WATERPROTECT

Innovative tools enabling drinking WATER PROTECTion in rural and urban environments

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This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450

Action lab – goals to achive

- The Horizon 2020 project WaterProtect will develop new solutions and tools in 7 Action labs where water pollution (nutrients and/or pesticides) from intensive agriculture may affect the quality of the water for drinking water production.

- Upscaling succesful practices from action labs to EU
- The WaterProtect Consortium aims at a strong long term multiplier effect for the lessons and successful practices of the Action labs and other good examples into new policy and governance instruments around Europe. Specific attention is paid to communication and dissemination since it is vital for the success of the project.

- Project Duration:
- June 2017 until May 2020

- WaterProtect relates to the Horizon 2020 Work Programme under the topic 'Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy', and addresses the Topic: Water farms – improving farming and supply of drinking water.

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Polish Geological Institute – National Research Institute

West Pomeranian University of Technology (ZUT)

Institute Of Technology And Life Sciences (ITP)

Support:
Voivodeship Inspectorate for Environmental Protection in Szczecin
Regional Water Management Authority in Szczecin
Szczecin Water Services
West Pomeranian Water Services (WZ)
West Pomeranian Farmer's Advisory Centre (ZODR)

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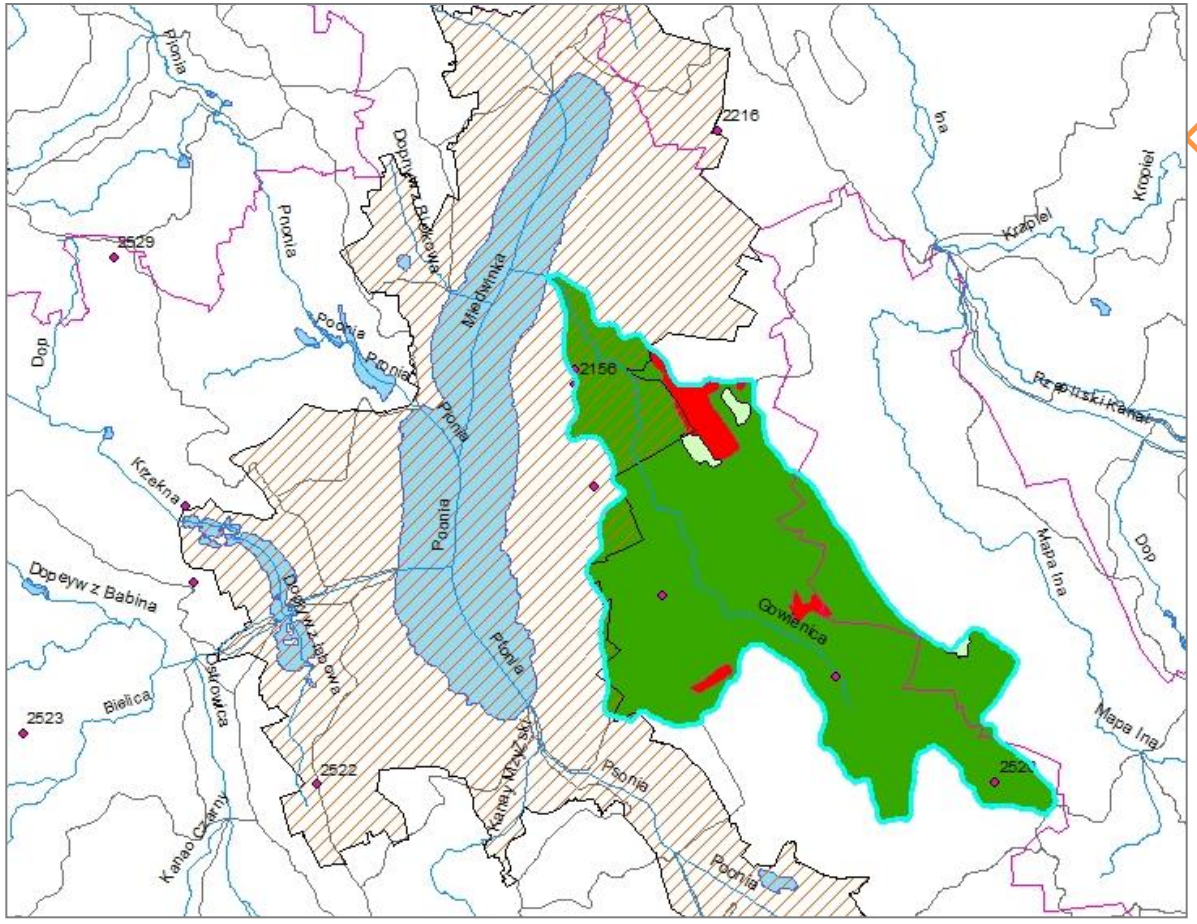
Action lab – Gowienica catchment



- Miedwie Lake – drinking water reservoir
- Gowienica (Miedwiańska) – inflow to the Miedwie
- Catchment area ca. 60 km^2.
- Above 95% of catchment area rural evironment (fertile soils).
- NVZ and Miedwie intake protection zone

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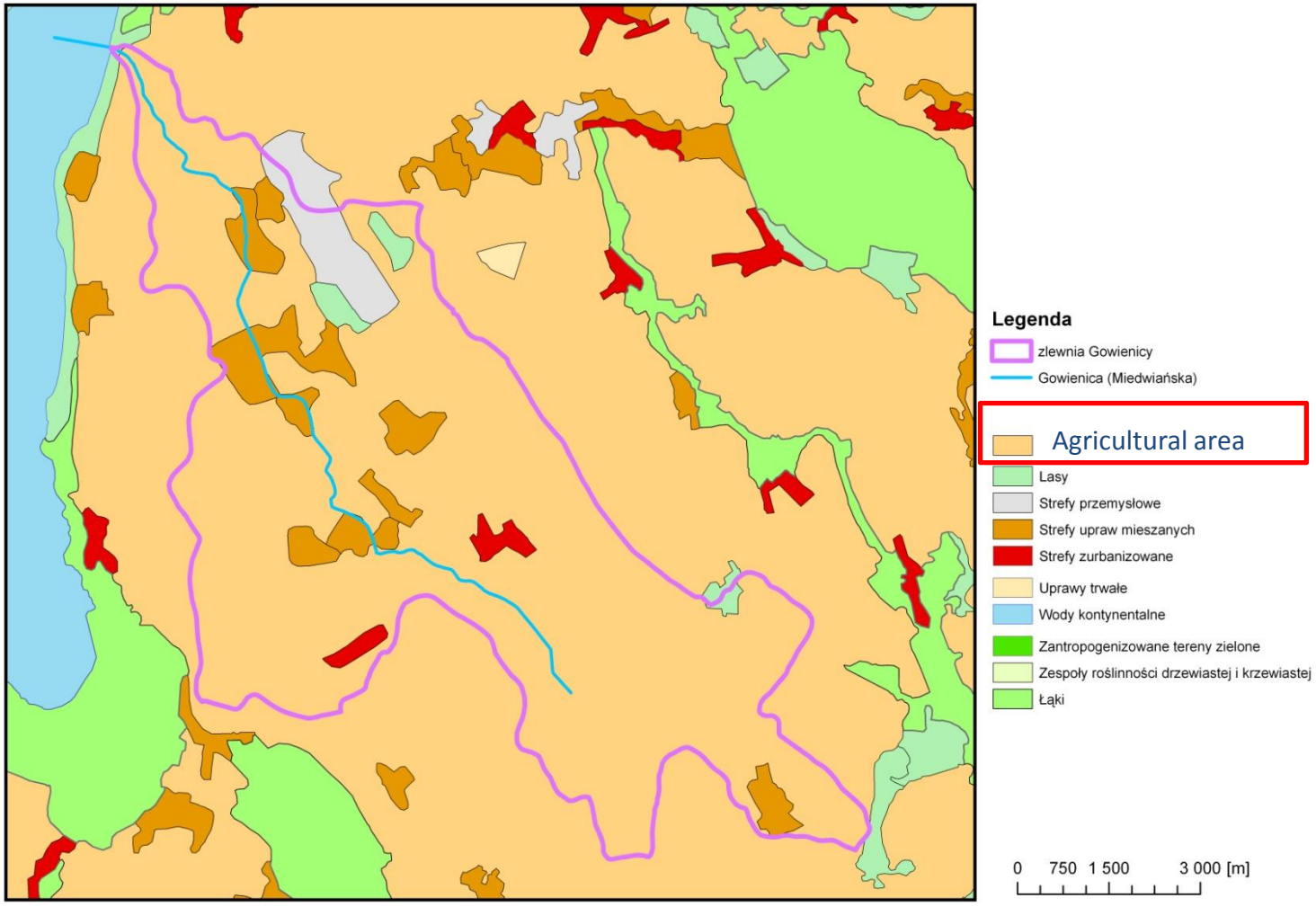
Action lab – Gowienica catchment



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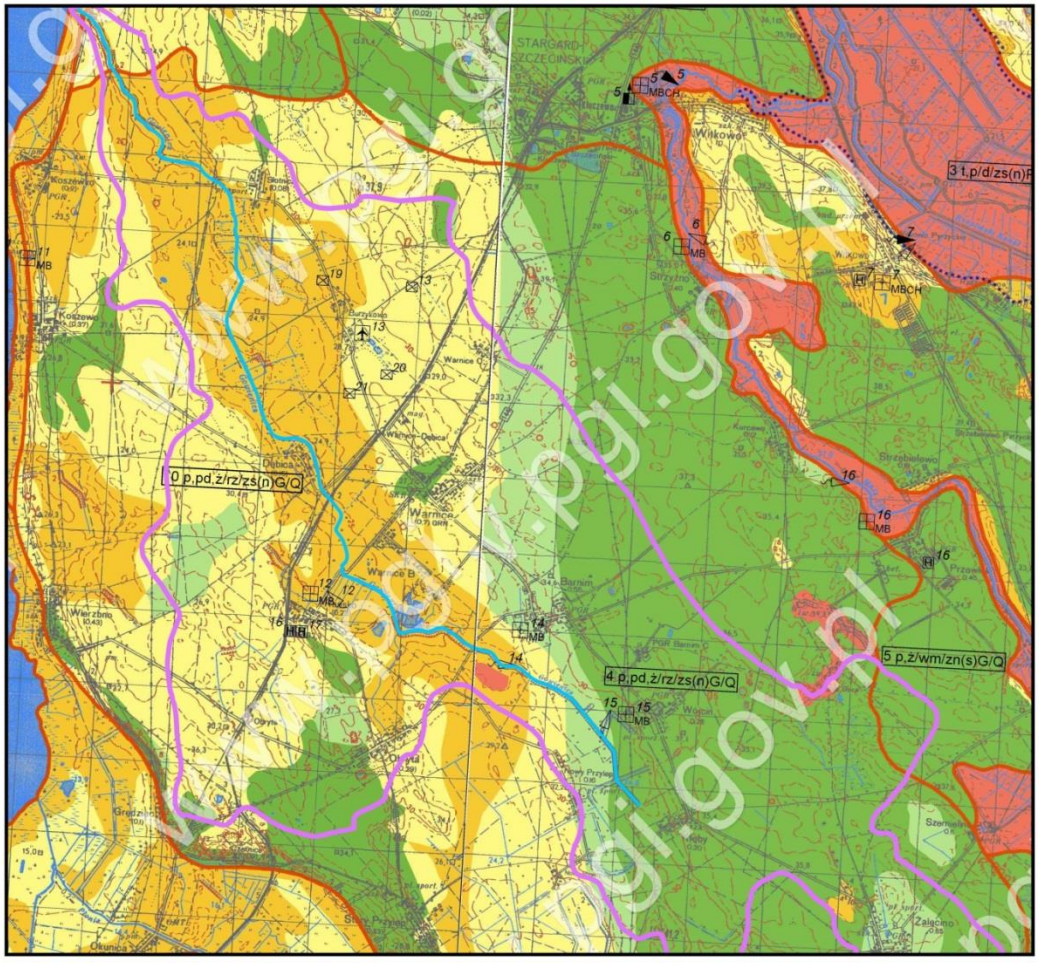

Legenda

zlewnia Gowienicy

Gowienica (Miedwiańska)

Hydrogeological Map of Poland, First Aquifer – Vulnerability and Quality

WRAŻLIWOŚĆ NA ZANIECZYSZCZENIE

WÓD PIERWSZEGO POZIOMU WODONOŚNEGO

Stopień podatności (przybliżony czas dotarcia zanieczyszczenia do PPW**)

bardzo wysoki	(< 5 lat)
wysoki	(5 - 25 lat)
średni	(25 - 50 lat)
niski	(50 - 100 lat)
bardzo niski	(> 100 lat)

0 750 1 500 3 000 [m]

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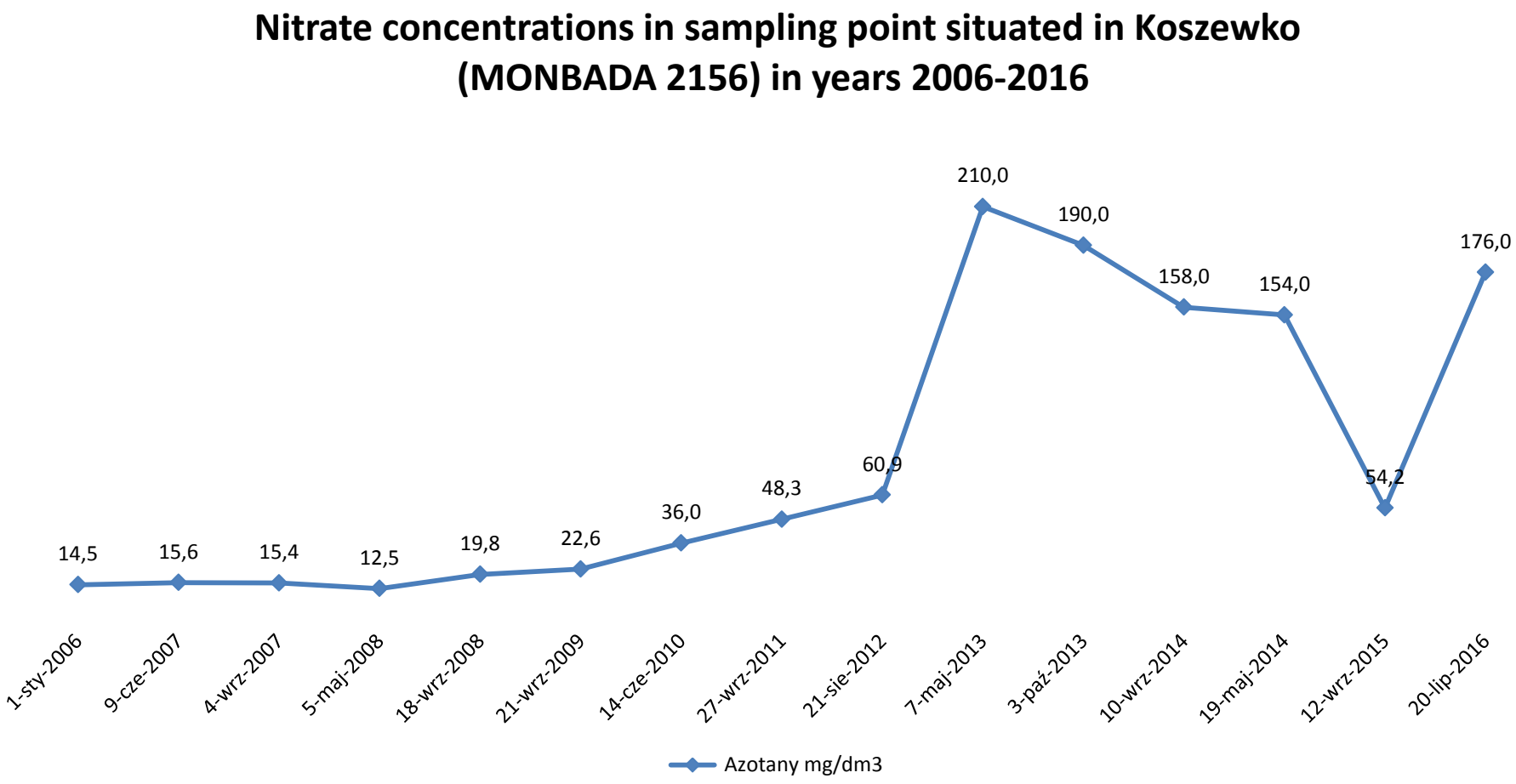

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Work Packages:

1. WP1 – Project Management
2. **WP2 – Water Governance**
3. **WP3 – Participatory Monitoring**
4. **WP4 – Best Management Practices**
5. **WP5 – Collaborative tool**
6. WP6 – Upscalling
7. WP7 – Integrated Policy Support
8. WP8 – Dissemination

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WP 2 – Water governance

WaterProtect conceptualizes water resource systems as complex socio-ecological systems, consisting of a resource system and a governance system, which defines and sets rules for the way actors collectively behave.

This work package aims to determine characteristics, constraints and possibilities (opportunities) to develop governance models that support water management systems that enhance the quality of ground- and surface water, focusing on water supplies mainly suffering from agricultural pollution.

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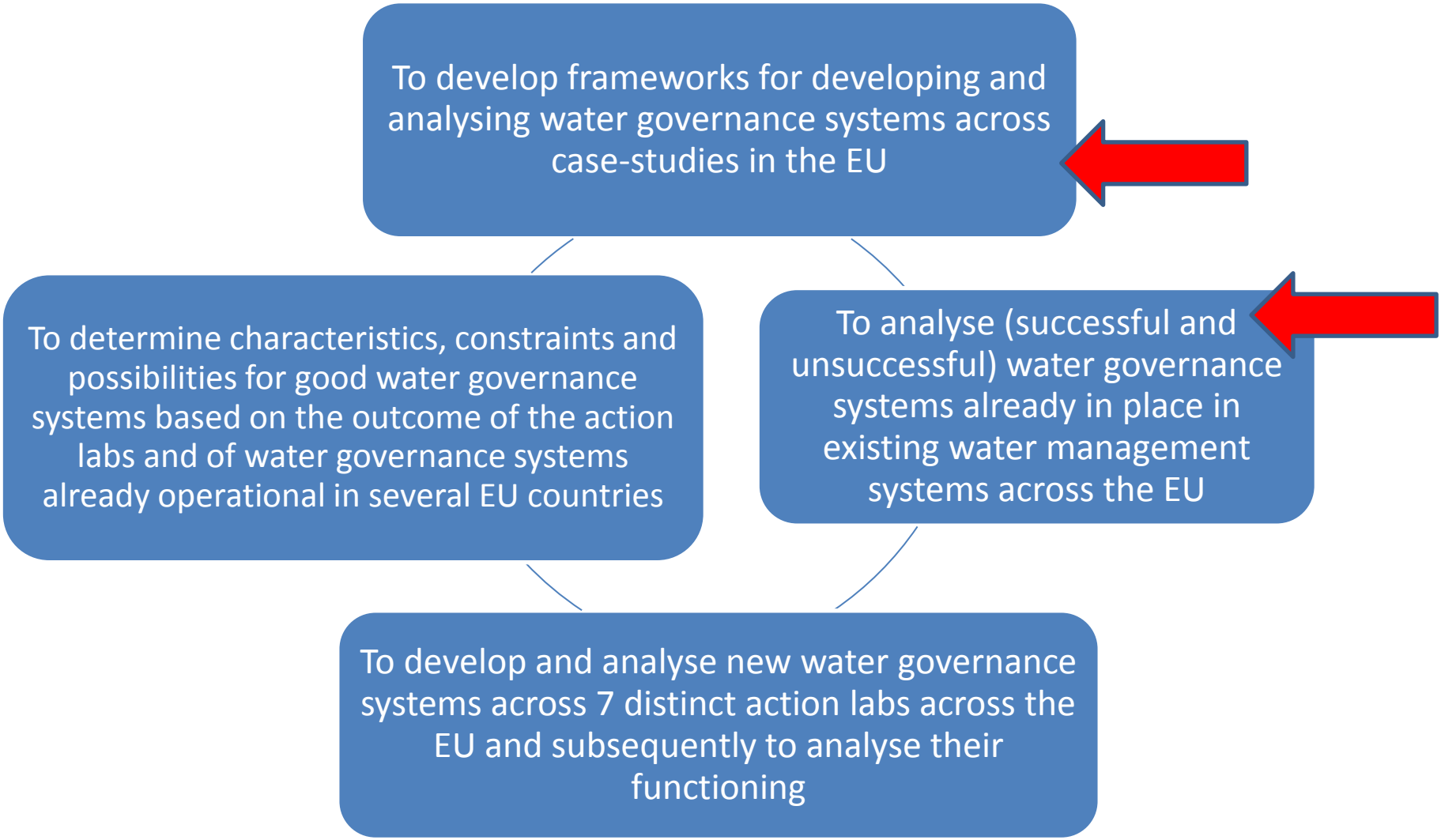
WP 2 – specific objectives



WP 2 – preliminary conlusions

- The Nowy Przylep and Kłęby with a total population of **281 without connection to the sewage system** (no such in the plans), the existing sewage system is largely leaking (Barnim-80%, Rensko-100%, Wójcin-80%, Warnim 50%)
- Agricultural production in the basin is based **mainly on demanding arable crops** (wheat, rapeseed), and over the last 12 years there has been a significant drop in pig population (87.8%) and increase in cattle population (46.6%)
- The lack of a real and **effective mechanism to control** compliance with BMPs by 01.01.2018 as part of the NVZ, this aspect in the "new Water Law" is clarified.
- **Lack of a common and integrated information platform for the exchange and transfer of monitoring data to institutions taking part in water management**
- "New Water Law" is a document refined, clearly clarifying the competences and responsibilities of individual bodies solving problems that have been so far addressed (eg division of duties, sanctions for non-compliance with OSP requirements, drainage fee, IT system for water management), but no executive acts to the Act , NO PROGRAM!
- **Underfunding of the monitoring program implemented by WIOŚ**, resulting in the application of the principle of "data inheritance" from previous years
- **Low involvement of local society** in matters related to water management

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WP 2 – Water Governance

THE BIGGEST CHALLENGES OF THE LINE, IMPROVING THE WATER QUALITY:

- Convincing agricultural producers about the **benefits of using BMPs**, awareness of the impact of agricultural producers on the aquatic environment,
- Building a **new sewage treatment plant in Barnim** and modernization of the sewage network and 35 individual sewage treatment plants included in KPOŚK (planned date of completion until 31.12.2021),
- **convincing residents of the importance of water quality**, especially important in towns without sewage systems (economic instruments improving the sewage management infrastructure in private farms)
- **encourage / involve the public in the water management process**
- improving the **flow of information between institutions**, as well as between the public sector and citizens

Next steps:
Comparison of all case studies - seven pilot areas to identify the so-called success and failure factors in the effectiveness and efficiency of the management system. RECOMMENDATIONS FOR CHANGES

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WP 3 – participatory monitoring

Participatory monitoring of water quality is a process through which **stakeholders at various levels engage in monitoring**.

This WP will offer new ways of assessing and learning from changes that are more inclusive, and more responsive to the needs and aspirations of directly involved actors such as farmers, drinking water producers, environment agencies and consumers.

The core principles of participatory monitoring in this WP are: **primary stakeholders as active participants – not just sources of information**; building capacity of **local people to analyse, reflect and take action**; joint learning of stakeholders at various levels; catalyses commitment to take corrective monitoring actions if required.

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WP 3 – specific objectives

- Design the participatory monitoring approach together with the actors
- Collection of existing water quality monitoring data (including surface, ground and drinking water)
- Harmonization of data for further use in the collaborative management tool developed under WP 5 within each case study;
- Design and implementation of additional, targeted participatory monitoring campaigns to evaluate the effectiveness of measures and farming practices;
- Summarising the lessons learned from targeted participatory monitoring campaigns for disseminating to other areas.

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WP 3 - Harmonised database

- Drinking water producers (ZWiK, WZ), research centers (ZUT, ITP, PIG-PIB),
- 41 sample points
- One database (input into WP5)

- !!! Different parametres, gaps in time, different methodology of sampling and lab tests, the same sampling points (double data)

WATERPROTECT ID	Rok	Data poboru próbki	Głębokość zwierciadła wody [m]	Odczyn pH	Przewodność elektrolityczna właściwa [µS/cm]	Temperatura wody [oC]	Tlen rozpuszczony w wodzie [mg/dm^3]	Jon amonowy NH4 [mg/dm^3]	Azotany NO3 [mg/dm^3]	Azotyny NO2 [mg/dm^3]	Azot ogólny N [mg/dm^3]	Fosforany PO4 [mg/dm^3]
WP_GW_11	2002	15.10		7,21	787			0,770	8,10			1,
WP_GW_11	2002	13.11		7,07	3080			0,540	35,70			1,
WP_GW_11	2002	11.12		7,11	2170			0,300	4,00			0,

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WP 3 - Participatory monitoring

Monitoring includes points:
1 - PIG-PIB (groundwater)
7 – ITP (river and groundwater)
7 – ZUT (river and groundwater)
3 – ZWiK (surface water)

Frequency of test:
- 1 per month – Gowienica river and precipitation
- 1 per quarter– groundwater and sewage discharge

Analytical range:
- Surface water, drainage water and sewage discharge : NO_2, NO_3, PO_4, SO_4, NH_4, B Cl, K, Mg, N, P
- Groundwater: NO_2, NO_3, PO_4, SO_4, NH_4, B Cl, K, Mg
- Precipitation: N

Additional analysis:
- Soil sampling (NO_3, NH_4, pH, P, K, Mg)
- Groundwater profile – sampling at different depths to determine NO_3 concentration in vertical profile
- Groundwater and surface water sampling for N and O isotope analysis
- Infra-red imaging

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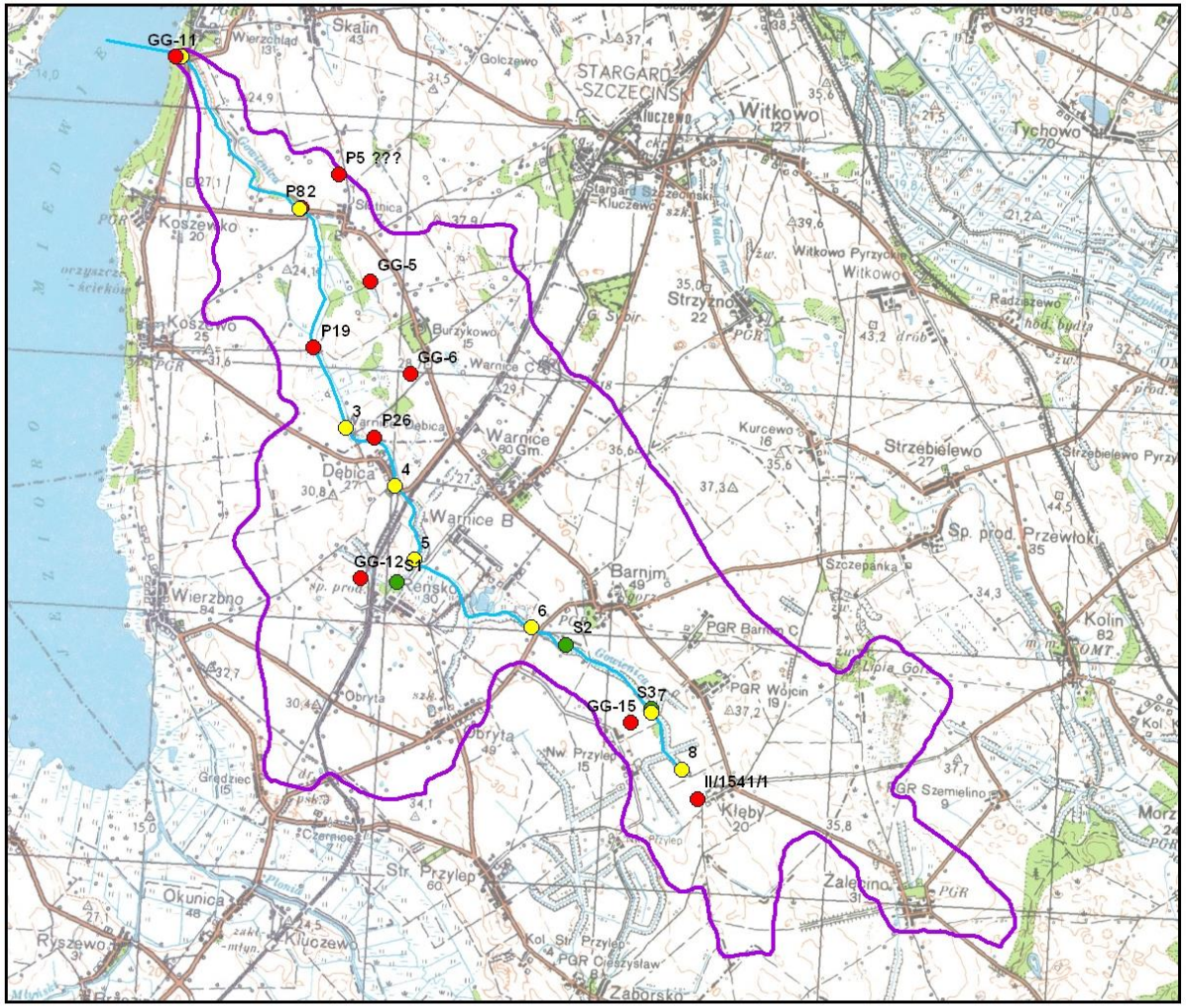
WP 3 - Participatory monitoring



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WP 4 – Best Management Practices

The aim of WP4 is to **review and evaluate current farming systems and new innovative farming systems** (or water farms) that optimise the delivery of good water quality within the case study areas, taking into account cost-effectiveness of management practices.

An overview and exchange on relevant and cost-effective best management practices (soil management, cropping practices, vegetative buffer strips, natural retention structures, sustainable use of fertilizer and pesticides, irrigation management and the use of biopurification systems) to reduce point sources and diffuse pollution of pesticides and fertilisers will be made.

Using the developed water governance strategies (WP2), the participatory monitoring (WP3) and the collaborative tool (WP5), which indicates where targeted mitigation and BMPs will have the largest effect on water quality, we aim to advice actors in the action labs with good practical solutions in the case study areas.

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WP 4 – Main tasks

- Identification of available innovative mitigation measures and BMPs (type, applicability, costs)
- Collecting information on BMPs in the case study sites and the assessment of willingness to implement these BMPs.
- Comparison of mitigation measures and BMPs applied in various case studies
- Recommendations of BMPs for each case study to target new water governance strategies.
- Identification of weaknesses of current legislative and organisational set ups inhibiting the successful implementation of mitigation measures and BMPs

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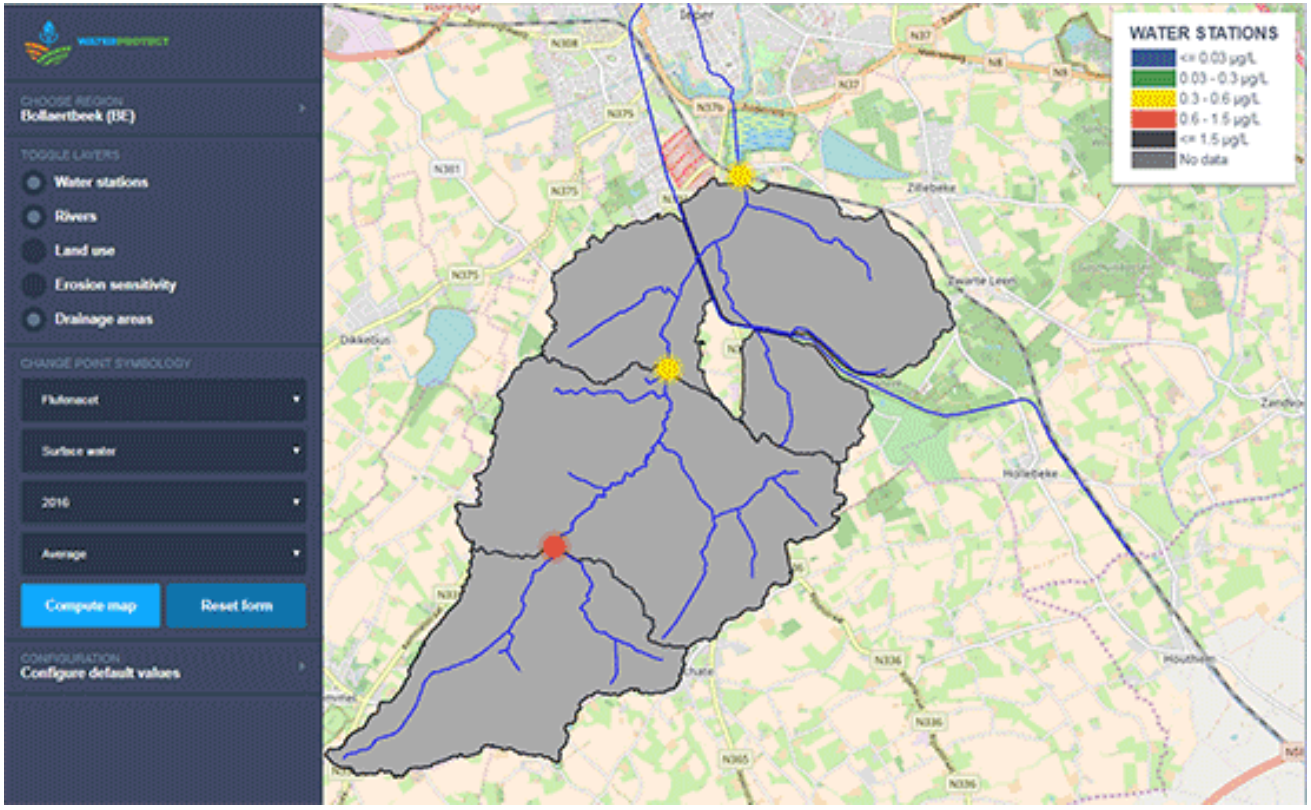
WP 5 – Colaborative tool



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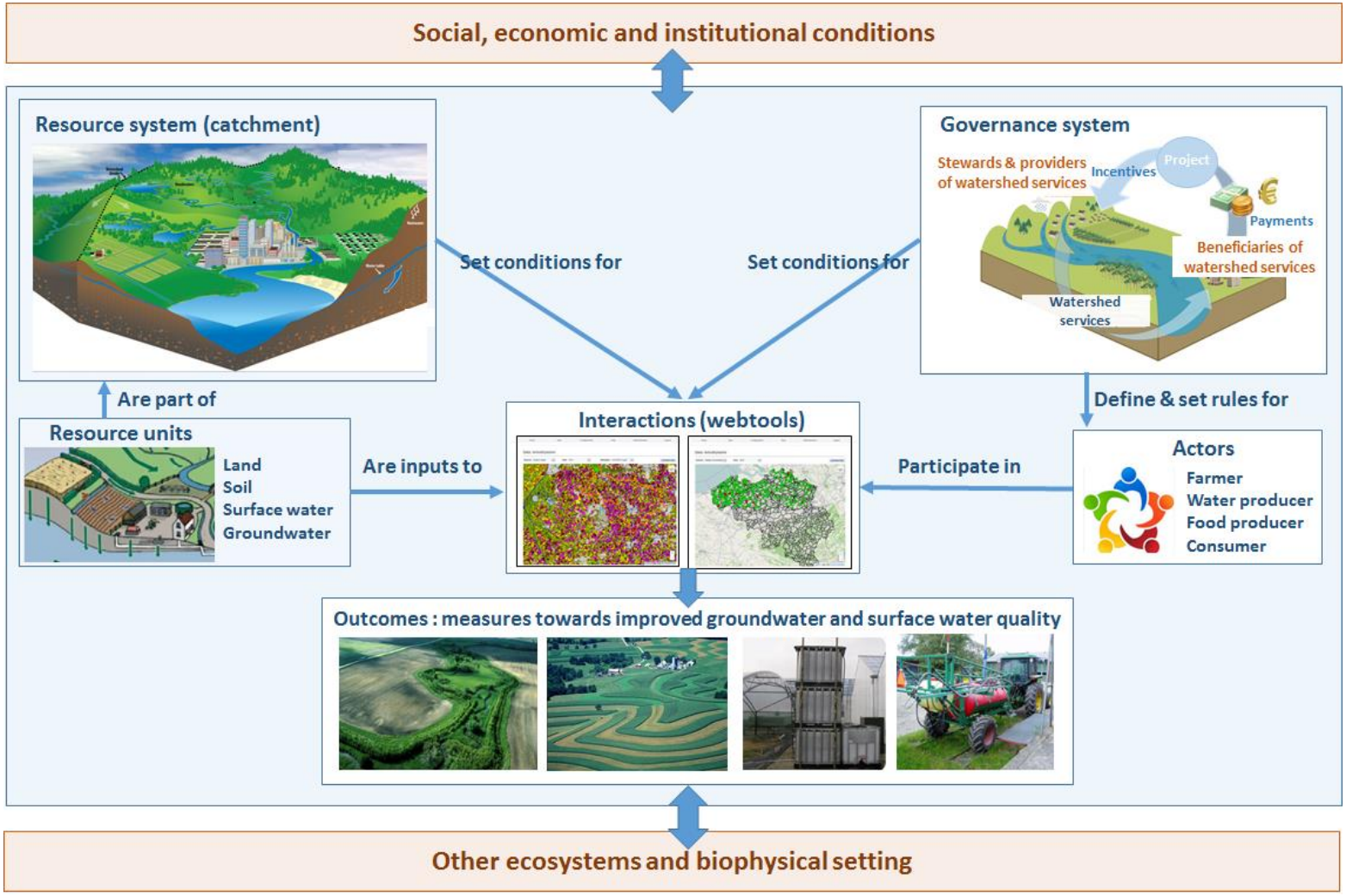
Action lab - multi actor approach



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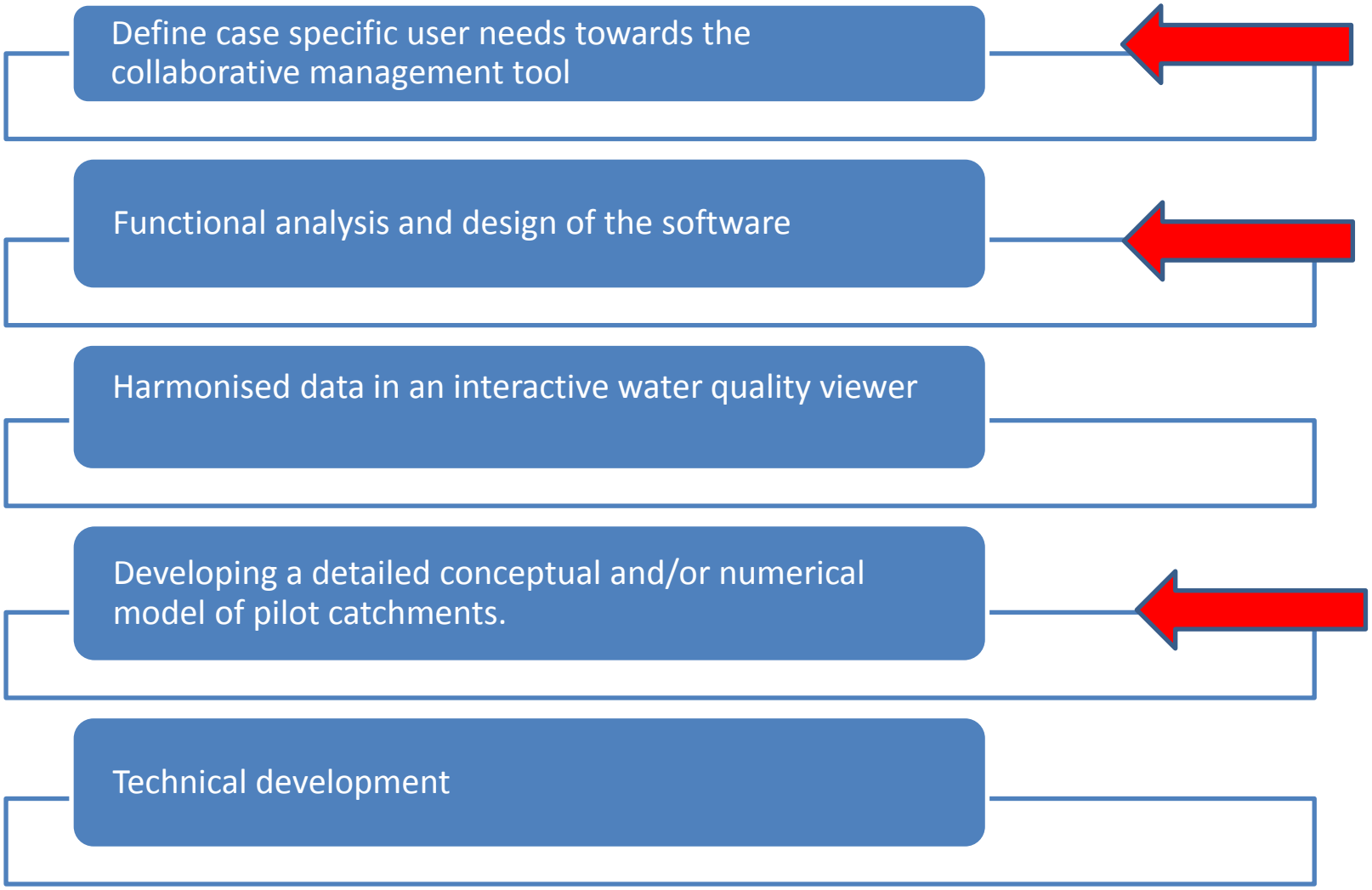
WP 5 – Colaborative tool



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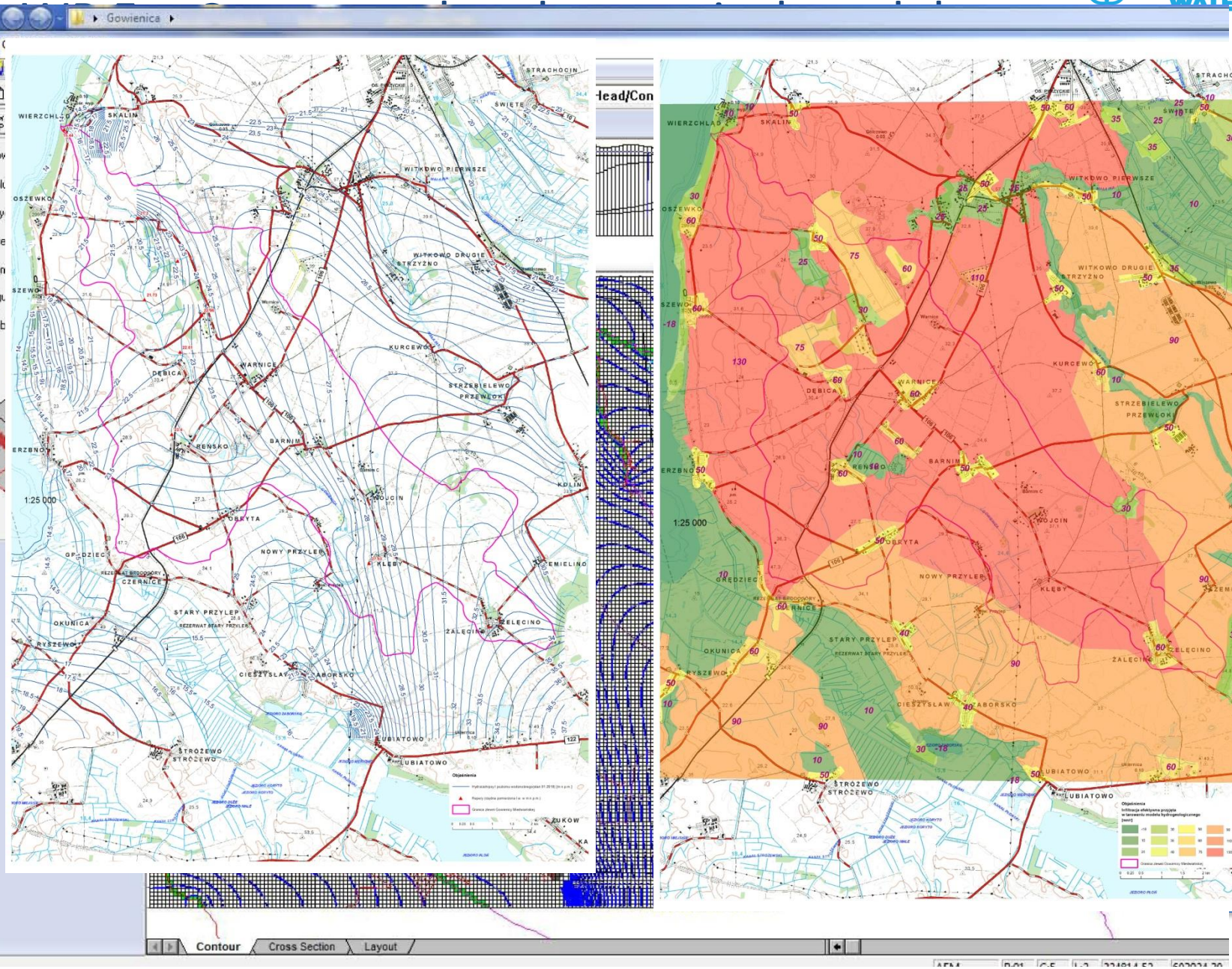
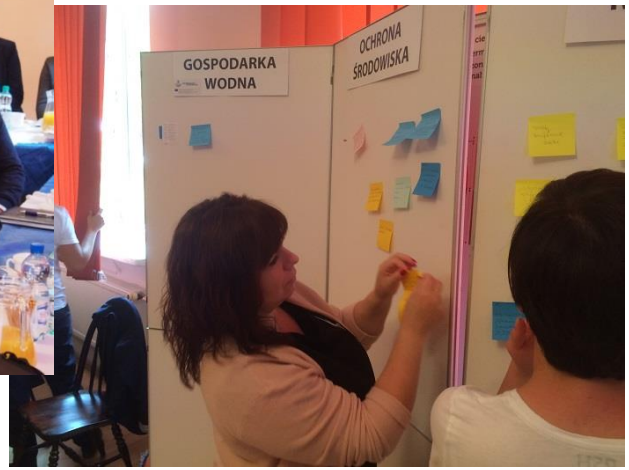

Gowienica
Contour
Cross Section
Layout
1:25 000
1:25 000

MAA – in progress

Meetings with stakeholders (discussion groups with all stakaholders and meetings with individual stakeholder to discuss specific issues)

workshop AgroPomerania Barzkowice 8.09.2017

workshop AgroPomerania Barzkowice 7.09.2018



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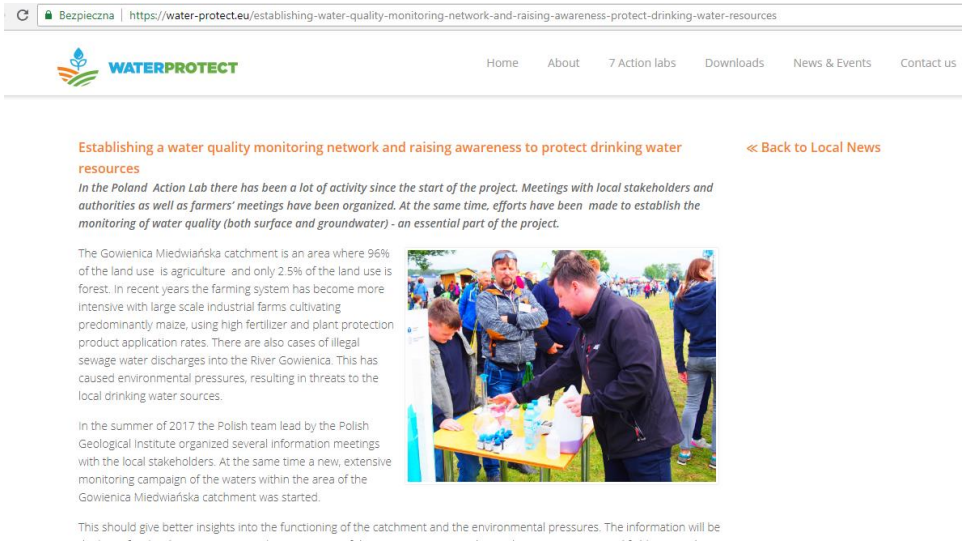
MAA – in progress

- Leaflets
- Newsletter



- www.water-protect.eu
- www.pgi.gov.pl

- waterprotect@pgi.gov.pl

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