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# **Information society in rural areas in Poland in comparison with other EU Member States**

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## **Information society in rural areas in Poland in comparison with other EU Member States**

The information society<sup>1</sup> is understood as a society which commonly and effectively uses information and communication technologies (ICTs). The emergence and development of the information society requires knowledge and skills of its members, which allow to make an effective use of information by means of modern information and communication technologies. This is a society which is based above all on knowledge and is marked by a willingness to learn, increase labour productivity and introduce modern ICTs and, in its broadest sense, innovation (Rao M., 2007). The concept of the information society which makes an effective use of the ICTs is strictly related to the definition of the knowledge-based economy which is mostly defined as an economy in which knowledge is the most important resource (Ludvall B. A., Foraya D. 1995), while learning is the most important process. In a narrower sense, the knowledge-based economy is directly identified with the dissemination of modern information and communication technologies in the economy and society.

The implementation of the assumptions of the knowledge-based economy is assumed to be the fundamental objective for the development strategy of the EU Member States. In accordance with the Europe 2020 Strategy (continuing the Lisbon Strategy)<sup>2</sup>, the development of the EU economy is based on innovation based on extensive scientific research, along with the development of the information society and the improved education system. The development of the knowledge-based economy takes place under the 1<sup>st</sup> pillar (priority of the Strategy), called “Smart growth based on knowledge and innovation”<sup>3</sup>. The development of the knowledge-based economy, including the use and “familiarisation” of information and communication technologies is to make the EU the most competitive economy in the world. To accelerate the development of the ICTs in all the Member States of the EU, create modern technologies and introduce safeguards in using the network, the European Commission initiated the Digital Single Market Programme in May 2015. The Programme is to “transform” 28 national digital markets into a single one.

### **Position of Poland in world rankings of the development of the information society**

The development stage of the Polish information society was compared with other Member States of the EU by means of two measures, i.e.

- ICT Development Index (IDI), elaborated by the United Nations International Telecommunication Union. The IDI measure takes into account 11 coefficients concerning three groups, i.e. Access, Use and Skills<sup>4</sup>.
- NRI – Networked Readiness Index (RRI), published by the World Economic Forum. The value of this measure is estimated based on 48 variables assigned to one of three compound indexes. They include: environment sub-index (market, political, legal and infrastructure), readiness sub-index (individual readiness, readiness of the enterprise

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<sup>1</sup> The concept of the information society was proposed by Tadao Umesamo for the first time in 1963, and was used to describe a society which processes information – for competitiveness. Macro, meso and micro level. Polish Scientific Publishers PWN, Warsaw 2008, Daszkiewicz N. (ed.).

<sup>2</sup> Europe 2020 Strategy: [https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/framework/europe-2020-strategy\\_pl](https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/framework/europe-2020-strategy_pl).

<sup>3</sup> Other pillars include: Sustainable growth - aimed at increasing the significance of the low-carbon economy, and socially inclusive growth favouring economic, social and territorial cohesion.

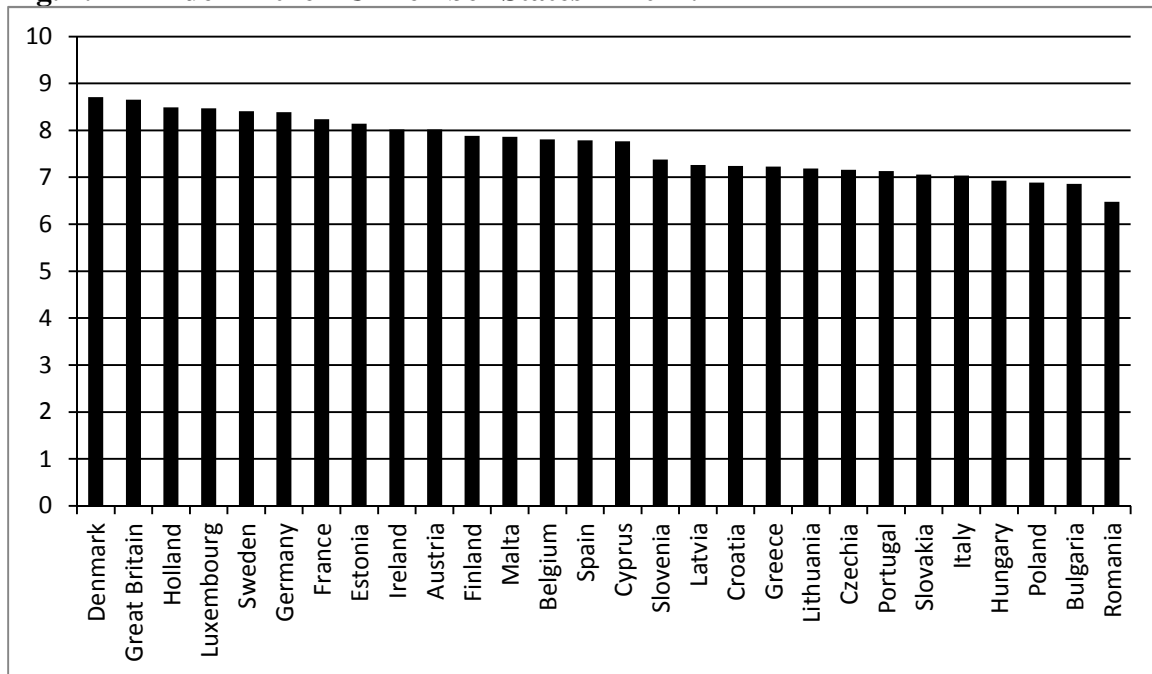
<sup>4</sup> The group “Access” covers coefficients concerning the scale of using fixed and mobile telephones and the Internet network. The group “Usage” refers to the scale of using the Internet, while the group “Skills” refers to the level of education.

and government sectors), and usage sub-index (individual, enterprises and government).

Thanks to a wide range of information used to elaborate both of the measures, it is possible to perform a complex evaluation of the readiness of individual countries to develop the information society, and the scale of using the ICTs.

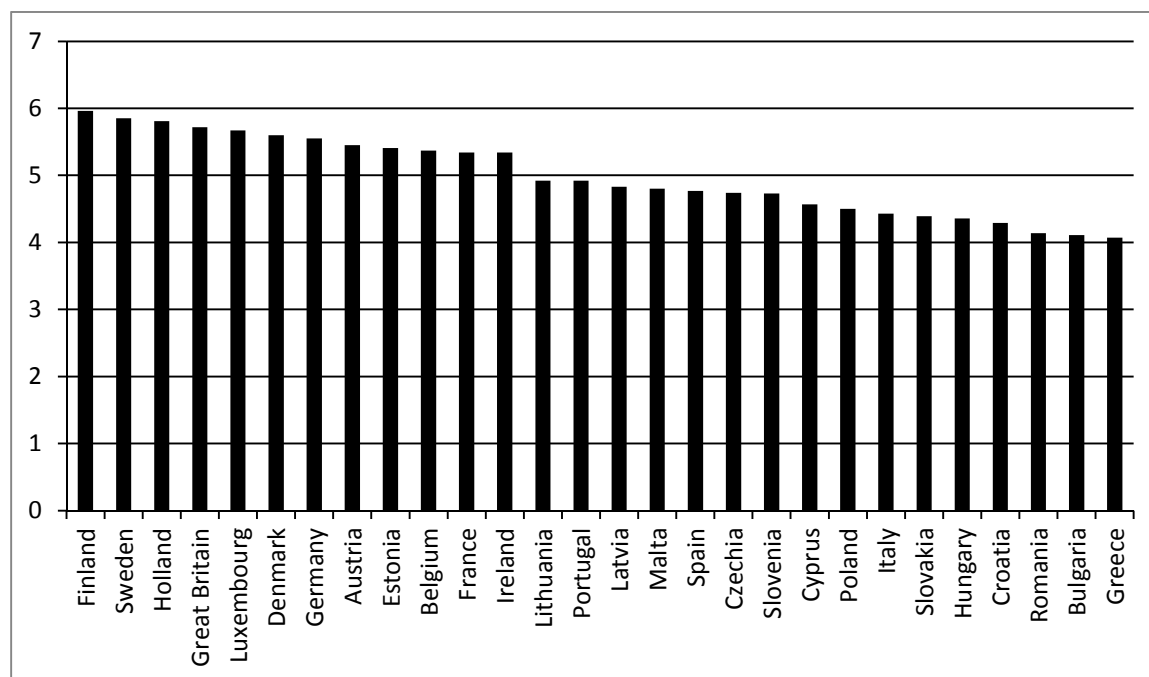
Taking into account the values of both the IDI and NRI indexes, Poland may be classified to the EU Member States which are marked by a relatively low level of development of the information society. In 2017, only Bulgaria and Romania recorded a lower value of the IDI index than Poland (Fig. 1). Poland faces the smallest distance towards the remaining EU Member States in terms of the skills indexes. In 2016, the lowest values of the NRI index were recorded by: Italy, Slovakia, Croatia, Romania, Bulgaria, Greece, and Hungary (Fig. 2). In terms of this measure, a relatively high position is achieved in terms of the individual readiness of members of the society to use and process information.

**Fig. 1. IDI index in the EU Member States in 2017.**



*Source: United Nations International Telecommunication Union.*

**Fig. 2. NRI index in the EU Member States in 2016.**



Source: World Economic Forum.

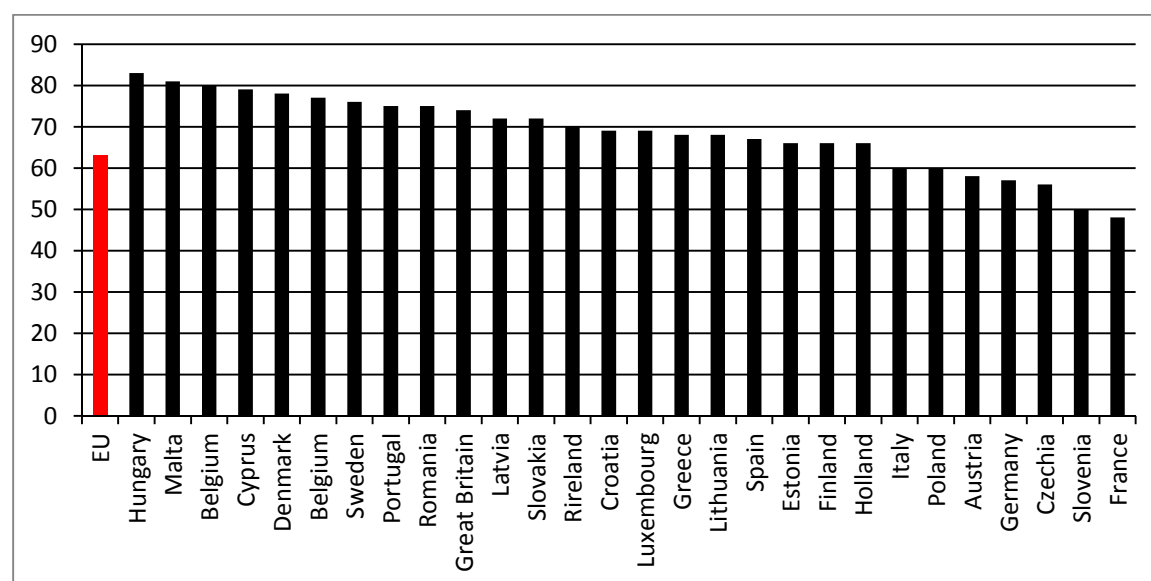
It should be pointed out that the information society is most developed in Finland, Sweden, Holland, Great Britain, Luxembourg and Denmark of all the EU Member States, measured by the IDI and NRI indexes (Fig. 1 and 2). These countries belong to ten countries with the most developed information society of the countries covered by the global evaluation. In 2017, Iceland, South Korea, Switzerland, Hong Kong and Norway (apart from the EU Member States) were among the 10 countries with the highest value of the IDI index, while the highest value of the NRI index was characteristic for Singapore, Switzerland, the USA, Japan and Norway. The countries with the highly developed information society are industrial countries whose economic development strategy is largely based on the dissemination and export of the ICTs.

#### *Accessibility of the Internet in urban and rural areas of Poland in comparison with other EU Member States*

The accessibility of the Internet, allowing to gain and process information, is the fundamental factor determining the standard of living of members of the society, and the broadly understood effectiveness and competitiveness of the functioning of participants in the economy.

All the EU Member States, including Poland, experience a dynamic growth in the number of households having access to the Internet. In 2016, an average of 85% of European households had access to the Internet, if compared with 70% in 2010. In Poland, the index increased from 63% to 80% and was higher by 50 p.p. than in 2005, i.e. the first year of Poland's functioning in the EU structures (Digital economy and society in the EU 2017, Statistical Yearbook by the Central Statistical Office of Poland (GUS), 2017). In 2016, the share of persons using the Internet in the total population of persons aged 16-17 years amounted to approx. 60% in Poland, if compared with the EU average of 62%. A lower value was recorded only by Austria, Germany, the Czech Republic, Slovakia and France (Fig. 3). Despite its dynamic progress, Poland still belongs to the group of the EU Member States which are marked by the relatively smallest share of citizens in terms of the accessibility and usage of the Internet.

**Fig. 3. Persons participating in social networks (as % of persons aged 16-74 who have used the Internet during the last 3 months) in 2016.**



Source: Eurostat.

Both in Poland and in the remaining EU Member States, the Internet is less accessible in rural areas than in the urban ones. That obviously results from a lower level of incomes of residents in rural areas (mainly farmers), poorer computer skills, and a poorer infrastructure in rural areas.

In 2016, 78% of Polish households living in rural areas had access to the Internet, if compared with 82% of households in urban areas (Fig. 1), and the EU average of approx. 80% and 88% accordingly. Thus, urban and rural areas in Poland are marked on average by a smaller difference in the Internet accessibility than in the Community. It should be pointed out that the difference has significantly shrunk since Poland's accession to the EU. In 2005, approx. 19% of residents of rural areas and 36% of those in urban areas had access to the Internet. The number of households with broadband access has increased faster in rural areas than in the urban ones. In 2016, the share of urban households having broadband access in the total number of access increased by 57 p.p. to 78% from 2005, while it increased by 66 p.p. to 71% in rural areas.

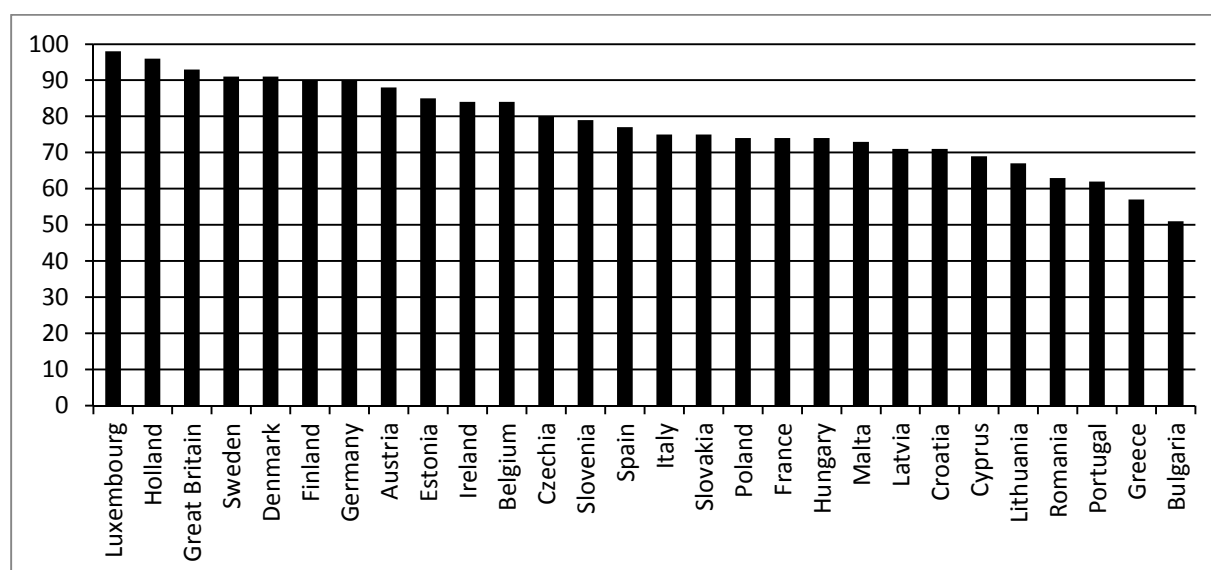
**Table 1. Households having Internet access as % of the total number of households.**

Specification	2005			2016		
	Total	urban	rural	Total	urban	rural
Total, including:	30.4	36.1	18.8	80.4	81.7	77.8
Households having broadband access	15.6	20.6	5.2	75.7	77.9	71.3

Source: Statistical Yearbook by the Central Statistical Office of Poland (GUS), 2017.

According to Eurostat data, Portugal, Bulgaria, Greece, Croatia, Romania, Cyprus and Latvia (Fig. 4) were marked by a lower percentage of households with broadband access in less populated areas (<100 persons/km<sup>2</sup>) than Poland in 2017. In more populated areas (>100 persons/km<sup>2</sup>, mainly the urban ones), only Bulgaria, Greece and Romania recorded a higher index than Poland.

**Fig. 4. Share of households with broadband access in the total number of households in less populated areas with <100 persons/km<sup>2</sup> (in %).**



Source: Eurostat.

In Poland, the number of persons using the Internet for electronic mail, searching information about goods and services, downloading computer programmes, using banking services or public administration services has been growing faster in rural areas than in the urban ones. Nevertheless, the distance between the urban and rural areas in Poland remains significant in terms of using the opportunities provided by Internet access. That mainly refers to using electronic mail (in 2016, the difference was nearly as high as 16 p.p. to the detriment of the rural ones), searching for information about goods and services (approx. 11 p.p.), and using banking services (approx. 21 p.p.) (Table 2).

**Table 2. Purposes the Internet is used for by persons aged 16-74 years in rural and urban areas in Poland (% of households).**

Specification	2005			2016		
	Total	urban areas	rural areas	Total	urban areas	rural areas
Total	35.1	42.0	23.2	73.3	78.1	65.9
Using electronic mail	24.1	30.8	12.5	57.8	63.9	48.3
Searching for information about goods	18.0	22.8	9.7	56.6	61.1	49.7
Using banking services	5.9	8.4	1.6	39.1	47.5	26.2

Source: Statistical Yearbook by the Central Statistical Office of Poland (GUS), 2017.

The share of persons aged 16-74 years and using electronic mail in the total Polish population of this age (and for other purposes) is lower than the EU average. That refers both to urban and rural areas.

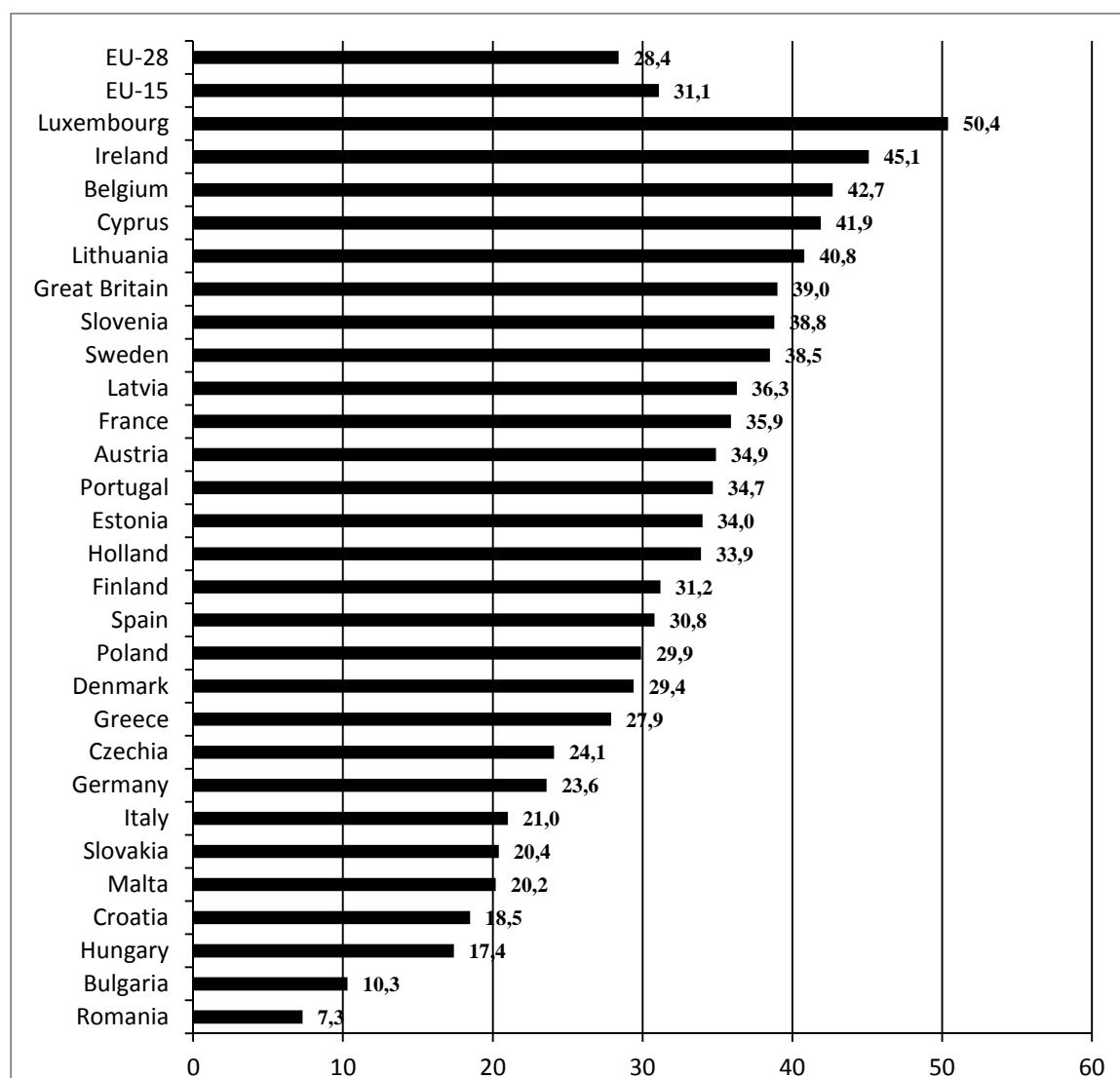
The Internet is not commonly used by Polish farmers by making production and economic decision. It is estimated that one third of Polish farmers do not use the Internet in this respect, while approx. 20% do that occasionally. In 2016, 94% of processing plants,

including the fruit and vegetable processing ones (Central Statistical Office of Poland (GUS), 2007) had Internet access, with approx. 93% having broadband access. Large companies (with over 250 employees) access and use the Internet in their economic activities as their counterparts in Western Europe.

### Level of education of residents of urban areas in Poland in comparison with other EU Member States

The introduction of the ICTs and the general knowledge-based development are highly dependent on the level of education of the population. In 2016, approx. 30% persons aged 30-34 years in rural areas had a university diploma in Poland (Fig. 5). The share was slightly lower than in the EU-15, but above the EU-28 average. Among the new Member States of the EU, a higher share of persons of this age and having a university diploma was recorded by Estonia, Slovenia, Lithuania and Latvia. Bulgaria and Romania had the lowest percentage of residents of rural areas and having a university diploma (that also refers to urban areas). This is one of the important reasons determining the low level of indexes depicting the development of the information society in both of these countries, mainly the indexes concerning the development of the ICTs.

**Fig. 5. Share of persons aged 30-34 years and having a university diploma in the total number of population of this age in rural areas in the EU, in 2016 (in %).**

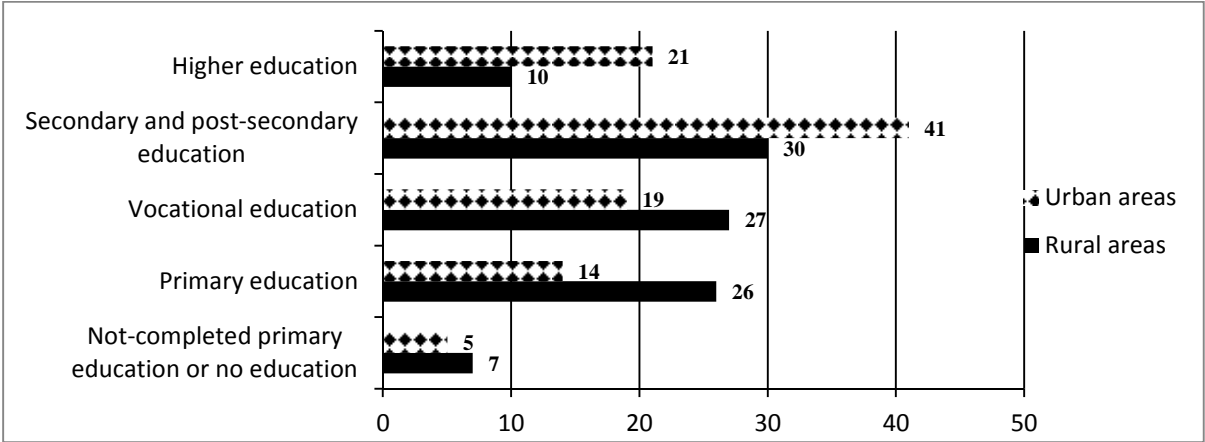


Source: Eurostat.



Residents of rural areas in Poland and the EU Member States are less educated than in the urbanised areas. According to Polish statistics (Statistical Yearbook by the Central Statistical Office of Poland (GUS), 2017), 10% of persons aged more than 13 years had a university diploma in 2016, with the percentage reaching 21% in urban areas. In rural areas, 30% of the population had secondary education, 27% basic vocational education, and 26% primary education (Fig. 6). However, only 3% of farmers managing farms had a university diploma in agriculture, 25% had secondary education (vocational, basic, and post-secondary), while 20% completed courses in agriculture.

**Fig. 6. Level of education of the Polish population (aged more than 13 years) by the place of residence in 2016 (in %).**



Source: Statistical Yearbook by the Central Statistical Office of Poland (GUS), 2017.

Persons managing large farms have a much higher level of education. Of the farmers managing farms of more than 50 ha, approx. 60% of persons had a university diploma or secondary education in 2016, with the percentage being as high as 14% for the smallest farms (1-1.99 ha). The continuous large fragmentation of the agricultural structure in Poland (the average area of a farm amounted to approx. 10 ha in 2016, if compared with the EU-28 average of 17 ha) largely determines the demotivation of farmers to gain better education and use the ICTs to a larger extent in pursuing economic activity. In smaller farms, hardly connected to the market, the introduction of the ICTs or innovative solutions is not justified in economic terms.

**Supporting the development of the information society and the knowledge-based economy in the Polish agricultural sector from the Rural Development Programme**

The development of the knowledge-based economy (including the ICTs) in the Polish agricultural sector and in the whole agri-food sector is mainly financed from the Rural Development Programme (RDP). The Programme refers to the implementation of the 2<sup>nd</sup> pillar of the Common Agricultural Policy, i.e. the rural development. The implementation of the Programme will be performed by supporting a number of actions, sub-actions, and operations. As in the years 2007-2013, in the years 2014-2020 Poland is the largest beneficiary of the EU support under the 2<sup>nd</sup> pillar of the Common Agricultural Policy. In the year 2014-2020, the budget of the RDP amounts to EUR 13.6 billion in Poland, if compared with EUR 13.4 billion in the years 2007-2013.

The development of the knowledge-based economy and the introduction of the ICTs are directly related to actions and operations (Fig. 7):

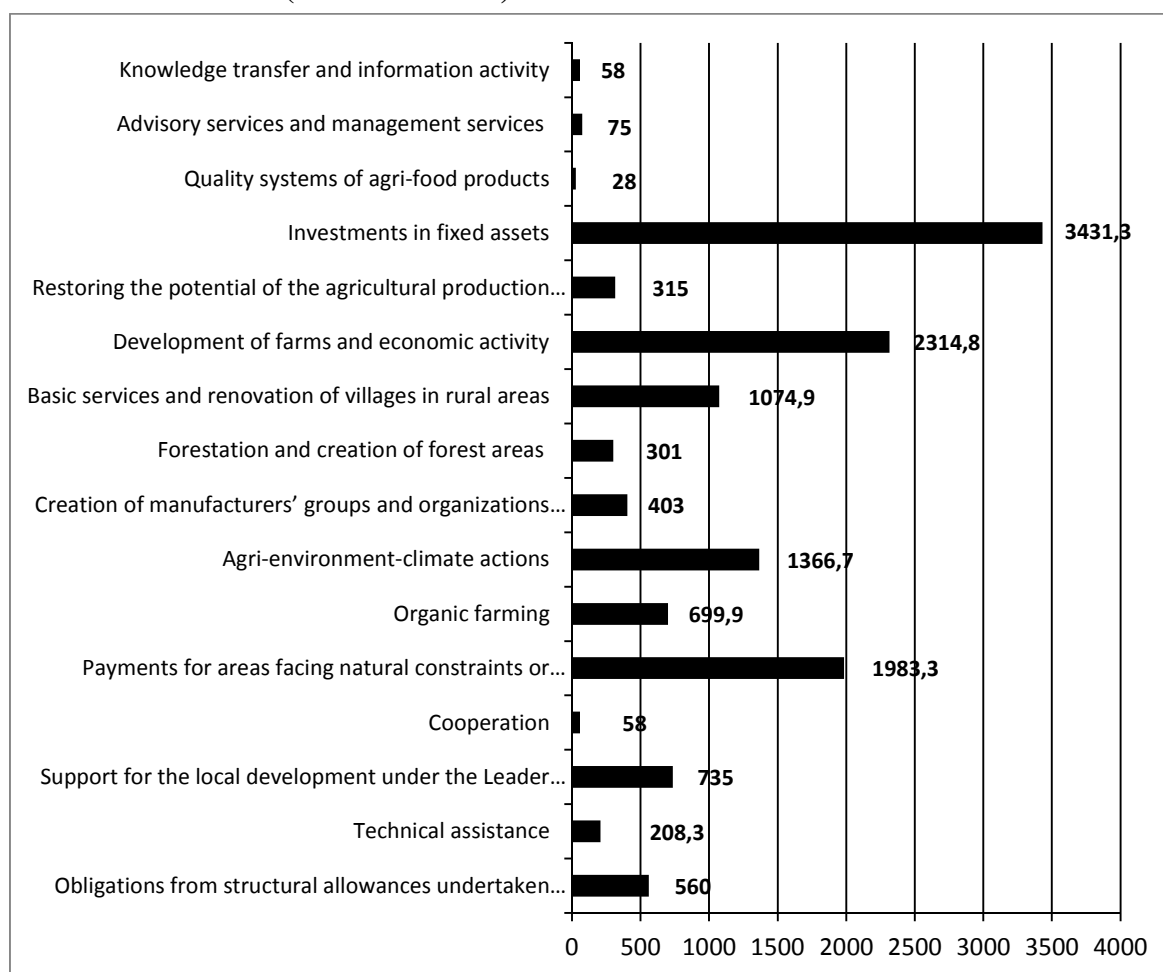
- Cooperation - actions covering innovative projects;
- Modernisation of farms - the operation is aimed at supporting the introduction of innovations and improving the quality of agricultural products. The projects submitted by farmers also include the introduction of the ICTs;
- Bonuses for young farmers - the action is aimed at improving the age structure of farmers managing farms. Young farmers managing farms are creative in using current production solutions and using computers in the process of making production and economic decisions;
- Supporting the creation and functioning of manufacturers' groups and organizations - the action favours the "breaking" of the barrier consisting of the fragmented agricultural structure in Poland and the greater dissemination of the information and communication technologies;
- Supporting the processing in small and medium-sized enterprises - also concerning the introduction of the ITCs.

The total support for the actions and operations was equal to approx. 30% of the total budget of the RDP at the end of December 2016, including 25% concerning the support for investments in farms and processing plants. The support for investments highly related to the innovative activity and the increased significance of the ICTs in the decision-making process of agricultural and processing plants was the greatest position in the budget of the RDP, if compared with the remaining actions included in the RDP<sup>5</sup>.

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<sup>5</sup> Other actions include: Knowledge transfer and information activity, Advisory services, Quality system of agri-food products, Restoring the potential of the agricultural production destroyed by natural catastrophes, Basic services and renovation of villages in rural areas, Forestation, Agri-environment-climate actions, Organic farming, Payments for areas facing natural constraints, Support for the local development under the Leader initiative.

**Fig. 7. Budget for the implementation of the RDP in the years 2014-2020 by actions, state as of 31.12.2016 (in EUR million).**



Source: Agency for Restructuring and Modernisation of Agriculture.

## Conclusion

Rural areas both in Poland and other EU Member States experience a swift development of the information society, which mainly reflects in the dynamically increasing access to computer networks, including the broadband one. However, Poland still takes a distant position in the EU in terms of the development of the information society both in rural and urban areas. The difference is clearly greater in comparison with the EU-15 industrial countries. The further economic development of Poland along with the functioning of the Digital Single Market and the large scale of EU support will result in closing the gap in the development of the information society in rural areas (and in the urban ones) between Poland and the highly developed Member States of the EU. In Poland, the greatest barrier in using and processing information by means of the ITCs consists of the continuous fragmented agricultural structure which determines the lack of economic justification in making production and economy decisions by means of the ICTs in farms.

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