006, only 6 contracts were signed to finance targeted research projects of the Advanced Technologies Centres. In comparison, 42 contracts were signed for investment projects relating to building up, modernisation and acquisition of equipment of the Advanced Technologies Centres and Centres of Excellence.<sup>14</sup>

Finally, there are two instruments which are relevant for the objective of promoting the mobility of employees from the private sector to research institutes i.e. mobility of researchers and scholarships for PhD students under Measure 2.6 Regional innovation strategies and transfer of knowledge, and Measure 2.3 Development of personnel of modern economy, which is primarily focused on general training of employees of the private sector. If such measures are better integrated with the infrastructure projects, their complementarities may have important positive spillovers on the future NIS system.

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<sup>14</sup> See: <http://www.konkurencyjnosc.gov.pl/Stan+realizacji+SPO+WKP/>.

## **11. Case study proposal**

**Would the country be a good candidate for case study on the policy mix? What are the particular elements that would deserve a more in-depth analysis?**

There are many recent R&D policy instruments for which there are no evaluations available. Therefore, it would be of great value-added to have a possibility to investigate in greater detail the value-added of existing policy instruments. In addition, there is no culture of preparing impact-assessments prior to the launch of support instruments.

**Are there regions in the country that are worthwhile studying on the policy mix question? Either regions that have developed a particularly interesting explicit approach towards the policy mix, or regions where conflicts are apparent in policies design/implementation?**

The regional policy mix could be studied only in December 2006, when all the 16 Regional Operational Programmes will be finalised. They will constitute the legal and operational framework for the SF interventions during the 2007-13 period. For the time being, it would not be interesting to study regional policy mix because all regions are eligible to use funding of IROP (2004-2006), which has two measures i.e. Sub-measure 1.3.1 Regional educational infrastructure, and Measure 2.6 Regional innovation strategies and transfer of knowledge.

**Are there sectors in the country which would deserve an in-depth analysis with respect to the policy mix question?**

Certainly, sectoral aspects are not being emphasised by policymakers. Instead horizontal approach to RTDI is being favoured. Nevertheless, it would be of great interest and relevance to study relevant and interactions of policy instruments in the most dynamic sectors, such as: textiles, chemicals, food, and eco-innovation.

**Are there specific policies worth investigating in more depth for their role in the policy mix?**

Regional policy, innovation policy, education policy, and fiscal policies.

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