



Katarzyna Izydroczyk

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Currently held positions

European Regional Centre of Ecohydrology of the Polish Academy of Sciences

Łódź

DIRECTOR

European Regional Centre of Ecohydrology of the Polish Academy of Sciences

Łódź

ASSOCIATE PROFESSOR

Scientific profile and collaborations

My main research focus is the development of systemic **ecohydrological solutions** in catchment water management to **reduce reservoir eutrophication**. My research focuses on quantifying hydrological processes and mapping pressure sources at the catchment scale as a basis for understanding the cause-and-effect relationships that regulate ecosystem functioning and for establishing a hierarchy of factors influencing risk dynamics.

A key element of **water management** is harnessing the potential of ecosystems. We focus on the development of **nature-based solutions** (including ecohydrological biotechnologies) to reduce agricultural non-point source pollution. For example, the development, design and implementation of **High Efficiency Buffer Zones** in the Sulejów Reservoir shoreline. These are vegetated buffer zones reinforced by structures in the form of a denitrification barrier or a limestone-based barrier. The enhancement of naturally occurring processes such as sedimentation, biofiltration, denitrification or adsorption contributes to the reduction of nitrogen and phosphorus concentrations in the water flowing through the zone.

Research is carried out in international cooperation thanks to participation in European Commission projects led by such entities as the Swedish **University of Agricultural Sciences** and the **IHE Delft** Institute for Water Education, as well as within the framework of **UNESCO Water Family**, in particular within the ecohydrology demosites network.

The applicability of my research translates into cooperation with both institutions involved in water management and a wide group of stakeholders (decision makers, NGOs, local authorities). This includes collaborating with them, but also research on the development of models for **co-creation with stakeholders**, as well as research on attitudes and behaviour.

Selected publications

- 2019 *The ecohydrological approach, SWAT modelling, and multi-stakeholder engagement – A system solution to diffuse pollution in the Pilica basin, Poland* [\[link\]](#)
- 2019 *Effective phosphorous reduction by a riparian plant buffer zone enhanced with a limestone-based barrier* [\[link\]](#)
- 2018 *Extensive grasslands as an effective measure for nitrate and phosphate reduction from highly polluted subsurface flow - case studies from Central Poland* [\[link\]](#)

Research grants

Principal Investigator: 3 grants: the European Commission's projects: LIFE+, IP LIFE and national project: NCN

Project Manager: 3 grants: KBN

Co-Investigator: 14 grants: the European Commission's projects – 2xFP5, FP6, HORIZON 2020, Interreg Baltic Sea Region, LIFE+, and 8 national projects: KBN, NCN, WFOŚiGW