

CROSS-REGIONAL ASSESSMENT WORKSHOP

Region: MAZOVIA

Katarzyna (Kowalska) Rull Quesada

UNIMOS

Warsaw, 22nd of November 2022



STAKEHOLDER DATABASE

CLUSTER FOUNDERS

- MB MONIKA BANKIEWICZ**
 - GRUPA SKOWRONKI**
 - MODR MAZOVIA**
 - IPHZR**
 - POLSKA PAPRYKA**
 - INHORT**
 - BARTEX**
 - RCIT**
 - TB GOSP.SADOWNICZE**
- Producer of natural apple juice (NFC)
 - Production group of apples, pears, cherries and plums
 - Agricultural advisory center for the Mazovia region (Warsaw)
 - Chamber of Commerce and Industry of the Radom region
 - Production group of pepper, eggplant and zucchini
 - Horticulture Research and Development Institute (R&D)
 - Export - import of agricultural products
 - Radom Innovation and Technology Center
 - Production of apples, pears, cherries and plums

CLUSTER MEMBERS AND PARTNERS

- GMINA RZECZNIOW**
 - GMINA KLWOW**
 - GMINA POTWOROW**
 - ZSSIH**
 - EUST**
 - MASARNIA PYSIAK**
 - CAMELOT CATERING**
 - PASIEKA MURAWSKI**
 - FOGIEL FOGIEL**
 - PIEKARNIA WACYN**
 - STRUS**
- Local City Council of Rzecznio
 - Local City Council of Klwow
 - Local City Council of Potworow
 - Vocational training school for food and hotel bussines
 - Private university specializing in public health
 - Production of cold meats and meat products
 - Catering company and organization of nutrition workshops
 - Production of honey and propolis
 - Bakery and confectionery
 - Bakery and confectionery
 - Production of goat cheese, milk and ostrich eggs

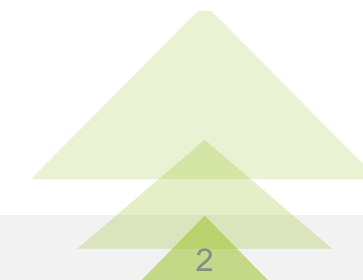
AMPLUS

- SADPOL**
- PPHU TOMPEX**
- ZPHU KABe-K**
- PHU Azmar**
- PHU ZDZICH**
- IPHT Kędziora Wiesław**
- SORTER**
- OZON FOOD**
- FHU Eko-wiert**
- TOMA SEEDS**
- ARTAGRO**
- EURO-INVERSIA**
- 4CF**
- techBrainers**
- TSNP**
- LGD RAZEM DLA RADOMKI**
- FUNDACJA FORUM**
- CROSS-CULTURAL**

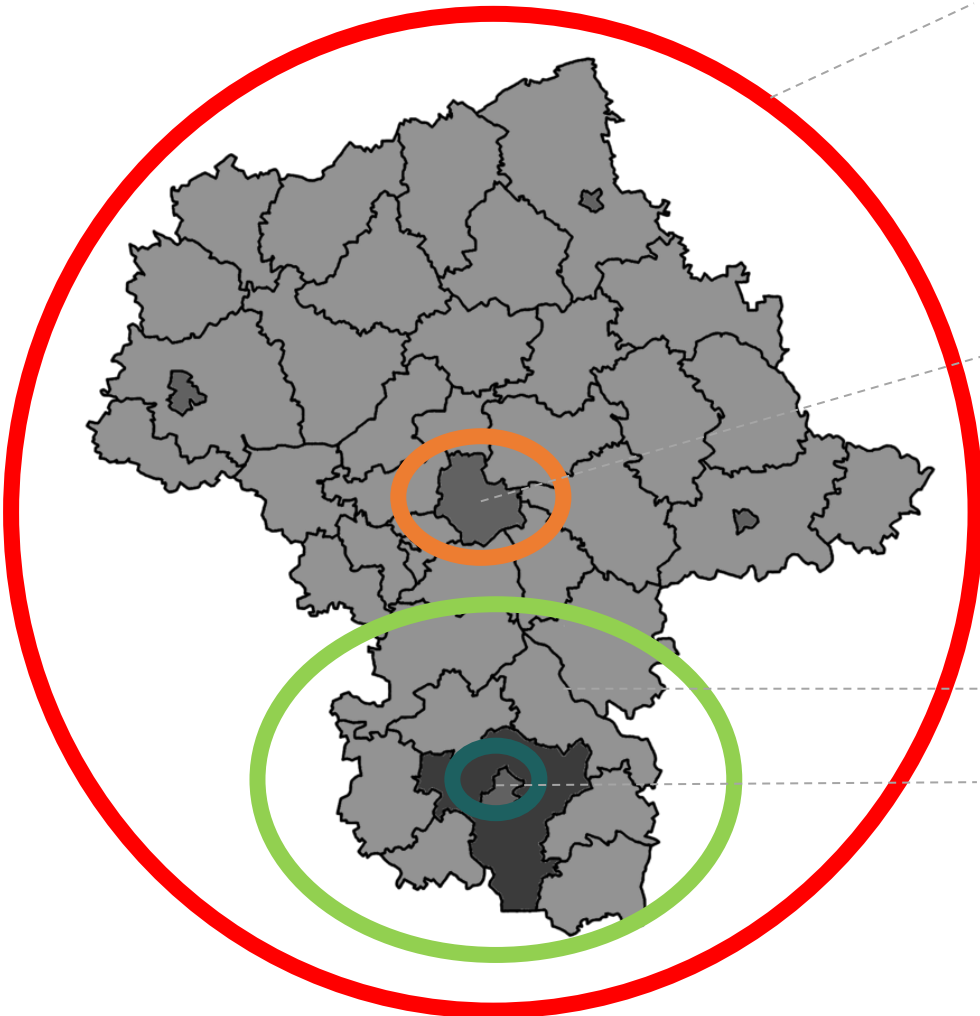
CLUSTER MANAGEMENT

UNIMOS

- Production and distribution of fresh fruits and vegetables
 - Production and distribution of fruits and vegetables
 - Purchase of fruits and vegetables
 - Agricultural articles
 - Maquinary trade
 - Agrifood trade
 - Agrifood trade and transport
 - Production of sorting, palletizing and vision machines
 - Food safety systems through ozonation
 - Soil Excavation Services
 - Seeds, fertilizers and technological advice
 - Hydronanogels, R&D, technological laboratory
 - Advanced consulting in internationalization and export
 - Advanced foresight advice
 - Technological scouting
 - Market research, analysis and technological observatory
 - Local Action Group of the Radomka river
 - Education in the field of health
 - Media, intercultural communication
- Development of innovations, internationalization & interclustering



Mazovia region – territorial perspective



Mazovia region

Warsaw – capital of Poland and Mazovia region.
UNIMOS headquarters

Radom Region – agriculture, especially apple and
pepper production

City of Radom - manufacture / industrial city

SCALE UP platform



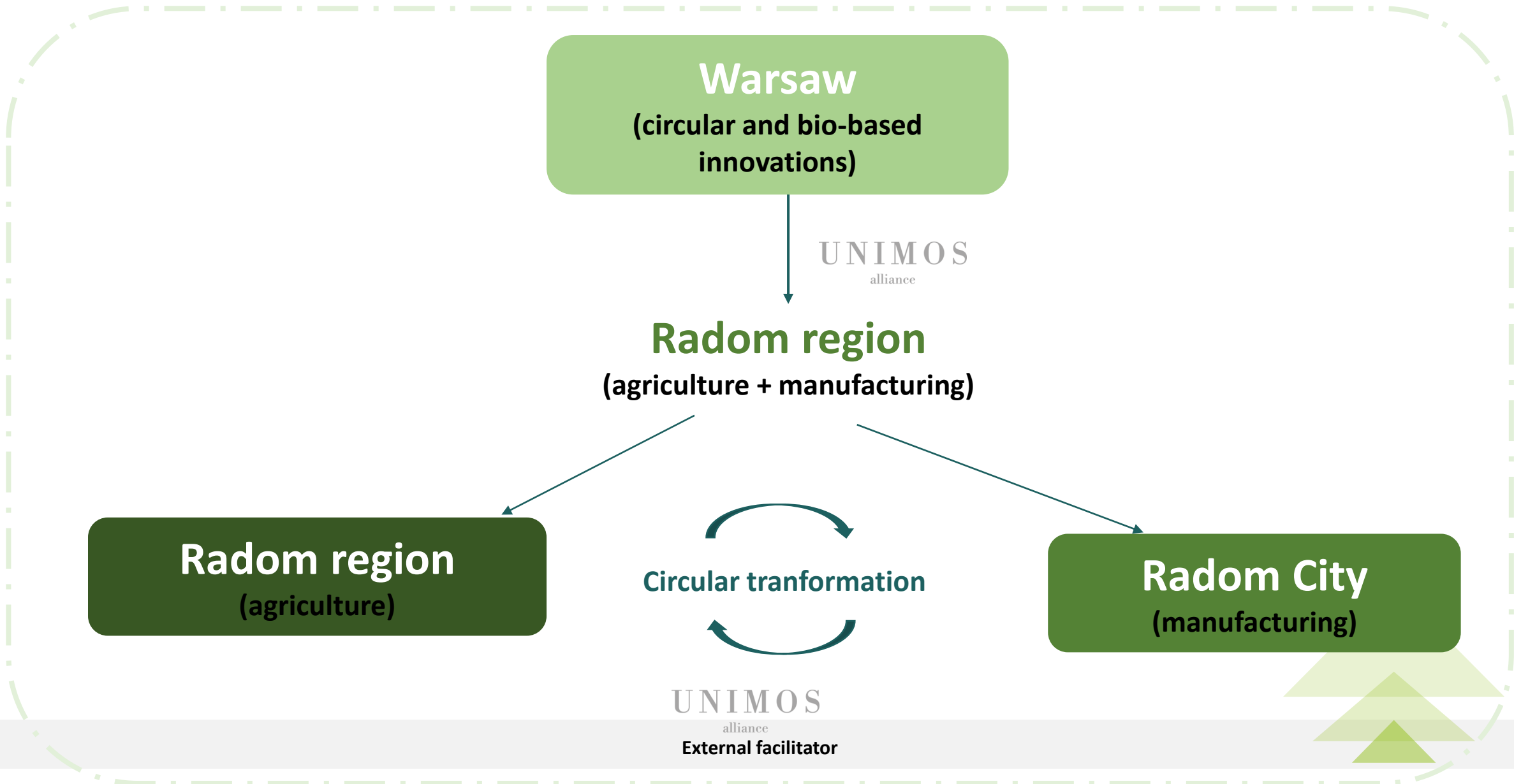
Warsaw
capital of Poland and Mazovia region

Radom city
manufacturing / industrial city

Radom Region (rural)
agriculture, especially apple
and pepper production



Bio-circular-digital transformation



BRIEF OVERVIEW OF THE VALUE CHAIN 1

Mazovia agri-food value chain:

- Agri-food value chain - focus on apple production
- Poland is the largest apple-growing country in the European Union
- Poland is fourth largest producer of apples in the world after China, the United States and Turkey
- The production of apples from apple orchards in 2021 was estimated at approx. 4 million tonnes, i.e. approx. 13% more than the 2020 harvest.
- Apples make up 80% of the country's fruit production

SCALE UP focus. Small scale bio-based solutions will be oriented on the:

- production of new functional agri-food products;
- production of new bio-based packaging;
- production of fertilisers based on waste from fruits, grains and vegetables and
- other processing activities.



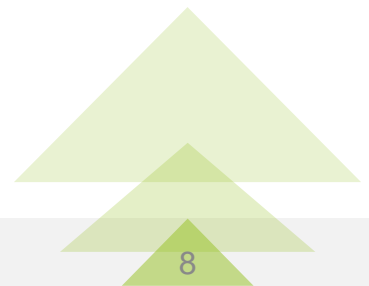
AVAILABLE SKILLS AND CAPABILITIES IN THE REGION

- Very fertile soils enabling a thriving development of agricultural economy
- Usable agricultural land covers about 65% of the area, hence the large role of horticulture, orcharding and related activities
- Region's economy is characterized by high industry diversification, being less dependent on cyclical fluctuations than regions uniform in terms of the structure of the economy.
- Heritage and experience in apple production
- Availability of high-tech and Industry 4.0 solutions
- Strong and active clusters with dynamic capabilities for both exploration and exploitation of existing potential
- Tangible support from the regional government for agriculture development
- Development of entrepreneurship in the region primarily influenced by the existence of business incubators, including academic business incubator
- Transregional role of Warsaw, connected to its role as the capital city of Poland



AVAILABLE SKILLS AND CAPABILITIES IN THE REGION

- Apples have been grown in Poland since the 12th century, and today form an integral part of its economy. Indeed, apples account for more than 80% of the fruit production in that country.
- Poland is the biggest apple-growing country in the EU and is home to nearly a third of all apple orchards in the union.
- Agricultural areas occupy 65% of the surface area of the region (13% of agricultural land in Poland). Basically, in the region of Mazovia, there are horticulturists and fruit growers.
- Approximately 30% of Polish orchards are in Mazovia, which makes almost 50% of the national production of fruit. More than half of the total national production of apples and strawberries come from Mazovia.



AVAILABLE SKILLS AND CAPABILITIES IN THE REGION

- Poland is the leading producer of apples in Europe. As a country, covers 35% of European apples production with 4,3 million tons per year in 2018. After China and USA it takes 3rd place in the world.
- Apples production is historically based in Poland. It started in twelfth century when the wild apple trees were cultivated by the Cisterians. They also bring new varieties from Germany in thirteenth and fourteenth century.
- Apples production is concentrated in the central region of Poland - Mazovia District. With the 73.627 hectares it provides almost half country production of apples. Next important regions are Lubelskie District with 22.752 hectares and Świętokrzyskie region with 21.381 hectares and Łódź area 19,512 hectares.
- Polish orchards are set up on the lowland areas. Country is situated in moderate climate zone which is very favourable for apple trees. Average temperature from flowering to harvesting time is 16,3 C (with rainfall 615 mm / month) and 2,7 C (with rainfall 320 mm / month) in the vegetation period.
- Orchards are mostly placed on soils made of clays, dust formations and saprophytic sands that gives good oxygenation to significant depths. The level of pH between 6,1 - 6,7.
- The potential is growing in accordance to new varieties of low trees and increasing the number of orchards. The intensity of production is picking up above 50 tons/ hectare.



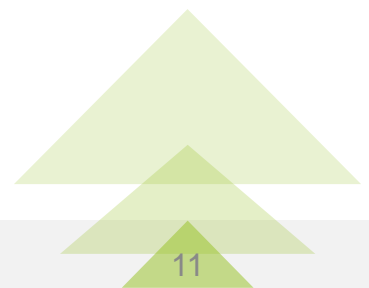
Production Regions

- Apples production in Poland is concentrated in the central region of the country – Mazovian District: Grójec – Tarczyn - Warka - Góra Kalwaria, Łowicz – Skierniewice, Wilga
- Central region produce 48% apples in the country.
- Additional apples are produced in the east side of the country – Lublin District (13% of total production) and south region - Świętokrzyskie District (14% of total production) and Łódź area (12% of total production)
- 13% of total production is evenly located in other regions of Poland
- Weather and geological conditions are comparable in all main production regions and the varieties are also located evenly.



AVAILABLE SKILLS AND CAPABILITIES IN THE REGION

- Polish producers concentrate on high quality of produced apples. They have also access to modern cold stores and can offer fresh apples during the whole year.
- Suppliers very often consolidate in associations and are able to plan, sort, pack and supply big uniformed batch of apples
- Labour resources costs are lowering by hiring workers from East European countries out of EU.
- The most popular varieties in Poland are: Idared (21,6%), Jonagold (17,5%), Champion (11,2%), Ligol (7%), Golden Delicious (5,1%), Gala (5%), Gloster (4,8%), Lobo (2,3%)
- 64% of apples produced in Poland are dedicated to consumption and 36% for industry
- There are no special government regulations affecting apple production in Poland. Main support from the authorities concentrate on the marketing campaigns promoting polish apples abroad.
- The main investments in apples production concern modern storage, sort and packaging facilities. It's financed mostly by the groups of producers in the regions.



Production Methods

- Central region of Poland has a very good relation of cold and hot days during the year, what makes good balance of sweet and sour taste
- Depending on varieties, the trees are planting in the autumn or early spring in a rows with 2-4 meters of space in between. The soil must be fertilized in 3-6 months before.
- The most popular varieties need 140 - 150 days from flowering till harvesting.
- During the growth process, required works are: pruning, aimed at shaping the tree and limiting its growth, which in turn affects the better quality of the fruit that the tree produces; digging, performed in order to cover the trunk of the tree and protect it against negative temperatures; fertilization and watering, determining the uptake by the tree of water and nutrients; spraying, protecting fruit trees against diseases, insects and weeds.
- Fertilization with nitrogen, magnesium, phosphorus and potassium is necessary during flowering, because they take part in the process of bud development
- The pesticides must be controlled and used only when necessary. Chemical composition is regulated with the appropriate regulations.

AVAILABLE SKILLS AND CAPABILITIES IN THE REGION

- Polish apple producers are mostly small companies with less than 5 hectares areal (89,3% of all producers). In each region they set up local trade groups, which associate most of the local suppliers.
- Trade groups are responsible for the sale of the apples but also they store the fruits, sort, pack and organize the transport. They negotiate the prices and the cooperation conditions.
- The producers with the acreage above 5 hectares (10,7%) mostly work independently. They sell and export the apples directly to the buyers.





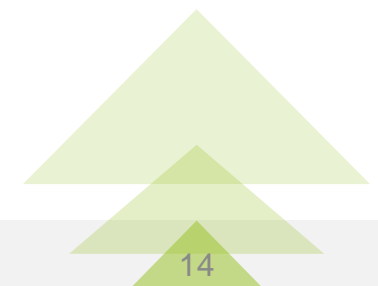
AgroBioCluster is an interdisciplinary tool for development of agrobioeconomy industry.

Created in 2014, is the result of an international project ORCHESTRA implemented in close cooperation with Spain and aimed at developing partnerships, clusters and cross-sectoral cooperation.

The cluster brings together companies, local government administration, research and scientific institutes, as well as business support organizations from South Mazovia and stimulates international and intercluster cooperation.

The aim of the cluster is to strengthen the capacity of the agri-food industry in an interdisciplinary way and accelerate the development of agriculture bio-economy through:

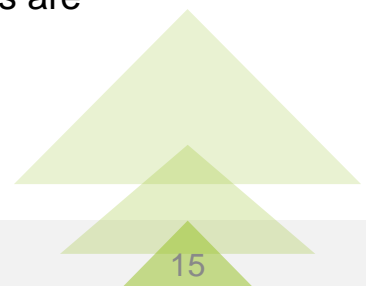
1. identification of shared competences and cooperation areas of the cluster members;
2. initiating the creation of products with added value resulting from the joint capacities and its commercialization on domestic and foreign markets;
3. transfer of knowledge and technology and international exchange of experience;
4. building links between sectoral and cross-sectoral clusters and its members and establishing synergies with clusters and networks with related industries (chemicals, cosmetics, life science, renewable energy, IT);
5. initiating joint ventures and projects co-financed from EU funds, both on domestic and international field;
6. organization of promotional, education, training and information activities;
7. internationalization activity of the cluster and its members





The Institute of Horticulture - National Research Institute in Skierniewice

- Advanced science - conducting advanced scientific research, we use the latest and reliable research methodology. laboratories and experimental spaces.
- Unique research - a unique scientific unit where research is carried out in cooperation with entrepreneurs from the horticultural sector. Implemented results of R&D works bringing economic benefits to Polish farms.
- Technology transfer - IO-PIB systematically develops research and development facilities. In response to the needs of practice, innovative R&D CENTERS are created in the unit.
- International activity - The Institute operates on the international arena, taking advantage of the opportunity to popularize knowledge about Polish scientific research. The Institute's offer reaches foreign enterprises, academic centers and industry associations.
- Development - The long-term tradition of the Institute's activity is a solid basis for building lasting economic and social ties. Flexible use of available resources opens up new possibilities for the development of laboratories and equipment for the Institute.
- Tradition and modernity - Actions aimed at implementing new technologies, introducing new varieties or combating pests are aimed at every type of modern farm. They solve important and difficult environmental problems of modern agriculture.



SUPPORTING NETWORK



Instytut Hodowli i Aklimatyzacji Roślin
Państwowy Instytut Badawczy

The Plant Breeding and Acclimatization Institute - National Research Institute (PBAI-NRI) is an institute of great scientific and developmental potential, which is based on three pillars:

- science;
- applications and implementations;
- dissemination of knowledge and its commercialisation.

Institute Mission is to conduct extensive highest-quality research in both basic science as well as research and development research, developing services, transfer advanced technologies to agricultural practice, and provide knowledge dissemination activities in the field of agricultural sciences, contributing to the construction and development of a competitive economy based on knowledge and entrepreneurship.

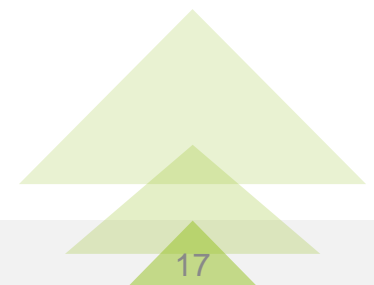




Cluster of Innovation in Agribusiness - established by the Warsaw University of Life Sciences –SGGW.

The main focus of the cluster is to transfer the knowledge into business (science to business-S2B), increase the efficiency of technology and knowledge transfer between participants in the cluster, and consequently increase the innovative potential of the Mazovia region.

Mazovian Science and Technology Park in Płońsk - an initiative aimed primarily at supporting the agri-food sector using the competitive advantage of the Mazovia region. The park cooperates with entrepreneurs, scientists and regional public institutions in order to achieve common goals and implement joint projects. The park also focuses on the development of biotechnology, renewable energy sources, innovations in agriculture, as well as the strengthening of clusters.

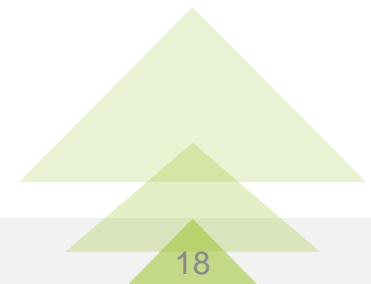


SUPPORTING NETWORK



The Agricultural Advisory Centre in Brwinów -The Centre is an operator that cooperates with agricultural advisory organizations, government and self-government administration institutions, professional associations, research and development units, as well as other entities working for the development of agriculture and rural areas in Poland.

Institute of Agricultural and Food Biotechnology - Elaboration of the scientific fundamentals of food technology and technique development is the purpose of Institute's activity. This objective is realized by carrying on the R&D works and their implementations, as well as by dissemination of the research results.



OPPORTUNITIES & LINKS WITH PREVIOUS IMPLEMENTATIONS, STRATEGIES OR ROADMAPS

EU project 2007-2013



EUROPEAN LEVEL – 7 projects, 8 in January 2023

Pilot implementation

UNIMOS is born



UNIMOS
alliance

Mazovia.
heart of Poland



SUAVE

SCALE-UP

REGIONAL LEVEL – 17 projects supported by Mazovia Regional Government

EXCELENCIA+

INTERNEXUS+

INNO+

INTER+

EXPO+

FOOD+

STARTUP+

FUTURO

FOOD FUSION LAB

INTERCLUSTER+

NEXT

VAMOS

ALLIANCES

COVID
no funding

DIGI & CIRCULAR HUB

ORKIESTRA 21

AMPLIFICA

ORKIESTRA 22

2014

2015

2016

2017

2018

2019

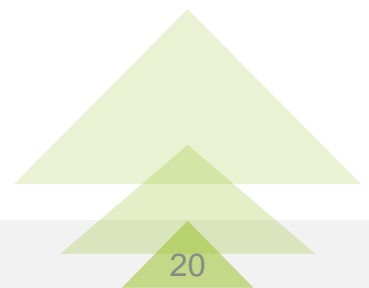
2020

2021

2022

FORESEEABLE BARRIERS FOR DEPLOYMENT

- Language and communication – English is not commonly used by farmers
- Need for balancing SCALE-UP timeline and farmer's calendar and their availability (harvesting, post harvesting, etc.)
- Low level of awareness about bio-based industries and its practical implementation
- Need for (on-site) guidance on its implementation
- Weak internet connection on some parts of rural zones
- Workforce



Relevant biomass streams and valorization options

Apple pomace

- Solid residue that remains after milling and pressing of apples for apple juice
- Apple pomace is a valuable source of mulch or compost
- Apple pomace is a waste product occasionally disposed of by dumping in fields or next to processing plants.
- It is rapidly biodegradable, with a high biochemical oxygen demand (BOD)
- Its high water and fermentable sugar contents result in quick spoilage causing pollution
- Using apple pomace for feeding livestock is a way to alleviate this problema
- Alternative methods for disposing of apple pomace include composting, fuel production, and spraying it as mulch for landfilling or landspreading
- Apple pomace is an extremely variable product, probably due to large variations in the proportion of skins, pulp, core, seeds and juice in the by-product. The composition of apples themselves is variable and depends on the variety, maturity, season of harvest, etc.

Prunings

Apple tree pruning residue:

- requires annual pruning and thus generate a substantial amount of residues, which must be disposed of
- woody residues are the most promising source of raw materials for the wood industry
- could replace traditional wood assortments for bioenergy and industrial use
- could be used as a lignocellulosic source for particleboard production



THANK YOU FOR YOUR ATTENTION



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Vice-President & Co-Founder

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PROJECT PARTNERS



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