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Accelerating circular bio-based solutions
integration in European rural areas

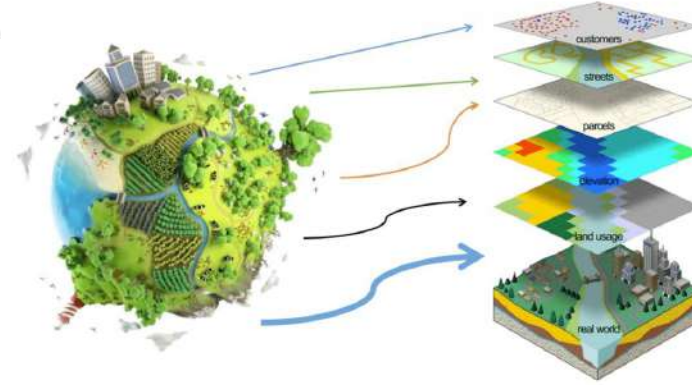
Data integration in GIS for biomass monitoring

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Institute of Soil Science
and Plant Cultivation
State Research Institute



Geographical Information Systems

(GIS) is a system that creates, manages, analyzes, and maps all types of data. GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there).

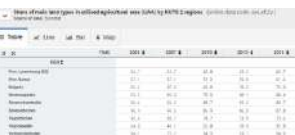
GIS - helps users understand patterns, relationships, and geographic context.

Many organizations in virtually every field are using GIS to make maps that communicate, perform analysis, share information.

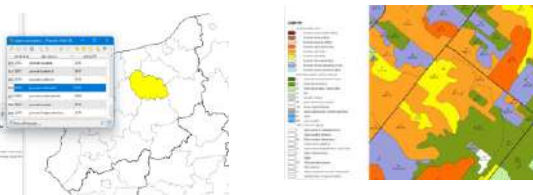
Components of GIS

DATA

- analog data
- statistical data



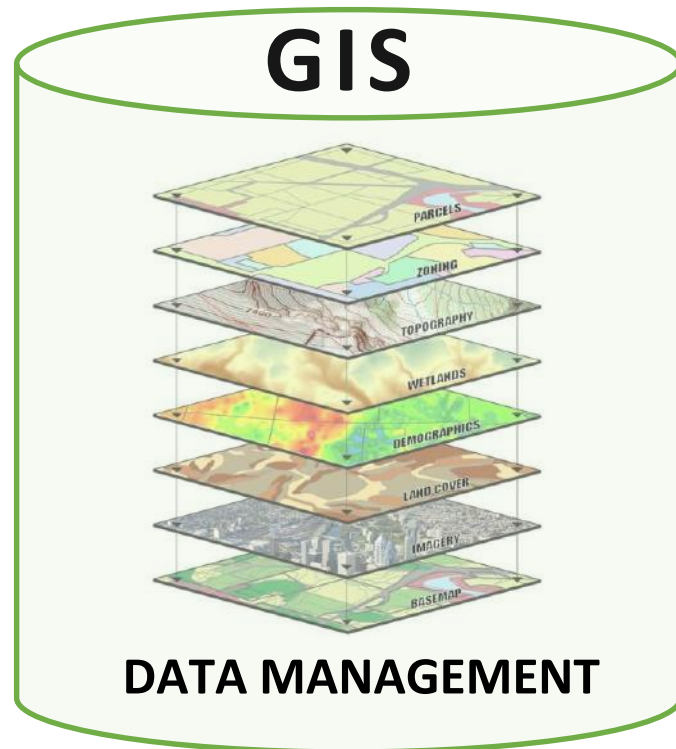
- digital spatial data



- remote sensing data



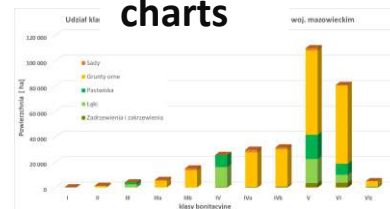
GIS



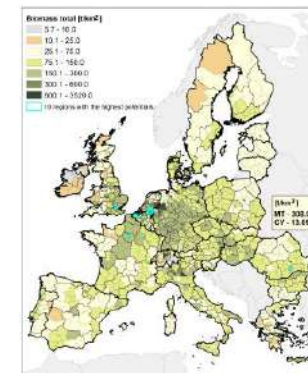
SPATIAL INFORMATION

new data

charts



maps



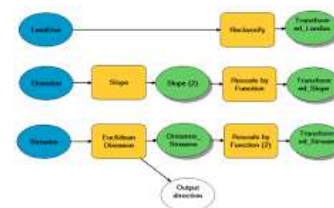
sql query



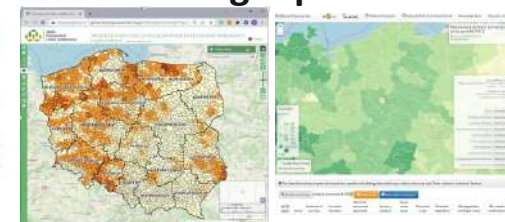
tabular data

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models



geoportals



HARDWARE



SOFTWARE

ANALYSIS





















- methods
- procedure



In progress

 <p>BBioNets</p> <p>Boosting the adoption of Bio-Based Technologies</p> <p>Creation and promotion of Forest and Agriculture Networks to boost Bio-Based Technologies adoption and Value Chain development.</p>	 <p>CEE2ACT</p> <p>Empowering the Central and Eastern European Countries to Develop Circular Bioeconomy Strategies and Action Plans</p>	 <p>Carbon Farming CE</p> <p>Development of Carbon Farming in the Central Europe</p>
 <p>BIOECO-UP</p> <p>Circular BioEconomy Market Uptake and Policy Support in Central Europe</p>	 <p>Clim4Cast</p> <p>Central European Alliance for Increasing Climate Change Resilience to Combined Consequences of Drought, Heatwave, and Fire Weather Through Regionally-Tuned Forecasting</p>	 <p>PATHWAYS</p> <p>Pathways for transitions to sustainability in livestock husbandry and food systems</p>
 <p>MainstreamBio</p> <p>MAINSTREAMing small-scale BIO-based solutions across rural Europe via regional Multi-actor Innovation Platforms and tailored innovation support</p>	 <p>Biorural</p> <p>Accelerating circular bio-based solutions integration in European rural areas</p>	 <p>EJP SOIL COMMIT</p> <p>Sustainable Management of soil Organic Matter to Mitigate Trade-offs between C sequestration and N_2O, CH_4 and NO_3^- Losses</p>

completed

 <p>AgroFossilFree</p> <p>Strategies and Technologies to achieve a European Fossil-energy-free agriculture</p>	 <p>ECOSERV-POL</p> <p>Services provided by main types of ecosystems in Poland – an applied approach</p>	 <p>Innovation Incubator 4.0</p> <p>"AgriBioFood PULS 4.0" – project financed in the framework of Innovation Incubator 4.0</p>	 <p>AFINET</p> <p>Agroforestry Innovation Network</p>	 <p>BioReg</p> <p>Absorbing the Potential of Wood Waste in EU Regions and Industrial Bio-based Ecosystems</p>	 <p>BioMagic</p> <p>BIOproducts from Agrocellulose biomass (derived from Marginal land) to fill the Gap in Current national bioeconomy</p>
 <p>FoodLevers</p> <p>Leverage points for organic and sustainable food systems</p>	 <p>BIOEASTUP</p> <p>Advancing Sustainable Circular Bioeconomy in Central and Eastern European Countries</p>	 <p>Smart Village</p> <p>Implementation of Smart Villages concept in Mazowieckie Voivodeship</p>	 <p>SustainFARM</p> <p>Innovative and sustainable intensification of integrated food and non-food systems to develop climate-resilient agro-ecosystems in Europe and beyond</p>	 <p>LCAgri</p> <p>Support for low carbon agriculture able to adapt to observed climate change in the perspective of 2030 and 2050</p>	 <p>AgroProNatura</p> <p>Protection of species diversity of valuable natural habitats on agricultural lands on Natura 2000 areas in the Lublin Voivodeship</p>
 <p>NUTRIMAN</p> <p>NUTrient Management and Nutrient Recovery Thematic Network</p>	 <p>BioEcon</p> <p>New Strategies on Bio-Economy in Poland</p>	 <p>TechRol</p> <p>New renewable energy technologies for sustainable development of rural areas and low-carbon agriculture (site under construction)</p>	 <p>BioBoost</p> <p>Biomass based energy intermediates boosting biogas production</p>	 <p>S2BIOM</p> <p>Delivery of sustainable supply of non-food biomass to support a "resource-efficient" Bioeconomy in Europe</p>	 <p>MACSUR</p> <p>Modeling European Agriculture with Climate Change for Food Security</p>
 <p>B-First</p> <p>Implementation of remote sensing data and models in optimizing the localisation of renewable energy sources on the example of biofuel crops with respect to ecological constraints</p>					
 <p>ENORASIS</p> <p>ENVIRONMENTAL Optimization of IRRIGATION Management with the Combined use and Integration of High Precision Satellite Data, Advanced Modeling, Process Control and Business Innovation</p>					
 <p>Catch-C</p> <p>Compatibility of Agricultural Management Practices and Types of Farming in the EU to enhance Climate Change Mitigation and Soil Health</p>					



Research projects related to biomass estimation

international projects

completed

7-FP

- **BioBoost 2012 -2015-** Biomass based energy intermediates boosting biofuel production

HORIZON 2020

- **BioEcon 2015- 2020** - New Strategies on Bio-Economy in Poland
- **BioReg** - Absorbing the Potential of Wood Waste in EU Regions and Industrial Bio-based Ecosystems

In progress

- **BBioNets** Creation and promotion of Forest and Agriculture Networks to boost Bio-Based Technologies adoption and Value Chain development
- **CEE2ACT-** Empowering the Central and Eastern European Countries to Develop Circular Bioeconomy Strategies and Action Plans
- **BioRural-** Accelerating circular bio-based solutions integration in European rural areas

national projects

completed

BIOSTRATEG III

- **TechRol** - New renewable energy technologies for sustainable development of rural areas and low-carbon agriculture (site under construction)
- **BioMagic** - BIOproducts from lignocellulosic biomass derived from MArginal land to fill the Gap In Current national bioeconomy

In progress

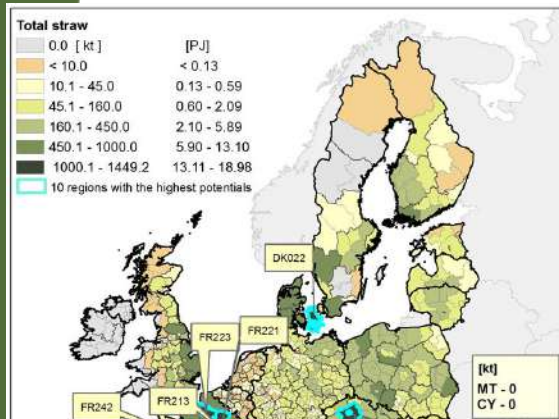
Targeted Subsidy

- **Task 3.0** - Analysis of the biomass supply potential in 2023 at the national and regional level

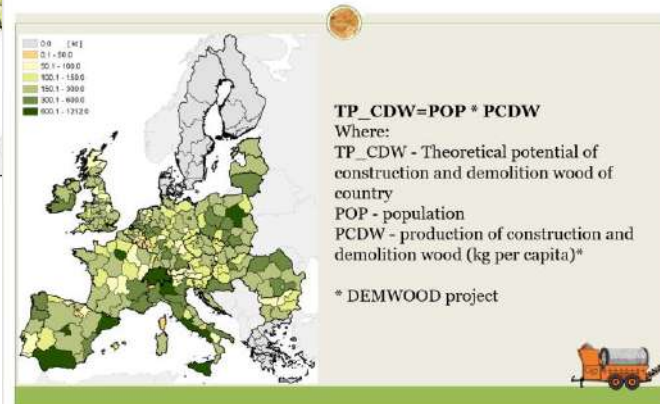
As part of the implementation of the projects, a series of spatial data and analytical models were collected and developed to create the "Biomass Estimation System"

international projects

European scale



Theoretical potential of construction and demolition wood of country

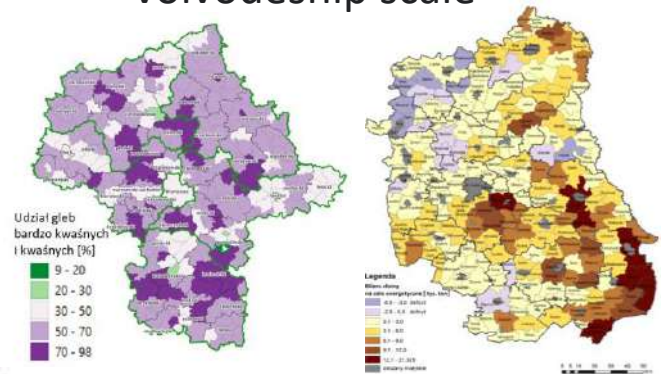


national projects

national scale



voivodeship scale



municipalities scale



farm scale



Main assumptions of the Biomass Estimation System

Database

European scale



National scale



Local, farm, field scale



field data *in situ*

GIS

knowledge base
procedure,
algorithms,
indicators

models,
geoprocessing tools

Results

Publications
Geoportals
Reports
Maps



GIS for bioeconomy



HOME

COMPENDIUM ▾

TOOLS ▾

GEOPORTALS ▾

Lexicon

GAMS Model

TARGETED SUBSIDY 3.0

Dictionary

Biomass Calculator

BIOBOOST PROJECT

BIOREG PROJECT

BIOMAGIC PROJECT

TECHROL PROJECT

LCAGRI PROJECT

KIK-25 PROJECT

BIOECONOMY PLATFORM

A tool supporting the development of the bioeconomy
in Poland



<http://platforma.biogospodarka.iung.pl/>

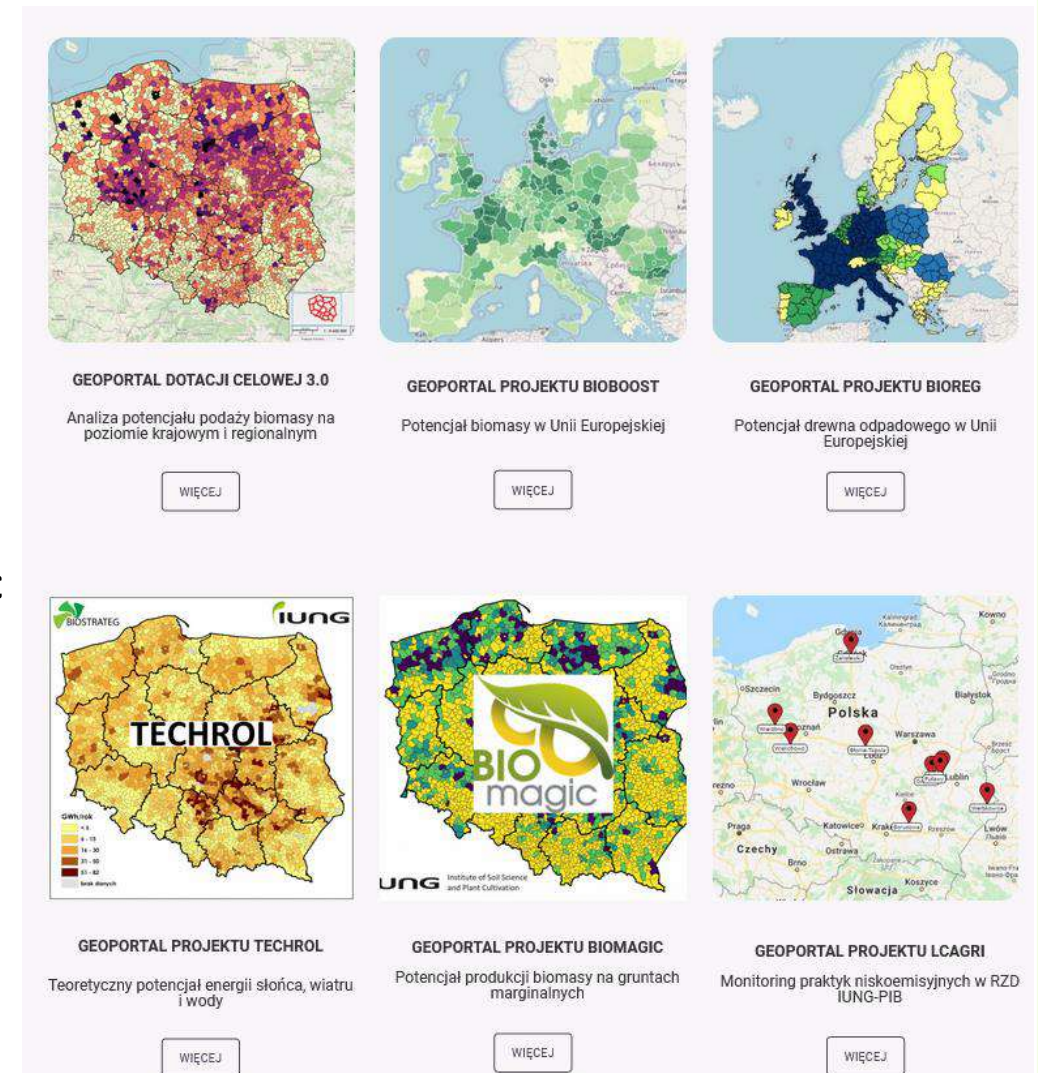
www.biorural.eu

A **geoportal** is a type of web portal used to find and access via the Internet:

- geographic information (geospatial information)
- associated geographic services (display, editing, analysis, etc.)

Geoportals are important for effective use of geographic information systems (GIS) and a key element of Spatial Data Infrastructure (SDI).

How can GIS support advisory systems and agricultural policy?

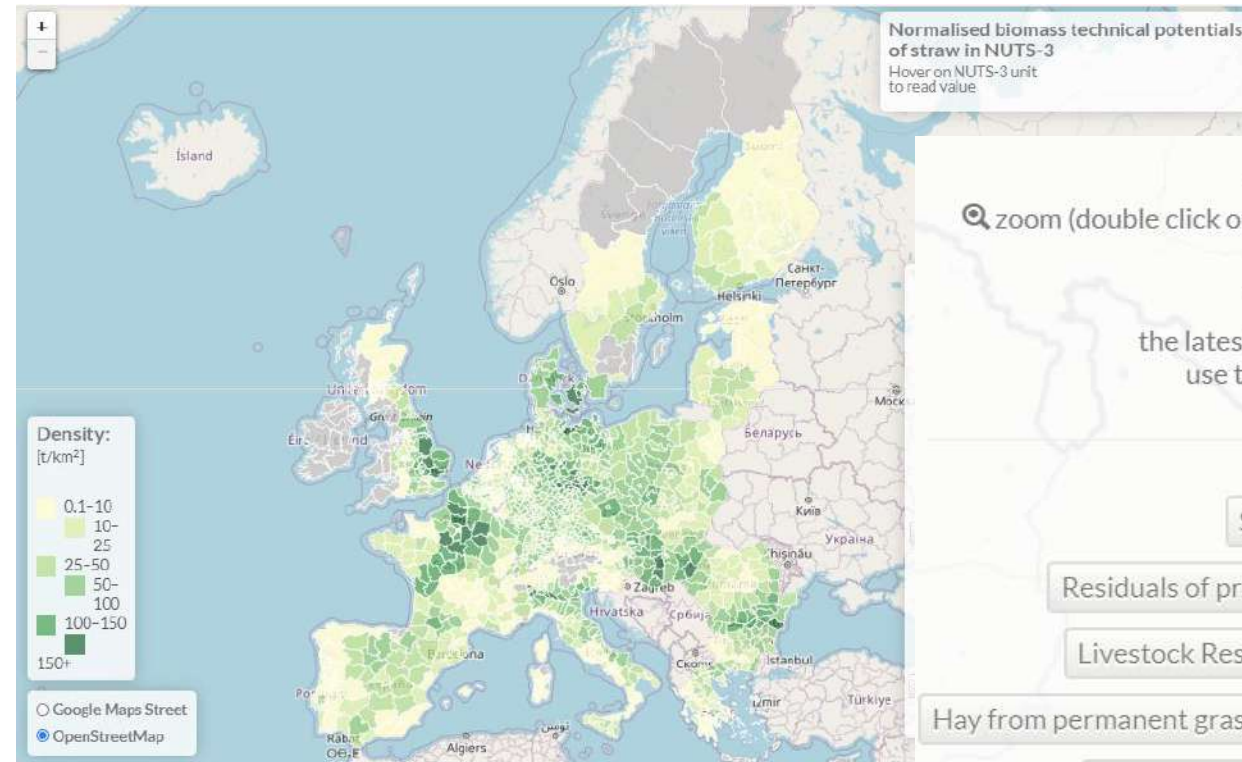
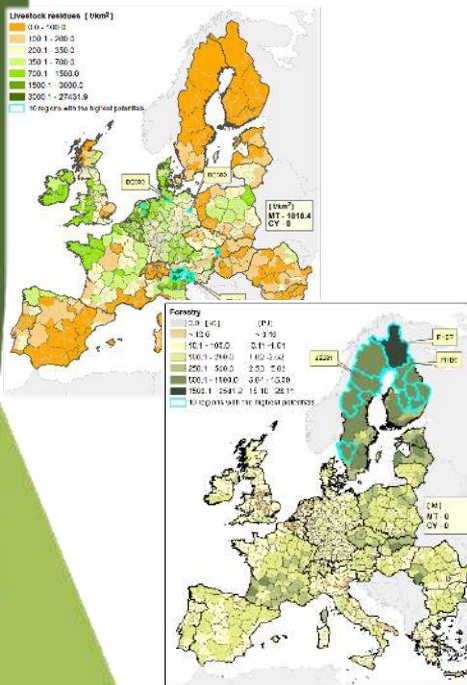




Selected results generated by the Biomass Estimation System



BioBoost 2012 -2015- Biomass based energy intermediates boosting biofuel production



You can pan (drag and move), zoom (double click or scroll) and hover on the map to gather required information

To make sure that you are using the latest version of BioBoost Geoportal, use the key combination **Ctrl + F5**

To view the technical potential statistics, enable calculating, then click any units on the map and "Sum values in columns" button

<div><div><div><div><div></div><div>Enable calculating</div></div></div></div><div>Number of selected NUTS 0</div><div><div><div></div><div>Remove all</div></div><div><div></div><div>Sum values in columns</div></div></div></div>											
NUTS name	Straw	Residuals of pruning	Livestock Residues	Hay from permanent grassland	Forestry residues	Green urban areas	Perennial crops	Roadside vegetation	Biodegradable municipal waste	Bio-waste of food industry	Total

Map description

The map present technical straw potential that was assessed by subtraction of the amount of straw necessary for animal bedding a needed for incorporation into the soil. Straw for energy purposes was defined as a total production minus from the straw used in th is necessary in the maintenance of soil.

Full description can be found here: [Download report \(11.7 MB - PDF file\)](#)

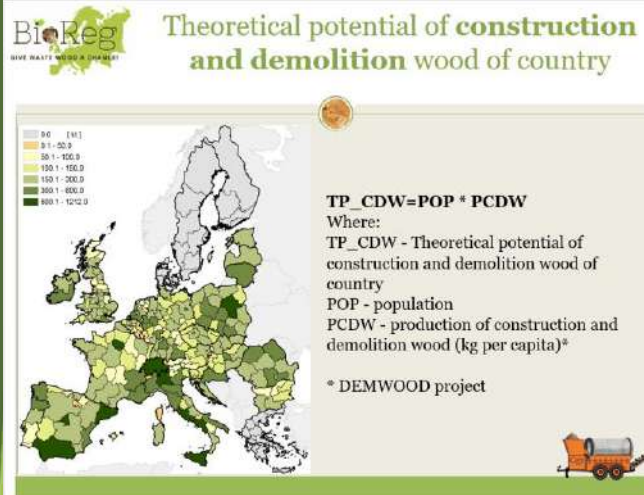
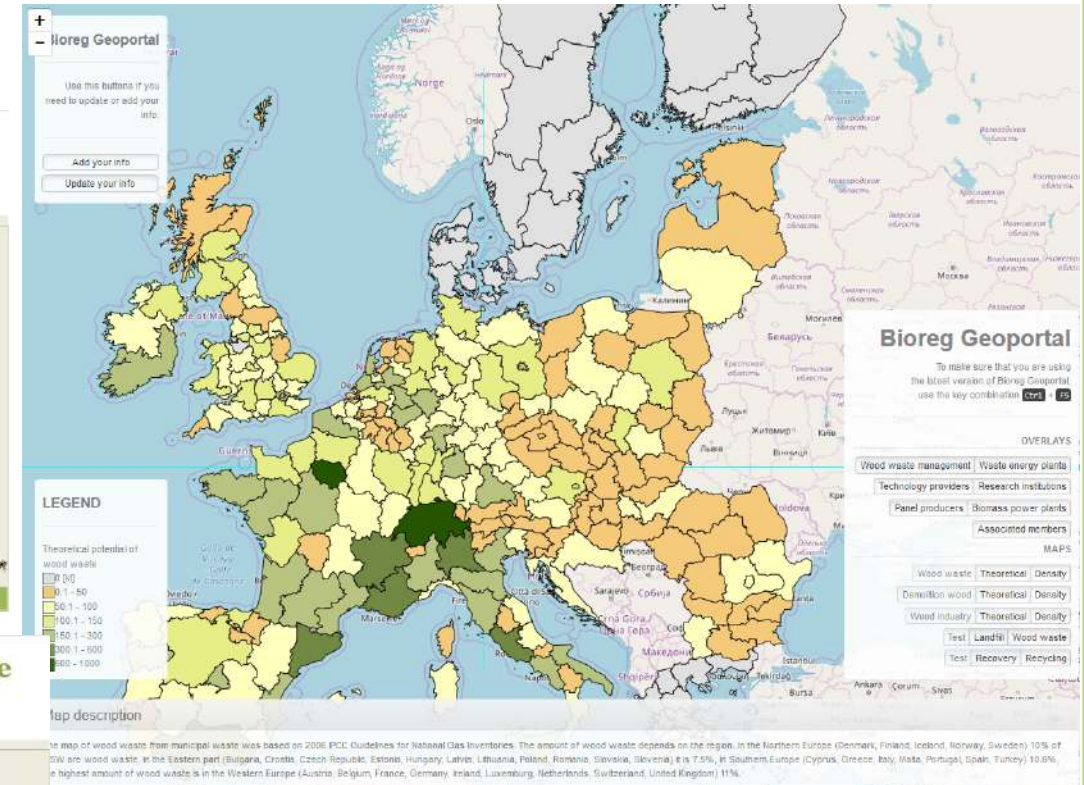
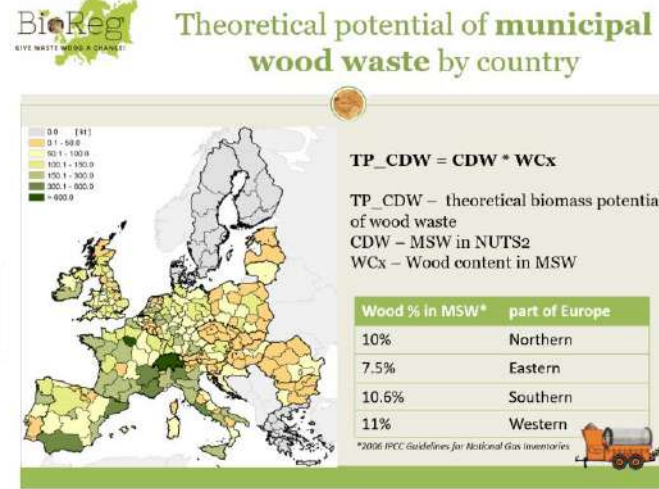
bioboost.iung.pl

http://bioboost.eu/results/public_results.php

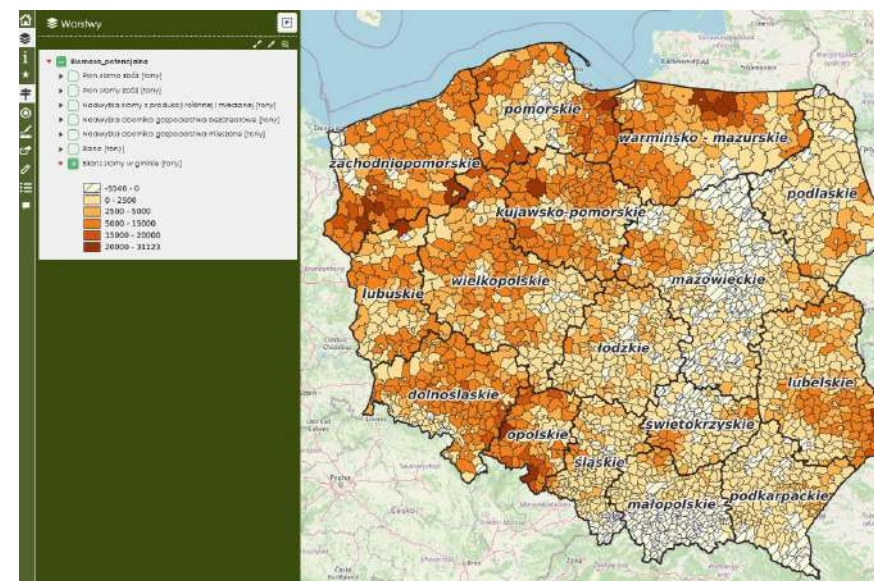
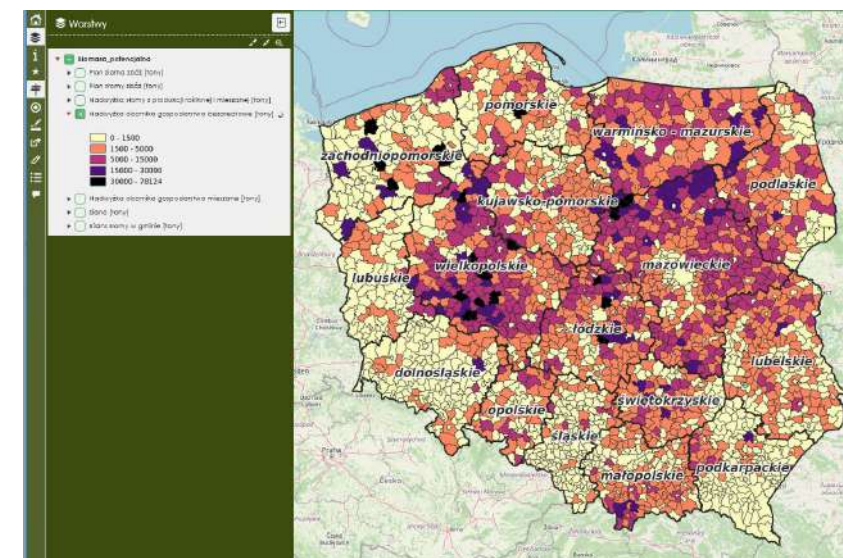
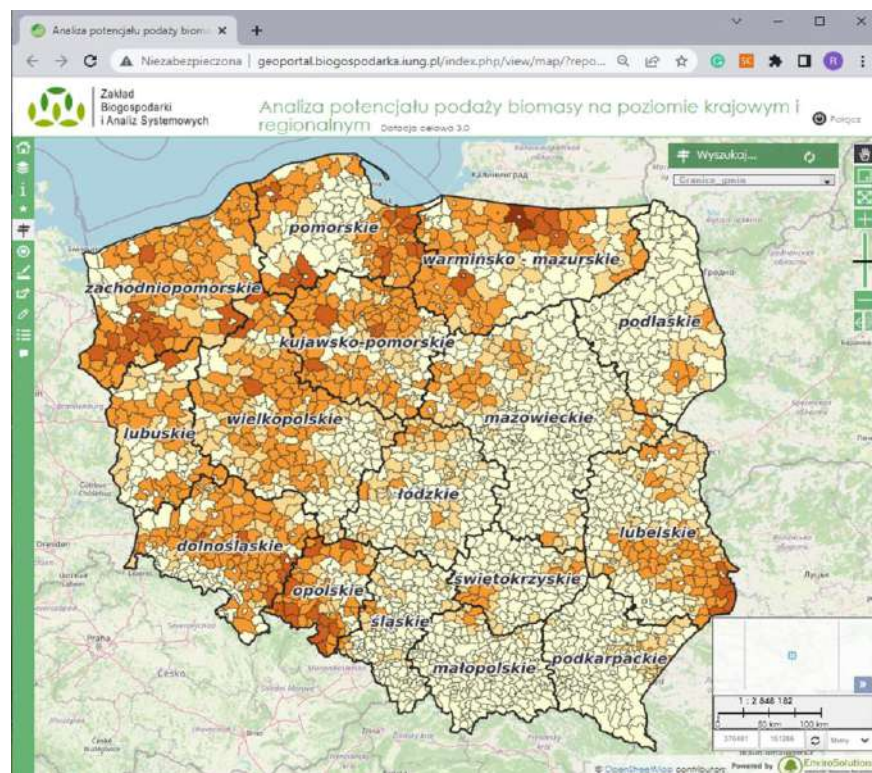
Straw	Theoretical	Technical
Residuals of pruning	Theoretical	Technical
Livestock Residues	Theoretical	Technical
Hay from permanent grassland	Theoretical	Technical
Forestry residues	Theoretical	Technical
Green urban areas	Theoretical	Technical
Perennial crops	Theoretical	Technical
Roadside vegetation	Theoretical	Technical
Biodegradable municipal waste	Theoretical	Technical
Bio-waste of food industry	Theoretical	Technical

BioReg
GIVE WASTE WOOD A CHANCE!

The potential of biomass
from wood waste in Europe



<https://www.bioreg.eu/platform/>





Institute of Soil Science
and Plant Cultivation
State Research Institute

Thank you for your attention

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Dept. : <https://biogospodarka.iung.pl/en/news/>