

Increasing Innovation With Support of European Union Funds, the Case of Polish Regions

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ABSTRACT

Main objective of the article is to present the way of allocation of European Union funds in Polish regions within priority axes concerning innovation in Regional Operational Programmes for Polish regions for the 2007-2013 programming period. To provide the analysis, identification of innovative projects was performed basing on titles of projects from the operational programme beneficiaries list for years 2007-2013, prepared by original method. Titles of projects were selected and grouped by a PHP script, written for this purpose.

The main findings of the analysis confirm that micro, small, and medium enterprises were the biggest beneficiaries of European Union Funds support within Regional Operational Programmes in Polish regions in the 2007-2013 programming period. The second most valuable information found in the analysis is that the biggest amount of European Union funds intended for innovation projects was spent on implementation of new or significantly improved products, processes, marketing and organisational methods.

Key Words: regional policy, European Union funds, regional innovation, data analysis

1. INTRODUCTION

European Funds (the European Regional Development Fund, the European Social Fund and the Cohesion Fund) are one of the most important instruments of the European Union's regional policy. In the 2007-2013 programming period they concerned three main objectives: the Convergence objective, the Regional competitiveness and employment objective, and the European territorial cooperation objective. Improvement and promotion of regional innovation was among other objectives included in the measures of the first two objectives, as well as priorities of individual Funds. In the 2007-2013 programming period, the first priority theme of Convergence and Regional competitiveness and employment objective was *Research and technological development (R&TD), innovation and entrepreneurship*. Regional Operational Programmes are basis of the realisation of the Convergence and Regional competitiveness and employment objectives. Each region prepares a programme basing on individual needs, resources and specific situations, but taking into consideration the Community strategic guidelines on cohesion. Priorities of the Regional Operational Programme should be linked with Community priorities.

The main purpose of the article is to present the allocation of European Funds in Polish regions according to innovation priority and check if Polish regions have improved their performance in main innovation indicators in years 2007-2013. This was achieved by meeting the following operational purposes:

- presentation of priority axes concerning innovation from each of the 16 Regional Operational Programmes,
- analysis of project titles realised within these priorities, and grouping them by project beneficiaries and project types in each of the sixteen Polish voivodships,
- comparison of Polish regions according to the amount of European Funds spent on innovation projects and number of projects,

- comparison of Polish regions according to the level of main innovation indicators in the years 2007-2013.

The research hypotheses were:

- The biggest amount of European Union Funds intended for innovation projects were spent on implementation of new or significantly improved products, processes, marketing and organisational methods.
- SME were the biggest beneficiaries of European Union Funds support within regional operational programmes in Polish regions in the 2007-2013 programming period.
- Polish regions did improve their performance in main innovation indicators in years 2007-2013.

The identification of innovative projects was performed basing on titles of projects from the operational programme beneficiaries list for years 2007-2013.

2. LITERATURE REVIEW

From the beginning of the European Community regions were very important in its policy. In the preamble to the Treaty establishing the European Economic Community [1957] it was clearly underlined that the signatories 'are anxious to strengthen the unity of their economies and to ensure their harmonious development by reducing the differences existing between the various regions and by mitigating the backwardness of the less favoured'. Aid for the regions according to the text of the Treaty [Article 92] was concerned for the regions where the standard of living is abnormally low or where under-employment is a serious problem. In the European Single Act [1986] the competence for Community regional policy was assumed and the main aim was to reduce disparities between various regions and the backwardness of the least-favoured regions. The European Social Fund was created in 1957, The European Agricultural Guarantee Fund was created in 1964, and the European Regional Development Fund was established in 1975, as instruments of financial support for the realisation of cohesion policy.

Council Regulation (EC) No 1083/2006 specifies main objectives of the EU structural policy in line with the Lisbon strategy [art. 3]:

1. the Convergence objective, which shall be aimed at speeding up the convergence of the least-developed Member States and regions by improving conditions for growth and employment through the increasing and improvement of the quality of investment in physical and human capital, the development of innovation and of the knowledge society, adaptability to economic and social changes, the protection and improvement of the environment, and administrative efficiency. This objective shall constitute the priority of the Funds;
2. the Regional competitiveness and employment objective, which shall, outside the least-developed regions, be aimed at strengthening the regions' competitiveness and attractiveness as well as employment by anticipating economic and social changes, including those linked to the opening of trade, through increasing and improvement of the quality of investment in human capital, innovation and promotion of the knowledge society, entrepreneurship, protection and improvement of the environment, and improvement of accessibility, adaptability of workers and businesses as well as development of inclusive job markets;
3. the European territorial cooperation objective, which shall be aimed at strengthening cross-border cooperation through joint local and regional initiatives, strengthening transnational cooperation by means of actions conducive to integrated territorial development linked to the Community priorities, and strengthening interregional cooperation and exchange of experience at the appropriate territorial level.

Council Regulation (EC) No 1083/2006 specifies the following Funds as ones of financial instruments of EU cohesion policy: European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund. Funds for support of Convergence and Regional competitiveness and employment objective should be spend for realisation of the following priority themes [ANNEX IV]:

1. Research and technological development (R&TD), innovation and entrepreneurship

2. Information society
3. Transport
4. Energy
5. Environmental protection and risk prevention
6. Increasing the adaptability of workers and firms, enterprises and entrepreneurs
7. Improving access to employment and sustainability
8. Improving the social inclusion of less-favoured persons
9. Improving human capital

Research conducted for data about European Union Regional Support in the 1980s and 1990s has shown the positive impact of European Structural Funds on regional growth [Rodríguez-Pose, Fratesi, 2004; Capallen, Castellacci, Fagerberg, Vaspagen. 2003] There is evidence suggesting that EU support is more efficient in 'advanced' regions [Capallen, Castellacci, Fagerberg, Vaspagen. 2003]. Rodríguez-Pose and Fratesi [2004] have shown that investment in infrastructure and business support had negligible impact on regional convergence, more significant were investment in education and human capital. Oughton, Landabaso and Morgan [2002] suggested that innovation policy should be concentrated on investment in collective learning and institutional innovation rather than on basic infrastructure provision. According to their analysis government expenditure on R&D, business expenditure on R&D and spending by the education sector on R&D are correlated, and complementary – increase of R&D spending by the business and educational sectors increase a region's capacity to absorb public funding of R&D, which is necessary to increase the expenditure/ investment capacity of the business sector.

3. MATERIAL AND METHODS

The data was collected for sixteen Polish NUTS-2 regions, for the 2007-2013 programming period. Firstly data about priority axes concerning innovation were collected from sixteen Regional Operational Programmes for 2007-2013:

1. Regional Operational Programme for the Lower Silesian Voivodeship
2. Regional Operational Programme for Kujawsko-Pomorskie Voivodeship
3. Regional Operational Programme of Lubelskie Voivodeship
4. Regional Operational Programme of Lubuskie Voivodeship
5. Regional Operational Programme for the Lodzkie Voivodeship
6. Małopolska Regional Operational Programme
7. Regional Operational Programme for the Mazowieckie voivodeship
8. Regional Operational Programme of the Opolskie Voivodeship
9. Regional Operational Programme of Podkarpackie Voivodeship
10. Regional Operational Programme for the Podlaskie Voivodeship
11. Pomorskie Regional Operational Programme
12. Regional Operational Programme for the Świętokrzyskie voivodeship
13. Regional Operational Programme of Śląskie voivodeship
14. Regional Operational Programme Warmia and Mazury
15. Wielkopolska Regional Operational Programme
16. Regional Operational Programme for the Zachodniopomorskie voivodeship

To identify ways of allocation of European Funds in Polish regions according to innovation priority data from an operational programme beneficiaries list for years 2007-2013 were analysed¹ (as of 31 December 2014). The list contains information about among others: a name of a beneficiary, a title of a project. a program name. a total value of the project. an amount of public funding, an amount of EU funding. a legal form of a beneficiary. an implementation area (city or rural area). a date of signing of the contract, a completion date. The projects, which were realised within priority axes concerning innovation (selected in the previous stage), were separated from the list. Data for each region was collected singly.

¹ Operational programme beneficiaries list for years 2007-2013 is available on website:
http://www.funduszeuropejskie.2007-2013.gov.pl/NaborWnioskow/listabeneficjentow/Strony/Lista_beneficjentow_FE_311214.aspx

In the first step, a list of words defining innovative projects was prepared (table 1). Based on the OSLO Manual [2005] definition of an innovation was recognised the implementation of new or significantly improved products (good or services), or processes, new marketing, or organisational methods. Additionally, projects concerning a R&D activity, creation of supporting organizations (Technology Parks, Centres of Technology Transfer, Business Incubators), attendance at fairs (understanding as an opportunity to exchange of tacit knowledge), were accounted as ones supporting innovation.

Table 1. List of words defining innovative projects and projects supporting innovation used in the analysis

Group of words	Words	English translation
Attendance at fairs	targ	fair
	wystaw	exhibition
	udział	attendance
Supporting organizations	park	park
	inkubator	incubator
	transfer	transfer
	klast	cluster
	klust	cluster
R&D activity	B+R	R&D
	badawcz	research
	laboratorium	laboratory
	bada	research
Innovative	now*	new
	pierwsz	first
	unikatow	unique
	unikal	unique
	niedostępny	inaccessible
	inno	innovative
	udoskonal	improved
Product (good or service), process, marketing, organisational method	techno	technology
	proces	process
	produkcji	production
	produkt	product
	patent	patent
	wynalaz	invention
	preparat	preparation
	wyrob	product
	usług	service
	organizacyjn	organisational
	marketing	marketing
	metod	method
	rozwiąz	solution
	fabryk	factory
	linii	production line
	robot	robot
	oprogramowa	software
	system	system
	Implementation	wdrożeni
wykorzystani		utilization
zastosowani		application
wprowadz		introduction
użyci		use
produkcja		manufacturing
świadczeni		services
poszerzeni		
uruchomieni		start-up
oparci		based on
tworzeni		formation
kreowani		creation

Investments or purchase	inwestycj	investment
	zakup	purchase
Fixed assets	środk	assets
	urządź	equipment
	maszyn	machines
	sprzęt	equipment
	lini	production line
	samoch	car
	wyposażeni	equipment
	aparatur	apparatus
	oprogramowa	software

Source: own elaboration

*taking into account the rules of Polish grammar, the words were not used in their full versions, because of inflection of nouns and adjectives words could have different number, case or gender, e.g. new = nowy, nowa (gender), nowy, nowego (cases), nowy, nowe (number)

In the second step groups of project categories were prepared (table 2) with the use of the list of selected words (table 1).

Table 2. List of groups of project categories used in the analysis

Group	Description	Used groups of words	Example of a project title
Fairs	Attendance at fairs and exhibitions	Attendance at fairs	Udział spółki Color Press w targach ProWein
Organisations	Creation and financing of supporting organizations e.g. Technology Parks, Centres of Technology Transfer, Business Incubators	Supporting organizations	Inkubator Przedsiębiorczości w Legnicy
R&D	R&D public and private activity, also creation of new research centres, laboratories or research departments.	R&D activity	Rozwój działu B+R w firmie KLINGENBURG" Sp. z o.o."
Innovation and investment	Implementation of innovative product/ process/ marketing method/ organisational method connected with investments in or purchase of assets or specialized services.	Innovative + Product (good or service), process, marketing, organisational method + Implementation + Investments or purchase	Zakup myjni tunelowej celem wdrożenia innowacyjnej technologii mycia metali oraz innowacyjnej usługi malowania
Innovation	Implementation of innovative product/ process/ marketing method/ organisational method.	Innovative + Product (good or service), process, marketing, organisational method + Implementation	Rozwój potencjału innowacyjnego i przedsiębiorczości TEMAR", poprzez wdrożenie unikalnej technologii oraz wdrożenie nowego produktu - pompy do mediów o lepkości 60÷2000 CPs."
Investment in innovative assets	Investments in or purchase of innovative assets	Innovative + Investments or purchase + Fixed assets	Zakup innowacyjnej linii do produkcji szczotek wieńcowych.
Innovative product	Innovative product/ process without a word referring to implementation in the project title	Innovative + Product (good or service), process, marketing, organisational method	Interferometr laserowy HPI-1GHz – nowy przyrząd i technologia pomiarowa jako realizacja RSI WD

Source: own elaboration

In the third step titles of projects were grouped automatically according to a prepared PHP script (annex 1) in the following order:

1. Fairs
2. Organisations
3. R&D
4. Innovation and investment
5. Innovation
6. Investment in innovative assets
7. Innovative product

A project which was assigned to the first group was automatically excluded from the next procedure. The group marked 'Other' was not taken into account in the analysis. The script fetches, along with project titles, the following information needed for analysis: evidence number of an agreement, total value of a project, amount of EU funding, legal form of the beneficiary, implementation area (urban or rural area), and category of funds assistance. Next, the grouped projects were manually, randomly checked to exclude wrong matching (e.g. the word 'park' could be use also in the sense of open area with grass and trees or amusement park, or the word 'now' could be a part of surname, e.g. 'janowiak', 'karnowski'). If the title of a project had not indicated directly its connection with innovation, 'R&D activity' projects with category of funds assistance no 02 (R&D infrastructure) were added manually, and 'Innovation' projects with category no 07 were added (Investment in firms directly linked to research and innovation), even though they were assigned by the script to the group 'Other'. The 'Other' group was checked manually on the occurrence of word 'new' or 'innovative' to identify projects which use specialised names of assets in titles, e.g. "zakup innowacyjnego tunelu aerodynamicznego" (eng. purchase of innovative wind tunnel).

In the last step groups of projects were analysed in terms of amount of granted EU funding, number of projects in each group, type of beneficiaries and implementation area. Beneficiaries include micro, small, medium and big enterprises, and other: associations, universities, local governments, public healthcare units, employers' organisations. Implementation area was divided for: urban, rural and mountain areas.

The method adopted here has some limitations. Not all innovative projects funded within ROP are titled in a way which would allow to recognise them as innovative. Likewise, it is possible, that not all combinations of words were taken into consideration. The set of words and combinations will be expanded in order to improve the procedure. The operation of the script was hindered by misspellings, as well. Some of the innovative projects were realised in other priority axes (e.g. Development and modernisation of education infrastructure, Environmental protection, prevention of threats, and energy) or in other operational programmes (e.g. Operational Programme Innovative Economy). This research was focused mostly on innovations implemented in enterprises, and on projects supporting innovation in enterprises in a specific region.

To compare Polish regions according to levels of main innovation indicators for the years 2007-2013 data (according to data availability) from GUS (Central Statistical Office of Poland) and EUROSTAT on NUTS-2 level was used (table 3). It made it possible to compare the starting level of innovativeness in Polish regions with the end level, and observe if it changed.

Table 3. List of innovation indicators used in the analysis

Indicator	Source
Intramural R&D expenditure (PLN per inhabitant)	GUS
Employment in R&D sector (person per inhabitant)	GUS
Units engaged in research activity (number per inhabitant)	GUS
Percentage of enterprises engaged in innovation activity in services	GUS
Percentage of enterprises engaged in innovation activity in industry	GUS
Employment in technology and knowledge-intensive sectors ((percentage of total employment))	Eurostat
The share of sales of new / improved significantly products in industrial enterprises in sales value of total products	GUS

Source: own elaboration

4. RESULTS AND DISCUSSION

4.1. Support for innovation in Regional Operational Programmes of Polish regions

'Research and technological development (R&TD), innovation and entrepreneurship' was one of the priority themes realised with funds supporting the Convergence and Regional competitiveness and employment objectives. In Regional Operational Programmes support for innovation for Polish regions was included mostly in priority axes concerning growth of competitiveness of enterprises and development of innovation potential. Mostly, projects within these priorities should be concentrated on implementation of new, innovative products and processes by enterprises, and development of organisations supporting innovation activity in enterprises, as well R&D activity should be financed (table 4). In all Regional Operational Programmes it was stressed that proposed forms of support are offered mainly to Small and Medium-Sized Enterprises. The support for large companies and maximum amount of support for large enterprises within this priorities shall not exceed 10% of the total priority allocation.

Table 4. Priority axes concerning innovation in Regional Operational Programmes for Polish regions for 2007-2013 programming period

Region (CCI number)	Priority axis	Support for innovation in a priority description	Total EU funding granted for the priority axis (euro)	EU funding granted for the priority axis as a percentage of total EU investment in ROP
Dolnośląskie (Lower Silesia) (2007PL161PO005)	Priority 1: Growth of competitiveness of Dolnoslaskie enterprises ("Enterprises and Innovation")	Support for investment in product and process innovation. Support for R&D activity. Establishment and development of infrastructure supporting innovation.	297 842 736	24%
Kujawsko-Pomorskie (2007PL161PO006)	Priority 4: Development of the infrastructure of information society	Support for implementation innovative ICT solutions in services.	57 060 229	6%
	Priority 5: Increase of competitiveness of companies	Support for investment, and implementation of innovative technologies. Support for R&DT activity. Support for development of organisations supporting innovation.	252 016 012	26%
Lubelskie (2007PL161PO007)	Priority 1: Entrepreneurship and innovation	Support for increase of the utilization of modern technologies. Improving the intensity of cooperation between science and business sectors.	242 729 455	21%
	Priority 2: Economic Infrastructure	Support for R&D infrastructure, and development of institutions that facilitate the transfer of knowledge.	75 130 546	6%
Lubuskie (2007PL161PO009)	Priority 2: Stimulating investment growth in enterprises and strengthening innovation	Support for development and implementation of innovation in enterprises. Support for R&D infrastructure and institutions that facilitate	99 907 448	23%

	potential	knowledge transfer.		
Łódzkie (2007PL161PO009)	Priority 3: Economy, innovativeness, entrepreneurship	Support for enterprises in development and implementation of innovative solutions. Support for R&D activity and improving the intensity of cooperation between R&D and business sectors. Creation or specialisation of units responsible for transfer of technology.	271 722 846	27%
	Priority 4: Information society	Support for implementation innovative ICT solutions in services.	120 765 709	12%
Małopolskie (Lesser Poland) (2007PL161PO010)	Priority 1: Conditions for the development of the knowledge society	Support for research as one of sources of competitive advantage	162 841 230	13%
	Priority 2: Regional opportunity economy	Support for enterprises in develop and deploy innovative solutions. Development of infrastructure supporting innovation.	160 708 698	12%
Mazowieckie (Mazovia) (2007PL161PO011)	Priority 1: Creating conditions for development of innovation potential and entrepreneurship in Mazovia	Support for improving a cooperation between R&D and business sectors. Support for development of R&D units. Development of organisations supporting innovation. Support for investment in innovative assets and implementation of innovative products and processes.	430 401 731	24%
	Priority 2: Accelerating the e-development of Mazovia	Support for implementation innovative ICT solutions in production and services.	205 127 627	11%
Opolskie (2007PL161PO012)	Priority 1: Strengthening economic attractiveness of the region	Support for investments in new technology and implementation of innovative solutions. Support for R&D sector and organisations supporting innovation.	158 043 581	37%
Podkarpackie (2007PL161PO013)	Priority 1: Competitive and Innovative Economy	Support for investments in new technology and implementation of innovative solutions. Development of organisations and infrastructure supporting innovation. Support for improving cooperation between R&D and business sectors and B2B cooperation.	288 640 033	25%

Podlaskie (2007PL161PO014)	Priority 1: Increase of innovation and support of entrepreneurship in the region	Support for development of organisations and infrastructure supporting innovation. Support for implementation of innovation in enterprises. Support for research activity and implementation of research results.	139 965 734	22%
Pomorskie (Pomerania) (2007PL161PO015)	Priority 1: Small and Medium Enterprises (SME) development and innovation	Support for developing innovation in enterprises. Support for research activity. Support for improving cooperation between R&D and business sectors, and B2B cooperation. Support for development organisations supporting innovation.	185 863 810	21%
Śląskie (Silesia) (2007PL161PO019)	Priority 1: Technical research and development (R&D), innovation and entrepreneurship	Support for investments in innovation in enterprises. Support for development of cooperation between R&D and business sectors	296 238 553	17%
Świętokrzyskie (2007PL161PO018)	Priority 1: Business Development	Support for investments in new assets and implementation of innovative technology. Development of organisations supporting innovation.	130 645 308	18%
	Priority 2: Supporting Innovation, Developing the Information Society and Increasing the Investment Potential of the Region	Development of R&D units. Improving the intensity of cooperation between R&D and business sectors.	108 871 090	15%
Warmińsko-Mazurskie (2007PL161PO012)	Priority 1: Entrepreneurship	Support for innovation implementation, and investments in R&D activity in enterprises. Support for increasing cooperation between R&D and business sectors. Development of organisations supporting innovation.	207 308 408	20%
Wielkopolskie (Grater Poland) (2007PL161PO017)	Priority 1: Competitiveness of enterprises	Support for investment in innovation for enterprises. Support for R&D activity and improving of cooperation between R&D and business sectors. Establishment and development of organisations supporting	328 887 000	26%

		innovation.		
Zachodniopomorskie (2007PL161PO016)	Priority 1: Economy – Innovation – Technology	Support for implementation of product and process innovation in enterprises. Support for development of organisations supporting innovation. Support for development of R&D infrastructure.	232 753 899	28%

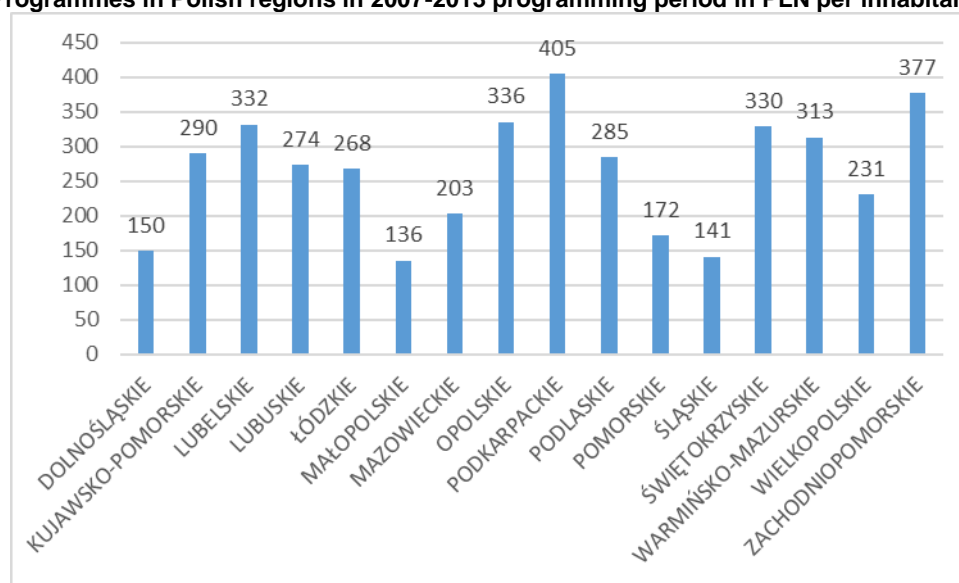
Source: own elaboration based on 16 Regional Operational Programmes for Polish regions

Total EU funding granted for the priority axes within which innovative projects were supported constituted, on average, 20% of total EU investment in Regional Operational Programmes. The analysis below presents how specific European Funds intended on financing innovation projects were allocated in each of the Polish regions.

4.2. Innovative projects supported with European Union funds within Regional Operational Programmes in Polish regions

Summary Polish regions received 9 154 828 432 PLN of European Union funds for the realisation of projects concerning innovation. The highest amount of financing per inhabitant was gained by the Podkarpackie and the Zachodniopomorskie regions, respectively 405 PLN and 377 PLN per inhabitant. The Małopolskie and the Śląskie received the lowest amount of financing – 136 PLN and 141 PLN per inhabitant (figure 1).

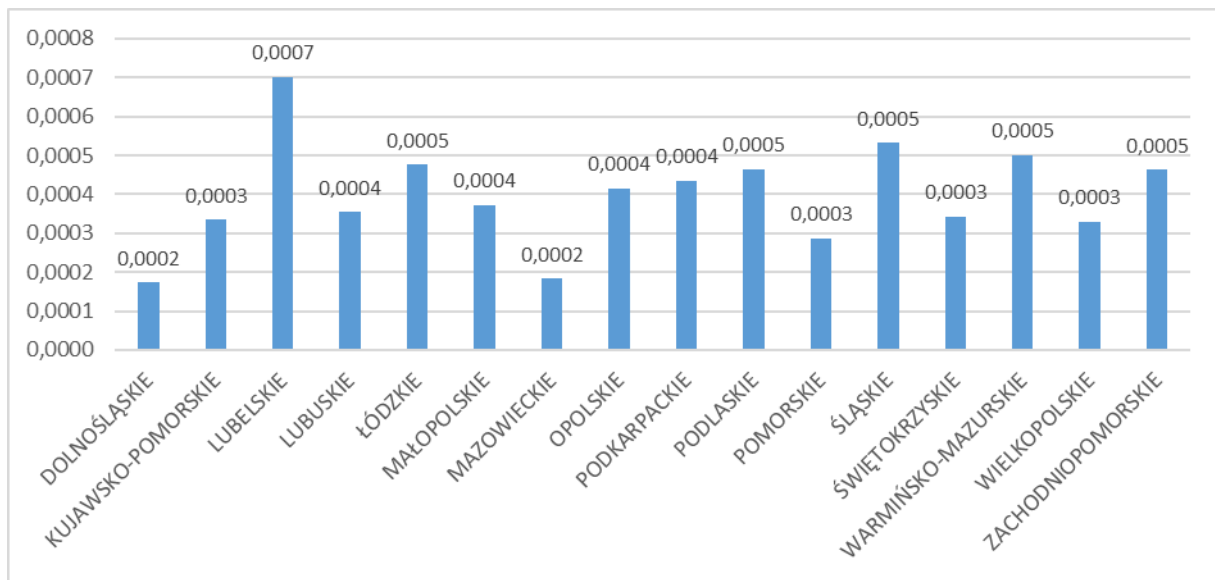
Figure 1. Amount of European Union funds intended for realisation of innovative projects within Regional Operational Programmes in Polish regions in 2007-2013 programming period in PLN per inhabitant



Source: own calculation

According to number of realised projects in the Lubelskie region the highest number of projects per inhabitant was realized. The lowest number of projects was realized in the Dolnośląskie and Mazowieckie regions. Summary in Polish regions 14 594 projects concerning innovation were realized with support from European Union fund (figure 2).

Figure 2. Number of innovative projects realised within Regional Operational Programmes in Polish regions in 2007-2013 programming period in number per inhabitant



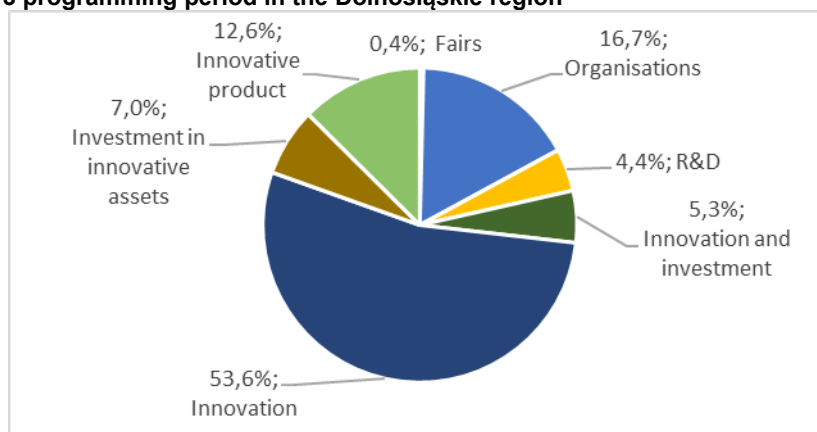
Source: own calculation

Next, an analysis of exact allocation of European Union funds within realisation of innovative projects for all Polish regions is conducted.

Dolnośląskie region

Within Priority 1 in the Dolnośląskie region 436 634 399 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). More than 50% of that funding was intended for financing implementation of a new or significantly improved product/process/marketing method/organisational method. 5.3% of funds intended for innovation was connected with investment in fixed assets, and 7% with purchase of new or innovative fixed assets. For development of Incubators, technology parks and the Centre of Technology Transfer 16.7% of funding was earmarked, and only 4.4% for support of R&D activity (figure 3).

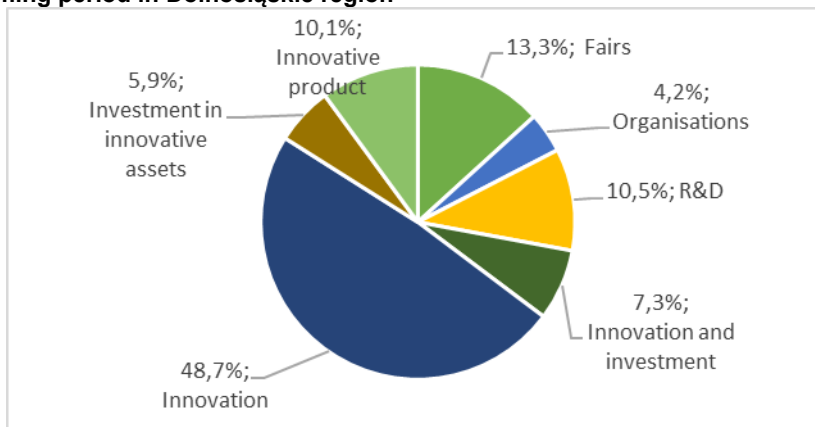
Figure 03. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Dolnośląskie region



Source: own calculation

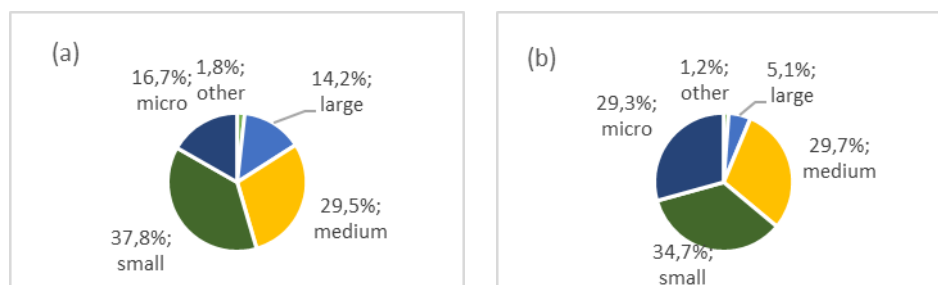
From selected innovative projects in the Dolnośląskie region almost 50% of them concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 13.3% of projects were devoted to attendance at fairs and exhibitions. 10.5% of projects were connected with support for R&D activity, and 4.3% with development of incubators, technology parks and the Centre of Technology Transfer. 7.3 % of projects were related to innovation connected with investment in fixed assets, and 5.9% with purchase of new or innovative fixed assets (figure 4).

Figure 4. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in Dolnośląskie region



Source: own calculation

Figure 5. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in Dolnośląskie region



Source: own calculation

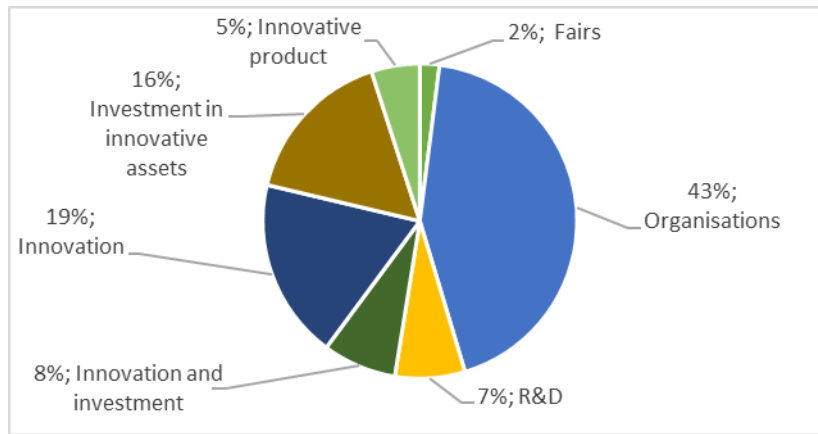
The biggest beneficiary of European Union support for innovative projects in the Dolnośląskie region were small and medium enterprises. Small enterprises received 37.8% of the funds intended on innovative projects, and medium enterprises received 29.5%. For large and micro firms respectively 14.2% and 16.7% funding was earmarked (figure 5a). Micro, small and medium enterprises prepared 94.7% of the innovative projects in total, on average each of them prepared 30% of projects. Large firms prepared 5.1% of projects (figure 5b).

In the Dolnośląskie region, 71% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 28% for projects implemented in the rural area. More than 70% of innovative projects in the Dolnośląskie region were realised in the urban area.

Kujawsko-Pomorskie region

Within Priorities 4 and 5 in the Kujawsko-Pomorskie region 606 490 708 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). More than 40% of the funding was intended for development of incubators, technology and industrial parks and the Interdisciplinary Centre for Modern Technologies Nicolaus Copernicus University in Torun. For the implementation of new or significantly improved product/process/marketing method/organisational method 19% of funding was earmarked. 8% of the funds was intended for innovation connected with investment in fixed assets, and 16% for purchase of new or innovative fixed assets. For support of R&D activity, 7% of funding was intended (figure 6).

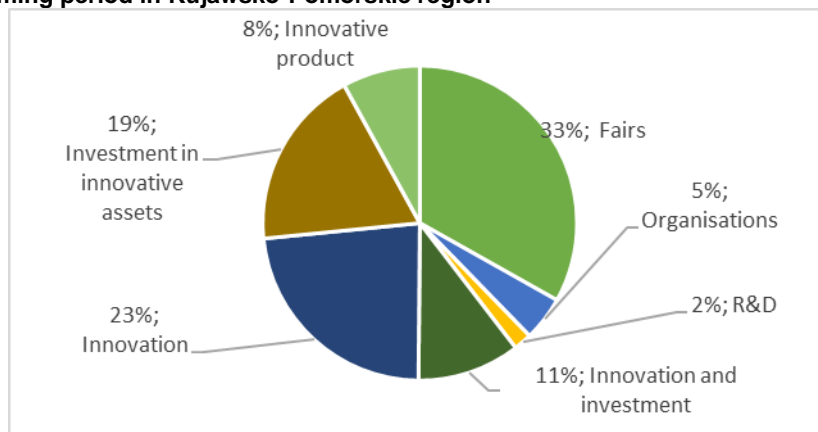
Figure 6. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in Kujawsko-Pomorskie region



Source: own calculation

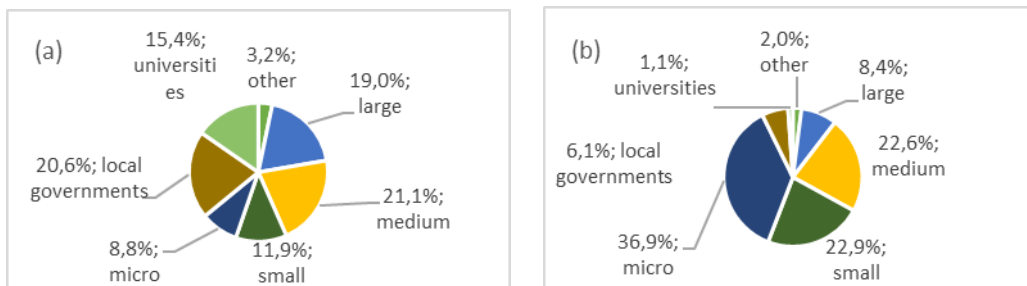
Among the selected innovative projects in the Kujawsko-Pomorskie region 35% concerned attendance at fairs, exhibitions and economic missions. 23% of the projects were concerned with implementation of a new or significantly improved product/ process/ marketing method/ organisational method. With support of R&D activity, 2% of the projects were connected, and 5% with development of incubators, technology and industrial parks and the Interdisciplinary Centre for Modern Technologies Nicolaus Copernicus University in Torun. 11% of the projects were related to innovation connected with investment in fixed assets, and 19% with purchase of new or innovative fixed assets (figure 7).

Figure 7. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in Kujawsko-Pomorskie region



Source: own calculation

Figure 8. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in Kujawsko-Pomorskie region



Source: own calculation

The Kujawsko-Pomorskie region there had no significantly “biggest” beneficiary of European Union support for innovative projects. Local governments and universities were

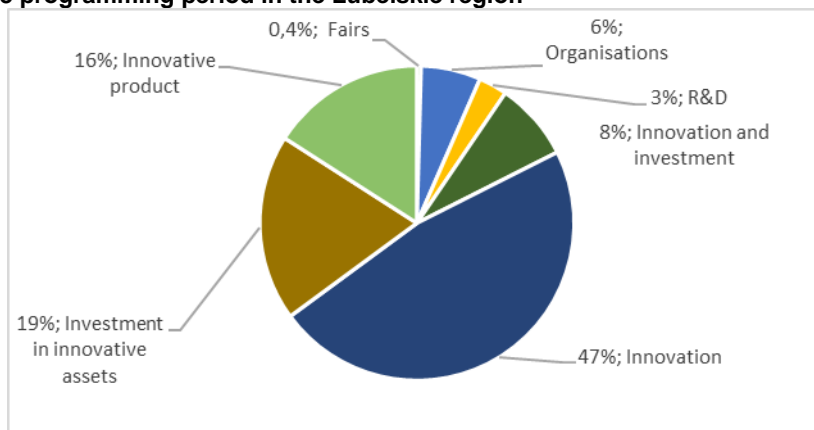
earmarked respectively 20.6% and 15.4% of the funding. Large and medium enterprises received a similar amount of funds intended on innovative projects. For micro firms 8.8% of funding was earmarked (figure 8a). Micro, small and medium enterprises prepared 82.4% of the innovative projects in total. Large firms prepared 8.4% of the projects, and local governments prepared 6.1% of projects (figure 8b).

In the Kujawsko-Pomorskie region, 70% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 30% for projects implemented in the rural area. Almost 70% of innovative projects in Kujawsko-Pomorskie region were realised in the urban area.

Lubelskie region

Within Priority 1 and 2 in the Lubelskie region 715 763 956 PLN of the support from European Union funds was received by projects concerning innovations (according to selected project titles). Almost 50% of the funding was intended for financing implementation of a new or significantly improved product/process/marketing method/organisational method. 6% of funding was earmarked for development of incubators, clusters, and technology parks, and 3% for support of R&D activity. 8% of funds intended for innovation was connected with investment in fixed assets, and 19% with purchase of new or innovative fixed assets (figure 9).

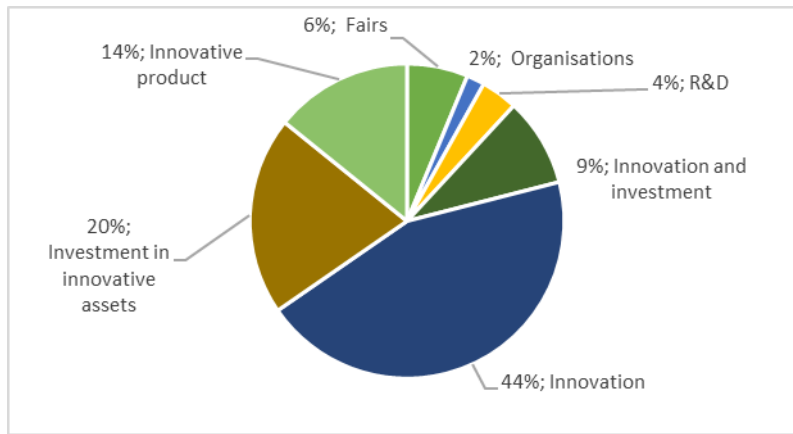
Figure 9. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Lubelskie region



Source: own calculation

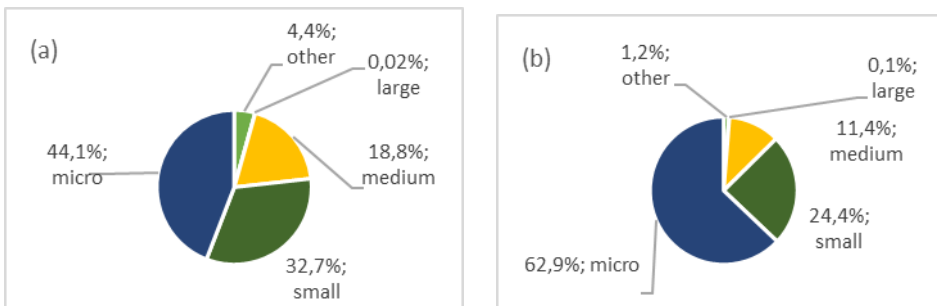
Among the selected innovative projects in the Lubelskie region almost 45% of them concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 6% of the projects were devoted to attendance at fairs and exhibitions. 4% of projects were connected with support for R&D activity, and 2% with development of organisations supported innovation. 20% of projects were related with purchase of new or innovative fixed assets, and 9% with innovation connected with investment in fixed assets (figure 10).

Figure 10. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Lubelskie region



Source: own calculation

Figure 11. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Lubelskie region



Source: own calculation

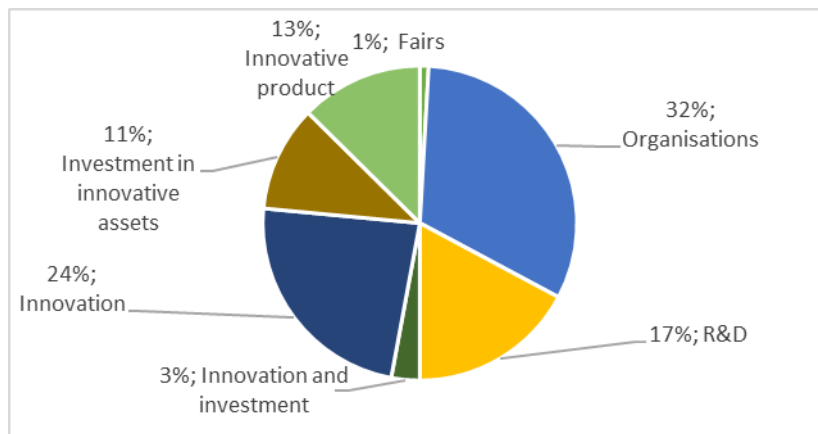
The biggest beneficiary of European Union support for innovative projects in the Lubelskie region were micro enterprises, which received 44.1% of the funds intended on innovative projects. 32.2% of funds received small enterprises. For medium firms respectively 18.8% of funding was earmarked (figure 11a). Micro, small and medium enterprises prepared 98.7% of the innovative projects in total. The highest number of projects were prepared by micro firms (62.9%) (figure 11b).

In the Lubelskie region, 68% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 32% for projects implemented in the rural area. Almost 80% of innovative projects in the Lubelskie region were realised in the urban area.

Lubuskie region

Within Priority 2 in the Lubuskie region 278 296 314 PLN of support from European Union funds was received by projects concerning innovations (according to selected project titles). More than 30% of the funding was intended for development of technology and industrial parks and the I Park of Science and Technology - University of Zielona Gora. 17% of the funds were intended for support of R&D activity. For implementation of a new or significantly improved product/ process/ marketing method/ organisational method 24% of funding was earmarked. 3% of the funds was intended for innovation connected with investment in fixed assets, and 11% for purchase of new or innovative fixed assets (figure 12).

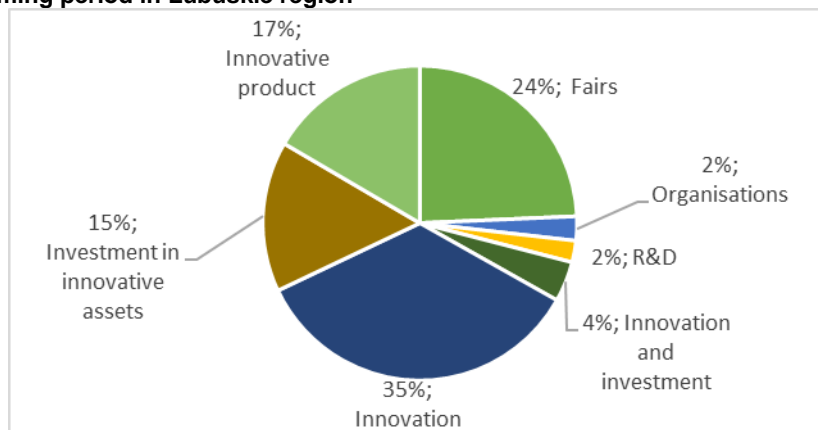
Figure 12. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in Lubuskie region



Source: own calculation

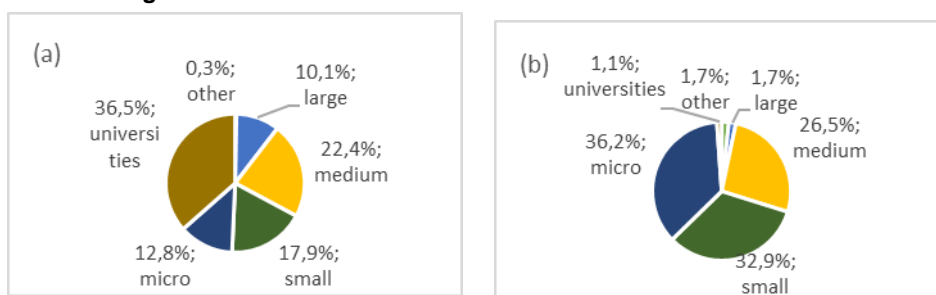
Among the selected innovative projects in Lubuskie region 35% of them concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 24% of the projects was devoted to attendance at fairs and exhibitions. 2% of the projects were concerned with support for R&D activity, and 2% with development of technology and industrial parks and the I Park of Science and Technology - University of Zielona Gora. 4% of the projects were related with innovation connected with investment in fixed assets, and 15% with purchase of new or innovative fixed assets. 17% of the projects were connected with innovative products, presumably authors of these projects intended to implement the new products mentioned in the title (figure 13).

Figure 13. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in Lubuskie region



Source: own calculation

Figure 14 Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in Lubuskie region



Source: own calculation

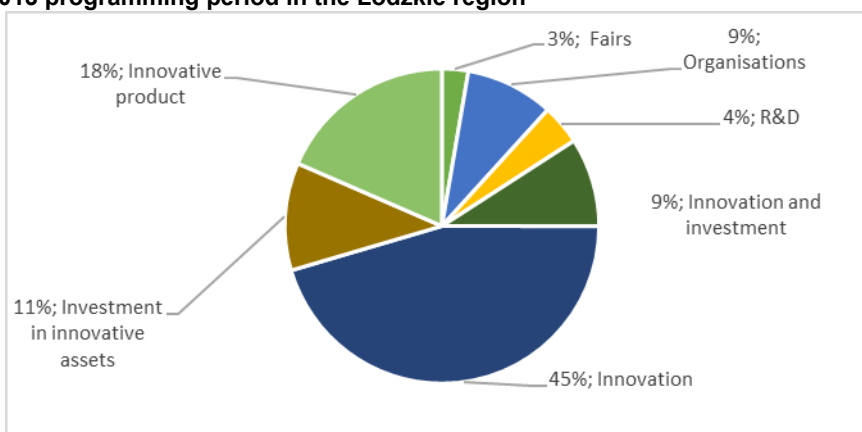
The biggest beneficiary of European Union support for innovative projects in the Lubuskie region were universities, who received 36.5% of funds intended on innovative projects. Medium enterprises received 22.4%. For micro, small and large firms was earmarked respectively 12.8%, 17.9%, and 10.1% of the funding (figure 14a). Micro, small and medium enterprises prepared 95.6% of the innovative projects in total, by an average each of them prepared 30% of projects. Universities prepared 1.1% of projects (figure 14b).

In the Lubuskie region, 58% of the European Union support for innovative projects was earmarked for projects implemented in the rural area, and 42% for projects implemented in the urban area. More than 70% of the innovative projects in the Lubuskie region were realised in the urban area.

Łódzkie region

Within Priority 3 and 4 in the Łódzkie region 674 370 634 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). More than 40% of the funding was intended for financing implementation of a new or significantly improved product/process/marketing method/organisational method. 9% of funds intended for innovation was connected with investment in fixed assets, and 11% with purchase of new or innovative fixed assets. For development of Incubators, technology parks and clusters 9% of funding was earmarked, and only 4% for support of R&D activity (figure 15).

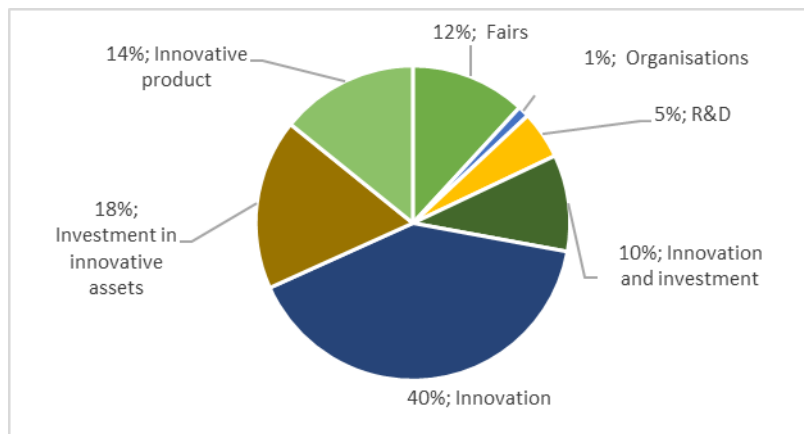
Figure 15. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Łódzkie region



Source: own calculation

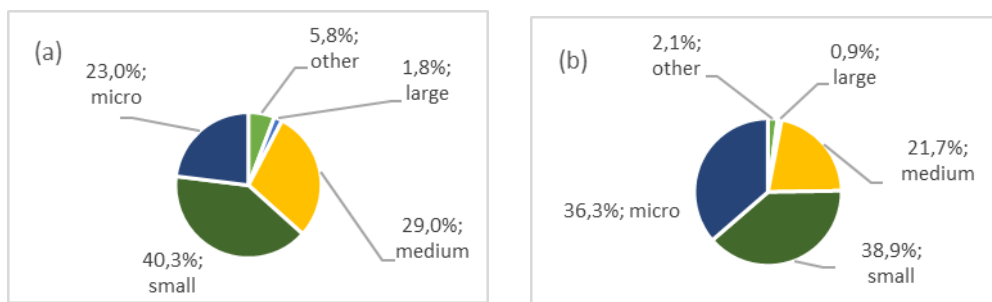
Among the selected innovative projects in the Łódzkie region 40% of them concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 12% of the projects were devoted to attendance at fairs and exhibitions. 5% of projects were connected with support for R&D activity, and 1% with development of incubators, technology parks and clusters. 18 % of the projects were related with purchase of new or innovative fixed assets, and 10% was related to innovation connected with investment in fixed assets. (figure 16).

Figure 16. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Łódzkie region



Source: own calculation

Figure 17. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Łódzkie region



Source: own calculation

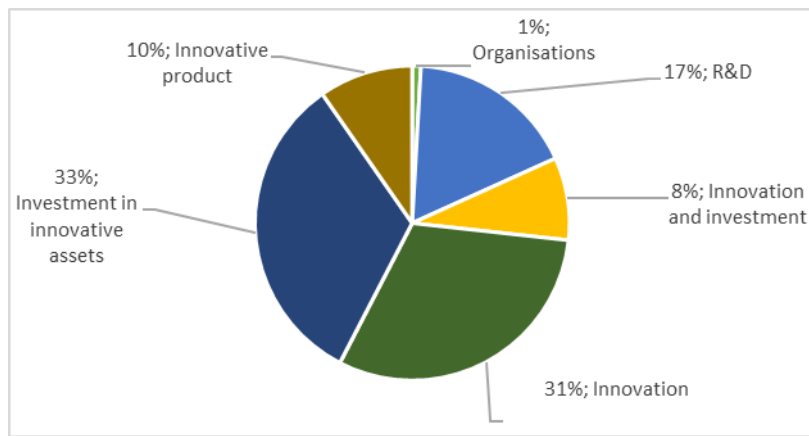
The biggest beneficiary of European Union support for innovative projects in the Łódzkie region were small and medium enterprises. Small enterprises received 40.3% of the funds intended on innovative projects, and medium enterprises received 29%. For micro and large firms respectively 23.8% and 1.8% funding was earmarked (figure 17a). Micro, small and medium enterprises prepared 96.9% of the innovative projects in total. The highest number of project was prepared by micro (36.3%) and small firms (38.9%) (figure 17b).

In the Łódzkie region, 78% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 22% for projects implemented in the rural area. More than 80% of innovative projects in the Łódzkie region were realised in the urban area.

Małopolskie region

Within Priority 1 and 2 in the Małopolskie region 456 303 514 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). More than 30% of the funding was intended for purchase of new or innovative fixed assets. For implementation of a new or significantly improved product/process/marketing method/organisational method 31% of funding was earmarked. 8% of funds intended for innovation was connected with investment in fixed assets. For a support of R&D activity 17% of funds was earmarked (figure 18). In the Małopolskie region, there were no projects connected with attendance on fairs and exhibitions.

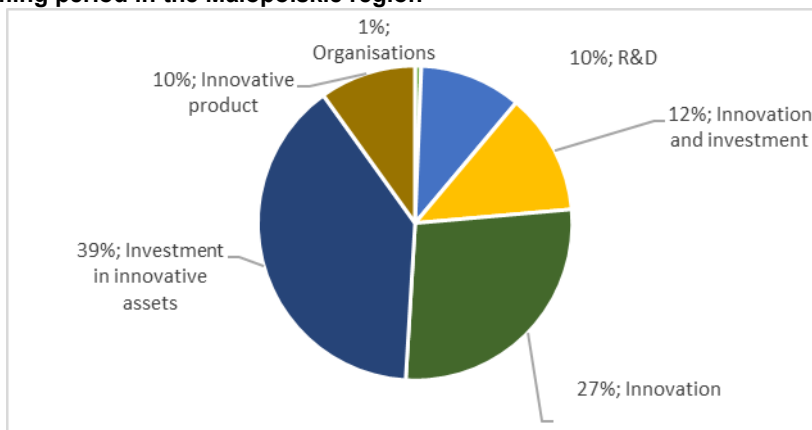
Figure 18. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Małopolskie region



Source: own calculation

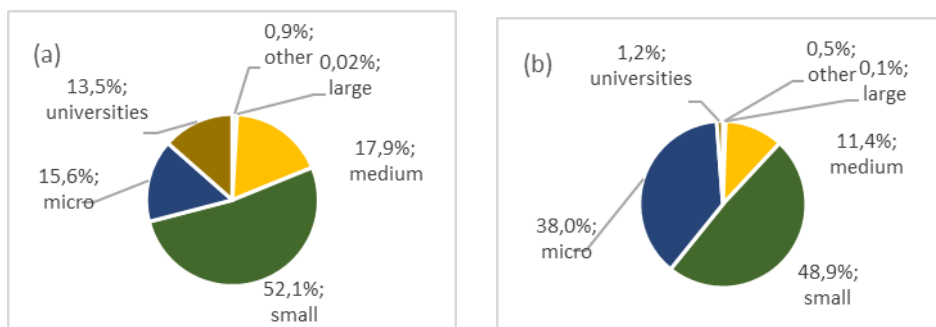
From selected innovative projects in the Małopolskie region almost 40% of them concerned investments in new or innovative fixed assets. Implementation of a new or significantly improved product/ process/ marketing method/ organisational method were devoted almost 30% of projects. 10% of projects were connected with support for R&D activity. 12% of projects were related to innovation connected with investment in fixed assets (figure 19).

Figure 19. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Małopolskie region



Source: own calculation

Figure 20. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Małopolskie region



Source: own calculation

The biggest beneficiary of European Union support for innovative projects in the Małopolskie region were small enterprises, which received more than 50% of funds intended on

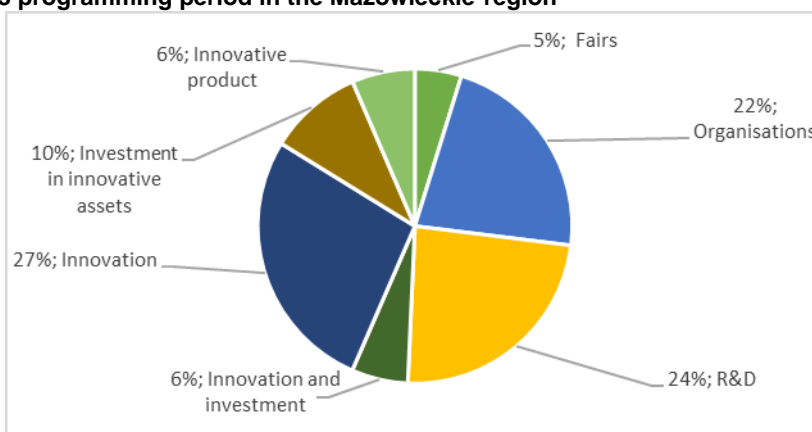
innovative projects. For micro and medium firms respectively 15.6%, and 17.9% funding was earmarked. Universities received 13.5% of funds (figure 20a). Micro, small and medium enterprises prepared 98.3% of the innovative projects in total. The highest number of projects were prepared by small firms (48,9%). Universities prepared 1.2% of projects (figure 20b).

In the Małopolskie region, 70% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 30% for projects implemented in the rural area. Almost 70% of innovative projects in the Małopolskie region were realised in the urban area.

Mazowieckie region

Within Priority 1 and 2 in the Mazowieckie region 1 079 384 203 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). Almost 25% of the funding was intended for support of R&D activity. For financing implementation of a new or significantly improved product/process/marketing method/organisational method 27% of funds was earmarked. For development of incubators, technology parks and the Centre for Innovation Management and Technology Transfer of Warsaw University of Technology 22% of funding was earmarked. 10% of funds was intended for purchase of new or innovative fixed assets, and 6% for innovation was connected with investment in fixed assets. (figure 21).

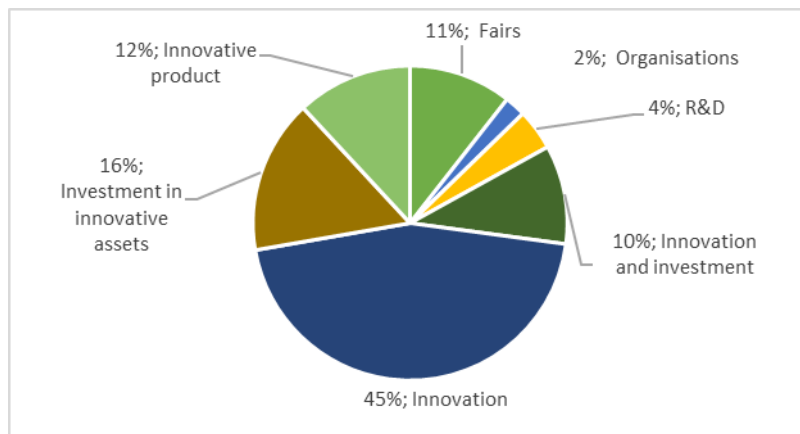
Figure 21. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Mazowieckie region



Source: own calculation

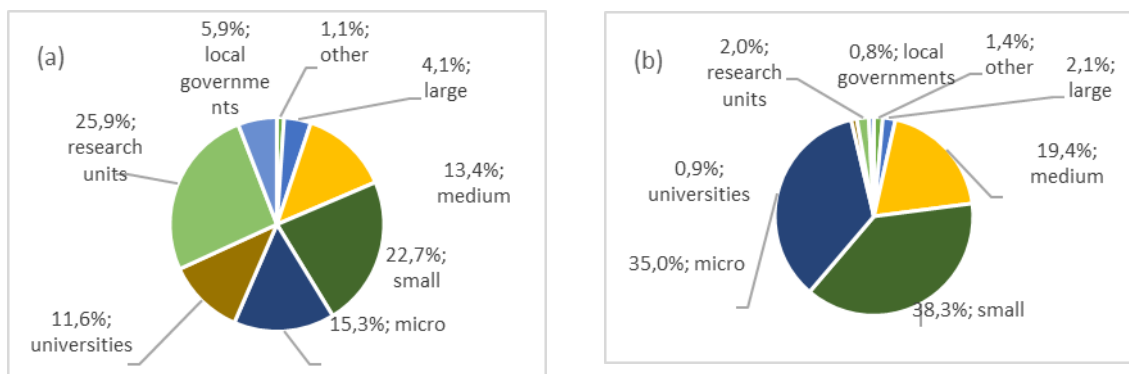
Among the selected innovative projects in the Mazowieckie region 45% concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 31% of the projects were devoted to attendance at fairs and exhibitions. 4% of the projects were connected with support for R&D activity, and 2% with development of incubators, technology parks and the Centre for Innovation Management and Technology Transfer of Warsaw University of Technology. 10 % of projects were related to innovation connected with investment in fixed assets, and 16% with purchase of new or innovative fixed assets (figure 22).

Figure 22. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Mazowieckie region



Source: own calculation

Figure 23. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Mazowieckie region



Source: own calculation

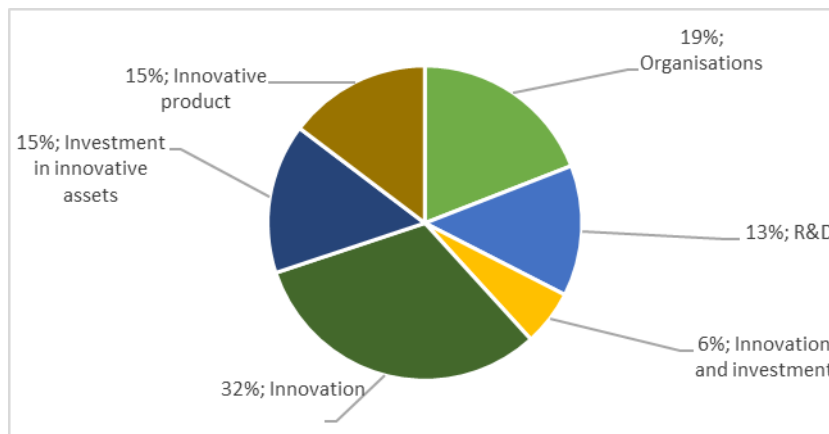
The biggest beneficiary of European Union support for innovative projects in the Mazowieckie region were research units and small enterprises. Research units received 25.9% of the funds intended on innovative projects, and small enterprises received 23.4%. For Universities 11.6% of funding was earmarked. Micro and medium firms received respectively 15.3%, and 13.4% of the funds (figure 23a). Micro, small and medium enterprises prepared 92.7% of the innovative projects in total. Research units prepared 2% of projects (figure 23b).

In the Mazowieckie region, 71% of the European Union support for innovative projects was earmarked for projects implemented in the urban area, and 29% for projects implemented in the rural area. More than 70% of innovative projects in the Mazowieckie region were realised in the urban area.

Opolskie region

Within Priority 1 in the Opolskie region 337 321 606 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). More than 30% of the funding was intended for implementation of a new or significantly improved product/process/marketing method/organisational method. For the development of organisations supporting innovation, 19% of funds was earmarked. R&D activity received 13% of the financing. 15% of the funds was intended for purchase of new or innovative fixed assets, and 6% for innovation connected with investment in fixed assets (figure 24). In the Opolskie region, there were no projects connected with attendance at fairs and exhibitions.

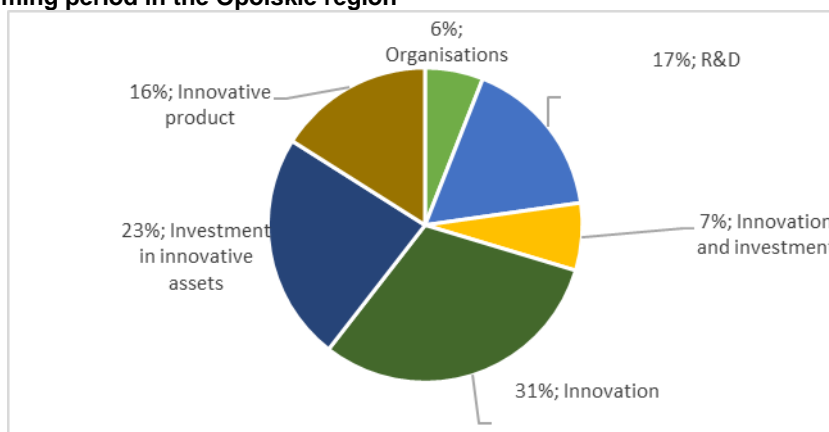
Figure 24. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Opolskie region



Source: own calculation

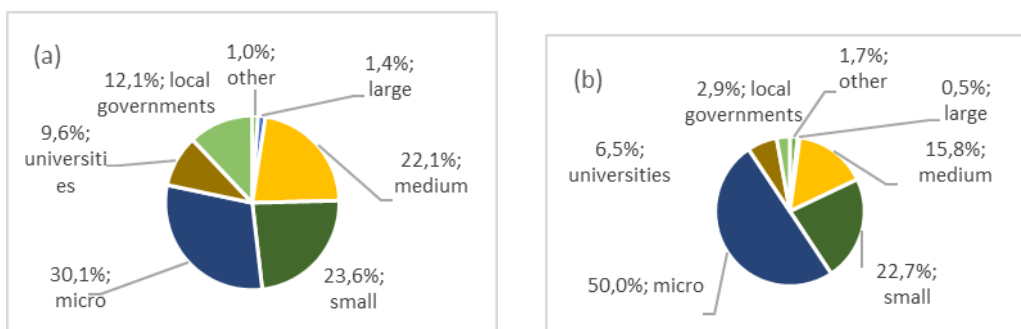
Among the selected innovative projects in the Opolskie region more than 30% concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 23% of the projects were devoted to investments in innovative assets. 17% of the projects were connected with support for R&D activity, and 6% with development of organisations supported innovation. 7% of the projects were related to innovation connected with investment in fixed assets. 16% of the projects were connected with innovative products, presumably authors of these projects intended to implement the new products mentioned in their titles (figure 25).

Figure 25. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Opolskie region



Source: own calculation

Figure 26. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Opolskie region



Source: own calculation

The biggest beneficiary of European Union support for innovative projects in the Opolskie region were micro, small, and medium enterprises. Small firms received 30.1% of the funds

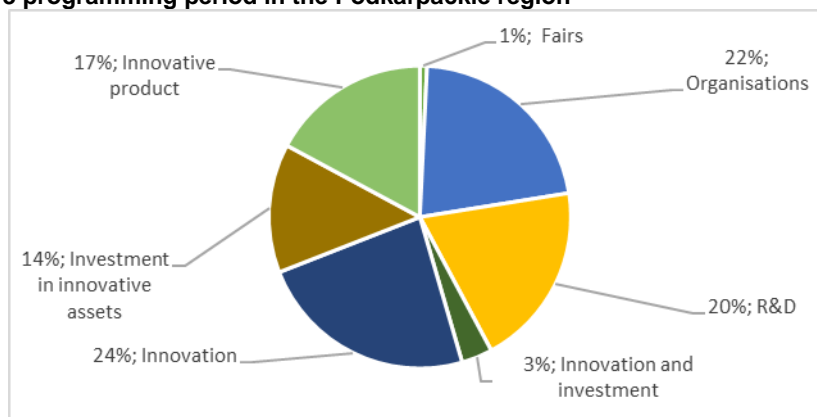
intended on innovative projects, small – 23.6%, and medium firms received 22.1%. For local governments, and universities respectively 12.1%, and 9.6% of funding was earmarked (figure 26a). Micro, small and medium enterprises prepared 88.5% of the innovative projects in total, 50% of projects were prepared by micro firms. Universities prepared 6.5% of projects (figure 26b).

In the Opolskie region, 70% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 30% for projects implemented in the rural area. More than 60% of innovative projects in the Opolskie region were realised in the urban area.

Podkarpackie region

Within Priority 1 in the Podkarpackie region 862 337 015 PLN of support from European Union funds was received by projects concerning innovations (according to selected project titles). 24% of the funding was intended for financing implementation of a new or significantly improved product/process/marketing method/organisational method. For development of incubators, clusters, technology parks and the University Centre for Innovation and Knowledge Transfer 22% of funding was earmarked, and 20% for support of R&D activity. 3% of funds intended for innovation was connected with investment in fixed assets, and 14% with purchase of new or innovative fixed assets (figure 27).

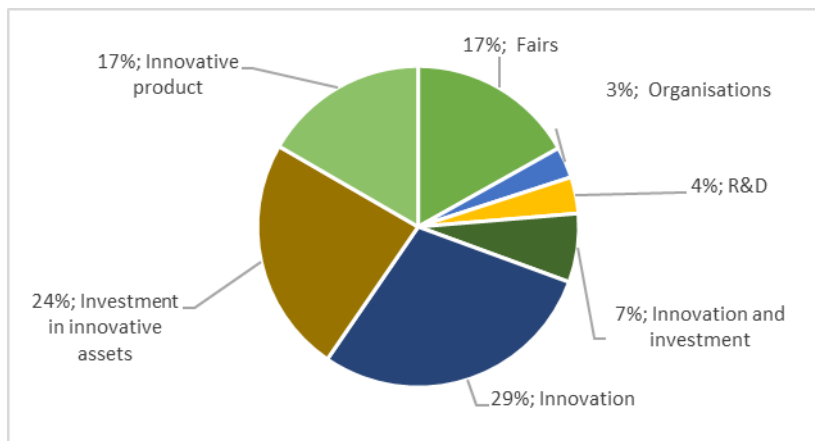
Figure 27. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Podkarpackie region



Source: own calculation

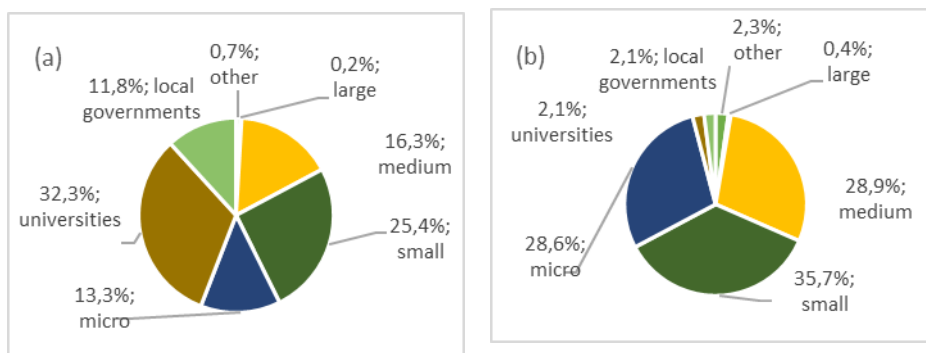
Among the selected innovative projects in the Podkarpackie region almost 30% concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 17% of the projects were devoted to attendance at fairs and exhibitions. 4% of the projects were connected with support for R&D activity, and 3% with development of organisations supported innovation. 24% of the projects were related with purchase of new or innovative fixed assets , and 7% with innovation connected with investment in fixed assets, and 5.9% (figure 28).

Figure 28. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Podkarpackie region



Source: own calculation

Figure 29. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Podkarpackie region



Source: own calculation

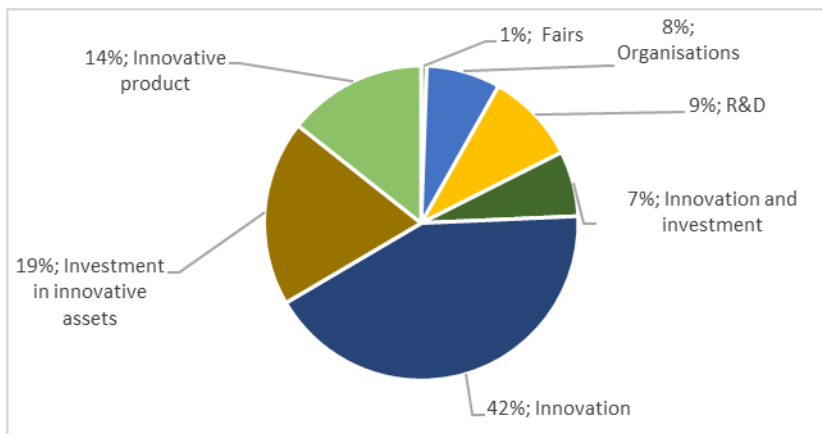
The biggest beneficiary of European Union support for innovative projects in the Podkarpackie region were universities, which received 32.3% of the funds intended for innovative projects. 11.8% of funds were received by local governments. For micro, small and medium firms respectively 13.3%, 25.4%, and 16.3% funding was earmarked (figure 29a). Micro, small and medium enterprises prepared 93.2% of the innovative projects in total. Universities, and local governments prepared respectively 2.1%, and 2.1% of projects (figure 29b).

In the Podkarpackie region, 67% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 33% for projects implemented in the rural area. More than 60% of innovative projects in the Podkarpackie region were realised in the urban area.

Podlaskie region

Within Priority in the Podlaskie region 337 740 281 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). More than 40% of the funding was intended for financing implementation of a new or significantly improved product/process/marketing method/organisational method. 7% of the funds intended for innovation was connected with investment in fixed assets, and 19% with purchase of new or innovative fixed assets. For development of Incubators, technology parks and the Centre of Technology Transfer 8% of funding was earmarked, and 9% for support of R&D activity (figure 30).

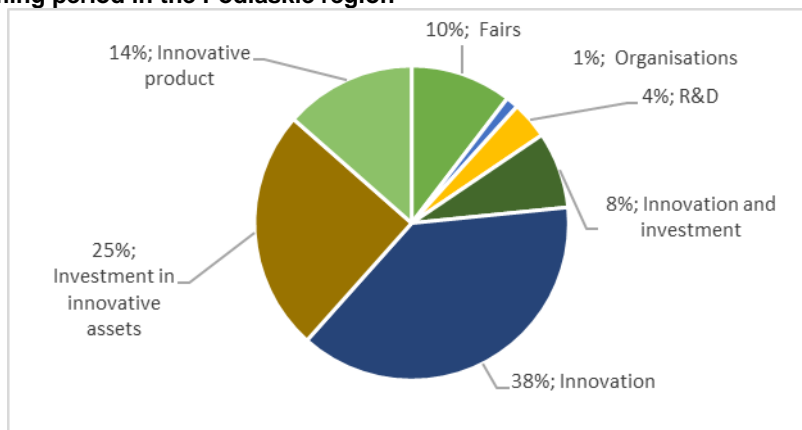
Figure 30. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Podlaskie region



Source: own calculation

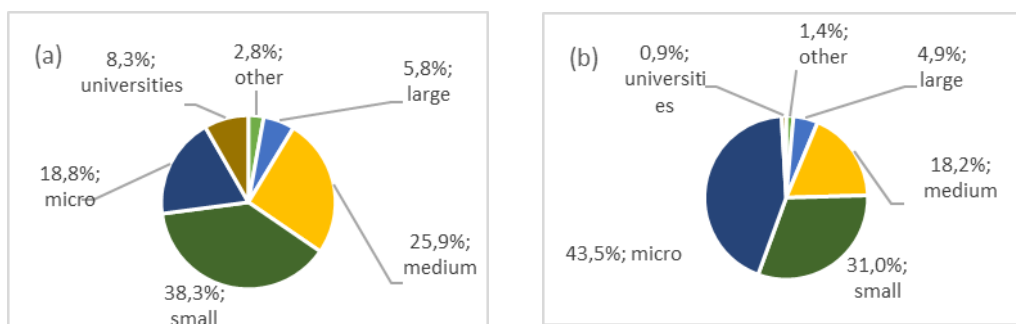
Among the selected innovative projects in the Podlaskie region almost 40% concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 10% of the projects were devoted to attendance at fairs and exhibitions. 4% of the projects were connected with support for R&D activity, and 1% with development of incubators, technology parks and the Centre of Technology Transfer. 25 % of the projects were related with purchase of new or innovative fixed assets, and 7% were related with innovation connected with investment in fixed assets. (figure 31).

Figure 31. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Podlaskie region



Source: own calculation

Figure 32. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Podlaskie region



Source: own calculation

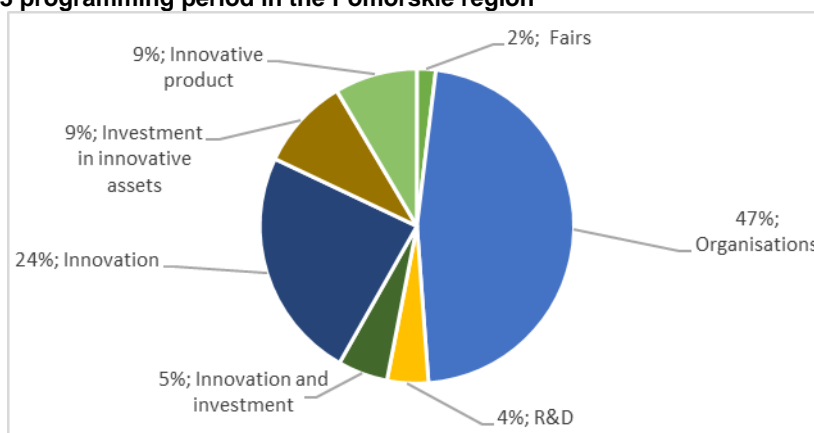
The biggest beneficiaries of European Union support for innovative projects in the Podlaskie region were small and medium enterprises. Small enterprises received 38.3% of the funds intended on innovative projects, and medium enterprises received 25.9%. For micro and large firms respectively 18.8% and 5.8% funding was earmarked. Universities received 8.3% of funds (figure 32a). Micro, small and medium enterprises prepared 92,8% of the innovative projects in total. The highest number of projects was prepared by micro firms (43.5%). Universities prepared 0.9% of projects (figure 32b).

In the Podlaskie region, 78% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 22% for projects implemented in the rural area. More than 80% of innovative projects in the Podlaskie region were realised in the urban area.

Pomorskie region

Within Priority 1 in the Pomorskie region 395 260 443 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). Almost 50% of the funding was intended for development of incubators, clusters, and the Pomeranian Park of Science and Technology. For implementation of a new or significantly improved product/process/marketing method/organisational method 24% of the funding was earmarked. 5% of funds intended for innovation was connected with investment in fixed assets, and 9% with purchase of new or innovative fixed assets. For support of R&D activity 4% of funds was intended (figure 33).

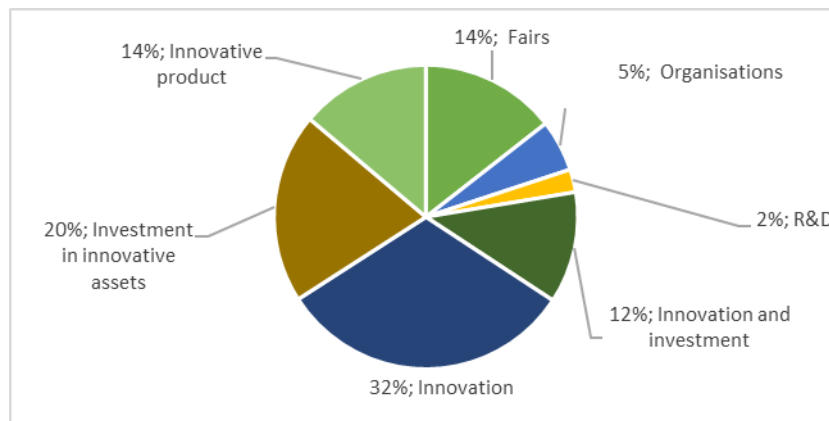
Figure 33. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Pomorskie region



Source: own calculation

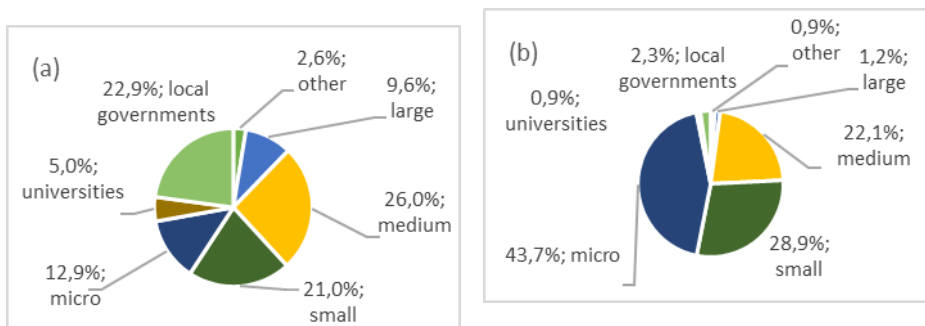
Among the selected innovative projects in the Pomorskie region more than 30% concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 14% of the projects were devoted to attendance at fairs and exhibitions. 2% of the projects were connected with support for R&D activity, and 5% with development of incubators, clusters and technology parks. 13% of the projects were related to innovation connected with investment in fixed assets, and 20% with purchase of new or innovative fixed assets (figure 34).

Figure 34. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Pomorskie region



Source: own calculation

Figure 35. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Pomorskie region



Source: own calculation

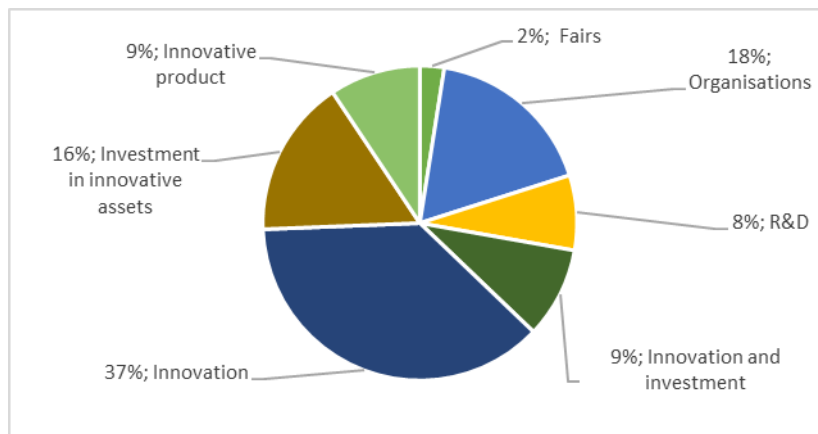
In the Pomorskie region, there was no biggest beneficiary of European Union support for innovative projects. Local governments received 22.9% of the funds intended on innovative projects. For micro, small, and medium firms respectively 12.9%, 21%, and 26% funding was earmarked. Universities received 5% of funds (figure 35a). Micro, small and medium enterprises prepared 94.7% of the innovative projects in total. The highest number of projects was prepared by micro firms (43.7%). Local governments prepared 2.3% of projects (figure 35b).

In the Pomorskie region, 69% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 31% for projects implemented in the rural area. Almost 70% of innovative projects in the Pomorskie region were realised in the urban area.

Śląskie region

Within Priority 1 in the Śląskie region 649 692 462 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). Almost 40% of the funding was intended for financing implementation of a new or significantly improved product/process/marketing method/organisational method. 16% of the funds were intended for purchase of new or innovative fixed assets, and 9% for innovation was connected with investment in fixed assets. For development of Incubators, technology parks and clusters 18% of funding was earmarked, and only 8% for support of R&D activity (figure 36).

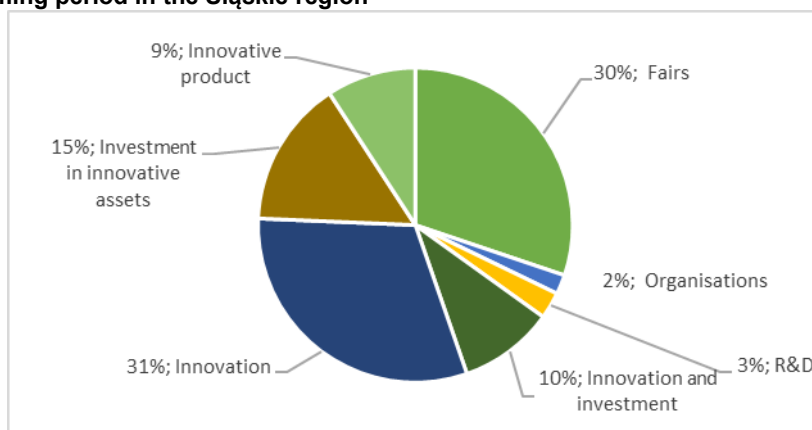
Figure 36. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Śląskie region



Source: own calculation

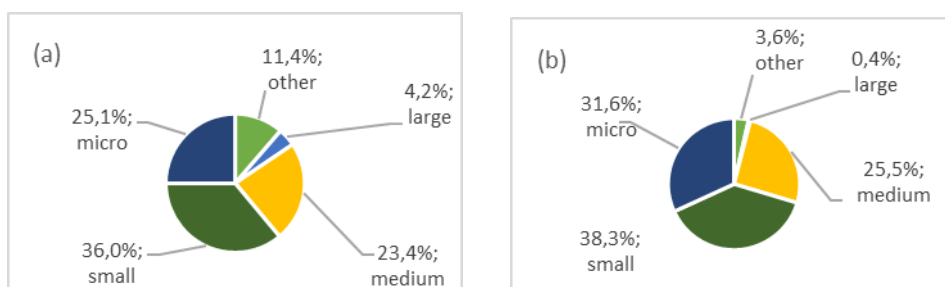
Among the selected innovative projects in the Śląskie region 30% concerned attendance at fairs, exhibitions, and economic missions. 31% of the projects were devoted to implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 3% of the projects were connected with support for R&D activity, and 2% with development of incubators, technology parks and clusters. 10% of the projects were related to innovation connected with investment in fixed assets, and 15% with purchase of new or innovative fixed assets (figure 37).

Figure 37. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Śląskie region



Source: own calculation

Figure 38. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Śląskie region



Source: own calculation

The biggest beneficiaries of European Union support for innovative projects in the Śląskie region were micro, small and medium enterprises. Small enterprises received 36% of the funds intended on innovative projects, micro – 25.1%, and medium enterprises received 23.4%. For

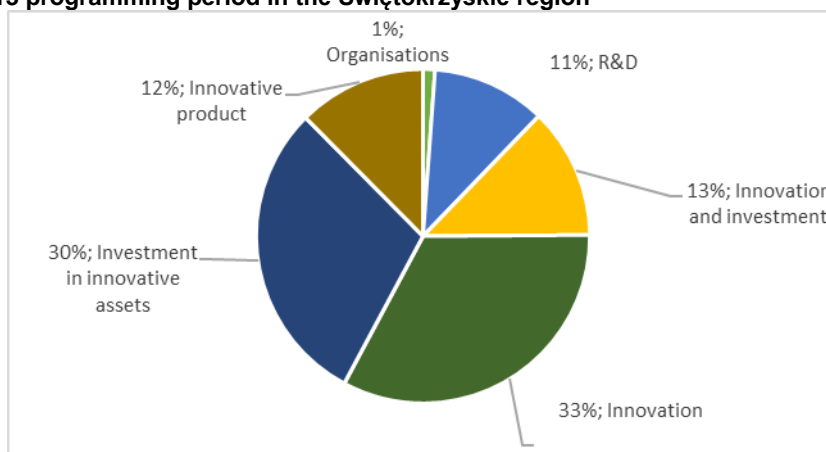
group of other units 11.4% of funding was earmarked (figure 38a). Micro, small and medium enterprises prepared 95.4% of the innovative projects in total (figure 38b).

In the Śląskie region, 88,8% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 10,9% for projects implemented in the rural area. More than 80% of the innovative projects in the Śląskie region were realised in the urban area.

Świętokrzyskie region

Within Priority 1 and 2 in the Świętokrzyskie region 418 006 300 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). More than 30% of the funding was intended for support of R&D activity. Implementation of a new or significantly improved product/process/marketing method/organisational method received 29% of the funds. 22% of the funds was intended for purchase of new or innovative fixed assets, and 8% for innovation was connected with investment in fixed assets. For development organisations, who supported innovation, 1% of funds was earmarked (figure 39). In the Świętokrzyskie region, there were no projects connected with attendance at fairs and exhibitions.

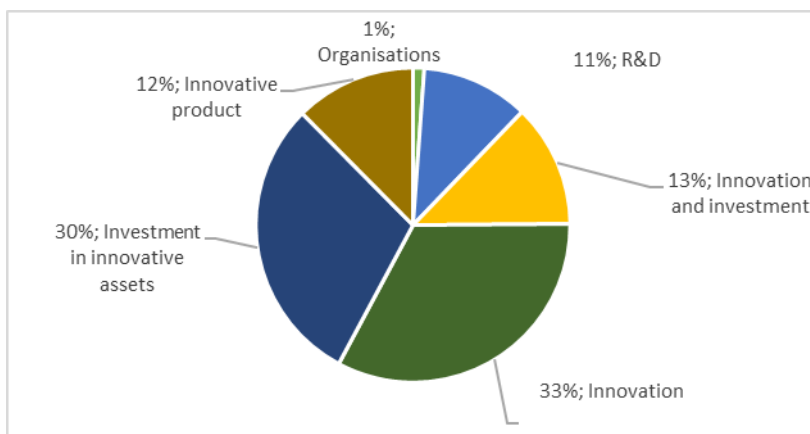
Figure 39. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Świętokrzyskie region



Source: own calculation

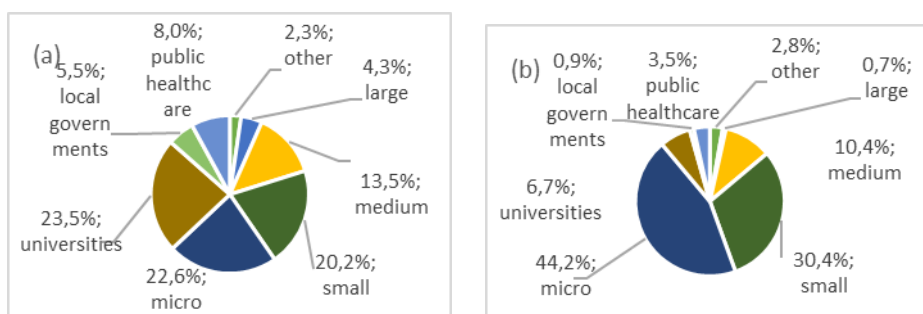
Among the selected innovative projects in the Świętokrzyskie region 30% concerned investments in innovative assets. 33% of the projects were devoted to implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 11% of the projects were connected with support for R&D activity, and 1% with development of organisations supported innovation. 13% of projects were related to innovation connected with investment in fixed assets (figure 40).

Figure 40. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Świętokrzyskie region



Source: own calculation

Figure 41. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the



Świętokrzyskie region

Source: own calculation

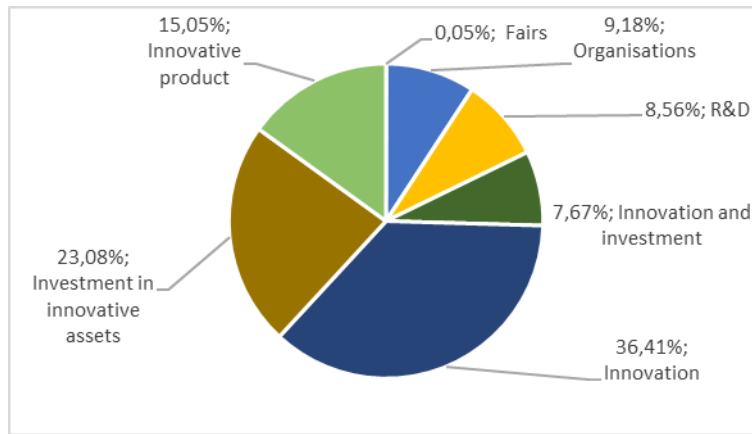
The biggest beneficiary of European Union support for innovative projects in the Świętokrzyskie region were universities, which received 23.5% of the funds intended on innovative projects. For micro, small, and medium firms respectively 22.6%, 20.2%, and 13.5% of funding was earmarked. Public healthcare units received 8% of funds (figure 41a). Micro, small and medium enterprises prepared 85% of the innovative projects in total, the highest number of projects were prepared by micro firms (44.2%). Universities prepared 6.7% of projects (figure 41b).

In the Świętokrzyskie region, the area of implementation in most of the projects was defined as 'Not applicable', therefore there is no possibility to analyse this issue for the region.

Warmińsko-Mazurskie region

Within Priority 1 in the Warmińsko-Mazurskie region 453 386 702 PLN of support from European Union funds was received by projects concerning innovations (according to selected project titles). More than 35% of the funding was intended for financing implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 23% of the funding was spent on purchase of new or innovative fixed assets. 7.6% of funds was intended for innovation connected with investment in fixed assets. For development of incubators, technology parks and clusters 9.18% of funding was earmarked, and 8.56% for support of R&D activity. (figure 42).

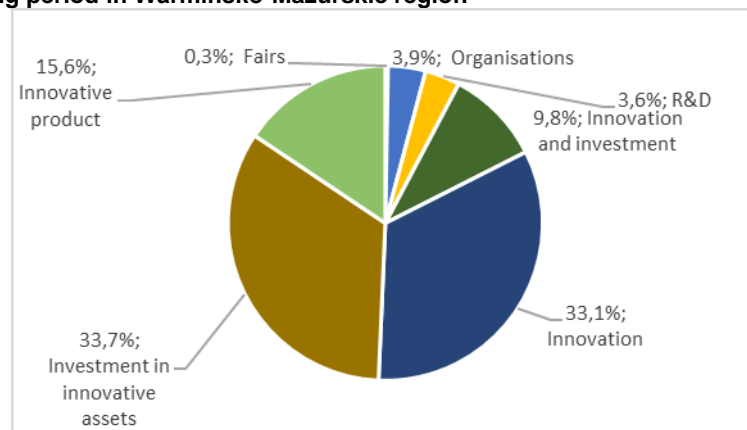
Figure 42. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in Warmińsko-Mazurskie region



Source: own calculation

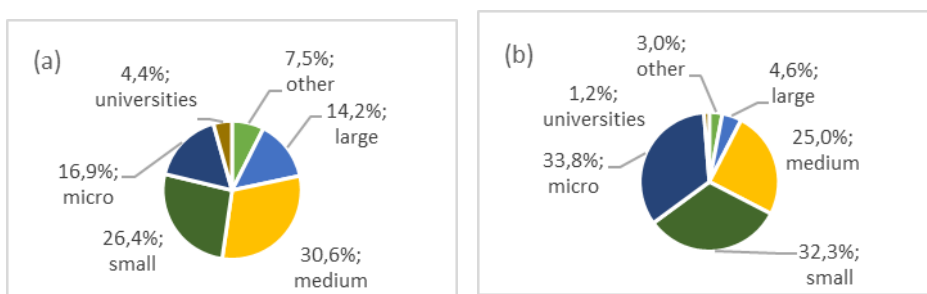
Among the selected innovative projects in Warmińsko-Mazurskie region almost 34% were related with purchase of new or innovative fixed assets. 33.1 % of innovative projects concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 0.3% of projects were devoted to attendance at fairs and exhibitions. With support of R&D activity, 3.6% of projects were connected, and 3.9% with development of incubators, technology parks and clusters. 7.3 % of the projects were related with innovation connected with investment in fixed assets, and 9.8% with purchase of new or innovative fixed assets. 15.6% of the projects were connected with innovative products, presumably authors of these projects intended to implement the new products mentioned in the title (figure 43).

Figure 43. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in Warmińsko-Mazurskie region



Source: own calculation

Figure 44. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in Warmińsko-Mazurskie region



Source: own calculation

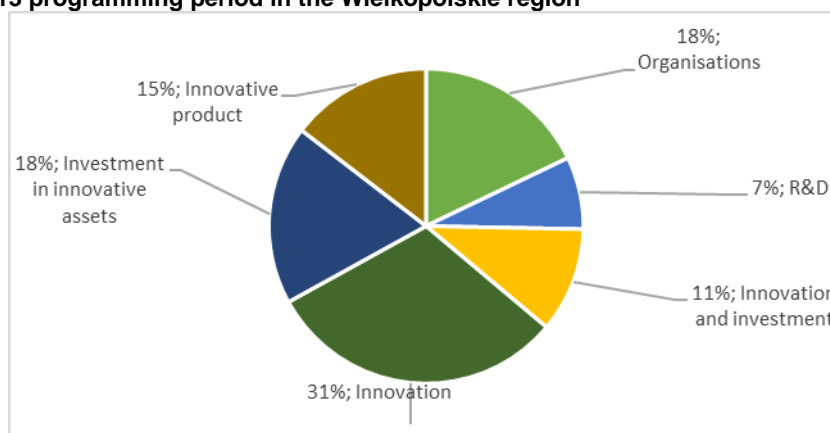
The biggest beneficiaries of European Union support for innovative projects in the Warmińsko-Mazurskie region were small and medium enterprises. Small enterprises received 26.4% of the funds intended for innovative projects, and medium enterprises received 30.6%. For large and micro firms were earmarked respectively 14.2% and 16.9% of the funding. Universities received 4.4% of the funds (figure 44a). Micro, small and medium enterprises prepared 91.1% of the innovative projects in total, on average each of them prepared 30% of projects. Large firms prepared 4.6% of the projects, and other units prepared 2% of projects (figure 44b).

In the Warmińsko-Mazurskie region, 73.58% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 26.24% for projects implemented in the rural area. More than 70% of the innovative projects in Warmińsko-Mazurskie region were realised in the urban area.

Wielkopolskie region

Within Priority 1 in the Wielkopolskie region 801 536 387 PLN of support from European Union funds were received by projects concerning innovations (according to selected project titles). More than 30% of the funding was intended for financing implementation of a new or significantly improved product/process/marketing method/organisational method. 11% of the funds intended for innovation was connected with investment in fixed assets, and 18% with purchase of new or innovative fixed assets. For development of Incubators, technology parks and the clusters 18% of funding was earmarked, and 7% for support of R&D activity (figure 45). In the Wielkopolskie region, there were no projects connected with attendance at fairs and exhibitions.

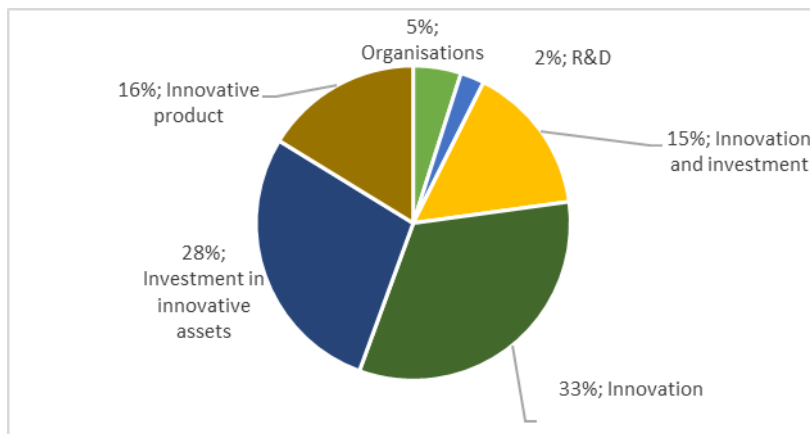
Figure 45. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in the Wielkopolskie region



Source: own calculation

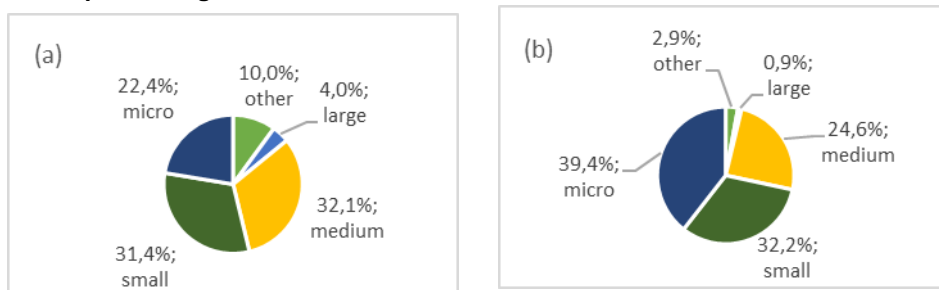
Among the selected innovative projects in the Wielkopolskie region more than 30% concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 28% of the projects were devoted to investment in innovative assets. 2% of the projects were connected with support for R&D activity, and 5% with development of incubators, technology parks and clusters. 15 % of the projects were related to innovation connected with investment in fixed assets (figure 46).

Figure 46. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in the Wielkopolskie region



Source: own calculation

Figure 47. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in the Wielkopolskie region



Source: own calculation

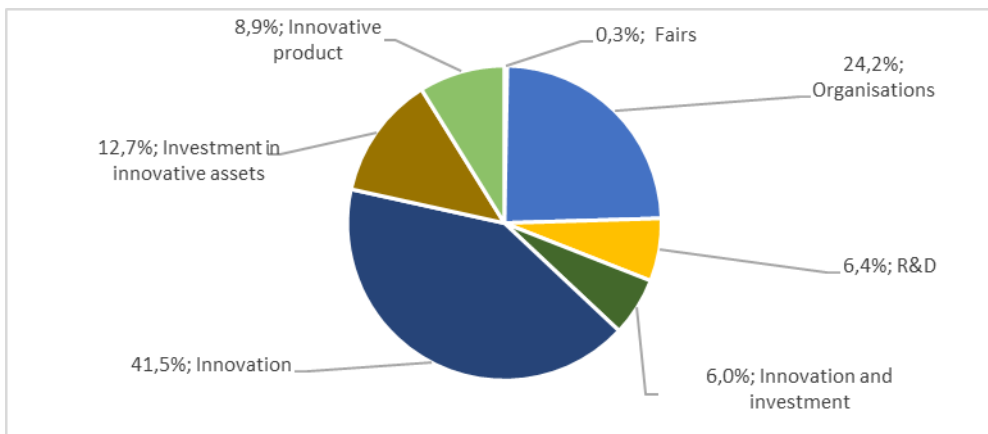
The biggest beneficiaries of European Union support for innovative projects in the Wielkopolskie region were micro, small and medium enterprises. Micro enterprises received 22.4% of the funds intended on innovative projects, small – 31.4%, and medium enterprises received 32.1%. For other units 10% of funding was earmarked (figure 47a). Micro, small and medium enterprises prepared 962% of the innovative projects in total, on average each of them prepared 30% of projects (figure 47b).

In the Wielkopolskie region, 54% of European Union support for innovative projects was earmarked for projects implemented in the rural area, and 46% for projects implemented in the rural area. Almost equal parts, each constituting around a half of the innovative projects in the Wielkopolskie region were realised in both urban and rural areas.

Zachodniopomorskie region

Within Priority 1 in the Zachodniopomorskie region 648 426 331 PLN of support from European Union funds was received by projects concerning innovations (according to selected project titles). More than 40% of the funding was intended for financing implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 6% of funds was intended for innovation was connected with investment in fixed assets, and 12% for purchase of new or innovative fixed assets. For development of Incubators, technology parks and the Centre of Collaboration of Science and Economy 24.2% of funding was earmarked, and only 6.4% was intended for support of R&D activity (figure 48).

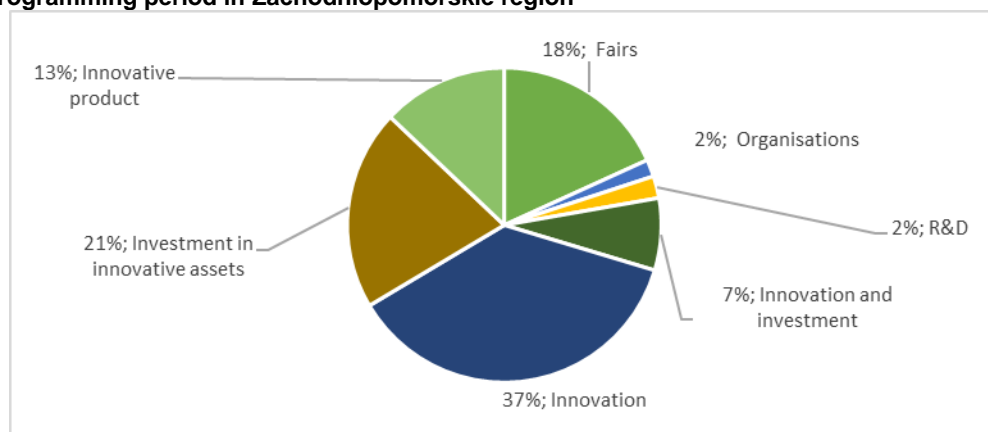
Figure 48. Types of innovative projects supported by European Union funds according to amount of gained support in 2007-2013 programming period in Zachodniopomorskie region



Source: own calculation

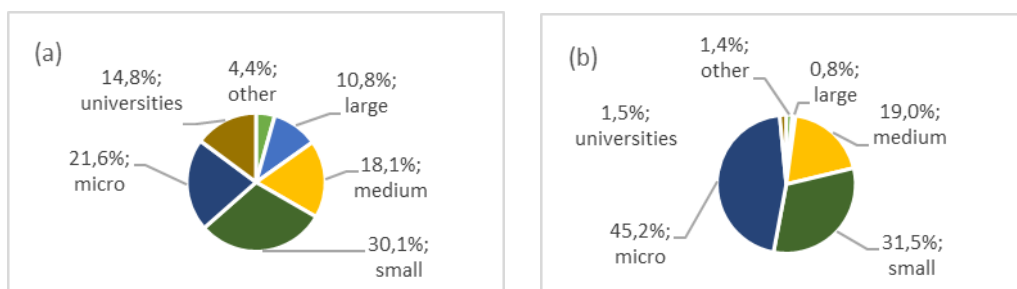
Among the selected innovative projects in the Zachodniopomorskie region, almost 40% concerned implementation of a new or significantly improved product/ process/ marketing method/ organisational method. 13% of projects were devoted to attendance at fairs and exhibitions. Only 2% of the projects were concerned with support of R&D activity, and 2% with development of incubators, technology parks and the Centre of Collaboration of Science and Economy. 7% of the projects were related with innovation connected with investment in fixed assets, and 21% with purchase of new or innovative fixed assets (figure 49).

Figure 49. Types of innovative projects supported by European Union funds according to number of projects in 2007-2013 programming period in Zachodniopomorskie region



Source: own calculation

Figure 50. Types of beneficiaries of innovative projects supported by European Union funds according to amount of gained support (a), and according to number of projects (b) in 2007-2013 programming period in Zachodniopomorskie region



Source: own calculation

The biggest beneficiaries of European Union support for innovative projects in the Zachodniopomorskie region were micro and small enterprises. Micro enterprises received 21.6% of funds intended for innovative projects, and small enterprises received 30.1%. For medium and

large firms were earmarked respectively 18.1%, and 10.8% of the funding. In Zachodniopomorskie region almost 15% of the funding was intended for the support of universities (figure 50a). Micro, small and medium enterprises prepared 95.7% of the innovative projects in total, almost half of them were prepared by micro enterprises. Universities were authors of 1.5% of the innovative projects (figure 50b).

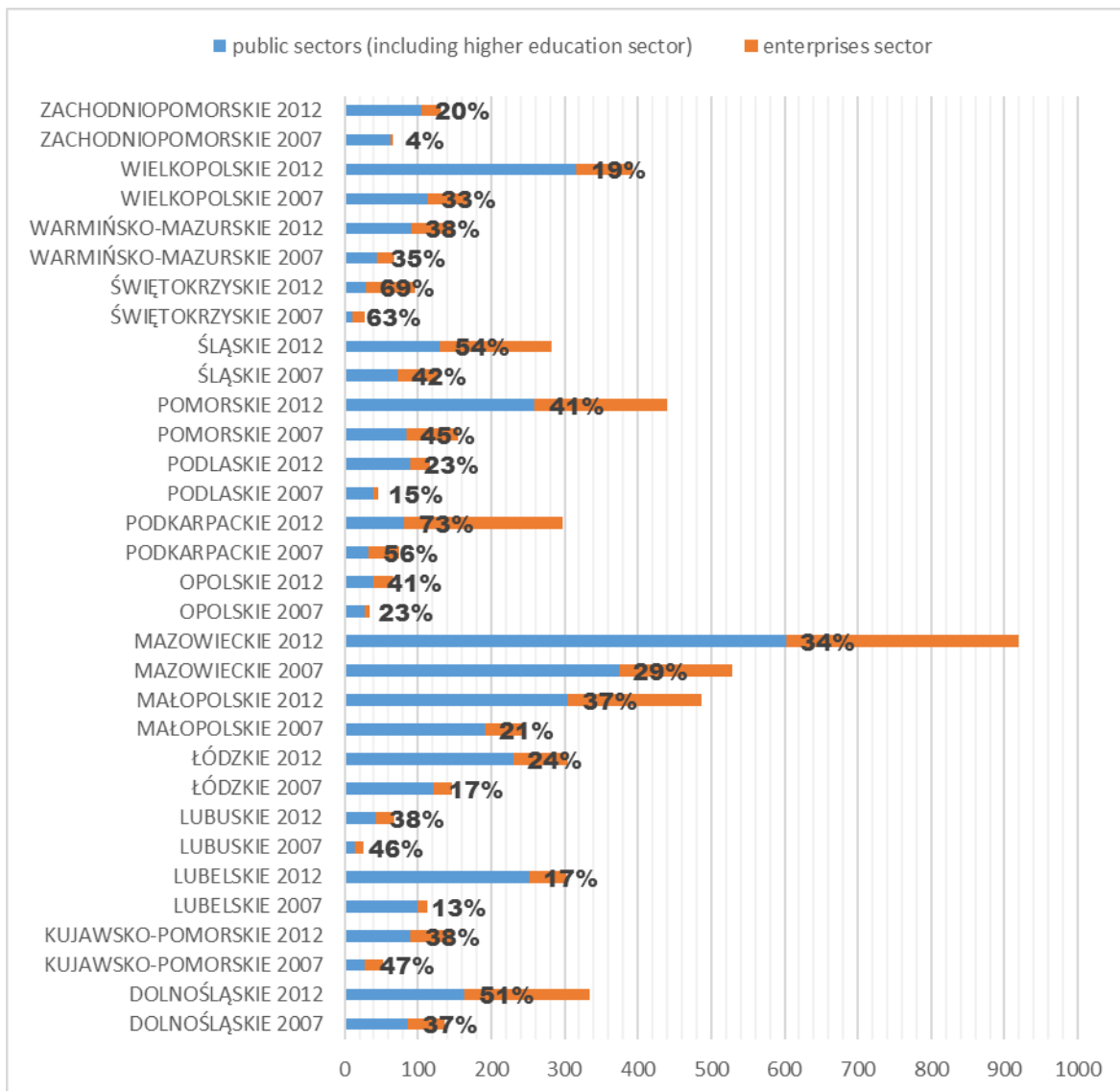
In the Zachodniopomorskie region, 76% of European Union support for innovative projects was earmarked for projects implemented in the urban area, and 24% for projects implemented in the rural area. More than 61% of innovative projects in Zachodniopomorskie region were realised in the urban area. 18,3% of projects accounted as N/A (not applicable) concerned fairs, exhibitions and economic missions.

Summarising, according to amount of gained European Union support within Regional Operational Programs for Polish Regions in 2007-2012 programming period, the highest amount of European Union funds was earmarked for realisation of projects concerning implementation of a new or significantly improved product/ process/ marketing method/ organisational method (on average, 34% of the funding). For development of organisations, supporting innovations, on average 17% of funds was intended, and 11% of funds was intended for support of R&D activity. According to the number of innovative projects, projects devoted to implementation of new or significantly improved product/ process/ marketing method/ organisational method were the ones realized most often – on average every third project belonged to that category, and projects concerning investment in new and innovative assets (average 21% of projects) were the second biggest group. The biggest beneficiaries of European Union support for innovative projects were micro, small and medium enterprises, which collectively received, on average, respectively 20%, 29%, and 23% of the funding. That is consistent with the objectives of Regional Operational Programmes of the Polish regions. For support of universities, on average 11% of the funds was earmarked. The amount of European Union funds for universities was the highest in the Lubuskie region (36%), and in the Mazowieckie region 26% of funding was intended for support of research units. In most cases European Union support for innovative projects was earmarked for projects implemented in the urban area. Exceptions were Lubuskie and Wielkopolskie where more funds were intended for realisation of innovative projects in the rural area.

4.3. Innovativeness of Polish regions – main indicators

Intramural R&D expenditures in all Polish regions have increased since 2007 (an average increase of 2.5 times). The highest value of intramural R&D expenditures in 2012 was in Mazowieckie region (919 PLN per inhabitant), the lowest was in the Opolskie region (65 PLN per inhabitant). The lowest value of intramural R&D expenditures in 2007 was in the Lubuskie region (25 PLN per inhabitant), the highest was in the Mazowieckie region (528 PLN per inhabitant). In the Podkarpackie region intramural R&D expenditures have increased four times since 2007, it was the highest growth in all of the Polish regions. Also, the Podkarpackie region had the largest share of R&D expenditure of the enterprises sector in 2012 (73%). In 2007 the largest share of R&D expenditure of the enterprises sector was in the Świętokrzyskie region (69%). The lowest share of R&D expenditure of the enterprises sector was seen in 2007 in the Zachodniopomorskie region (4%), and in 2012 in the Lubelskie region (17%). Almost all Polish regions increased their share of the enterprises sector expenditures, exceptions were the Kujawsko-Pomorskie, Lubuskie, Pomorskie and Wielkopolskie regions. It is worth to notice that in the Świętokrzyskie region, there was one of the lowest level of R&D expenditure, almost 70% of them are financed by the enterprises sector (figure 51).

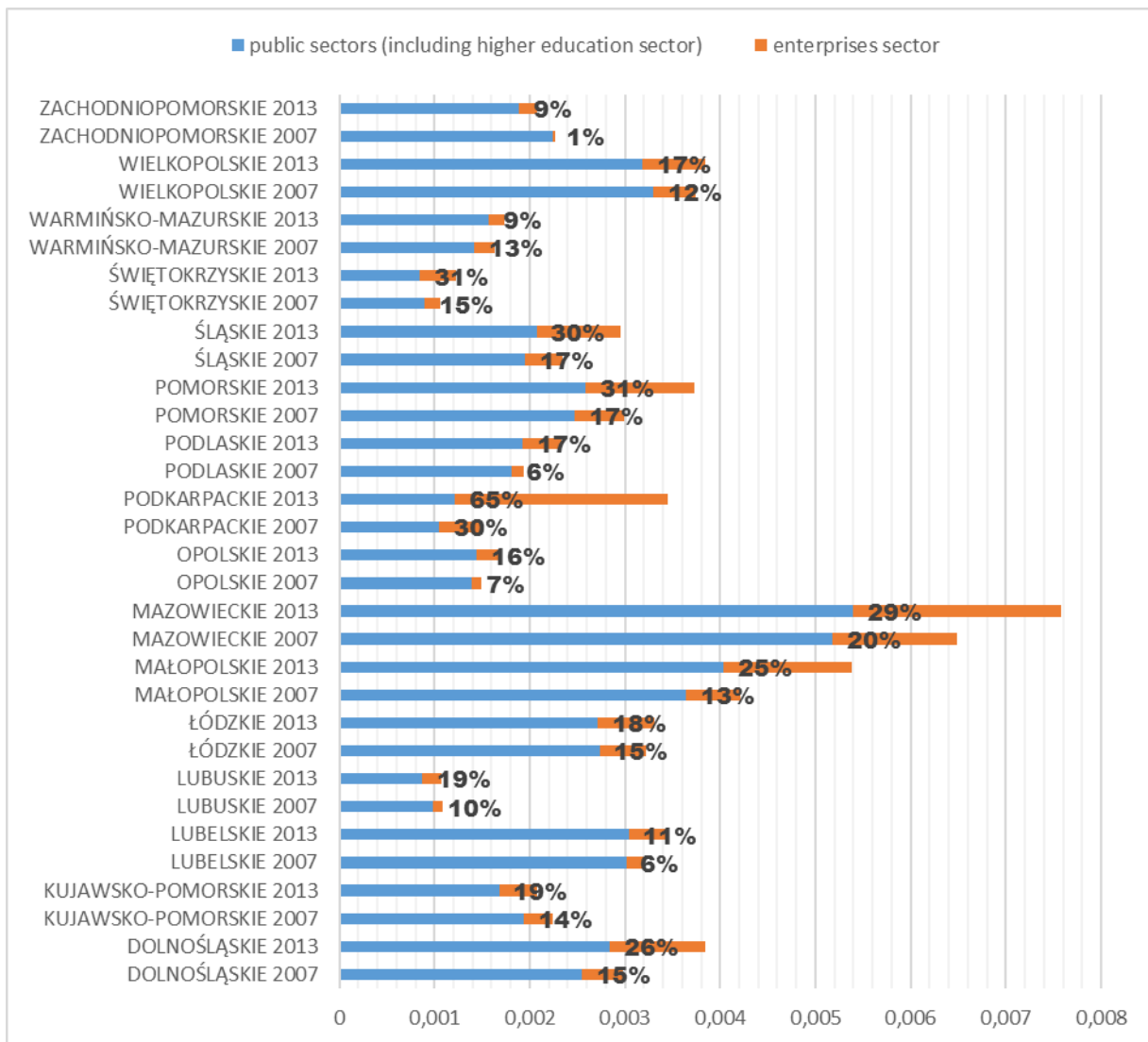
Figure 51. Intramural R&D expenditure in Polish regions in years 2007, 2012 in PLN per inhabitant, and % of enterprises sector expenditure



Source: own calculation based on GUS data

Employment in R&D has not changed significantly in the Polish regions since 2007 (an average increase of 1,2 times). The exception was the Podkarpackie region, where employment in R&D sector increased 2,5 times from year 2007. Decrease was noticeable in the Kujawsko-Pomorskie and Zachodniopomorskie regions. Also, the Podkarpackie region had the largest share of employment in R&D in the enterprises sector in 2013 (65%), and 2007 (30%). The lowest share of employment in R&D in the enterprises sector was observed in the Zachodniopomorskie region in 2007 (1%), and in 2013 (9%). Almost all Polish regions have increased their share of employment in R&D in the enterprises, exceptions were the Kujawsko-Pomorskie and Warmińsko-Mazurskie regions (figure 52). The cause of such a large share of the public sector in the R&D employment is the inclusion of the higher education sector were most of Polish employees of the R&D sector are employed.

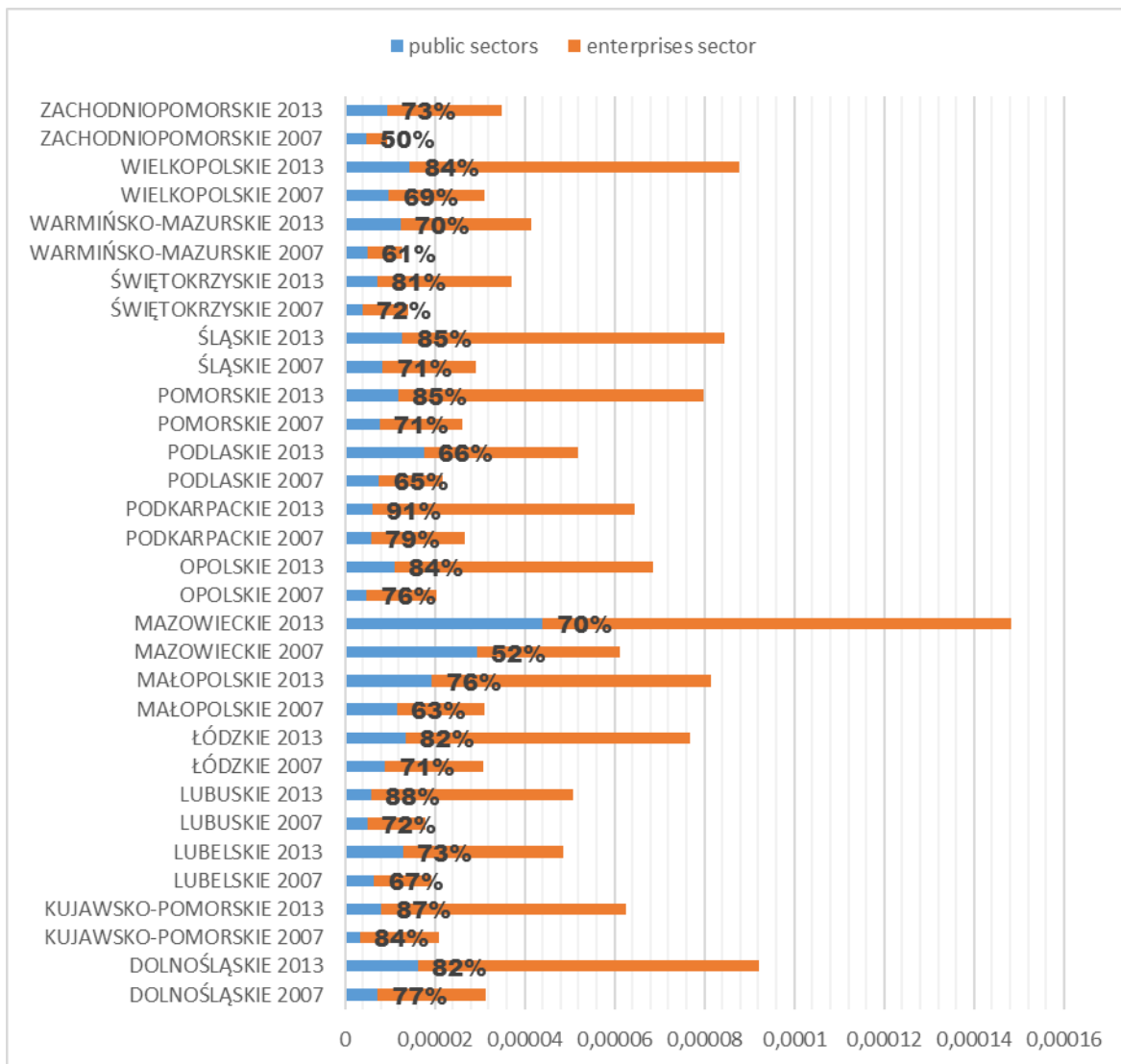
Figure 52. Employment in the R&D sector in Polish regions in 2007, 2013 in person per inhabitant, and % of employment in enterprises sector



Source: own calculation based on GUS data

The number of units engaged in research activity has increased significantly in Polish regions since 2007 (an average increase of 3 times). In the Zachodniopomorskie region, the number of units engaged in research activity has increased almost 4 times since 2007. The Podkarpackie region had the largest share of number of units engaged in research activity in the enterprises sector in 2013 (91%). In 2007 the largest share of the number of units engaged in research activity in the enterprises sector was in the Kujawsko-Pomorskie region (84%). The lowest share of number of units engaged in research activity in the enterprises sector was in 2007 in the Zachodniopomorskie region (50%), and in 2013 in the Lubelskie region (66%). All Polish regions have increased their share of units engaged in research activity in the enterprises sector, from average 69% in 2007 to average 80% in 2013 (figure 53).

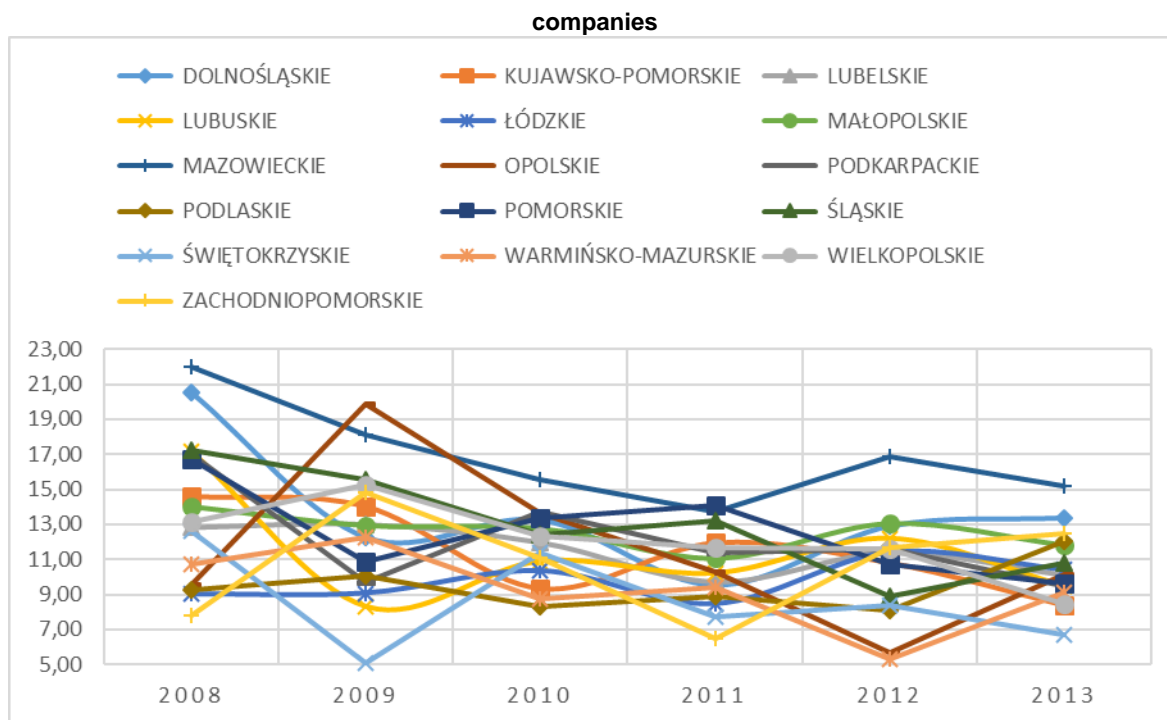
Figure 53. Units engaged in research activity in Polish regions in 2007, 2013 in number per inhabitant, and % of units in enterprises sector



Source: own calculation based on GUS data

In Polish regions the percentage of enterprises engaged in innovation activity in services was characterized by fluctuations in the 2008-2013 period. The average growth rate was negative in almost all Polish regions. Only the Lubuskie (3%), Opolskie (1%), Podlaskie (5%) and Zachodniopomorskie (10%) regions had positive average growth rates for the 2008-2013 period (figure 54).

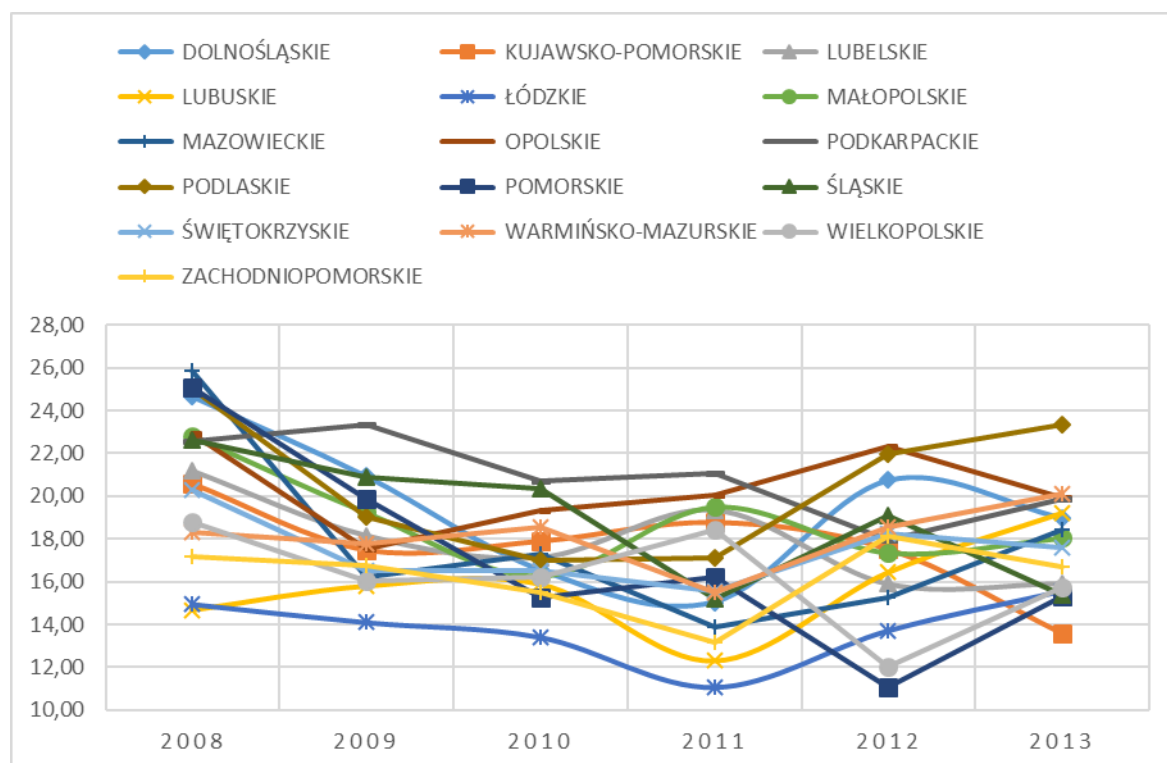
Figure 54. Enterprises engaged in innovation activity in services in Polish regions in 2008-2013 as percent of total number of



Source: own calculation based on GUS data

In Polish regions the percentage of enterprises engaged in innovation activity in industry was characterized by fluctuations in 2008-2013 period. The average growth rate was negative in almost all Polish regions. Only the Lubuskie (5%), Łódzkie (1%), and Warmińsko-Mazurskie (5%) regions had positive average growth rates for the 2008-2013 period (figure 55).

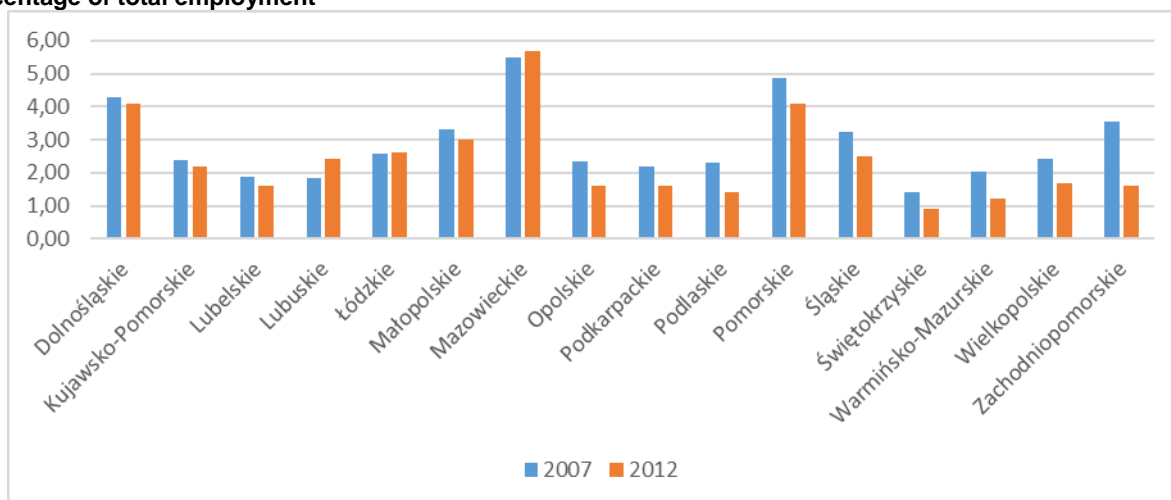
Figure 55. Enterprises engaged in innovation activity in industry in Polish regions in 2008-2013 as percentage of total number of companies



Source: own calculation based on GUS data

Employment in technology and knowledge-intensive sectors has not changed significantly in the Polish regions since 2007. In most of the regions a slight decrease of employment in that sector was noticeable. The exceptions were the Lubuskie, Łódzkie and Mazowieckie regions. The highest employment in technology and knowledge-intensive sectors were in the Mazowieckie, Dolnośląskie i Pomorskie regions – more than 4% of total employment. The lowest employment in technology and knowledge-intensive sectors was in the Świętokrzyskie region – less than 1% of total employment (figure 56).

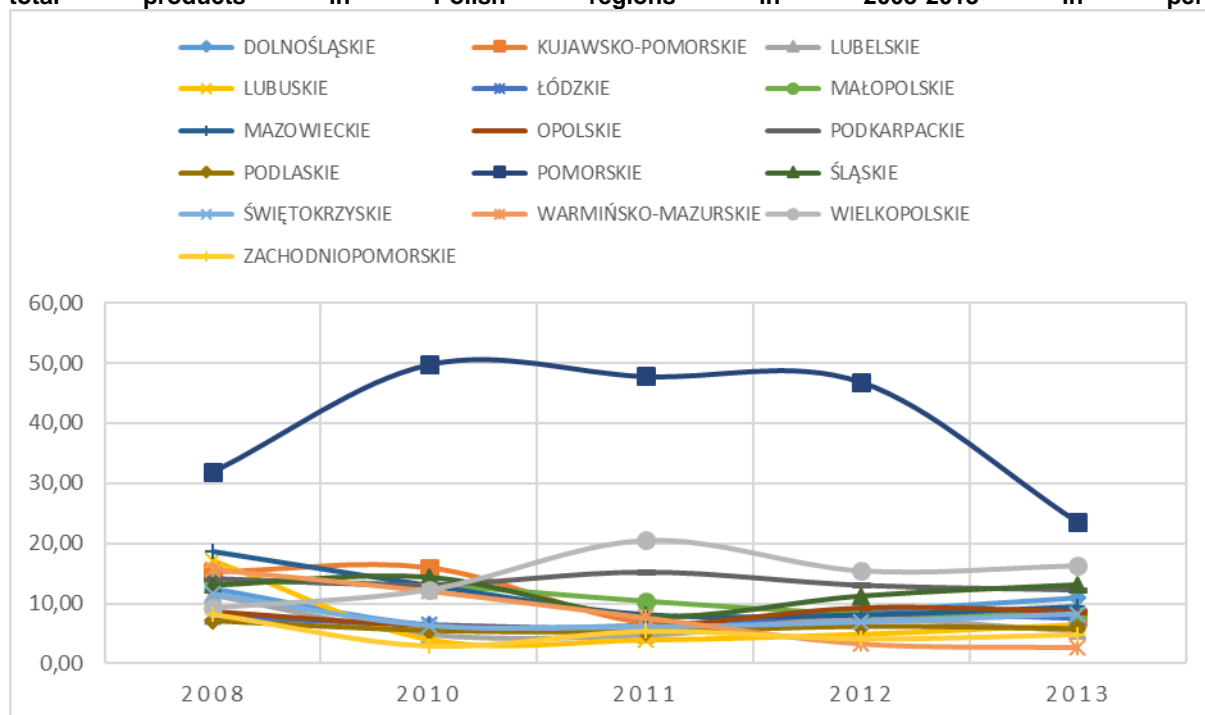
Figure 56. Employment in technology and knowledge-intensive sectors in Polish regions in 2007, 2012 as percentage of total employment



Source: own calculation based on Eurostat data

In Polish regions the share of sales of new/significantly improved products in industrial enterprises in sales value of total products was characterized by fluctuations in the 2008-2013 period. The average growth rate was negative in almost all Polish regions – the average growth rate was -5%. Only the Wielkopolskie region had a positive average growth rate for the 2008-2013 period, which was 15%. The average growth rates in the Opolskie and the Śląskie region were both 0% (figure 57).

Figure 57. The share of sales of new/ significantly improved products in industrial enterprises in sales value of total products in Polish regions in 2008-2013 in percentage



Source: own calculation based on GUS data

Polish regions are characterized by great diversity in terms of innovative activity. There are significant disparities between regions, especially according to expenditure on innovative and R&D activity. The difference between the highest and lowest intramural expenditure on R&D activity per inhabitant is 853 PLN. Similarly, the level of employment in technology and knowledge-intensive sectors is various in all Polish regions – from 5% to 1% of total employment. Simultaneously, the changeable share of enterprises engaged in innovation activity could be determined both by internal and external factors, like for example financing, general economic conditions, and availability of human capital.

5. CONCLUSIONS

This analysis presents the way of allocation of European Union funds in Polish regions within Priority axes concerning innovation in Regional Operational Programmes for Polish regions for the 2007-2013 programming period. The main finding of the analysis is the confirmation of one of the programme objectives, which proposed that the forms of support should be offered mainly to Small and Medium-Sized Enterprises. According to the selected data, based on project titles, micro, small, and medium enterprises were the biggest beneficiaries of European Union Funds support within Regional Operational Programmes in Polish regions in the 2007-2013 programming period. The second most valuable information found in the analysis is that the biggest amount of European Union funds intended for innovation projects was spent on implementation of new or significantly improved products, processes, marketing and organisational methods. Simultaneously, a similar share of funding was earmarked jointly for the support of R&D activity and development of organisations, supporting innovation in enterprises.

In 2007, the Polish regions were characterised by a very low level of intramural R&D expenditure, employment in a R&D sector, or number of units engaged in research activity. Until 2013 almost all of the Polish regions improved these innovation indicators. The share of the enterprises sector in R&D activity also increased since 2007 in almost all Polish regions. Indicators concerning the percentage of enterprises, which implemented innovation on the market, and the share of sales of new/ significantly improved products in industrial enterprises presented an unclear picture. These indicators are subject to fluctuation, and depend on many internal and external factors.

The method proposed here could be a useful instrument for exact analysis of ways of allocation European Union based on titles of projects from operational programmes' lists of beneficiaries, despite the limitations mentioned. In the course of further work the method will be improved.

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ANNEX I

index.php

```

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<html>
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  <meta charset="UTF-8" />
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  <style type="text/css">
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    body {background:#f2f2f2; border:10px solid #fff;margin:0; padding:20px;
font-size:14px;color:#5F6163;line-height:1.3;}
    body, input, button, textarea {font-family: sans-serif;font-weight: 400;}
    a {color:inherit;text-decoration: none;}
    img {border: none;}
    h1, h2, h3, h4, h5, h6, strong {font-weight: 700;color: #000;}
  </style>
</head>
</html>

```

```

h1, h2, h3, h4, h5, h6, ul, ol {margin:0;}
h3 {margin-bottom:20px;}
h1 {margin-top:30px;}
hr {border: none;height: 1px;background: #5F6163;}
p {margin:0;}
table {border-collapse:collapse;width:auto;border:1px solid #aaa;margin-bottom: 80px;margin-top:20px;}
td, th {padding:8px 15px;vertical-align: top;border-top:1px solid #aaa;}
td:nth-child(3), td:nth-child(4) {white-space:nowrap;text-align: right;}
</style>
</head>
<body>
<?php
include('groups.php');
include('config.php');
setlocale(LC_ALL, 'pl_PL');
function convert_locale_for_xls($text) {
    $return = iconv('UTF-8', 'cp1250', $text);
    return preg_replace("/([\xC2\xC4])([\x80-\xBF])/e",
"chr(ord('\1')<<6&0xC0|ord('\2')&0x3F)", $return);
};
function to_lower($text) {
    return mb_strtolower($text,'UTF-8');
}
$csv_files = array();
function analyse_file($file) {
    global $data_dir, $result_dir, $show_columns, $project_name_col,
$columns_amount, $groups, $words_groups, $show_html_table, $csv_files;
    if (($handle = fopen($data_dir.'/'.$file, "r")) !== FALSE) {
        $errors = '';
        if ($show_html_table) $html_table_header = '<table><thead><tr>'. "\n";
        $titles = fgetcsv($handle, 0, ";");
        if ($show_html_table) foreach ($show_columns as $td) $html_table_header .=
'<th>'. $titles[$td]. '</th>'. "\n";
        $header = '';
        foreach ($show_columns as $td) $header .= $titles[$td]. ';';
        $header = substr($header,0,-1);
        $show_columns_amount = count($show_columns);
        $result = '';
        if ($show_html_table) $html_table_header .= '</tr></thead><tbody>'. "\n";
        $data_array = array();
        while (($line = fgetcsv($handle, 0, ";")) !== FALSE) {
            $data_array[]=$line;
        };
        fclose($handle);
        echo '<h3>file analysed: '.$file.'</h3>';
        foreach ($groups as $group) {
            if ($show_html_table) {
                $html_table = '<h1>'. $group['title']. '</h1>'. "\n";
                $html_table .= $html_table_header;
            }
            $result .= $group['title'].str_repeat(";", $show_columns_amount). "\n";
            $result .= $header. "\n";
            $options = explode(" ", $group['option']);
            $found_count = 0;
            foreach ($data_array as $k=>$line) {
                $options_amount = 0;
                $current_amount = count($line);
                if ($current_amount<>$columns_amount) $errors .= '<h2>'. $k. ':
'.$line[0]. ' => wrong columns amount</h2>';
                else {
                    $found = 0;
                    $tmp_title = to_lower($line[$project_name_col]);

```

```

foreach ($options as $kk=>$option) {
    if (substr($option,0,1)=="1") {
        $options_amount++;
        $tmp_found = 0;
        foreach ($words_groups[$kk]['words'] as $word) {
            if (strpos($tmp_title,to_lower($word))!==false) {
                if (isset($words_groups[$kk]['words_no'])) {
                    $word_no_found = 0;
                    foreach ($words_groups[$kk]['words_no'] as $word_no) {
                        if (strpos($tmp_title,to_lower($word_no))!==false)
$word_no_found++;
                    }
                    if ($word_no_found==0) {
                        $tmp_found = 1;
                        break;
                    }
                } else {
                    $tmp_found = 1;
                    break;
                }
            }
        }
        if ($tmp_found==1) $found++;
    };
};
if ($found==$options_amount) {
    if ($show_html_table) $html_table .= '<tr>'. "\n";
    $result_tmp = '';
    foreach ($show_columns as $td) {
        if ($show_html_table) $html_table .=
'<td>'. $line[$td]. '</td>'. "\n";
        $result_tmp .= $line[$td]. ';';
    }
    $result .= substr($result_tmp,0,-1). "\n";
    if ($show_html_table) $html_table .= '</tr>'. "\n";
    $found_count++;
    unset($data_array[$k]);
}
}
if ($found_count==0) $result .= 'not
found'. str_repeat(";", $show_columns_amount). "\n";
echo $errors;
if ($show_html_table) {
    $html_table .= '</tbody></table>'. "\n";
    echo $html_table;
}
$result .= str_repeat(";", $show_columns_amount). "\n";
$result .= str_repeat(";", $show_columns_amount). "\n";
};

$result = iconv("UTF-8", "WINDOWS-1250", $result);
file_put_contents($result_dir.'/result-'. $file, $result);
$csv_files[] = $result_dir.'/result-'. $file;
}
}
if ($handle = opendir($data_dir)) {
    while (false !== ($tmp_file = readdir($handle))) {
        if ($tmp_file != "." && $tmp_file != ".." && substr($tmp_file,-3)=="csv") {
            analyse_file($tmp_file);
        }
    }
}
closedir($handle);

```

```

    if (!empty($csv_files)) {
        echo '<h1>CSV files:</h1><br />';
        foreach($csv_files as $csv_file) {
            echo '<h3><a target="_blank"
href="'. $csv_file .'">'. $csv_file . '</a></h3>'. "\n";
        }
    }
}
?>
</body>
</html>

```

config.php

```

<?php
$show_html_table = true;
$data_dir = 'data';
$result_dir = 'results';
$show_columns = array('0','1','9','12','19','20','21');
$project_name_col = 1;
$columns_amount = 27;
// options order must be the same as in $words_groups array, separated by comma.
texts after numbers are only for information
$groups = array(
    array(
        'title'=>'Fairs','option'=>'1-fairs, 0-organisations, 0-R&D, 0-innovative,
0-productprocess, 0-implementation, 0-investmentspurchase, 0-fixedassets'
    ),
    array(
        'title'=>'Organisations','option'=>'0-fairs, 1-organisations, 0-R&D, 0-
innovative, 0-productprocess, 0-implementation, 0-investmentspurchase, 0-
fixedassets'
    ),
    array(
        'title'=>'R&D','option'=>'0-fairs, 0-organisations, 1-R&D, 0-innovative, 0-
productprocess, 0-implementation, 0-investmentspurchase, 0-fixedassets'
    ),
    array(
        'title'=>'Innovation and investment','option'=>'0-fairs, 0-organisations, 0-
R&D, 1-innovative, 1-productprocess, 1-implementation, 1-investmentspurchase, 0-
fixedassets'
    ),
    array(
        'title'=>'Innovation','option'=>'0-fairs, 0-organisations, 0-R&D, 1-
innovative, 1-productprocess, 1-implementation, 0-investmentspurchase, 0-
fixedassets'
    ),
    array(
        'title'=>'Investment in innovative assets','option'=>'0-fairs, 0-
organisations, 0-R&D, 1-innovative, 0-productprocess, 0-implementation, 1-
investmentspurchase, 1-fixedassets'
    ),
    array(
        'title'=>'Innovative product','option'=>'0-fairs, 0-organisations, 0-R&D, 1-
innovative, 1-productprocess, 0-implementation, 0-investmentspurchase, 0-
fixedassets'
    ),
    array(
        'title'=>'Others','option'=>'
    )
);

```

groups.php

```
<?php
$words_groups = array(
    array(
        'title'=>'fairs',
        'words'=>array('targ', 'wystaw', 'udział')
    ),
    array(
        'title'=>'organizations',
        'words'=>array('park', 'inkubator', 'transfer', 'klast', 'klust'),
        'words_no'=>array('kopark', 'maszyn')
    ),
    array(
        'title'=>'R&D',
        'words'=>array('b+r', 'badawcz', 'laboratorium', 'bada')
    ),
    array(
        'title'=>'innovative',
        'words'=>array('now', 'pierwsz', 'unikatow', 'unikal', 'niedostęp', 'inno',
'udoscional')
    ),
    array(
        'title'=>'productprocess',
        'words'=>array('techno', 'proces', 'produkcji', 'produkt', 'patent',
'wynalaz', 'preparat', 'wyrob', 'usług', 'organizacyjn', 'marketing', 'metod',
'rozwiąz', 'fabryk', 'lini', 'robot', 'oprogramowa', 'system')
    ),
    array(
        'title'=>'implementation',
        'words'=>array('wdrozeni', 'wykorzystani', 'zastosowani', 'wprowadz',
'użyci', 'produkcja', 'świadczeni', 'poszerzeni', 'uruchomieni', 'oparci',
'tworzeni', 'kreowani')
    ),
    array(
        'title'=>'investmentspurchase',
        'words'=>array('inwestycj', 'zakup')
    ),
    array(
        'title'=>'fixedassets',
        'words'=>array('środk', 'urząd', 'maszyn', 'sprzęt', 'lini', 'samoch',
'wyposażeni', 'aparatur', 'oprogramowa')
    )
);
```