D.T3.1.3.5 REGIONAL ACTION PLAN

BIELSKO-BIAŁA, SILESIAN VOIVODESHIP

D.T3.1.5
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INDICE

Introduction - the national approach on Precision Agriculture

The agricultural sector is currently facing major challenges to feed a growing world population in a sustainable way, whilst dealing with major crises such as climate change and resource depletion. At the same time there are major technological advances in the fields of robotics, nanotechnology, gene technology, artificial intelligence and machine learning, and energy generation, amongst many others.

There are many activities and strategied being implemented on the national level which are strictly related tot he agricultural and food production sector. However in Silesia Voivodeship there are no direct references in regional strategies and documents if we consider Precision Farming as such.

National Level:

The Strategy for Responsible Development for the period up to 2020 (including the perspective up to 2030) – SRD – was adopted by the Council of Ministers on 14th February 2017. It is an applicable and key document the Polish State in the field of the medium- and long-term economic policy. The document sets the goals fort he future development:

Specific objective I - Sustainable economic growth increasingly driven by knowledge, data and organizational excellence
"…Small and medium-sized enterprises are the basis of the Polish economy and this is why they should be provided with optimal conditions for development. Modern instruments for support of enterprises will be introduced and barriers to the development for entrepreneurship will be diminished, structural transformations will be supported in order to enhance the competitiveness of Polish farmers and agri-food producers…"
One of the 10 main strategic sector tofocus on is:
3) the sector of specialist telecommunication and information technologies (e.g. fintech, machine and building automation, cybersecurity, computer games or bioinformatics)
Which also includes agei sector and food production and processing.

More specific approach is defined in the document called "**Strategy for Sustainalbe Development of the Rural areas, Agriculture and Fisheries 2030**" that defines strategic goals:

Direction of intervention: I.2 Food quality and safety
Achieving and maintaining a high level of quality and safety of agri-food products based on domestic raw materials and products requires the maintenance of the highest level of scientific and research infrastructure, control system, agricultural and fishery production base.

Horizontal measures:
1.2.1. Supporting the production and distribution of high quality and innovative products, including traditional, regional and ecological ones - implemented also through sector development projects;

Direction of intervention: I.3 Development of innovation, digitalization and Industry 4.0. in the agri-food sector
The entities of the agri-food sector should participate in the next industrial revolution, which is determined by innovations (product, process, organizational, marketing), digitalization, satellite technologies, the Internet of things and Industry 4.0, which is a condition for maintaining and strengthening the international competitiveness of this sector. The development of innovative data processing technologies must take into account resilience to cyber threats and increased protection of

information, in particular in the context of Big Data and the collection of data from a large number of geographically dispersed sensors (Internet of Things), while at the same time meeting the growing needs for high mobility of data collection, analysis and visualization systems. ICT has the potential to transform agriculture in many ways, including: the use of data from smart sensors in, e.g., weather conditions, soil quality, crop progress, or cattle health, to, among other things, track the overall health of the farm, the productivity of the people employed or the equipment (farm machinery) and solutions used, better control of internal processes by being able to predict the outcome of production, cost management and waste reduction in - through increased control over production, increased business efficiency - through process automation, control over the production process and maintaining higher standards in crop quality and growth capacity - through automation.
An increase in the number of active small and medium-sized enterprises, as well as agricultural and fisheries farms, implementing innovations and with higher efficiency and profitability than before, will avoid the middle-income trap and the average-product trap.
New technologies developed as a result of scientific research will also serve the sector's resilience to increased production and market risks and will facilitate reconciling the need for productivity growth with the need to meet societal expectations in terms of environmental resource protection, climate and provision of other public services.

Horizontal measures:
1.3.1. creation and implementation of innovative solutions in agriculture and agri-food processing sector, development of innovative agricultural products;
1.3.2. use of ICT in modernisation processes of the agri-food sector
1.3.3. implementation of research projects (national and international) oriented towards innovative solutions in the agri-food sector
1.3.4. implementation of a research and innovation management system in the scientific and research facilities of the agri-food sector, which can also be implemented in other sectors of the economy
1.3.5. dissemination and implementation of innovations in agriculture and increase of demand for innovations among producers and agri-food processing
1.3.6. stimulation of product innovativeness in domestic agriculture and agri-food industry aimed at satisfying the needs resulting from demographic processes taking place in the society and the necessity to prevent civilization diseases.

Complementary measures:
1.3.7. modernisation in agriculture and fisheries using the possibility of adapting the latest technologies, including inter alia automation, digitalisation, breeding and development of bio-economy;
1.3.8. Creation and implementation of innovative applications and open ICT platforms, which make it possible to provide remote advice, support agricultural producers or encourage users to cooperate actively (including knowledge exchange);
1.3.9. Digitalization in the field of agricultural policy instruments implementation facilitating development and dissemination of tools for optimization of production processes in farms;
1.3.10. implementation of a research programme for innovation (including from the EU framework programme) taking into account the specific nature of Polish agri-food sector (inter alia predominance of small and medium-sized entities, climate conditions) and strategic directions of animal and plant breeding, taking into account climate changes, resistance to harmful organisms or market requirements
1.3.11. Integration of the activities of science, education and development sector (including, among others, research institutes, agricultural universities and scientific units);
1.3.12. Stronger cooperation of the R&D sector with the production and processing sector, inter alia, through new forms of cooperation (e.g. operational groups for innovation of the EIP);
1.3.13. Improving competences and skills related to agricultural production and promotion and dissemination of knowledge concerning innovative solutions in the agri-food sector;
1.3.14. transfer of knowledge from the scientific sector concerning innovative solutions for reducing the negative impact of the fisheries sector on the environment, improving the condition of the environment and living resources

1.3.15. to increase the use of digital technologies in the framework of control and enforcement of the CFP (the use of drones in the control of marine fisheries, the use of satellite techniques for the measurement of breeding ponds)
1.3.16. Develop collaboration between farms and actors along the market chain, e.g. in the form of clusters, parks or technology platforms;

Direction of intervention: III.3 Increase of skills and competences of rural inhabitants
Skills and competences of inhabitants of rural areas will determine the possibility of taking advantage of new development opportunities connected with technological progress, innovations, market globalization, new value chains, including in the scope of bio-economy. They will also condition their competitiveness on rural and urban labour markets, determining their ability to take advantage of civilization progress.

Horizontal measures:
3.3.1. development of training services addressed to employees through modernisation of the offer of competence training (adapted to the needs reported by employees and employers), as well as the tools for co-financing a system of improving professional competences;
3.3.2. development of competence system concerning intergenerational succession for owners of family companies and craftsmen;
3.3.3. development of digital competencies - support in the area of education, learning, lifelong learning, flexible adjustment to individual needs of citizens, support addressed to groups with different levels of digital competencies, with particular emphasis on activities aimed at digital inclusion;
3.3.4. conducting educational and information campaigns for the dissemination of benefits from the use of digital technologies.

Complementary actions
3.3.5. raising the level of knowledge and acquiring new skills, which should translate into an increase in human capital and in the level of employment and entrepreneurship among the inhabitants of rural areas;
3.3.6. implementing lifelong learning policies aimed at facilitating transitions between jobs, up-skilling, entering or re-entering the labour market (broad approach to learning, opening up learning for all, partnership for lifelong learning, open approach to qualifications, facilitating access to new careers, investing efficiently in learning)
3.3.7. strengthening the programme in the education of leaders in public and social life, including a system for identifying leaders in society and supporting their development, upgrading the skills and professional qualifications of those working in the agri-food sector and upgrading ICT and business skills;
3.3.8. Dissemination (both in the formal and non-formal education system) of knowledge on social economy;
3.3.9. Improving the skills of adults and their participation in education (including low-skilled persons), inter alia, through strengthening educational and vocational counselling, development of flexible community outlets for adults (especially in rural areas and small towns), promotion of other forms of adult learning (learning by doing, workplace learning and competence development through implementation of social activities), promotion of the benefits of lifelong learning and benefits of inclusion in the digital space, allowing to save time, money, effort and more efficient operation in various areas of life;

Regional Diagnosis of Silesian Voivodeship

The Silesian Voivodeship is a region located in the southern part of Poland, in the basin of the three largest Polish rivers: the Vistula, the Oder and the Warta. It neighbors on the Opolskie, Łódź, Świętokrzyskie and Małopolskie Voivodships and in the south it borders on the Moravian-Silesian Region in the Czech Republic and the Žilina Region in the Slovak Republic. Geographically, the area is characterized by a diversified geological structure and varied geographical and natural relief. There are mainly mountains - the Silesian, the Żywiec and the Little Beskids, uplands such as the Silesian

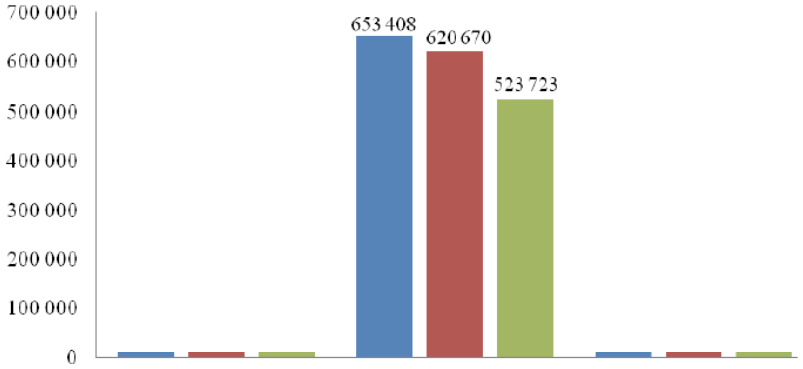
Upland and the Krakow-Częstochowa Upland, intermediate areas such as the Silesian Foothills and the Rybnik Plateau, and lowland, forested areas of the Racibórz Basin, the Pszczyna Valley and the Lower Vistula Valley. The area of the voivodeship covers 12,333 km2 (urban area: 3,790 km2, rural area: 8,543 km2), which accounts for almost 4% of the country's area.

Silesia is one of the economically (12.4% of GDP) and demographically (almost 4.6 million people) strongest regions in Poland. It is the largest urbanized area in Central and Eastern Europe, with the highest average national population density and urban population ratio - 77%.

Due to its specificity and high industrialization, the Silesian Voivodeship shows the lowest share of agriculture in creating gross added value. This situation may slightly improve in the coming years.
The low share of agriculture in the creation of gross value added in the Silesian Voivodeship is associated with a large share of small and very small farms, which contributes to the deagrarianisation of agricultural production space. These processes are particularly visible in urban agglomerations and their adjacent areas.

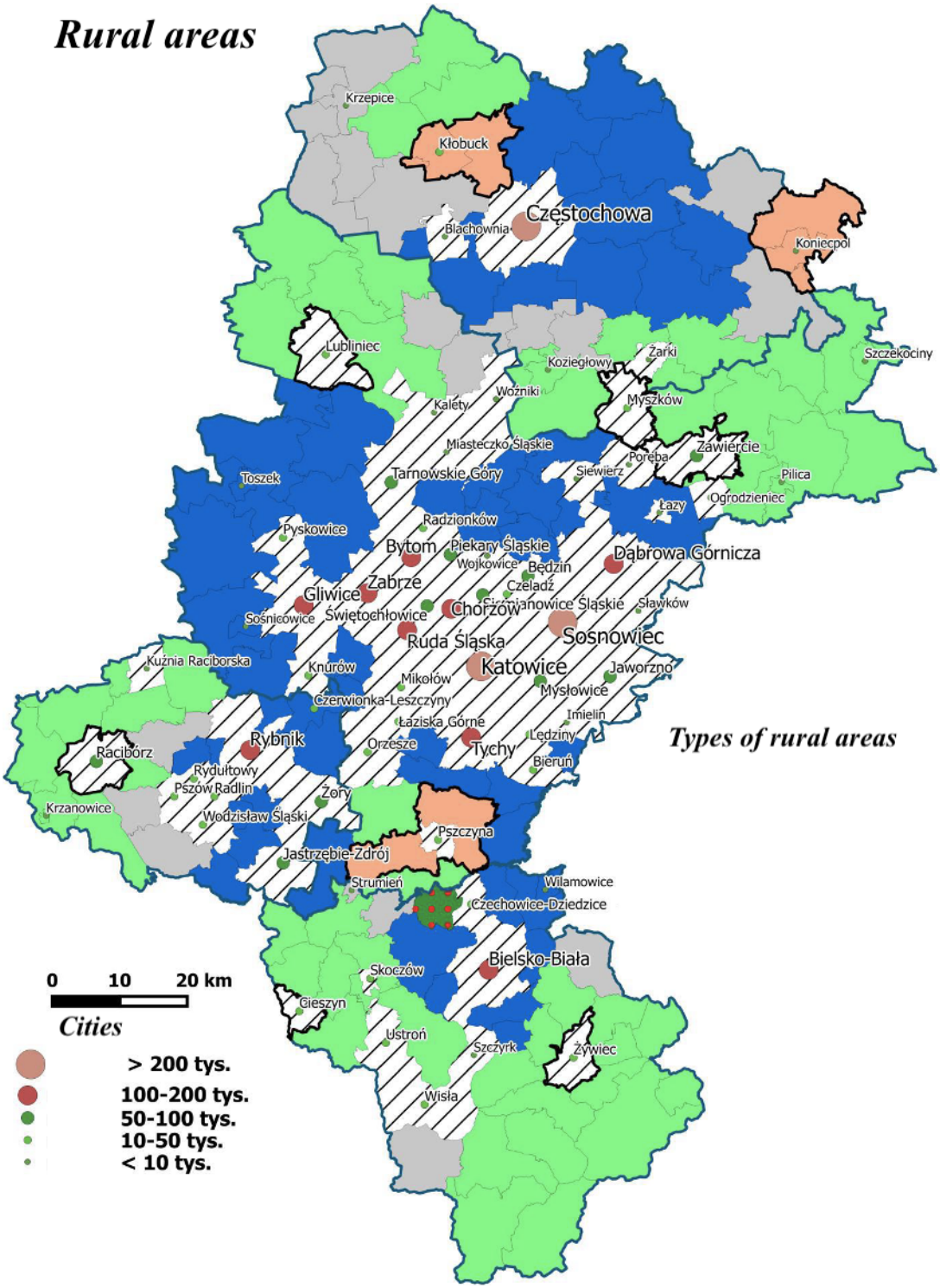
The age structure of the population in the Silesia Voivodeship shows that the proportion of people in the post-working age will be growing, both in towns and in rural areas. This problem will concern rural areas to a much greater extent, because the migration of people in the post-working age from cities to rural areas is noticeable, which, together with the migration of people in the working age from rural areas to cities, additionally increases this percentage.

Silesian voivodship is a voivodship with a low unemployment rate - 2nd place in the ranking of voivodships with the lowest unemployment rate, with a decreasing tendency.
Most of the unemployed in Śląskie voivodship live in towns, i.e. 78%, and only 22% live in villages. Women constituted more than a half of the rural unemployed subpopulation.
The climate of the Silesian Voivodeship, like that of the whole of Poland, is characterised by transitions between a moderate maritime and land climate. Due to soil conditions and location, there is a high risk of drought in agriculture.



Agri land in ha in (2000 blue, 2006 red, 2030 green)

According to the forecast, the area of land designated for non-agricultural purposes (built-up and urbanised) is expected to increase between 2006 and 2030 by 38%, from 161 thousand ha to 223 thousand ha. At the same time, along with increasing forestation, this will result in a 16% decrease in the area of agricultural land - from 621 thousand ha to 524 thousand hectars.


Rural areas
Krzepice
Kłobuck
Częstochowa
Blachownia
Koniecpol
Lubliniec
Koziegłowy
Żarki
Szczekociny
Kalety
Woźniki
Myszków
Miasteczko Śląskie
Zawiercie
Poręba
Siewierz
Tarnowskie Góry
Toszek
Pilica
Ogrodzieniec
Łazy
Radzionków
Pyskowice
Bytom
Piekary Śląskie
Wojkowice
Będzin
Dąbrowa Górnicza
Zabrze
Gliwice
Czeladź
Chorzów
Sławków
Sosnowiec
Sośnicowice
Świętochłowice
Ruda Śląska
Kuźnia Raciborska
Knurów
Katowice
Jaworzno
Mikołów
Mysłowice
Czerwionka-Leszczyny
Imielin
Łaziska Górne
Rybnik
Orzesze
Tychy
Lędziny
Racibórz
Bieruń
Rydułtowy
Pszów
Radlin
Żory
Krzanowice
Wodzisław Śląski
Pszczyna
Jastrzębie-Zdrój
Strumień
Wilamowice
Czechowice-Dziedzice
Bielsko-Biała
Skoczów
Cieszyn
Ustroń
Szczyrk
Żywiec
Wisła
0 10 20 km
Cities
> 200 tys.
100-200 tys.
50-100 tys.
10-50 tys.
< 10 tys.
Types of rural areas

Arable land constituted on average 64.9% of the agricultural land in the voivodship (from 39% in the Bielsko subregion to 77% in the Rybnik subregion). The Bielsko-Biała subregion was characterised by the highest share of permanent grassland in the voivodship (26% of agricultural land), and the lowest share of grassland was in the Rybnik subregion - 11%.

Crop production.
The dominant position in the structure of crops in the region was occupied by cereals. They constituted 78% of all crops in the region, with a small differentiation in subregions. Only in the Rybnik subregion their share was lower (72%). The share of cereals in the crops structure in the voivodship exceeded the limits of rational crop rotation and management in the conditions of sustainable development. There was a slight increase in the area of industrial crops, which in 2010 accounted for only 8% of the sown area.

Agri-food processing.
In the Silesia Voivodeship there is a well-developed processing network of products manufactured in rural areas. There is a constant tendency to diversify the range of food products with increasing consumption of processed goods and quality requirements. In Silesia the largest number of producers of meat products, including ready-made meat meals - 203, followed by establishments cutting fresh beef - 182, producers of minced meat and raw meat products - 104, producers of processed or processed fishery products - 14 and 6 producers of dairy products (including ice cream).

Fisheries in the Śląskie Voivodship.
Fishing in the Silesian Voivodeship has a centuries-old tradition. At the turn of the 14th-15th centuries, at the junction of Silesia and Lesser Poland there was one of the two largest centres of pond fishery in Poland - the Rybnik-Oświęcim center. In the following centuries pond farming developed in the whole Silesian voivodship. Currently, most fish farms are located in the southern part of the region, although even in the north there are mainly trout farms. According to data from RRW-22 forms, collected by the Institute of Inland Fisheries in Olsztyn, there are 220 fish farms in the province with a total area of 5,879.2 ha.

Livestock production
The following trends are being observed: an increase in the number of cattle caused by the unsatisfied and growing demand for milk and dairy products with the concentration of production in large farms and in animal husbandry, especially after the abolition of milk quota, a slow increase in the stock of pigs and poultry - the demand for meat will grow more slowly, a general decrease in the number of horses with an increase in the stock for recreational purposes, the restocking of sheep mainly in Podbeskidzie and Jura Krakowsko-Częstochowska.

Diagnosis smmary:
1.In our province there is a significant share of small farms, in which subsistence farming prevails. The most characteristic feature of agriculture in the region as a whole is the fragmented ownership of farms and land, which means that in many regions there is an anachronistic system, which in market economy conditions is inefficient and difficult to continue functioning. It is necessary to work on further consolidation of agricultural land in the province.
2. Cereals occupy the dominant position in the sowing structure. Industrial plants constitute only 6.7% of the sown area.
3. The Silesian Voivodeship is characterised by low and diversified animal density in subregions and farm area groups. However, a very high number of poultry in farm animal husbandry is distinguished.
4. Agriculture in many rural communes still constitutes an important source of income for the population. The diversification of the rural economy may occur faster only with greater involvement of non-farm economic entities. Small farms will be forced to lease their land for economic reasons.

5. The growth of rural households in our voivodship was one of the highest in the country. Revenues from various forms of leisure and rural tourism, including agritourism, begin to play an important and increasingly important role in the sources of income of rural households.
6. Reconstruction of our agriculture means, inter alia, modernization of technical infrastructure of farms. Thanks to investments the number of modern specialist machines will systematically increase.
7. Animal production technology requires an increasing scale of production and financial outlays. Further development of animal farms will be confronted with barriers concerning environmental protection and neighbourhood.
8. In the Silesia Voivodeship, farms in the Jura Krakowsko-Częstochowska and Podbeskidzie regions are predestined for organic farming because of their small size and touristic attractiveness. The development of organic farms (new pro-ecological technologies) should also be stimulated and supported by local authorities, especially in environmentally valuable areas.
9. The Silesia Voivodeship belongs to the regions with the biggest emission of dust and gas pollutants in Poland. The process of establishing industrial and energetic crops should be promoted on the most polluted areas. A key role in introducing environmentally friendly technologies is played by the system of state agricultural advisory, which disseminates and implements the principles included in the "Code of Good Agricultural Practice".
10. A small percentage of farmers has a chance of faster development of their holding through supporting investment undertakings with national and EU aid. A significant part of the remaining farms will perform the role of nature conservation, often running recreational and agritourism farms and will not be able to invest and generate income at a level guaranteeing economic viability.
11. In the Silesia Voivodeship, the highest economic viability is demonstrated by farms classified as agricultural types: horticultural crops and breeding of animals fed with concentrated feed.
12. In the Province of Silesia more attention should be paid to implementation of technological and innovative progress in plant and animal production, extension and modernisation of rural infrastructure, and increasing the share of processed products in the commodity production structure.
It is necessary to further develop food industry in the context of conditions and specifications of the Silesia Voivodeship.
13. Improvement of quality of life in rural areas of Silesia requires financial support using for this purpose financial means from the state budget and granted within the EU aid. Structural changes, farms modernization and as a consequence the development of rural areas in Silesia should be co-financed from farmers own incomes which, however, have to be on a proper level, much higher than at present.

Regional Level:

Vision of the rural areas development of the Silesian Voivodeship

*(Śląskie Strategia Rozwoju Obszarów Wiejskich do roku 2030)

Rural areas of the Silesian Voivodeship in the perspective of 2030 will be characterized by the following positive features:

1. competitive, diversified economic structure developing around traditional economic activities for rural areas, in particular agriculture and food production; among strong specialisations of rural areas in the Silesian Voivodeship the leading role is played by modern agriculture developing in connection with processing activity, with ecological activity and special divisions of agricultural production; various types of tourism - including agrotourism, active, educational, spa, weekend, ecotourism - in which values of rural areas are combined with modern technologies, various complementary economic activities are developed and innovative use of the potential of agricultural and forest farms is made;

2. developing new economy sectors based on the use of unique values of rural areas, including natural and cultural ones, while maintaining their quality and innovations based on cooperation with cities: renewable energy production; care and

rehabilitation services related to demographic changes; service and production activities whose competitiveness is based on access to clean natural environment;

3. Developing: scientific and research activities in ecology, agriculture, forestry, ethnography and other fields that are closely related to the activities and potentials characteristic of rural areas;

4. exceptional living conditions resulting from positive relationships between residents, the quality of the natural environment, a high sense of security, accessibility to services and amenities in rural areas, and accessibility to higher-level services in easily accessible urban areas;

5. consolidated local communities nurturing their cultural and natural heritage and at the same time open to the future and creative, involved in the adoption and implementation of local policies;

6. specific, attractive landscape resulting from the high quality of the natural environment, well-preserved tangible cultural heritage, pro-ecological attitudes of the residents and consistent spatial planning;

7. well-developed internal cooperation networks, including strong relations between farms, broad intersectoral cooperation, structures and institutions combining the potentials of various entities, as well as projects created and implemented in partnership;

8. strong relations with cities contributing to knowledge and technology transfer, connecting producers with consumers, complementary use of potential in cities and rural areas;

9. communication openness to the surroundings, the components of which are: developed transport infrastructure, convenient connections by public transport, availability of ICT networks;

10. respecting the principles of sustainable and balanced development manifested by rational space management, full infrastructural equipment limiting anthropopressive phenomena, as well as high level of residents' responsibility for the natural and cultural heritage.

Strategy for the rural development of Silesian Voivodeship 2030

Strategic goals	Specific goals	Actions
A1. High competitiveness agricultural products of the region and development of agriculture using local environmental conditions.	K.1.Increasing the profitability of agricultural production. K.2.Improvement of farm structure. K.3.Synergic development of agriculture and processing. K.4.Development of agricultural specialisation - development of farms in niche directions of production. K.5. Development of ecological agriculture and increasing competitiveness of ecological products. K.6. Improving of cultivation and breeding culture. K.7. Development of fishery and activities in fishery environment. K.8.Finding new markets for agricultural products. K.9.Increasing the use of research and innovation activities for agricultural development. K.10.Adaptation of agricultural production to climate change.	**Information and cooperation networks** P1. Forum for information exchange and cooperation integrating institutions operating in rural areas. P2. Organizing trans-regional cooperation aimed at development of agricultural specialization of the voivodship. P3. Information, educational and organisational actions favouring consolidation P4. Creating networks of producer-processor-consumer relations in the region. P6. Study visits enabling exchange of experience and promotion of good practices in farm development. P8. Various forms of training addressed to farmers and processors. **Production and marketing** P11.Setting up of agro-processing incubators oriented towards innovative companies and companies developing local products.
A3. Growing potential for the rural area economy to generate and absorb innovation.	K.16. Implementation of innovative solutions in agriculture, forestry, ecology based on results of experiences of scientific and R&D institutions. K.17. Increasing attractiveness of rural areas for companies with high innovation potential. K.18. Using the potential of immigrant population for development of innovative activity of rural areas	**Information and networking** P30.Exchange of experience with regions and centers of high of innovation. P31.Bank of good innovative practices implemented in the region. P32.Database of innovation leaders. **Education** P33.Educational projects supporting creativity and innovativeness of inhabitants of rural areas. P34.Contests on innovative themes. P35.Supporting the development of modern vocational education with agricultural profile.

		Innovation and technology P36.Promoting assets in rural areas of the Silesia Voivodeship for innovative activities - natural conditions, communication links with agglomerations. P37.Creation of new technologies based on the functioning of operational groups of the European Innovation Partnerships (EIP).
A5. Availability of amenities that enhance the business attractiveness of the rural area.	K.22. Improvement of skills and qualifications of inhabitants (trainings, courses). K.23. Implementation of pro-investment policy encouraging investors to invest capital in rural areas.	**Information** P43. Implementation of local and supralocal systems in the promotion of investment advantages and investor services in rural areas. rural areas. **Education** P44. Programmes supporting the development of vocational and entrepreneurial competencies of children and youth in rural areas. P45. Trainings and courses supporting vocational retraining of inhabitants of rural areas.
B.1. Availability of public services and technical infrastructure enabling the development of residents in rural areas.	K.26. Ensure a high level of education in schools at various levels.	**Education** P49.Educational programs in schools that promote the attractiveness of the rural area and strengthen the local identity of children and youth.

Possible action for the considerations and implementation.

Setting up a Communication Platform for stakeholders

National Agricultural Advisory Network in Poland (Ośrodki Doradztwa Rolniczego w Polsce), Lokalne Grupy Działalnia, Agency for Restructurisation and Modernization of Agriculture.

The system of agriculture support in Poland is based on institutions such as Agricultural Advisory Centres and the Agency for Restructuring and Modernisation of Agriculture. These centers deal with a wide range of support for agriculture, transfer of knowledge, training, but also assist in the distribution of funds and subsidies under national and EU programs.

	Promotion of the cooperation
Goal	Effective communication of the sectoral actors
	Setting up a cooperation and information exchange platform
activities	1. inventory of offers (research institutions and companies) in the scope of performing commissioned and consortium R&D works. 2. Launching a virtual cooperation exchange: offers of research institutions, research offers of companies, proposals of research subjects (including engineering and bachelor's theses, etc. 3. making the commercial offer of research activities more attractive - internal workshops/training to increase the commercialization potential. 4. organization of quarterly networking meetings ("bussines to science") in field thematic groups. 5. creation of a team of knowledge and innovation relays, animators of branch/domain thematic groups.
Liders and consotrium	University of Technology Agri Advisory Services,
Financing	**European Funds Silesian Voivodeship 2021-2027**
Measures For 1 operational year after start	1 virtual cooperation exchange platform 5 workshops increasing the potential for commercialization 10 networking meetings 3 knowledge and innovation brokers/relays services 30 study visits to local companies and research institutions

Use of technological incubators and laboratories for Industry4.0 companies

In the province there is a well-developed system of technology incubators and technology gas pedals operating mainly in the sector of modern technologies, mainly related to IT technologies - Industry4.0. Modern technologies and technical solutions in the field of automation, robotics, Internet of Things solutions or software and Big Data can also find application in the sector of precision agriculture. For this, it is necessary to take advantage of possible and available communication systems and to draw attention to the agricultural sector as a possible recipient of the R&D developments and technology outcomes.

Technology transfer centers

The use of modern communication channels for the commercialization of research results of companies and research centers and the return of demand for technologies and information solutions

	Cooperation with R&D and Technological Incubators
	Network cooperation including strategic technologies
Goal	***Cooperation and integration of agri market with innovation system in the region***
Activities	1. networking meetings. 2. Organization of competitions for field engineering / semester papers. 3. domain exchange of internships for students and faculty. 4. thematic trainings. 5. workshops for joint search of solutions. 6. Creation of joint R&D cooperation offers with external partners. 7. creation of plans for development of joint research and development infrastructure.
Leader and Consortium	Universities, Incubators, seed capital funds, start-uo centers
Financing	**National Funds for R&D Development, PARP**
Measures For 1 operational year after start	20 networking meetings 4 editions of competitions for engineering / semester papers 200 persons who completed thematic trainings 8 workshops of joint solution seeking 3 applications to national or international R&D programs, submitted consortially by network members and external partners.

Education system in the field of automation, robotics, electronics and IT, Promotion of the Precision Farming as a possible future career for students

In the field of education, there are very many schools, universities and educational centers in the province with specialization in automation, robotics, mechatronics and IT. The education system provides an adequate level of education. The aim is to indicate the possibility of using one's skills not only in industrial sectors traditionally understood as innovative, but also in the sector of broadly understood agricultural production, which is developing very rapidly in terms of implementing the latest technological solutions.

	Education
	Educational systems for specialized off the schoold additional education and trainings
Goal	Implementation of the supporting eduction cation s
Activiities	1. inclusion of new economic partners to the group of employers cooperating with the faculty, constitution of the faculty curriculum council 2. carrying out an analysis of the local economy needs in the field of knowledge, skills and competence of students and graduates of the faculty taking into consideration Precision Farming technological needs 3. working out the curriculum and rules for realization of partnerships between training agencies and agri support national services 4. carrying out internal procedures connected with conducting dual education. 5. promotional recruitment campaign 6. recruitment 7. joint didactic seminars for students and agri sector
Leader and cosortium	Agri Support Service (ODR or ARMIR) Education instytutions
Financing	National Funds for education
Measures for one operational year after start	Analysis of the needs Common off school educational program Promotional campagne

Financial framework : European Funds Silesian Voivodeship 2021-2027

Priority I: Intelligent Silesia
Specific objective: (i) Developing and strengthening research and innovation capacities and exploiting advanced technologies

Developing and strengthening Research and innovation capacities innovation capacity and using advanced technologies	002 Investments in fixed assets, including research infrastructure, in small and edium-sized enterprises (including private research organisations research organisations) directly related to research and innovation activities	5 500 000
Developing and strengthening Research and innovation capacities innovation capacity and using advanced technologies	004 Investments in fixed assets, including research infrastructure, in public research organisations research organisations and higher education institutions directly related to research and innovation activities	50 000 000

2.1.1.2. Specific objective: (ii) Reaping the benefits of digitisation for citizens, businesses, research organisations and public institutions
Specific objective: (iii) Enhancing sustainable growth and competitiveness of SMEs and job creation in SMEs, including through investments in to production

Strengthening the sustainable growth and competitiveness of Competitiveness of SMEs and Creating jobs in SMEs, including through including through investments productive investments	025 Business Incubators, support for spin-off and spin-out companies, spin-off and spin-out enterprises and start-up enterprises start-up	10 465 719

Priority II: Greening Silesia
Specific Objective: (vi) Supporting the transition towards a closed and resource-efficient economy

Supporting the transition towards a towards a circular economy closed and resource efficient economy resource-efficient economy	075 Support for ecological production processes and efficient use of resources resource efficiency in SMEs	11 000 000

Priority V: Social Silesia

Specific objective: (d) Supporting adaptation to change for employees, enterprises and entrepreneurs, supporting active and healthy ageing and a healthy and ageing and a healthy and well adapted working environment which takes account of health risks

Promoting adaptation employees, enterprises and entrepreneurs to change, Promoting active and healthy ageing and healthy ageing and a healthy and well well-adapted working environment work environment that takes into account health risks	146 Support for adaptation of workers in, enterprises and entrepreneurs to changes	107 500 000

Other sources that will be continued after approval of new financig programs fort he 2021-2027

Digitalization vouchers are grants from the European Union funds, under Measure 6.2 POIR - Priority VI of the Operational Programme Intelligent Development. Support for SMEs in the use of digital technologies and adaptation of the digitization business model to changes in the market as a result of the coronavirus pandemic.

For whom: Micro, small and medium enterprises operating in Poland

Projects must consist in the introduction (implementation) by SME of a process innovation (new or significantly improved process in an enterprise) through the use of digital technologies.

Thanks to the introduction and use of digital technologies in the enterprise, the project should cause a change in the way of working, processes of the enterprise, concerning production, provision of services, organization or additionally a change in the enterprise's products. The project may additionally consist in an implementation of a product innovation (a new or significantly improved product introduced to the market at least in relation to the existing products of the entrepreneur) connected with the implemented process innovation.

Vouchers for innovations for SME is a measure whose aim is to finance the purchase of R&D services developed by research and scientific units for your company. The measure is to support the development of cooperation between companies and scientific units.

Lessons learned, conclusions and recommendations for policy makers

During project implementation and promotion there's been a significan find within the policy documents and strategies of the region. Thus, Silesian Voivodeship is considered to be one the most important and highy industrialized region in Poland, agriculture productions in located on the very large area of the region, and takes a significant part of the regional landscape. Agricultural production makes good addition to the GPD of the region and such us has to be considered and mentioned in the regional documents as well. Potential of the Industry4.0 technologies implemented into the regional agri sector wil make a segnifican impact on the sector. This is also the case of the food processing sector, which is quite big in the region.

There is a significant number of problems created by an over-emphasis on emergent, high-tech solutions to our food system challenges, and this has potential inclusion and exclusion effects. Firstly, narratives associated with food security may become even more technocentric. The rise of Agriculture 4.0 thinking is only likely to extend this narrative towards the high-tech end of the innovation spectrum, further side-lining other responses to food security challenges which are not technology-based. These include social responses to food security challenges, built on the work of scholars who have shown that lack of access to food is rarely caused by a lack of food production, but by unequal distribution and entitlement to the food being produced due to societal inequalities. Increasing food production using technology, particularly in the developing world, is not a solution to this problem in and of itself. While technology is important to boost productivity and has indeed contributed to enhancing food security and prosperity, merely generating more food does not guarantee improved food security for marginalised groups and Agriculture 4.0 technologies should not be considered a panacea.

We can only achieve a responsible transition to more sustainable agricultural and food systems by working together and good methods of inclusion underpin efforts to innovate responsibly. In order to be responsible, transition pathways should evidently reflect a range of social and environmental needs. Inclusion of a range of actors in determining what the trajectory should be is crucial because existing actors (the 'usual suspects') may have a vested interest in maintaining the status quo.