

Theme 6: Public action to drive private innovation

INNOVATION POLICY INSTRUMENTS: DO THEY WORK IN POLAND?

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Introduction

There were two turning points in the modern development of Central and Eastern Europe: the first one in 1989/1990 – the collapse of the centrally-planned system and beginning of building a free-market economy in most Central & East European countries (CEECs),^[1] and the second one in 2004 – the formal membership of eight CEECs of the European Union.^[2]

Numerous publications on innovation in Central and Eastern Europe appeared before the enlargement of the European Union. Let's mention only some of them. For example, Dyker (2004) showed a critical evaluation of technology policies in CEECs. Radosevic and McGowan (2004) formulated several industrial policy implications including policies for innovation and foreign direct investments (FDIs). Piech and Radosevic, eds (2006) made a comprehensive survey of innovation policies in all CEE countries. Finally, Cogan (2004), Radosevic (2004) and von Tunzelmann (2004) threw an additional light on science and technology policies in transitional economies – in Jasinski, ed. (2004).

Now, what has changed in this field after the EU enlargement? As far as Poland is concerned, several authors have tried to evaluate the present innovation policy in the country. For instance, Grudzewski and Hejduk (2008) devoted the whole book to the policy and management of technological innovation. Klineciewicz (2008) made a bibliometric analysis of the Polish innovativeness including the policy for science and technology. Janasz and Koziol (2011) and Marciniak (2010) showed a very critical attitude to public innovation policy in the whole period. Sanislawski (2011) and Stawasz (2011) investigated the policy for innovation

in small and medium-sized enterprises (SMEs). Finally, a set of papers on the Polish innovation policy were published by Jasinski (2003, 2004, 2006, 2010).

The main aim of this paper is to analyze public innovation policy instruments addressed to enterprises in Poland. The paper is based on an empirical research project^[3] completed by the author in December 2012.

In the project, while evaluating particular policy tools we expected an answer to the following question: **Is a given instrument useful (helpful) for enterprises/entrepreneurs to start and/or carry out their innovation activities?**

Several research assumptions were adopted. We decided to deal with:

- firms' technological innovativeness,
- the policy tools which are addressed directly to enterprises,^[4]
- the instruments which are in force now,
- Polish firms only, excluding foreign ones investing in Poland,
- the tools financed from domestic sources – directly or indirectly from the state budget.^[5]

The main source of data were two questionnaire researches that embraced totally 77 respondents including:

- 52 private manufacturing firms, mostly SMEs (only two of them are big),
- 25 respondents, i.e., 13 outstanding Polish experts in economics and management of innovation, and 12 representatives of public institutions and non-governmental organizations (NGOs) dealing with public support for innovativeness.

An important source of data were reports and other documents from those institutions and organizations. And a complementary source were statistical data from the Central Statistical Office (GUS) in Poland.

The analyzed tools belong to two conventional groups of policy instruments:

- 1) *Legal regulations*, i.e., financial incentives contained in parliamentary bills; in the Polish literature called as systemic tools. Three such instruments were analyzed,
- 2) *Government programmes* run by the Polish Agency for Enterprise Development (PAED). PAED (Polish acronym PARP) is the main governmental agency directly supporting innovation activities in small and medium-sized enterprises (SMEs) in Poland. Now, the Agency carries out three programmes financed from domestic sources.

The analyzed instruments

1. A possibility to establish innovativeness fund (up to 20% of an enterprise's income) as a monthly write-off charging entrepreneur's operational costs thus lowering the CIT tax base.

Under the *Law on some forms of supporting innovative activities* of 2005, this solution applies to only those entrepreneurs with the status of a research and development center (RDC) granted by the Minister of Economy. The status may be granted to an entrepreneur after meeting three requirements, i.e.:

- his net income (without VAT) is no lower than this provided by the *Law on accountancy*,
- he carries out scientific research or/and development activities,
- his yearly income on sale of own R&D services or industrial property rights constitutes at least 20% of net income.

A commercial company set up as a result of commercialization or privatization of an R&D institution is granted automatically the RDC status.

According to the Public Information Bulletin of the Ministry of Economy, **only 27 entrepreneurs** enjoyed the RDC status at the end of 2012. So far, such a status has been granted to 35 entities; meanwhile, 10 entrepreneurs have been deprived of the status with two of them regaining it. Note that nearly all 10 firms carried out the R&D activities.

Half of the 27 firms with the RDC status are past state-owned research-development institutions transformed into commercial companies. Thus, this is a way to gain the RDC status and use due privileges. However, it is probably not what the legislator had in mind.

Assumingly, the solution was meant as an incentive for enterprises (production and service rendering) – through a possibility to lower the tax base – to earmark the highest possible outlays on R&D activities thus increasing their innovative capacities. Moreover, according to the *Law on the principles of financing science*, entrepreneurs having the RDC status can apply to the National Science Center or the National Center of Research and Development for means to be spent on research activity.

Meanwhile, as the aforementioned figures show, this tool practically does not work. Polish firms fail to appreciate the role of R&D activities in the long-term development; many of them cannot earmark, at least at the moment, higher funds on R&D, or they are not offered sufficient incentives. May be the requirements are too strict? It doesn't seem so. But the scale of taxation cuts seems too low.

The most frequently named causes of not applying for the RDC status are as follows:

- our firm is too small,
- we do not meet the formal criteria, requirements,
- we are a manufacturing firm (the respondents seem not to understand that the law is addressed mainly to producers).

2. Technological credit

Under the *Law on some forms of supporting innovative activities*, an entrepreneur can be granted a ‘technological credit’ of up to 4 million zlotys (ca. 1 million euros) on implementing the so-called technological investment consisting in (a) purchasing a new technology, implementing it and using it to manufacture new or markedly improved products, processes or services, or (b) implementing its own new technology to launch the production of new or markedly improved products, processes or services. The ‘new technology’ means here a technology in the form of industrial property rights or R&D service, or unpatented technological knowledge, which has been in use for less than five years.

Such credit may be granted by a bank to a micro-entrepreneur, small or medium-sized entrepreneurs who are safe for credit. The credit cannot be granted for implementing (a) a large investment project (in the light of the rule on proceedings concerning state aid, and (b) investments in five sectors: iron and steel industry, synthetic textile fiber, coal mining, shipbuilding, fisheries and aquaculture. Moreover, the *Law* provides for the further three detailed exclusions.

This is a preferential credit. By design, the interest rates of a technological credit cannot be higher than the average interest rates of the remaining investment credits while the terms of its granting cannot be less advantageous than in case of other investment credits. But the key preference lies in the fact that a loanee can obtain the so-called technological bonus up to 75% of technological investment costs. The bonus may be granted from the means of the Technological Credit Fund administered by the Bank Gospodarstwa Krajowego (BGK). It is treated as a return of entrepreneur’s expenditure on the purchasing or manufacturing on his own of fixed assets and intangible and legal assets linked with the implementation of a technological investment. There is, however, a long list of requirements to be met to obtain such credit and then the mentioned bonus.

The data released by the BGK Operations and Accounting Centre show that from the date the *Law* came into force, only 366 enterprises have been granted a technological credit under such terms. This is a drop in the sea of needs. The number of firms that obtained this credit (till September 2012) was as follows:

2006	2007	2008	2009	2010	2011	2012
48	7	17	4	39	102	119

In the years 2006–2008 when the credit was granted through the state budget means, it concerned 72 enterprises while in the years 2009–2012, when it was granted (and continues to be) through the means of the ‘Innovative Economy’ Operational Programme (IEOP) it concerned 264 firms. A clear rise in the number of credited entities over the recent years follows intensified activities of BGK after the amendment of the *Law* in 2008.

Only one among 52 surveyed firms accepted the offer of a technological credit with a bonus,^[6] only one plans to accept it while two firms applied but with no success. Two following causes of not applying for such credit are most frequently mentioned:

- 1) there is no such need since the firm does not implement or does not plan any technological investments, or it has already been financed through other sources, maybe under better terms in the form of a non-repayable loan offered by IEOP,
- 2) there are hard and rigid terms and difficult requirements of obtaining it.

Many respondents confirmed that their firms do not meet the criteria of granting a technological credit although it is addressed to different categories of enterprises of the SMEs sector. These requirements seem too high.

Moreover, too few Polish firms create their own or purchase modern patented or unpatented scientific and technological knowledge.

Therefore, this tool should be assessed as poorly effective; nevertheless its role will surely strengthen soon following the government planned changes in the system of financing innovations in the new financial perspective for the years 2014–2020.

3. Technological relief

Originally it was provided by the *Law on some forms of supporting innovative activities* but recently it has been ‘moved’ to the amended *Law on CIT*. The legislator opened up a possibility to deduct from the tax base 50% of expenditures for acquisition of new technologies.

The acquisition of a new technology means here the acquisition of rights to new technological knowledge (intellectual property rights) in the form of a contract on the transfer of rights and taking advantage of them. New technologies are, as mentioned before, technological knowledge in the form of intangible and legal assets, and in particular the

results of scientific research and development activities that help produce new or improved products or services and that has been in use in the world for less than five years.

According to the data released by the Department of Industry and Innovations of the Ministry of Economy, **only 892 firms** were granted a technological relief in the years 2006–2011, with the following number of firms taking advantage of the relief:

- 2006 – 12,
- 2007 – 25,
- 2008 – 37,
- 2009 – 40,
- 2010 – 431,
- 2011 – 347.

(no data available for 2012).

A jump in the number over the recent years is clear but the beneficiaries were mostly firms owned by individual persons. In 2010 the deductions concerned but 33 CIT payers.

There was no firm among the surveyed 52 companies to use the relief so far. Among the causes of not applying for the relief, the highest number of the respondents admitted failing to purchase any new technology or that they create new technology on their own. Thus, Polish enterprises continue not to be open to new scientific and technological solutions coming from the outside scientific units. This confirms a poor cooperation between the science and business.

Among other causes the following were most frequently named:

- we do not pay CIT (although this is not a formal obstacle), and
- we do not meet the criteria, too strict requirements.

It is quite puzzling that such answers were given by, inter alia, innovative active firms, e.g. entrepreneurs with the R&D status. This must arouse anxiety since this means that enterprises innovativeness is chiefly based on their own internal technological solutions.^[7] Hence so few novelties in Poland in the at least national scale.

The above conclusions show that the priorities of Polish enterprises lack canvassing of new knowledge from outside, they do not engage themselves in technology transfer, they do not earmark sufficient means on this. Maybe entrepreneurs should be allowed to deduct 100% of expenditures for the acquisition of new technologies?

This instrument, similar to the previous one, is by design to stimulate technological transfer processes, inter alia. As it is seen, it has failed to fulfill the expectations.

4. Innovation loan

This is the oldest programme of this type of the Polish Agency for Enterprise Development (PARP), initiated in 1997 by its predecessor, the Agency for Technology. It is addressed to micro, small and medium-sized entrepreneurs.

Such an entrepreneur may obtain a loan for implementing the investment of an innovative character, with costs accepted to be covered are expenditures on:

- acquisition and implementation of the results of R&D activities,
- acquisition of Polish or foreign licenses in the form of purchasing intellectual property rights,
- purchase and assembly of machines and appliances indispensable to introduce an innovative solution,
- construction, expansion or modernization of buildings or installations indispensable for the purpose,
- acquisition of advisory services for business planning,
- acquisition of advisory services in implementing new scientific and technological solutions.

The amount of a loan cannot surpass 75% of eligible expenditures, or the sum of 2 million zlotys (0.5 million euros), with the spending on advisory assistance cannot be higher than 15% of expenditures eligible to be covered by a loan. Such a loan is granted for the period no longer than 10 years.

So far, only **97** innovation loans have been granted to **69 entrepreneurs** for the overall amount of 54 351 131 zlotys, i.e. some of them obtained a loan more than once. Those data show that that the average loan amounted to 560 000 zlotys (140 000 euros). However, in the years 1997–2000, that is before the loans were granted by PARP, 39 such loans, or nearly 60%, were given. Meanwhile, in the years 2008–2012 only 5 loans were granted (sic!). Thus, this instrument does not work, either.

The low involvement in this tool stems probably from the poor attractiveness of the terms of the loan. The falling number of granted innovation loans results actually from the fact that the tool has been replaced with more attractive technological credit.

5. Innovation voucher

The programme was launched in 2008. Its aim is to initiate contacts between entrepreneurs and scientific units. The PARP-offered support can be earmarked only for the acquisition of the service of implementing or development of a product or production technology. Such service may be rendered only by a research institution.

The programme is addressed to micro and small entrepreneurs who have earlier (over three previous years) not made use of such service. The innovation voucher can be obtained only once. The sum of support cannot surpass at present 15 000 zlotys (4,000 euros). The amount of assistance may total up to 100% of eligible expenditures under the condition that the actual net cost (without VAT) of the realized service is no higher than 15 000 zlotys, with the beneficiary being obliged to guarantee financing of the project in its part not covered by the assistance.

So far, within the framework of five editions of the programme, innovation vouchers were granted to **only 2053 entrepreneurs**, i.e. less than 0.1% of Polish firms.

The results of the evaluation report prepared by the Uniconsult company (PARP, 2010) show appreciation for accomplishing the aim of the 'Innovation Voucher' programme in the years 2008–2009 that is, let us recollect, to initiate contacts between micro and small enterprises and scientific units. 41% of the beneficiaries continue afterwards cooperation with such units and 46% planned new moves in cooperation with them. The beneficiaries named different signs of positive impact of the programme without, however, mentioning concrete innovations.

The respondents pointed to the need to increase the amount of assistance and to too short required period of implementing a project (service) already in 2010.

6. Support for obtaining grants

This is the newest programme created in 2011. Its aim is to enhance the innovativeness of micro, small and medium-sized entrepreneurs through subsidizing their share in international innovation programmes (IIP), with the international innovation programme understood as a programme than envisions a cooperation of domestic enterprises with scientific units or other entrepreneurs abroad. Such cooperation should concern entities from at least two countries, and its purpose should be to carry out R&D activities under the condition that the implementation of IIP could not have started earlier than 2007.

The support is given to cover the costs (refunds) of preparing and lodging one project application in response to one competition call within the international innovation programme. There is no limit as to the number of applications lodged with PARP.

The amount of support for obtaining a grant allocated to one enterprise cannot exceed 75 000 zlotys (19 000 euros) for a coordinator of an international innovation project, and 35 000 zlotys (9,000 euros) for a partner in such project. The amount of support for obtaining a grant may be up to 100% of expenditures eligible for grant.

Up till now only one edition of the programme was conducted and support was given to **25 firms**. It is worth reviewing it now. The second edition is under way at the moment.

The table presents the list of the analyzed instruments.

	Policy instrument	Date of launching	Fiscal character	Amount of subsidizing – up to	Eligible beneficiaries	Granting institution	Number of beneficiaries by end of 2012
		1	2	3	4	5	6
1	Write-off charging entrepreneur's operational costs	2006	Tax reduction	20% of firm's income	Medium-sized and large	Law	27
2	Technological credit	2006	Credit with bonus	1 mln euros; Bonus up to 75%	Small and medium-sized	Bank Gospodarstwa Krajowego	336
3	Technological relief	2006	Tax reduction	50% of technology acquisition costs	Small, medium-sized and large	Law	892*
4	Innovation loan	1997	Loan for 10 years	0.5 mln euros	Small and medium-sized	PARP	97
5	Innovation voucher	2008	Non-repayable subsidy	4,000 euros	Small	PARP	2,053
6	Support for obtaining grants	2011	Non-repayable subsidy	9,000 euros	Small and medium-sized	PARP	25

* Till the end of 2011.

As it is presented,

- the first three are systemic tools, the remaining are governmental programmes,
- the oldest tool is a loan for innovations, the freshest is support for obtaining grants,
- two instruments bear the character of a tax reduction, further two are credits/loans, another two are non-repayable subsidies,
- the size of subsidizing highly differs in individual cases: from 4,000 euros to 1 000 000 euros,

- most instruments are addressed to small and medium-sized enterprises,
- excluding the last programme, introduced only two years ago, one can note that the highest number of beneficiaries concerned the innovation voucher, and the lowest – the write-off charging entrepreneur's operational costs. There were also only a few beneficiaries of the 'Innovation loan' programme.

As it was mentioned above, the analyzed enterprises show rather low interest in using the available tools. According to surveyed experts, public institutions and public benefit organizations, there are three main reasons behind the phenomenon:

- 1) the tools are too weak incentives to firm's innovative activities (56% of the responses),
- 2) too strict requirements for obtaining such assistance (52%),
- 3) firms do not know exactly what means are needed for such activity and where they come from (almost 50%).

At present, the key issue of the Polish innovation policy is to spur on **firms' activity in research and development**.^[8] This is an important – or the most important – road to enhancing the innovativeness of Polish enterprises. A greater financial effort of entrepreneurs combined with their higher R&D potential should result in the growth of civilizational position of Polish firms, which in turn increases their capacities of both absorbing and generating innovations.

The surveyed experts as well as representatives of public institutions and public benefit organizations agreed that the most important reason (18 responses out of 25 respondents) behind too low outlays of firms on R&D was the fact that entrepreneurs fail to appreciate the role of R&D activities in their further development nor they see entailing benefits. Other reasons, according to the respondents, include:

- firms cannot afford involvement of higher outlays (56% of responses),
- firm do not conduct regular, broad, formalized scientific and technological cooperation with scientific units (52%).

One-third of the respondents claimed, however, that the system of public aid lacks effective incentives to increase outlays on R&D.

Speaking about the question of cooperation between entrepreneurs and scientific and technological units, experts and representatives of public institutions and public benefit organizations claimed that the main reason (56% of responses) of a narrow scope of this cooperation was a weak influence of public support tools on such cooperation; and then that

the role of bridging institutions operating between science and business was too poor (almost half of responses) while there were not entrepreneurs but mainly scientific institutions to be blamed for such situation (44% of responses).

The above conclusions found their reflection in responses to the question, what should be emphasized at present within the public aid for innovative activities of enterprises in Poland? Two-third of experts and representatives of public institutions and public benefit organizations answered that it should be scientific and technological cooperation between firms and scientific units, while 60% pointed to the support for R&D activities in enterprises.

Findings

The analyzed systemic instruments should be assessed as poorly efficient as to aiding the innovativeness of enterprises, and unfitted to the specific character of SMEs although the small and medium-sized firms were to be the main addressee of applying those tools of public innovation policy.

The offered financial preferences/incentives cannot wipe out fast the structural weak points of Polish firms (poor R&D potential, low expenditures on R&D, basing on own solutions). Generally speaking, the causes of low effectiveness of the tools are as follows:

- too low scale of taxation reduction or deduction of expenditures on R&D and new technologies, and
- too high requirements placed before entrepreneurs and difficulties while applying for such preferences.

As far as governmental programmes are concerned – the ‘Innovation loan’ and ‘Innovation voucher’ are to support both technology transfer and implementation of new scientific and technological solutions with particular stress put on cooperation between enterprises and scientific units. These are proper directions of those tools influence. The ‘Support for obtaining grants’ is a relevant tool, too, since it is designed to mobilize firms around international scientific and technological cooperation. As we know, Polish enterprises are not keen on such cooperation.

However, the low and diminishing interest in innovation loans means they are not an attractive solution to enterprises. The innovation voucher at the amount of 15 000 zlotys seems to some rather symbolic; not worth fighting for. As far as the support for obtaining grants is concerned, it is too early to evaluate the programme. Thus, the scope of influence of these tools is barely discernible.

Analyzing the results of our surveys, it turned out that only 3 firms out of 52 made use of the 'Innovation voucher' programme; and no firm made use of the remaining programmes. The reasons behind not applying were identical in reference to each of the three programmes. According to the respondents, the most important ones include:

- no information (knowledge) about the programmes, and
- complicated, time-consuming procedures.

Therefore, the gravest problem of the discussed PARP programmes is that very few firms know next to nothing about the projects.

There is an important role to be played by scientific units. This would, however, require a big marketing effort on their part. Since there is so small interest in those instruments on the part on entrepreneurs, then maybe scientific units should influence them and arouse such interest. Here we think about an offer of a scientific unit containing products^[9] and services (scientific, advisory and other) eligible for a loan or voucher, with a proposal to get involved in implementation activities.

Evaluating the analyzed innovation supporting instruments one can state the following:

- they are poorly useful to entrepreneurs who want to launch or develop innovation activities,
- the scope of their influence is next to nothing,
- they are an ineffective incentive to innovation activities,
- they are addressed to the already existing enterprises only; there are no preferences for those willing to start an innovation firm,
- they are designed rather for good, innovative entrepreneurs. Firms that are innovatively weak do not meet the high requirements of public aid, e.g. they do not buy new technologies since they do not cooperate with scientific units; that is why they cannot obtain a technological credit or technological relief. And so the circle closes,
- there is low interest in PARP programmes financed through domestic means; the interest could be higher when there are no operational programmes financed mainly from EU funds,
- incentives offered by the programmes are weak or unattractive while procedures are complicated and time-consuming.

Moreover, the analyzed set of instruments lacks the desired diversification and selective approach to supporting innovations. There are no preferences for, e.g. innovations in the high-technology sector or in underdeveloped areas/regions.

Surprisingly, there is no tradition in Poland of making use of such tool as public procurement for concrete innovative products or services. This is an instrument of the innovation policy generally and successfully applied in different countries. Such a solution is applied neither by the Public Procurement Office nor by the Industrial Development Agency that provides assistance to medium-sized and large enterprises. There are, however, attempts being made to discuss how to change the present unsatisfactory state of affairs, particularly legal ones (PARP, 2012).

The institution of public-private partnership (PPP) is another underestimated and frequently omitted tool although the *Law on public-private partnership* was passed nearly ten years ago. This must be alarming since in highly developed countries the role of PPP is on the increase which is linked with the growing significance of the public procurement market that becomes an important space of implementing innovative solutions. What is needed then is a financial aid to PPPs for innovations.

Summing up, the currently applied in Poland instruments supporting innovativeness, which have been analyzed here, are similar to those that have been applied in other EU countries. Thus, the question arises why those tools are not useful (helpful) enough to entrepreneurs/enterprises. Two reasons have been already mentioned, i.e. construction defects of those policy measures and strong competition from the operational programmes (OP) financed mainly through EU Structural Funds, chiefly from the ‘Innovative Economy’ OP.

It seems, however, that there are deeper reasons of the unsatisfactory usefulness of the measures. We have in mind here the continuing **structural imperfections** in the Polish economy. Those shortcomings, that are actually interconnected, include:

- 1) the lack of developed R&D and innovation markets, with low demand for innovations, weak competition, poor innovation diffusion processes,
- 2) improper location of the R&D potential, i.e. ‘far from the market,’
- 3) insufficient cooperation between the R&D and business sectors,
- 4) the lack of innovation culture (not limiting this to the enterprises sector only).

The weakest point, however, seems to be (5) a slim R&D effort on the part of Polish firms. Thus, the improvement of the functioning of the national system of innovation in Poland requires appropriate structural reforms to eliminate those shortcomings. This cannot be done, however, without profound changes in the national education system, with the

problem having been addressed to by many Polish authors, e.g. Bal-Wozniak (2012), Bialon, ed. (2010), Janasz and Koziol (2011), Marciniak (2010).

Conclusions

The results of the conducted research do not allow to give a positive answer to the question whether the analyzed policy measures are useful (helpful) to enterprises or entrepreneurs who plan to launch or/and conduct innovation activities.

To fully evaluate the effectiveness of the analyzed measures the further broad empirical research should be carried out to set up the palpable measurable effects of those measures operation. The point is to produce effects in the form of concrete innovations (technological) introduced by beneficiaries of public aid.

One must remember that this paper does not offer a full comprehensive picture of the firms' innovativeness supporting policy since its does not embrace instruments indirectly addressed to enterprises or solutions applied within the 'Innovative Economy' Operational Programme, or other OPs.

Policy implications

It was not the purpose of this paper to suggest new measures or concrete modifications of the currently available instruments although certain necessary alterations have been signaled. This is necessary with the starting point for further works on the measures of innovation activities should be an assumption that supporting the R&D potential (expenditures, employment, devices) in enterprises is at present the **most important challenge** for the scientific and technology system in Poland.

This must be accompanied by a decisive improvement of cooperation between the two sectors, including entities operating at the point of contact between science and business (this is the **second challenge**). This should help intensify the processes of technological transfer and diffusion of innovations. As a result, the absorption of R&D activities results by the economy will improve, translated into higher demand for new scientific and technological solutions on the part of firms.

The **third challenge** is to facilitate the organization and operation of units in the R&D sector so that the sector could offer a rich supply (offer) of modern scientific-technological solutions, better heeding the needs of innovations-oriented enterprises, and intensify its own initiative addressed to entrepreneurs. This would be, however, not possible without the simultaneous fast and considerable growth of public outlays on the research and development.

The above are *de facto* challenges addressed to the scientific and technology policy in Poland.

Foot-notes

- ^[1] They are referred to as countries in transition or transitional economies.
- ^[2] Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia and The Czech Republic. In the case of Bulgaria and Romania, it was 2007.
- ^[3] *The analysis of policy tools supporting the innovativeness in Poland*, a project within Strategic Programme on *Innovative Systems of Technological Support for Sustainable Economy Development* being run by Research Institute for Sustainable Technologies, Radom, Poland within the Operational Programme 'Innovative Economy' co-financed by the European Regional Development Fund.
- ^[4] In the country, there exist also the innovation policy instruments addressed to firms indirectly, i.e., via bridging institutions, independent research institutes or venture capitals.
- ^[5] In 2008, substantial resources began to flow into Poland from the EU Structural Funds. On the basis of this, eight Operational Programmes were established, among them the Programme 'Innovative Economy' which is a considerable source of finance for firms' innovation activities.
- ^[6] This refers to the launching of technology of manufacturing Alfatech threaded fasteners. This technology is applied in the production of cars, windows and mains.
- ^[7] Over 86% of R&D potential in Poland belong to independent scientific and research institutions, that is outside enterprises (GUS, 2012).
- ^[8] In 2010, only 13.8% of manufacturing enterprises in Poland bore outlays on R&D, with the share of expenditures on R&D in their outlays on innovative activity standing as low as 14.1% (GUS, 2012).
- ^[9] The result of R&D activities, invention and patent are examples of such products.

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