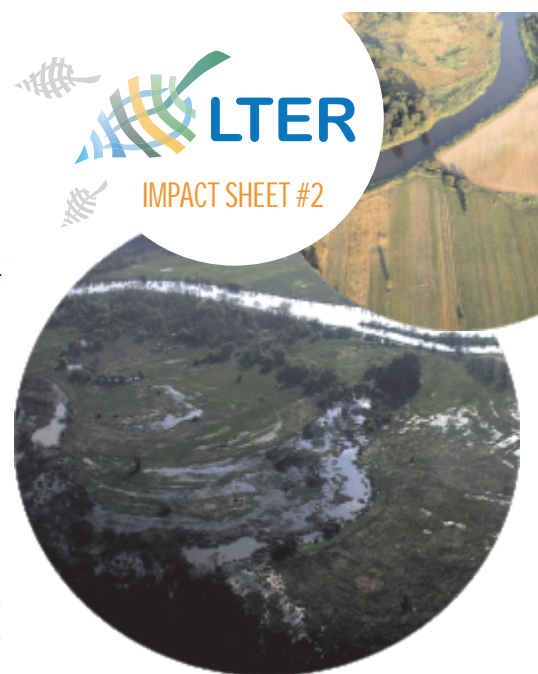


REDUCTION OF NUTRIENT LOAD TO RIVERS & RESERVOIR IN THE PILICA RIVER CATCHMENT

THE PILICA RIVER LTSE, POLAND

The Pilica River catchment is located in central Poland. Pilica is the longest tributary of the Vistula river, with a length of 319 kilometres and a basin area of 9,273 km². It flows through the Polish Jura, after which it enters the Central Polish Plains. In 1974, a dam was built near the town of Sulejow, resulting in the creation of a man-made reservoir, the 2,700 hectare Sulejow Lake. Pilica and the reservoir are the core systems providing several ecosystem services to towns and regions situated in the Pilica catchment and beyond (including Lodz, the 3rd largest city in Poland).

The key services involve wildlife habitats (Natura 2000 areas, reserves and landscape protection areas), provision of water, regulation of nutrient and water cycling supported by ecotone zones, and recreation. The catchment is mostly agricultural with several heritage places. The agriculture contributes significantly to problems of water quality both in the river and the reservoir, where toxic cyanobacteria blooms imposing health hazards.



AIMS

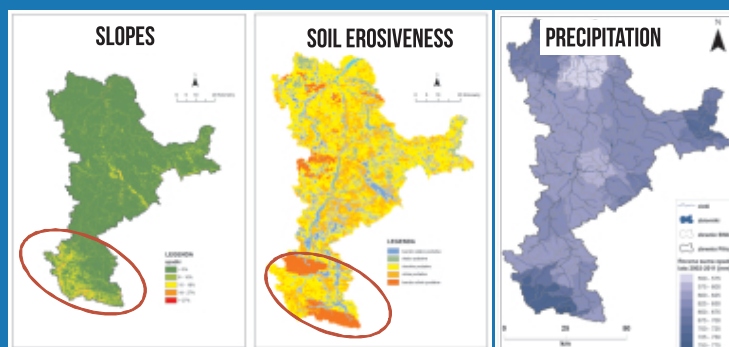
- Setting up a strategy for reducing diffuse pollution in the basin of the Pilica River by means of cost-effective ecohydrological methods;
- Support achievement of a good ecological status of water in the Sulejowski Reservoir;
- A manual for optimal ecotone formation, to help reduce diffuse pollution load and enhancement of biodiversity;
- Integration of stakeholders through capacity building, improved governance and efficient decision making for Integrated Water Management (IWM).

OUTCOME - IMPACT

- Identification of pollution hot-spots for improvement of landscape barriers and farmers' practices;
- Assessment of ecotone efficiency in nutrient regulation;
- Exemplary restoration of ecotone zones;
- Establishment of learning alliance group for development of strategy towards IWM;
- Engagement of local companies in developing know-how;
- Employment of local companies.

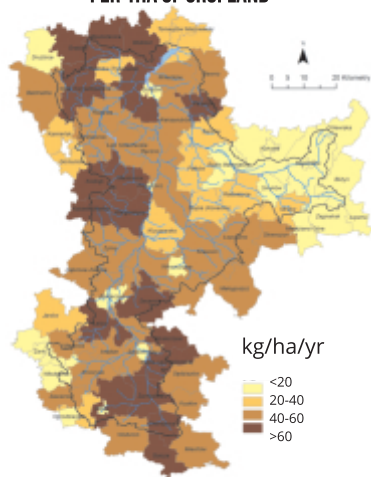
RESEARCH

SWAT - MODEL ANALYSIS OF POLLUTION HOT-SPOTS IN THE CATCHMENT



IZYDORCZYK, K., FRĄTCZAK, W.

USE OF NITROGEN FERTILIZERS PER 1HA OF CROPLAND



Long-term data indicated that average nutrient load at the entrance to the reservoir reaches 43,3t of P per year and 986t of N, while 1kg of P contributes to production of 2-3t of wet biomass of algae.

Thus understanding, which areas contribute the most to eutrophication & what is a load, was critical to allocate & design biogeochemical barriers.



LOCATION OF THE PILICA RIV. CATCHMENT & IMPLEMENTATION PROJECTS

SOLUTIONS DEVELOPMENT & IMPLEMENTATION



The multistakeholder platform - learning alliance - was launched to allow mutual learning among all the actors. They contributed to defining the problems and development of strategies that became part of the Pilica Basin Master Plan for Reduction of Non-Point Source Pollution.

BEFORE INTERVENTION

Small scale demonstration projects were established as a basis for verification of concepts, building awareness and education. They involved: engineering, ecosystem engineering, biotechnology (denitrification walls, degradable textiles), and biodiversity studies. The project promoted native species as components of the biogeochemical barriers.



AFTER INTERVENTION



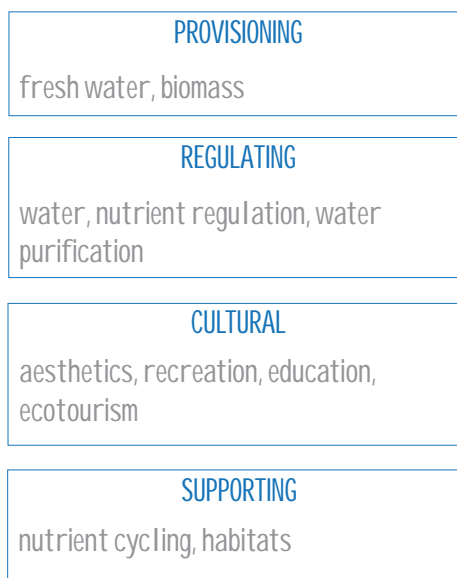
IZYDORCZYK, M., FRĄTCZAK, W., ZALEWSKI, M.



PRIORITY THEMES



PRIORITY ECOSYSTEM SERVICES



AREA OF RELEVANCE, ACCORDING TO SDG



SDG - UN SUSTAINABLE DEVELOPMENT GOALS



FURTHER INFORMATION

K. Izydorczyk, W. Frątczak, A. Drobniewska, E. Cichowicz, D. Michalska-Hejduk, R. Gross, M. Zalewski. 2013. A biogeochemical barrier to enhance a buffer zone for reducing diffuse phosphorus pollution – preliminary results. *Ecohydrology & Hydrobiology* 13: 104-112.

Bednarek A., Zalewski M., 2007. Management of lowland reservoir littoral zone for enhancement of nitrogen removal via denitrification. In: Okruszko T., Maltby E., Szatylowicz J., Świątek D., Kotowski W. (Eds). *Wetlands: Monitoring, Modeling and Management*. A.A. Balkema Publishers - Taylor & Francis Group, pp. 293-299.

<http://www.ekorob.pl>



PROJECT - EUROPEAN LONG-TERM ECOSYSTEM AND SOCIO-ECOLOGICAL RESEARCH INFRASTRUCTURE
FUNDED BY H2020-INFRAIA-2014-2015 654359