Institute of Soil Science
and Plant Cultivation
State Research Institute

New Strategies on Bio-Economy in Poland

The **BioEcon** project contributed to the research and monitoring of bio-based resources as well as the scientific capacity building in IUNG aiming at the support of "***New Strategies for Bioeconomy in Poland***". The outcomes have been achieved thanks to the following actions:

a) cooperation and networking with the industry and policy makers at national and regional, local and European level, with researchers, associations and clusters in the field of bioeconomy and the circular economy,

b) development and implementation of national and international research projects,

c) increasing competences and professional qualifications of the BioEcon team and BSA department,

d) dissemination and promotion of scientific findings and achievements,

e) building a bioeconomy platform offering tools for decision making.

Given that the Polish bioeconomy strategy is in the making and that Poland is a country of huge potential in terms of natural and human resources, IUNG, a State Research Institute, has used the resources of the BioEcon project to build capacity to consult and support Polish authorities in realizing one or a combination of the prevailing bioeconomy visions, namely:

(1) bio-technology bioeconomy, where the accent is put on bio-technology research and commercialization,

(2) bio-resource bioeconomy, where the biological raw material is the key, processed and upgraded in new value chains, and finally

(3) bio-ecology bioeconomy, where promoting sustainability and biodiversity are the most important factors.

In March 2016, The European Commission granted the logo "**HR Excellence in Research**" to the **Institute of Soil Science and Plant Cultivation – State Research Institute** in Puławy.

Development of policy and strategy

Policy for Open, Transparent and Merit based Recruitment (OTM-R) Institute of Soil Science and Plant Cultivation – State Research Institute

The Human Resources Strategy of The Institute of Soil Science and Plant Cultivation – State Research Institute for researchers' career development

All available at:

PORTAL – Human Resources Strategy for Researchers

HR EXCELLENCE IN RESEARCH

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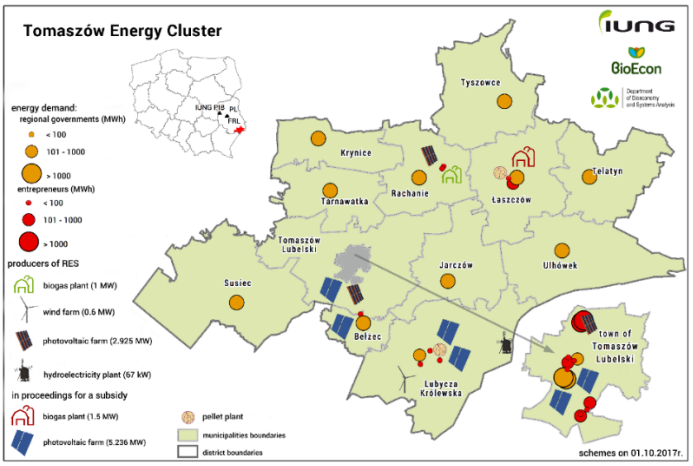
Regional support mobilization and development of a regional cluster for bioeconomy

Network for direct cooperation improved in BioEcon

- Council of Ministers of the Republic of Poland - agricultural, environmental, regional development and infrastructure departments;
- Local government and administrative authorities at various levels of management;
- Consulting and agricultural producers;
- Agency for Restructuring and Modernisation of Agriculture (ARMA);
- Farmers' organizations, agricultural chambers, business, clusters.

Support for local clusters in the preparation of bioeconomy development strategies

Strategy of Tomaszowski Cluster of Energy



The case study, presents a step-wise dynamic inventory method to uncover the role and optimal use of biogas to transition towards renewable energy systems at the local level. The case study covers 13 municipalities which agreed to create the cluster. Developed analysis regards localization and quantification of residual biomass potentials for biogas production, gas grid infrastructure, existing combined heat and power plants) and the dynamics of the electricity demand and supply, at the hour per hour level. Our analysis within the Strategy for the development of TLEC was submitted to the Ministry of Energy in September 2017. At the date of submission of the TLEC Strategy, the cluster was formed by 41 partners from different sectors: renewable energy sector - 6 entities, industry sector - 3 entities, service sector - 13 entities, public authorities sector - 14 entities, science and R&D sector - 2 entities, public benefit organization sector - 3 entities. IUNG representative is a member of the TLEC council and supports partners in strategic planning and project's development.

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Lublin Eco-Energy Cluster

Lublin Eco-Energy Cluster involves entities in the field of renewable energy (solar, wind, hydro and geothermal) as well as production and use of biomass for energy purposes. Among Cluster partners there are e.g.: producers of machinery and equipment (presses, granulators, crushers, mills, gear associated with the production of briquettes and pellets, biomass boilers, solar collectors) and producers of pellets and briquettes. The partners are also designers and contractors of biogas plants, wind farms, solar farms, small hydropower plants and electricity networks. Another group of entities are engaged in the waste management industry, IT solutions for the renewable energy industry, higher education and research as well as energy efficiency and energy-saving construction.

The coordinator of the Cluster is Foundation for Lubelskie Development.

Lublin Eco-Energy Cluster's mission is to support all possible activities related to sustainable use of renewable energy sources based on the potential of the Lubelskie Region through developing and implementing technological, manufacturing and processing innovations, popularization of energy efficiency and energy-efficient buildings, and to promote renewable energy sources in the region.

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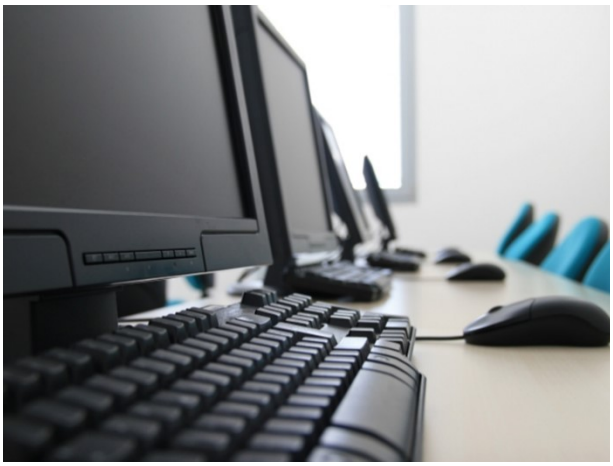
Capacity Building of the Team

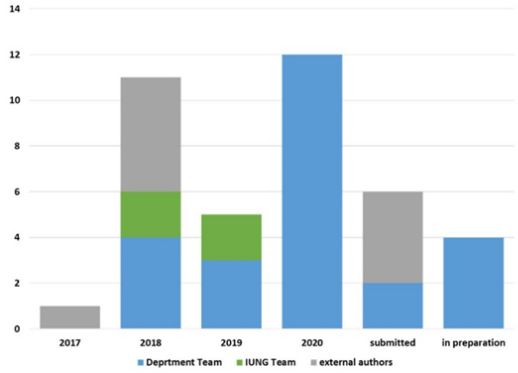
The **GIS laboratory** at the **Department of Bioeconomy and Systems Analysis** gained software independence (licenses: open source) - currently the entire operating system is based on free applications, which in many cases outweigh commercial applications.
This approach is extremely important in order to ensure the sustainability of the project in the coming years - currently there is no need to incur expenses for commercial software licenses, and analytical work is carried out on the most up-to-date and effective computing engines (which also use commercial applications, e.g. GDAL).



New equipment

- Workstations
- Computer stations
- Server/GIS server and web

Increase of the team publishing activity



Completed trainings

* PostgreSQL and PostGIS database environments;
* GIS desktop application: QGIS;
* non-desktop applications: GDAL, OSGeo standards;
* programming in standards and scripts: Python;
* geoportal build environments: Lizmap.

New software

- SimaPro
- ENVI
- GAMS Software
- DEA-Solver Pro

Extended offer

- Spatial analysis based on Geographic Information Systems and Remote Sensing;
- Biomass assessment and RES logistics;
- Mathematical modelling;
- Life cycle assessment;
- Strategic analyses concerning trees in rural areas.

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Efforts and results in national and international research projects

Projects in progress

Nutrient Management and Nutrient Recovery Thematic Network
Funding programme: H2020
Call: H2020-RUR-2018-1
Project realisation: 2018-2021

Advancing Sustainable Circular Bioeconomy in Central and Eastern European countries
Funding programme: H2020
Call: H2020-RUR-2019-1
Project realisation: 2019-2022

Strategies and technologies to achieve a European Fossil-energy-free agriculture
Funding programme: H2020
Call H2020-FNR-2020-1.
Project realisation: 2020-2023

FOODLEVERS

Leverage points for organic and sustainable food systems
Funding programme: ERA-NET SUSFOOD2 and CORE Organic Cofounds Joint Call 2019
Project realisation: 2020 - 2023

FaST Navigator

Development of a common framework for the quantitative advice of crop nutrient requirements and greenhouse gas emissions and removal assessment at farm level.
Funding Programme: DG AGRI, EC
Project realisation: 2020 - 2021

Agrobank

Creation of a bioinformatic system for the management of national genetic resources of crop plants and the development of social and economic capital in Poland through the protection and use of these resources in the process of providing agricultural advisory services
Funding Programme: Gospostrateg
Project realisation: 2020-2022

AgriBioFood

PULS IUNG 4.0
Funding Programme: „Innovation Incubator 4.0" Smart Growth Operational Programme 2014-2020
Project realisation: 2020-2022

Smart Villages

Implementation of the Smart Villages concept in the Mazowieckie Voivodeship
Funding Program: Regional Program of the Mazowieckie Voivodeship
Project realisation: 2020-2023

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Projects already finished

Absorbing the Potential of Wood Waste in EU Regions and Industrial Bio-based Ecosystems
Funding programme: H2020 call H2020-BB-06-2016 Project realisation: 2017-2020

Bioproducts from lignocellulosic biomass derived from Marginal land to fill the Gap In Current national bioeconomy
Funding Programme: Biostrateg III
Project realisation: 2017-2020

Agroforestry Innovation Network.
Funding programme: H2020
Call H2020-RUR-2016-2017
Project realisation: 2016 - 2019

Innovative and sustainable intensification of integrated food and non-food systems to develop climate-resilient agro-ecosystems in Europe
Funding programme: ERA-NET; FACCE SURPLUS
Project realisation: 2016 – 2019

TechRol
New renewable energy technologies for sustainable development of rural areas and low-carbon agriculture
Funding Programme: Biostrateg III
Project realisation: 2018-2020

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Bioeconomy Platform created for three different groups of stakeholders: SCIENCE, ADMINISTRATION, BUISNESS

Are you interested? Fill in the application form!

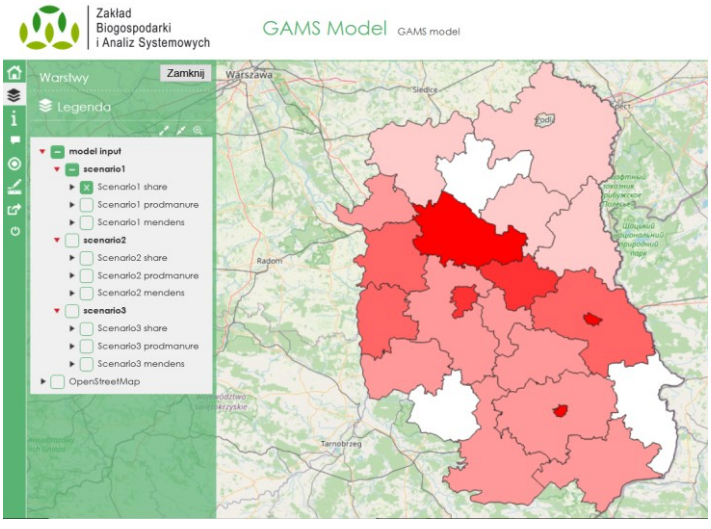
By visiting the platform, we can familiarize ourselves with the knowledge gathered in the compendium section: check the dictionary containing thematic vocabulary, or search the lexicon containing a database of publications, books, thematic websites, films, events etc.

WEB-BASED SPATIAL DECISION SUPPORT SYSTEM TO EVALUATE BIO-ENERGY PROJECTS

The DSS contains **technical, economic, and cartographic information**

- to evaluate **alternative bioenergy systems**,
- to determine the **optimal size, location and biomass** crop cultivations.

The DSS provides **spatial and economic information** on the bioenergy unit as well as on **biomass raw material** corresponding to the user-defined parameters.



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GEOPORTALS COLLECTION

Biomass potential EU

Bioeconomy

Waste Wood Potential EU

Protection of species diversity NATURA 2000

Agricultural Biomass potential PL

LCAgri
(available in PL version)

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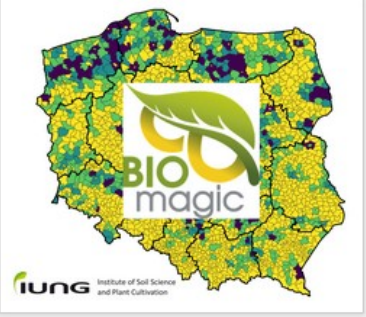
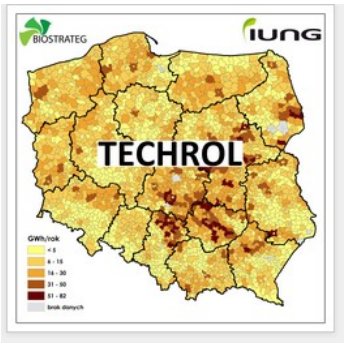
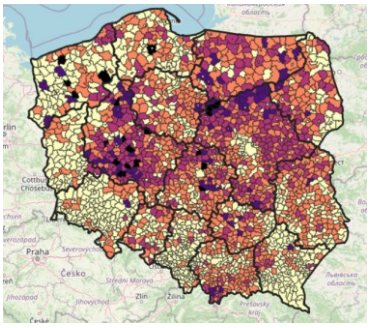
Recent GIS projects



BIOmagic
The potential of sustainable biomass from the cultivation of perennial industrial plants in marginal soils.

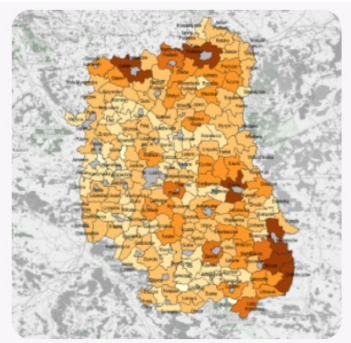
TechRol
- Prosumer model of rural communes
- Intelligent management
- Energy resources
- Environmental assessment of the impact of using renewable energy technologies in rural areas





Multi-annual program
- manure- farms without acreage [t]
- mixed farm manure [t]
- straw balance in the municipality [t]
- straw from crop and mixed production [t]
- hay [t]

Databases and resource assessment tools at the national level
Created especially for the needs of the geoportal project, available only to logged in users. In the geoportal, we can learn about the resources of the bioeconomy repository:
for assessment of resources available for the bioeconomy at the regional level in strategic programming for the Lubelskie Voivodeship



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Expertise for the Ministry of Agriculture and Rural Development

PRIORITY DIRECTIONS FOR SUPPORTING THE BIECONOMY IN THE CONTEXT OF CAP (2021-2027) IN POLAND:

The following actions are indicated:

1. Possibilities of maximizing the production of biogas and biofuels;

2. Support for regions striving to achieve energy independence;

3. Intensification and specialization of biomass production for non-agricultural purposes (straw, perennial crops, chemical and pharmaceutical industries);

4. Sequestration of carbon in soil and dissemination of the principles of agroecology;

5. Management of waste biomass from the food industry;

6. Promotion of the production of high-protein feed material that can replace imported soy-based feed.

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We are looking forward to cooperate with you

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