

Alternet Day - 12 June, 2024

Sustainability Research + Innovation Congress 2024 - Sustainability

How ready are we for opening a way to nature?

Kinga Krauze, Katarzyna Izydorczyk, Martyna Kuzioł, Renata Włodarczyk – Marciniak
European Regional Centre for Ecohydrology PAS, Łódź, Poland

THE SOURCE

THE TRANSFER

THE ENABLING ENVIRONMENT

**WATER
SPACE
TIME
SOCIETAL CHOICE**

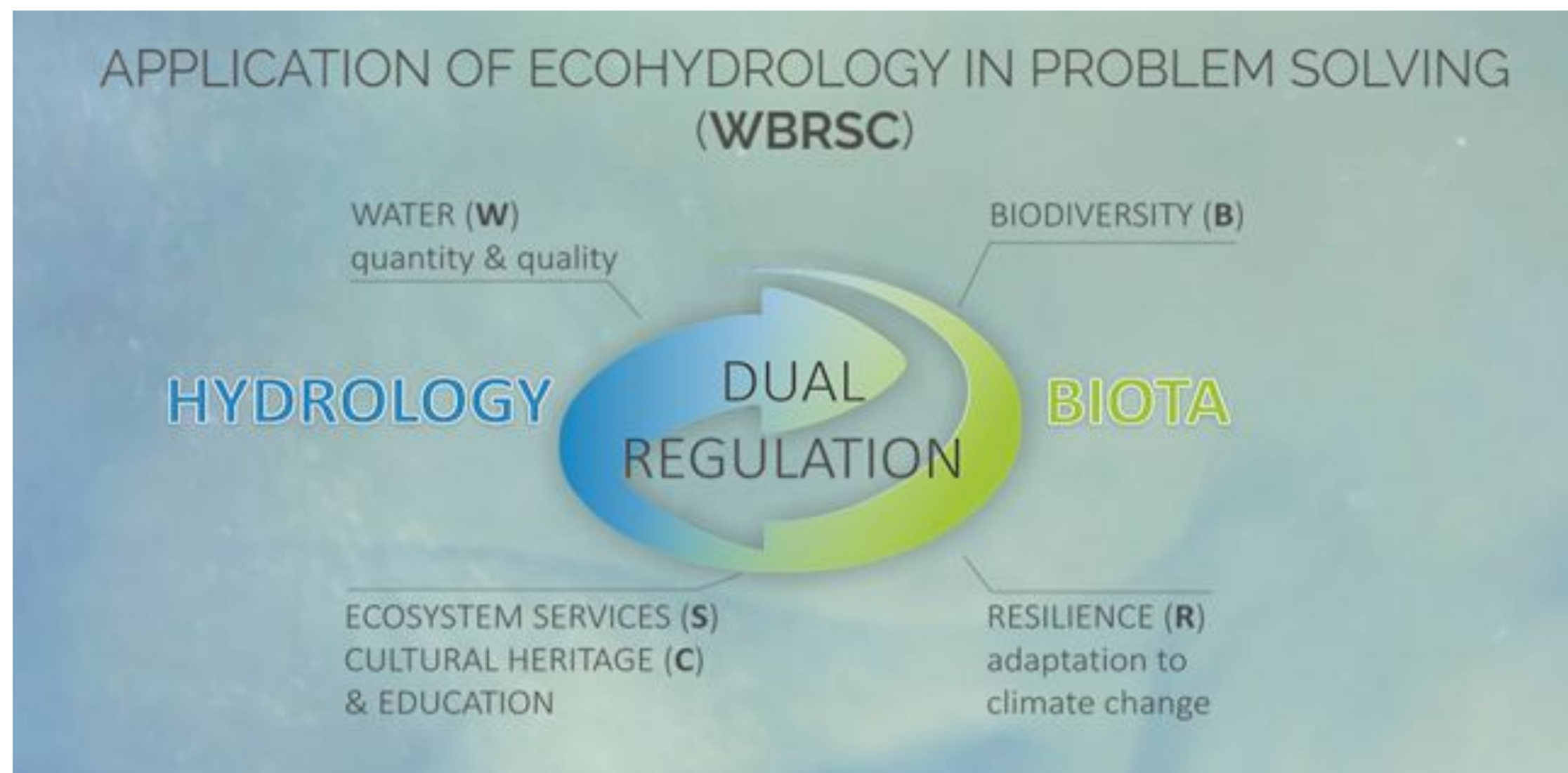
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Our framework

IHP IX 2022-2029

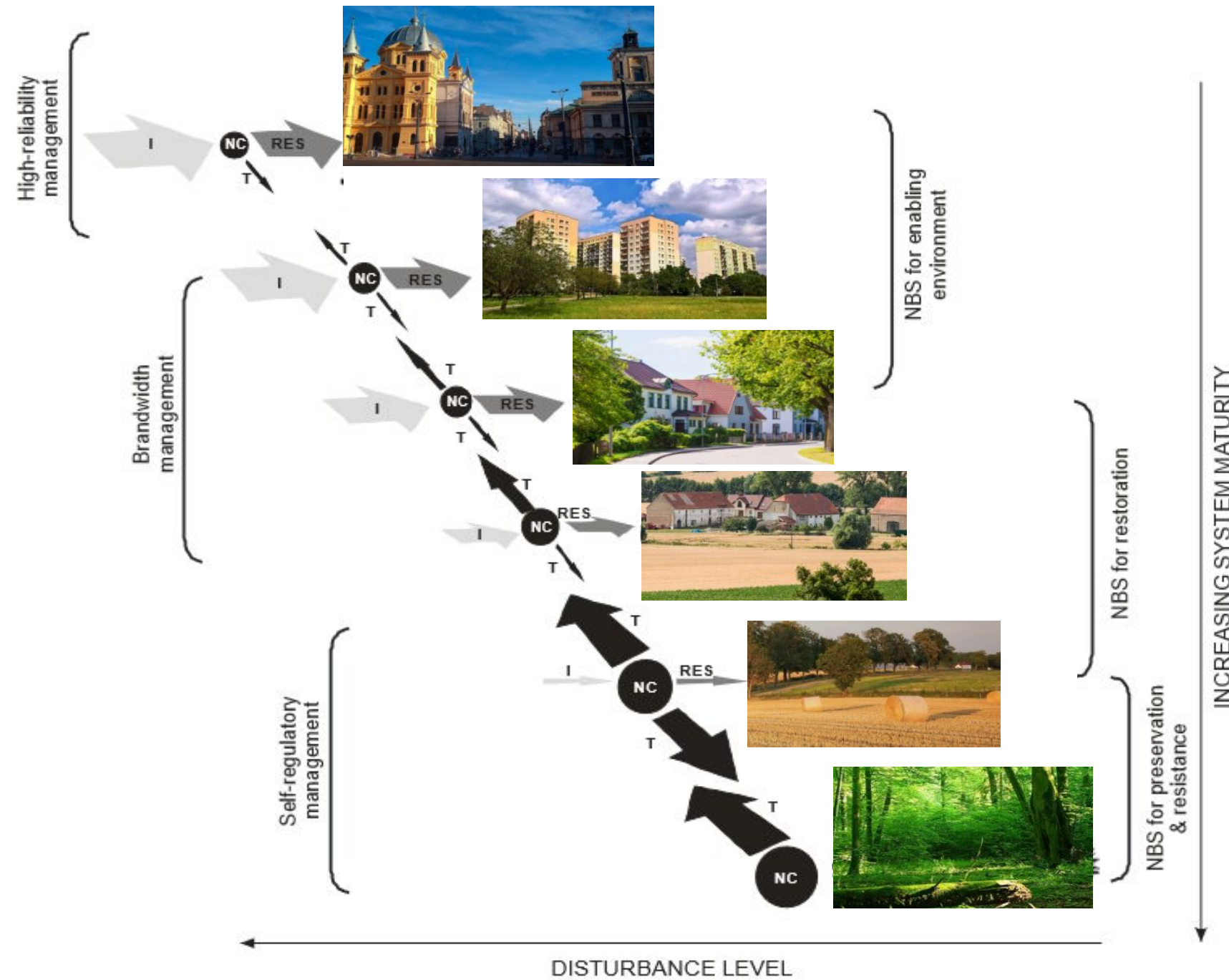


Science for a Water Secure World in a Changing Environment



„1.2. Ecohydrology research and innovation at UNESCO-designated sites conducted and shared by the scientific community and UNESCO Water Family, communicated to assess the impact of ecohydrological and nature-based solutions on water cycles and include such solutions in Integrated Water Resource Management (IWRM) and services at all scales and in Sites' management.”

ES TRANSFER RULE FOR REGULATORY SERVICES



Climaponds, retention basins and rainwater gardens, swales (FPP Enviro, E. Urbaniak)



Water-purification ramps, restoration of vales and riv. beds (P. Breil)

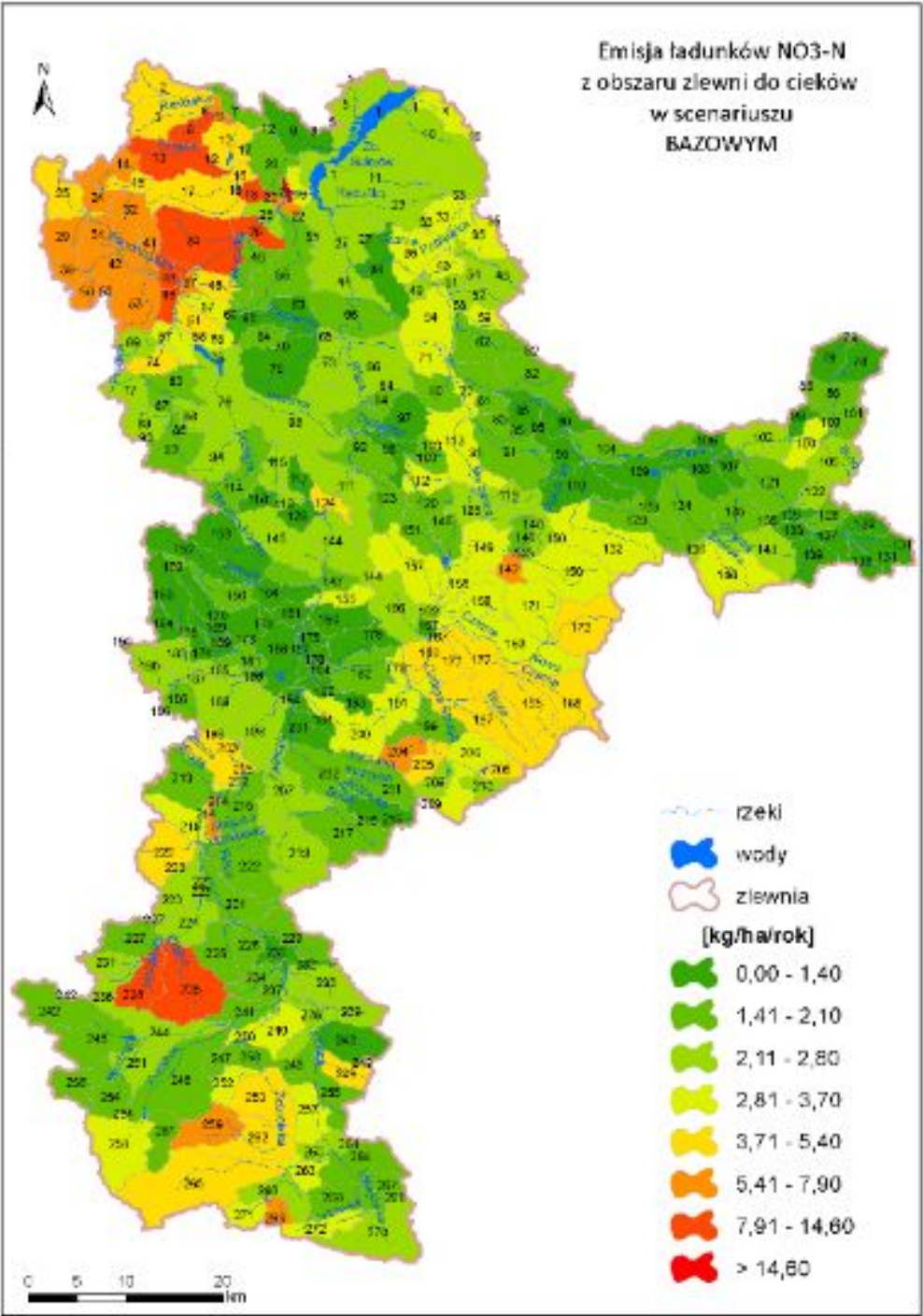


Denitrification walls + buffering zones (K. Izydorczyk)

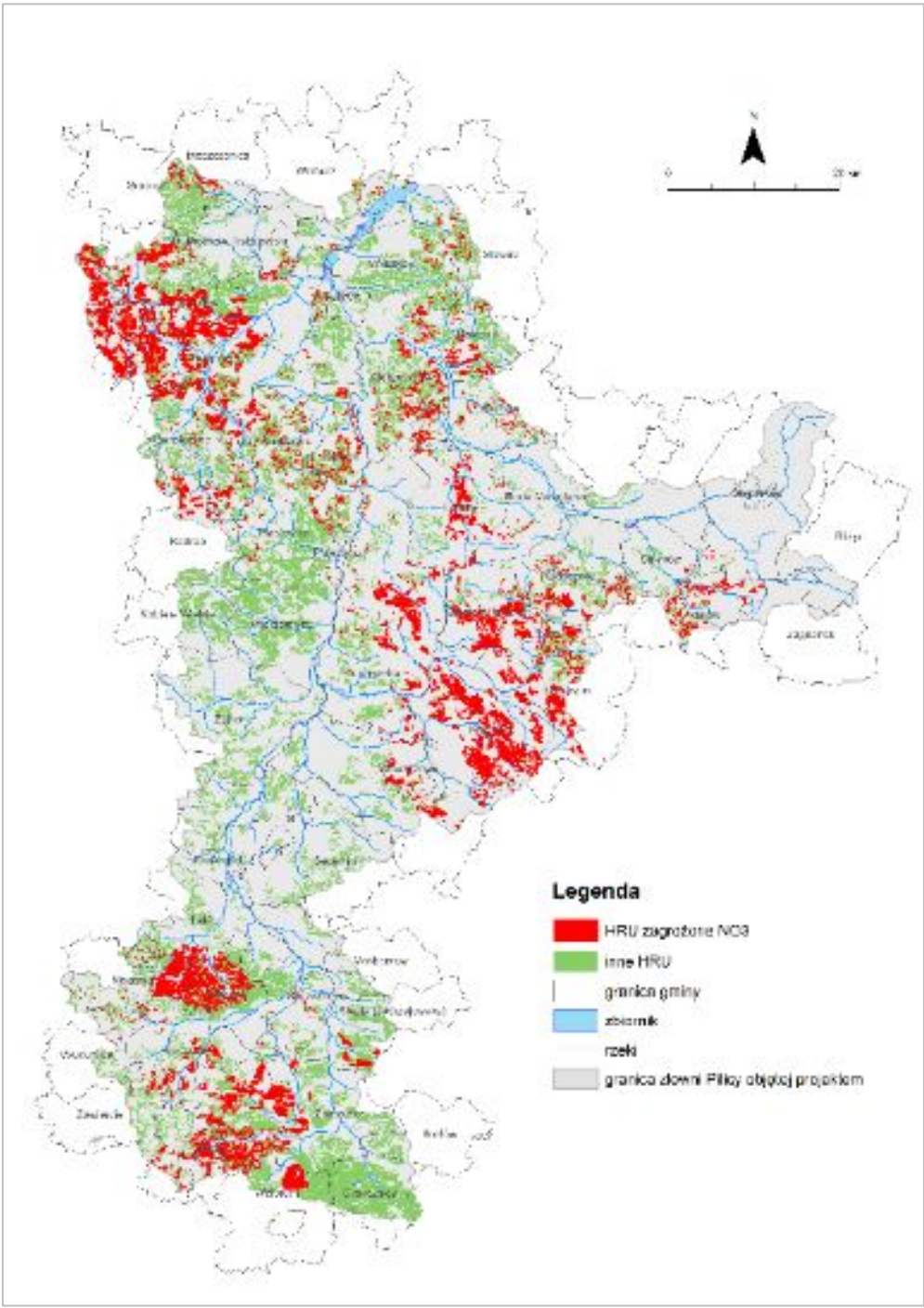
- ❑ Active restoration: from rural to urban areas;
- ❑ Focus on regulatory services;
- ❑ System solutions.

Counteracting nutrients leakage

N-NO₃ EMISSION



ARABLE LANDS – PRIORITY AREAS



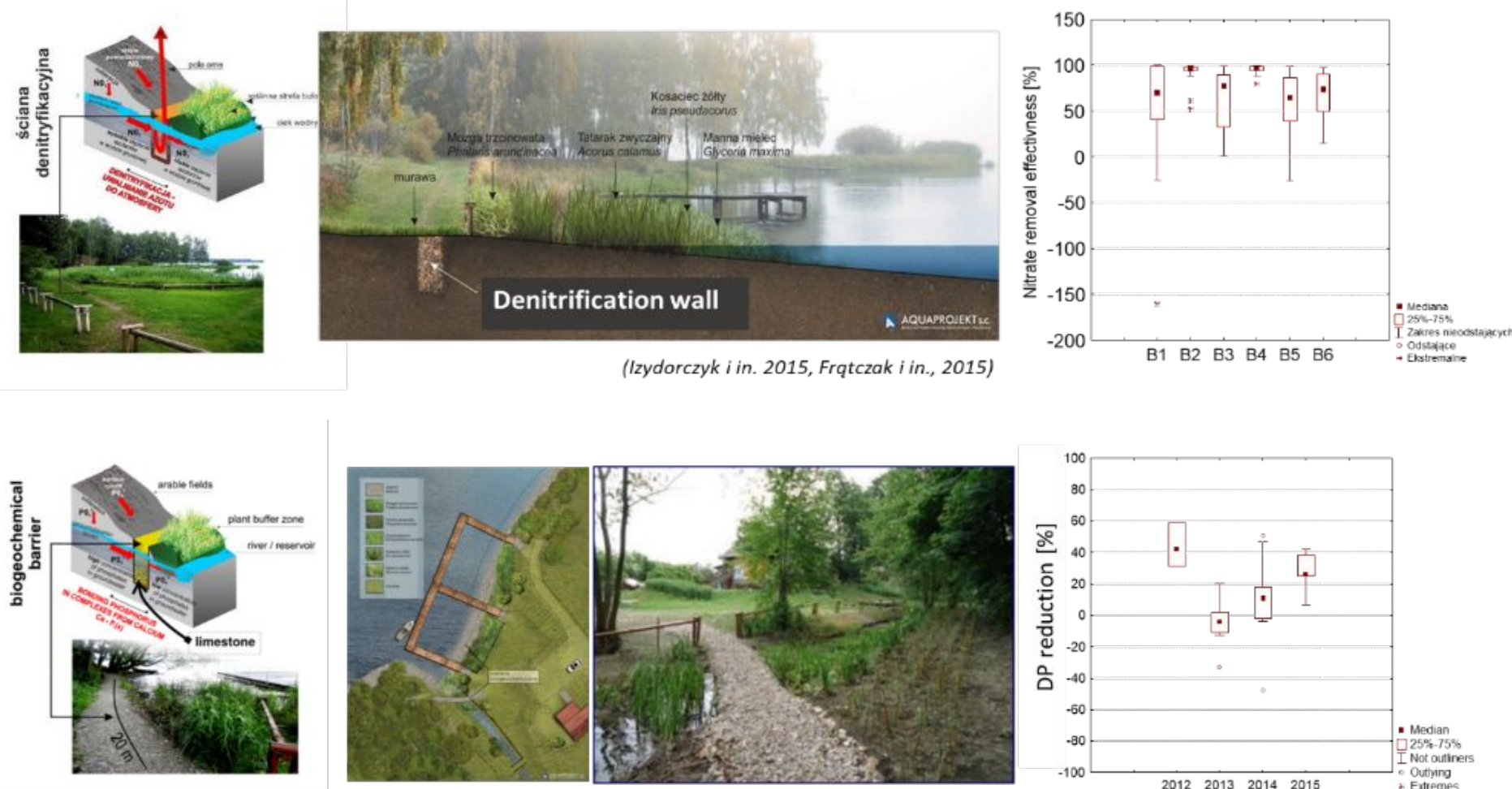
The SWAT model (Soil & Water Assessment Tool) was applied to estimate the quantity of N&P emissions, and to determine the **priority areas** in the catchment. The priority areas constitute only: about **6.6% of the area** of the analysed Pilica river catchment and **16.3% of the area of arable lands** located within the catchment. The SWAT model is useful for identification of areas where **measure implementation should be prioritized**



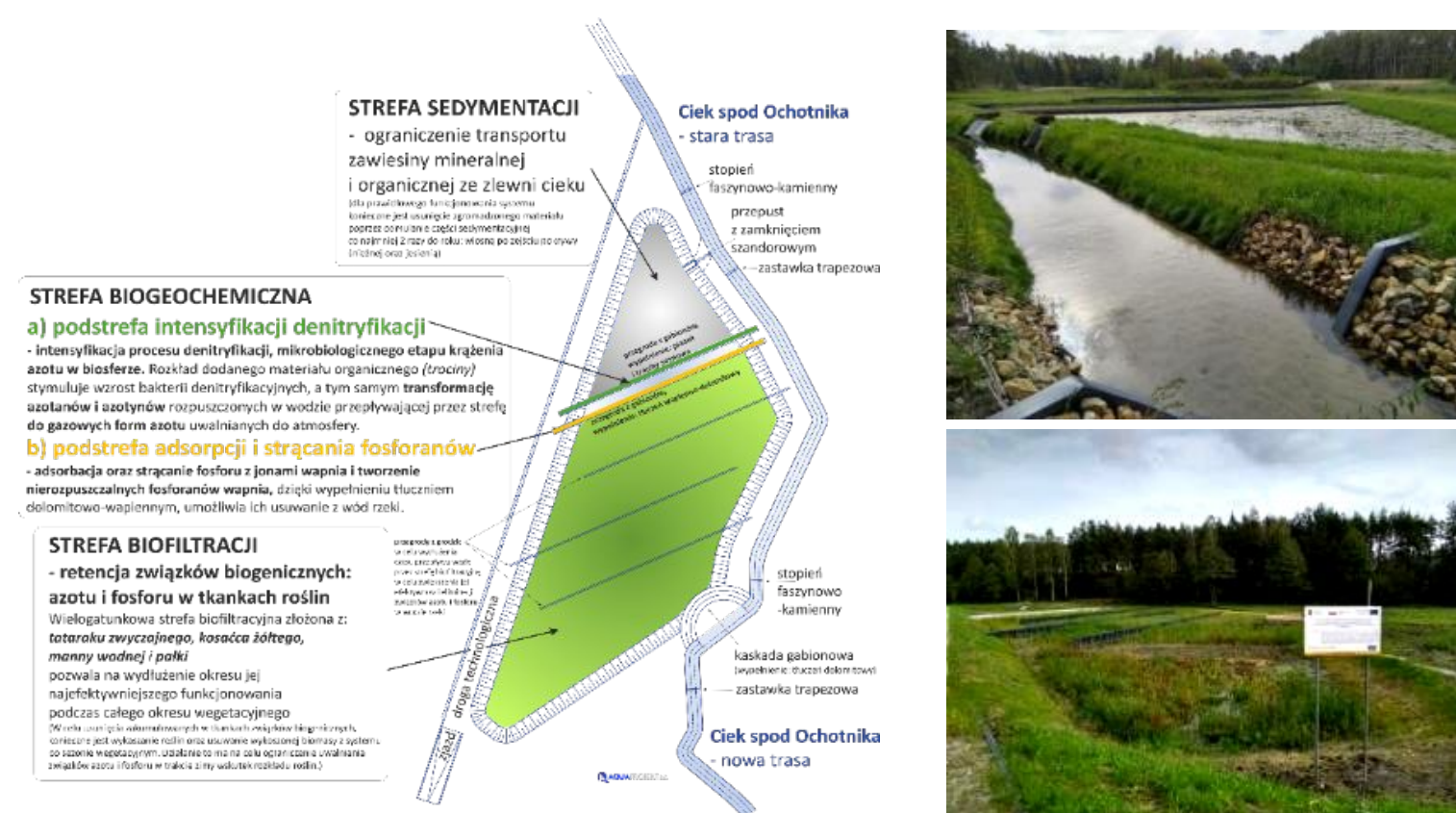
Source | Piniewski et al. 2015, Izydorczyk et al. 2019

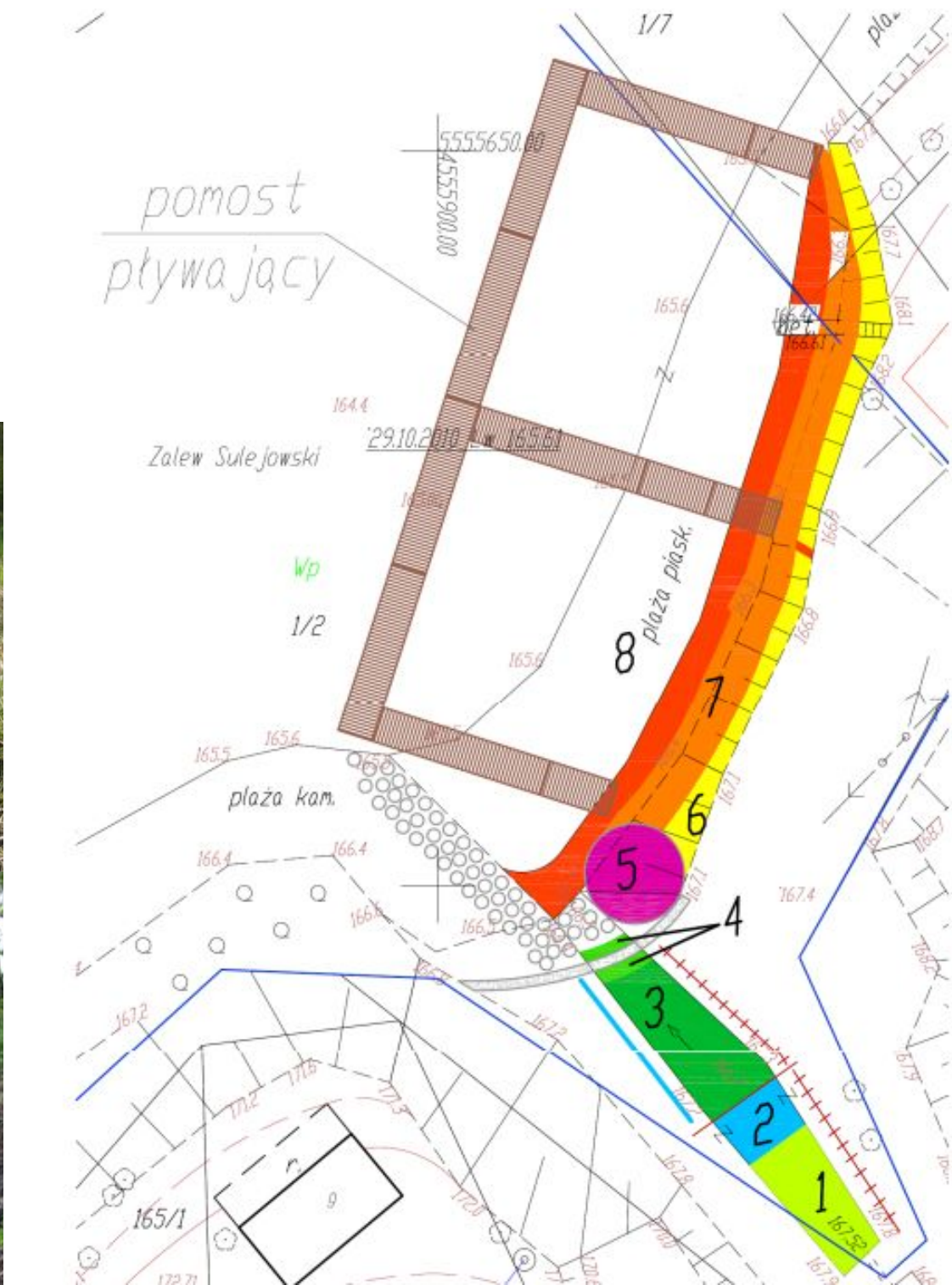
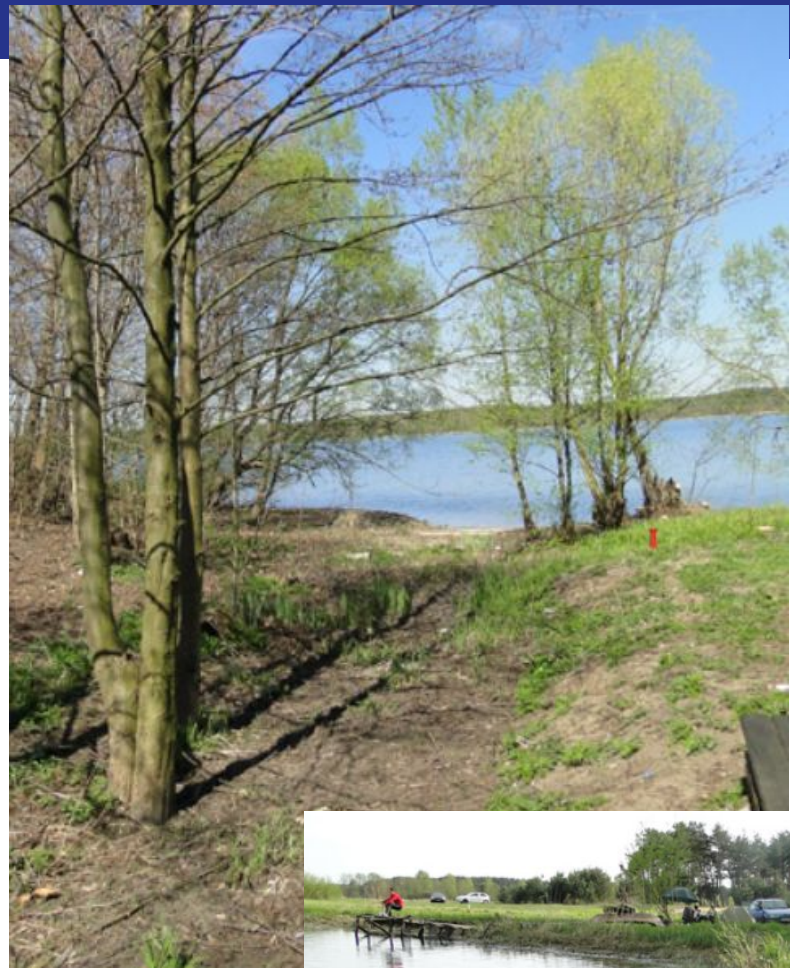
Restoration of self-purification services with blue-green infrastructure

Enhanced buffer zone for reduction of diffuse N & P pollutions

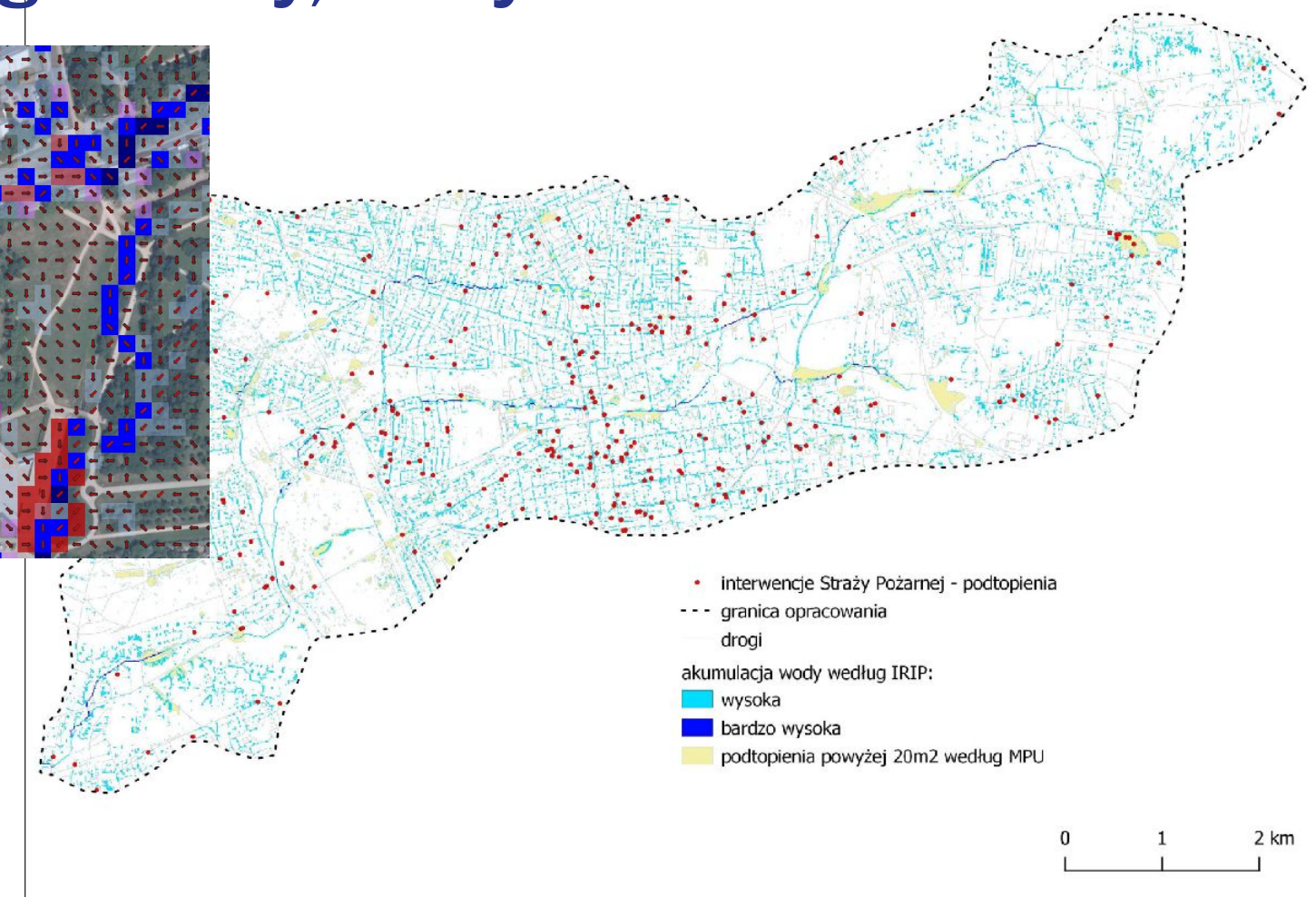
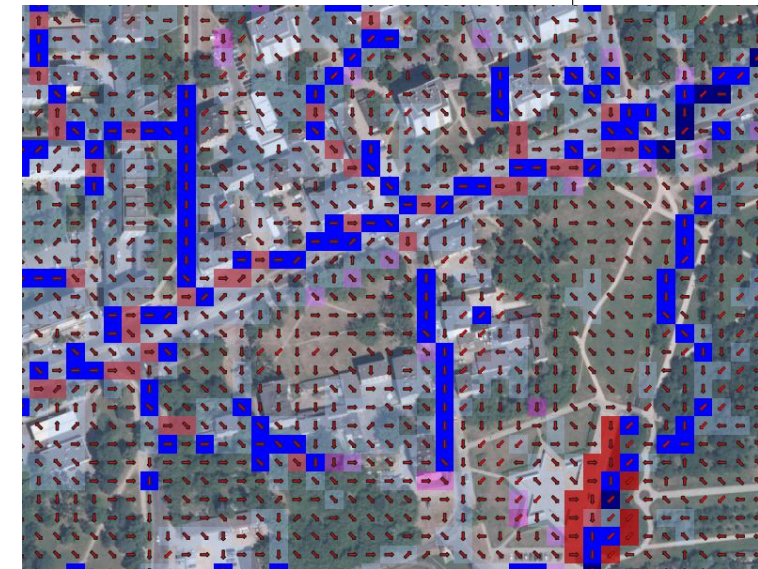


Sequential sedimentation-biofiltration system for protection of a recreational reservoir





Augmentation of ground waters for recovery of rivers and greenery, a city centre

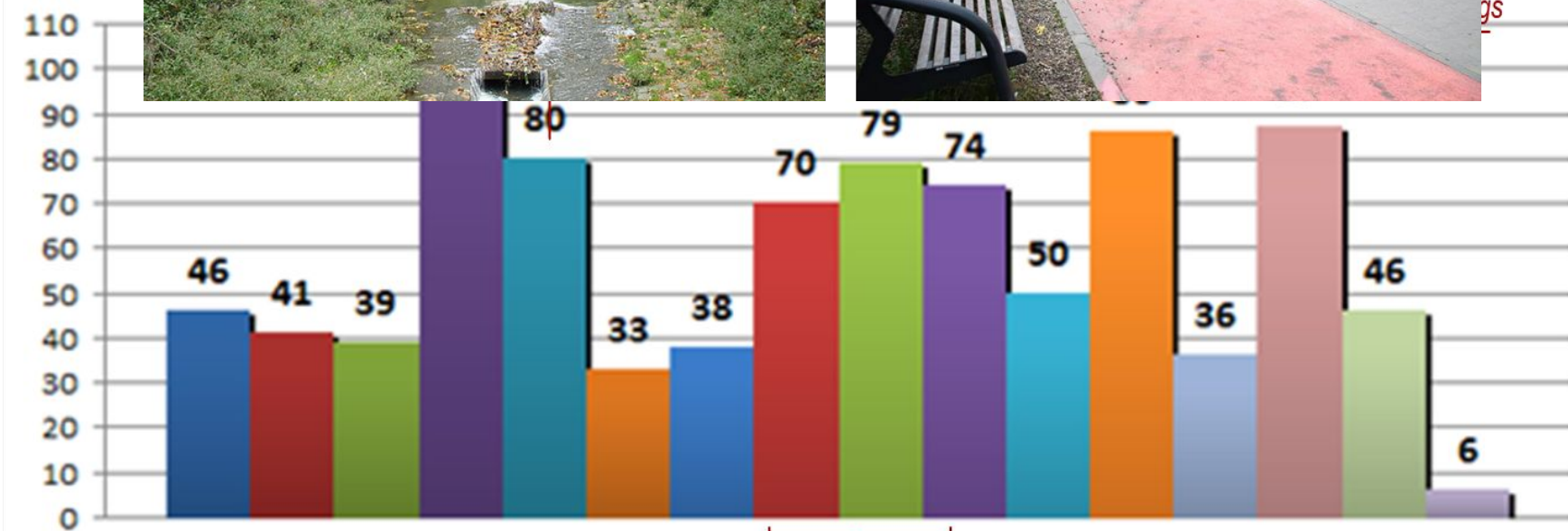


Each garden absorbs a rainfall of 30 mm (the intensity of rain with the probability of occurrence once in 5 years and duration of 1 hour) from 4 buildings.

Rainwater capture of 20m3 in total.

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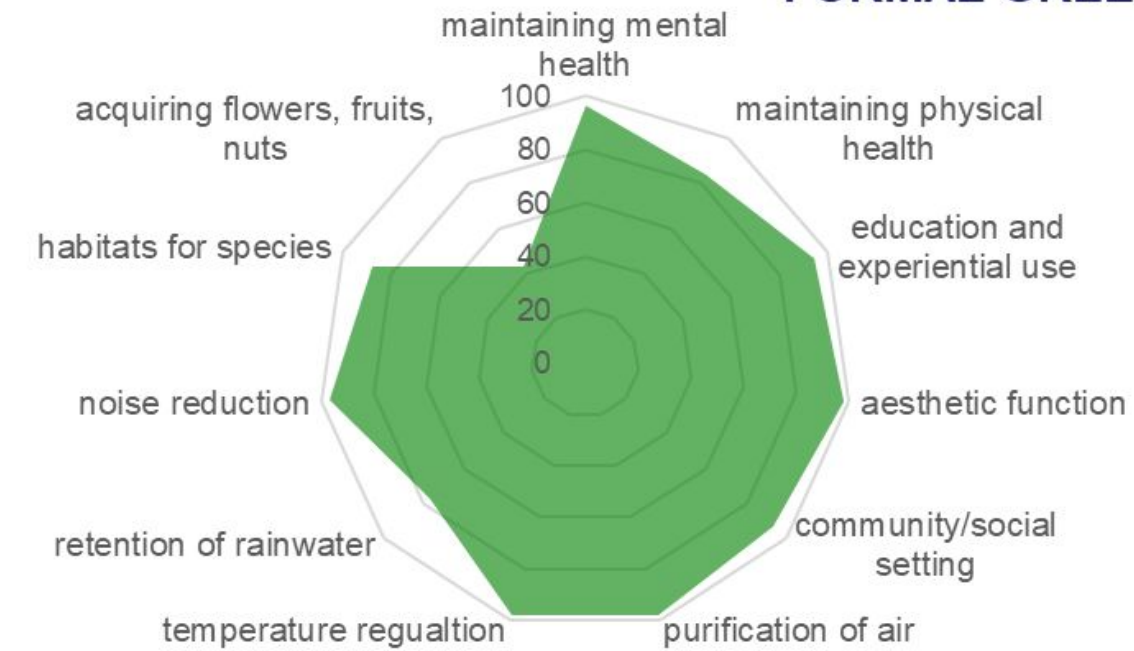
Green transportation

Krauze, Lewandowska, 2015

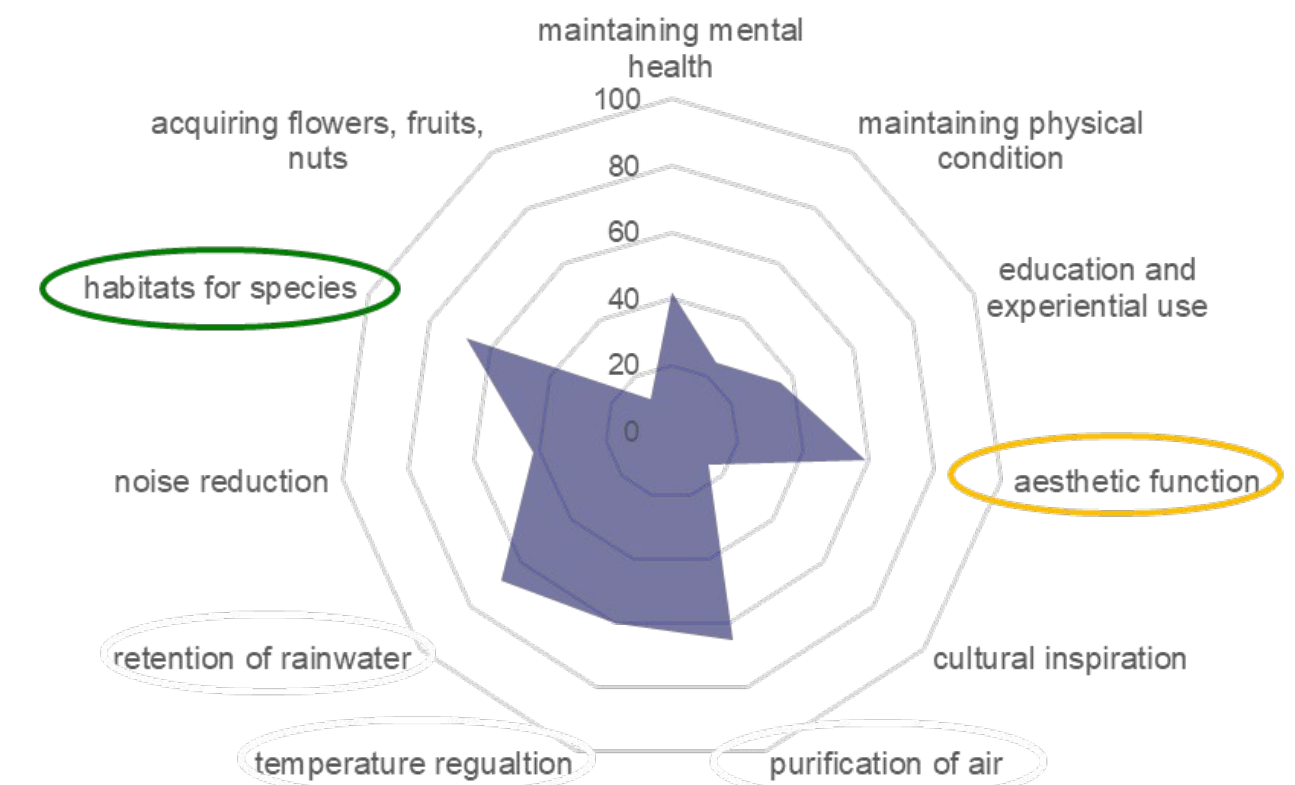
- increase of number of squares
- increase of the area of squares
- establishing of public allotment gardens
- greening of the streets
- rehabilitation of existing city's greens
- restoration of rivers' valleys
- launching of new parks
- better public transport connection with major green areas
- more bike paths
- more walking paths
- more kids playing grounds
- more ponds and fountains
- green public spaces for concerts and open space events
- greening the buildings
- more woonerfs
- others

What ecosystem services does the area serve?

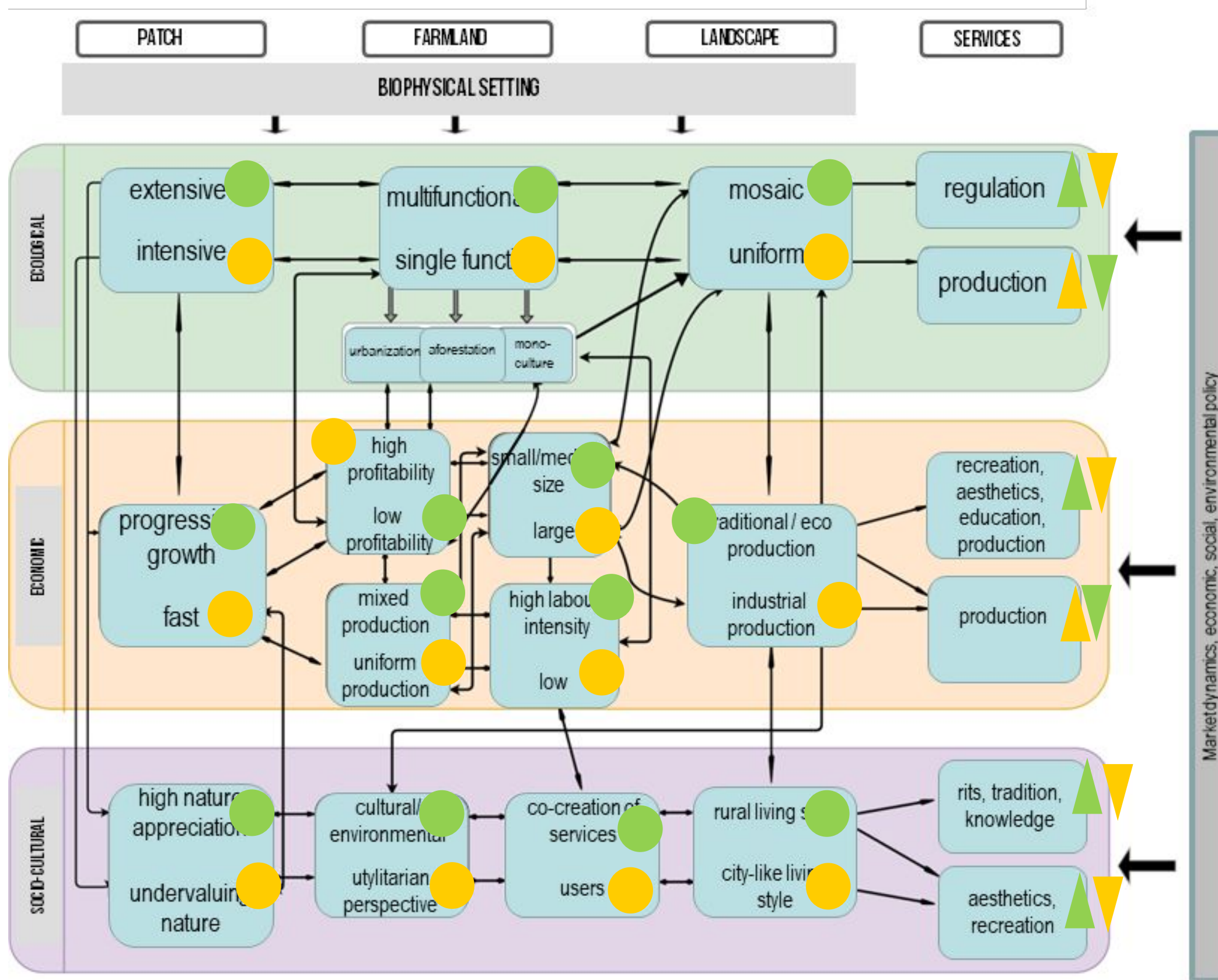
FORMAL GREEN SPACE



INFORMAL GREEN SPACE



Greening the rural spaces..



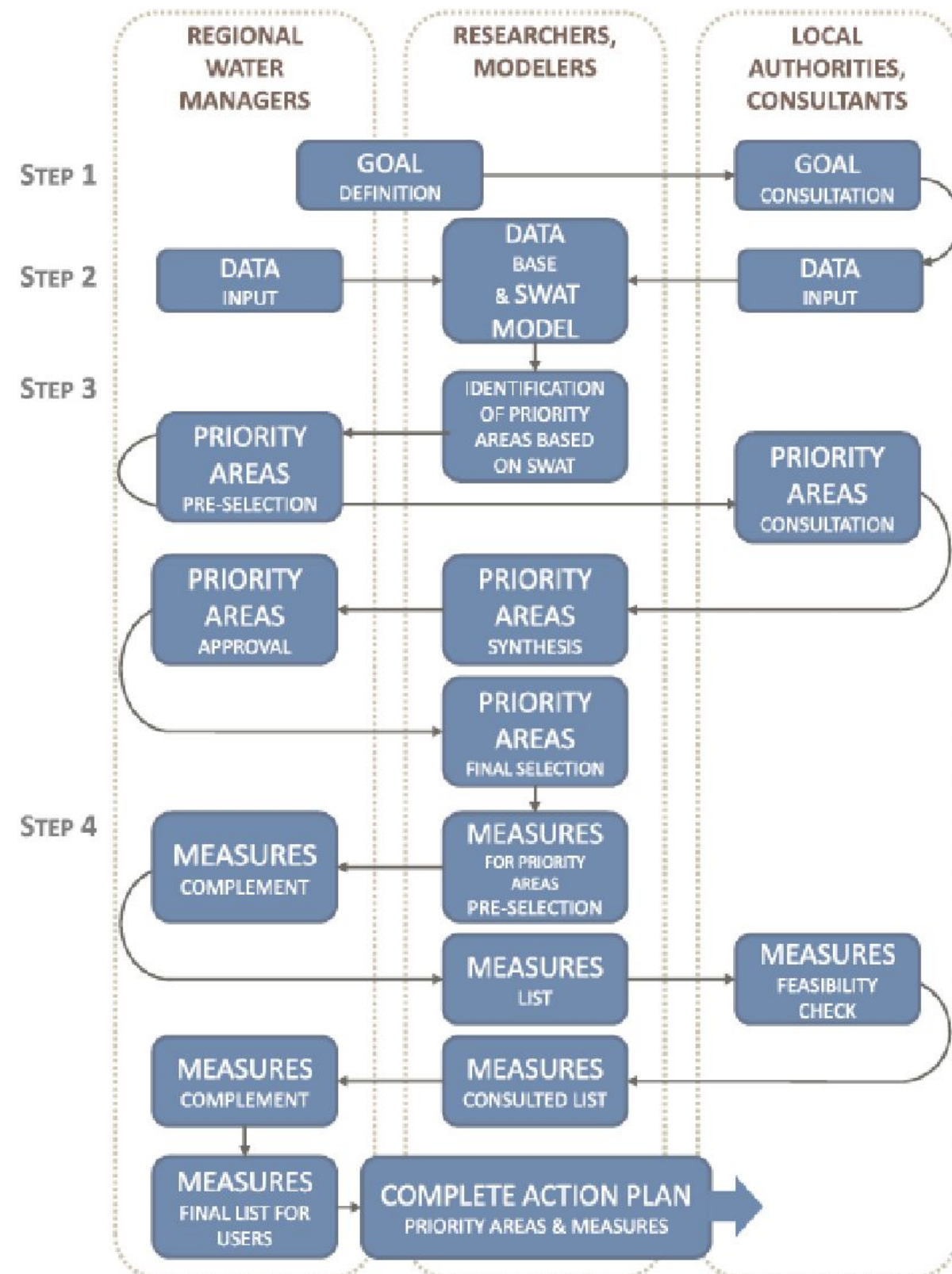
Extensive agriculture promoting NBS and investing in natural capital, push towards green growth and circular economy

Funds for eco-innovation, agro-environmental schemes, market for bio-products, knowledge & know-how, strong local market and demand for regional products, eco-marketing, awareness building

Industrial agriculture with little space & time for NBS, lost of natural & social capital, push towards global markets & unlimited growth, no long-term productivity perspective

Price – driven market, competitive & corporative, high tolerance to low quality, limited knowledge on NBS, limited market for local products, actors irrationally discount the future, e.g. soil vitality, biodiversity

The Pilica Catchment LA – strategy co-design



Research article

The ecohydrological approach, SWAT modelling, and multi-stakeholder engagement – A system solution to diffuse pollution in the Pilica basin, Poland

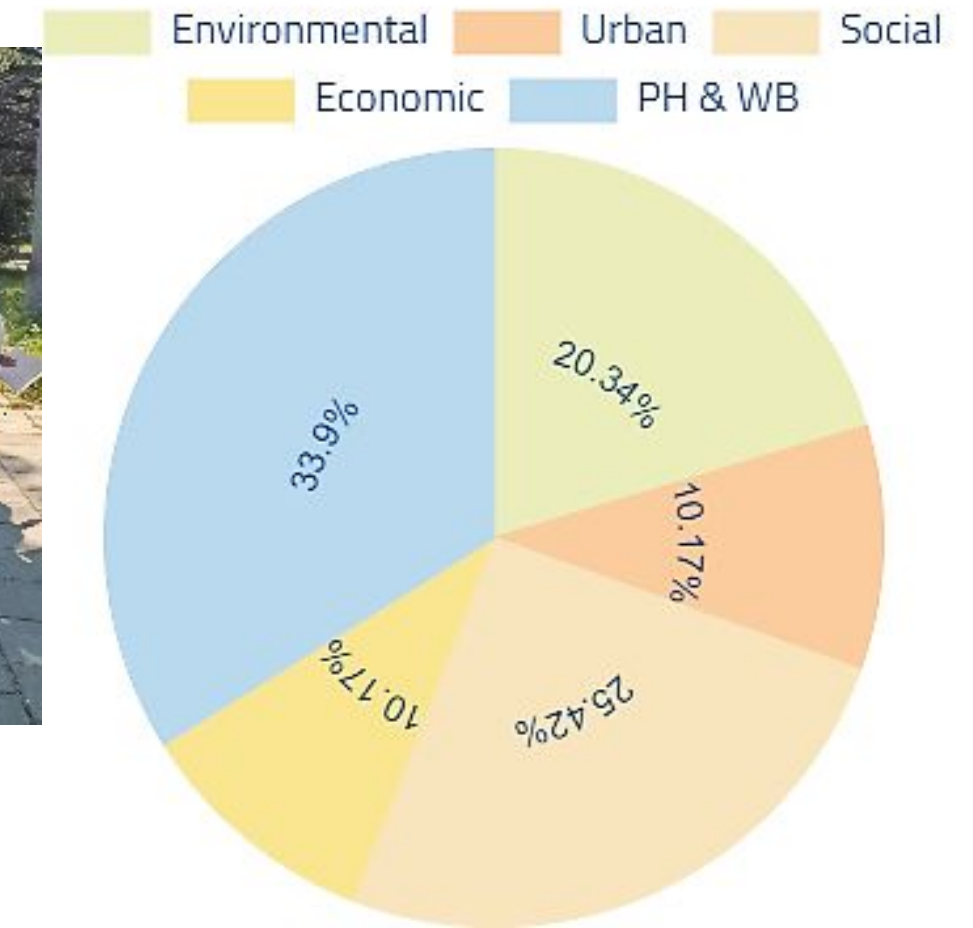
Katarzyna Izydoreczyk^{a,*}, Mikołaj Piniewski^b, Kinga Krauze^a, Louis Courseau^c, Paweł Czyż^d, Marek Giełczewski^b, Ignacy Kardel^b, Paweł Marcinkowski^b, Martyna Szuwart^a, Maciej Zalewski^a, Wojciech Frątczak^{a,c}



Generalizing the personal visions of nature towards one strategy

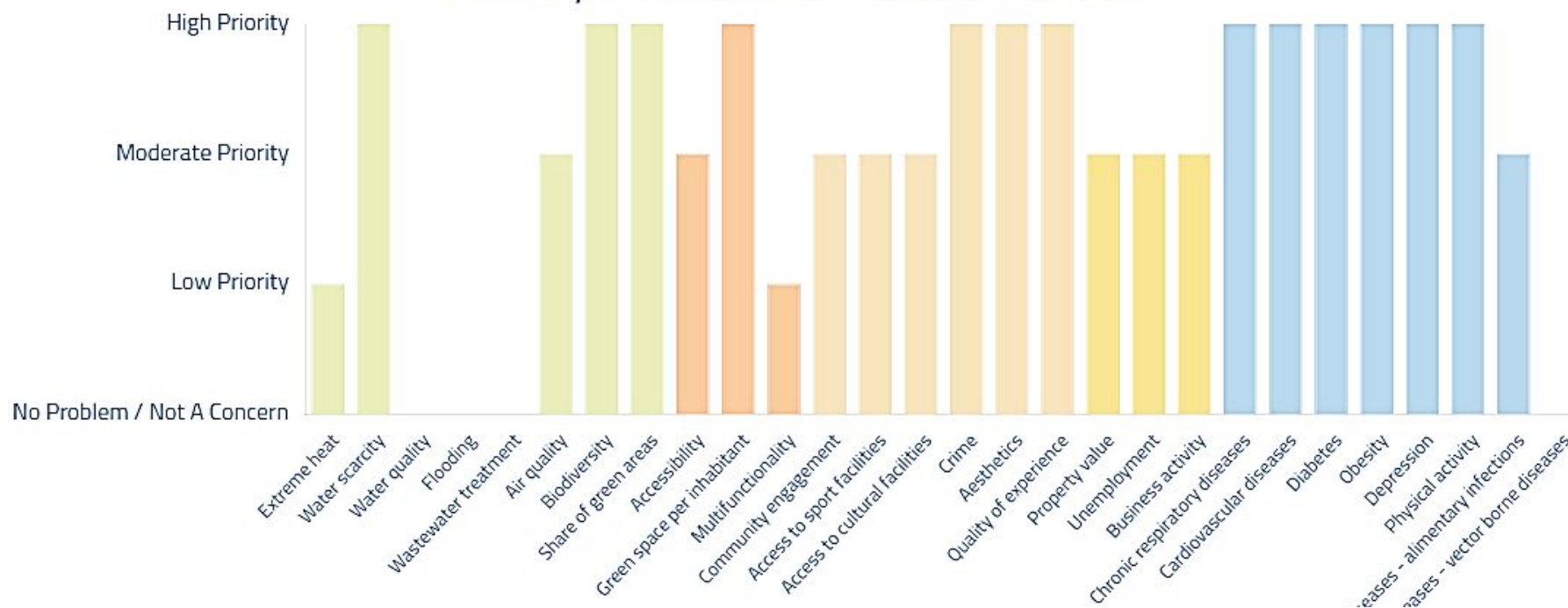


Nature of Concerns

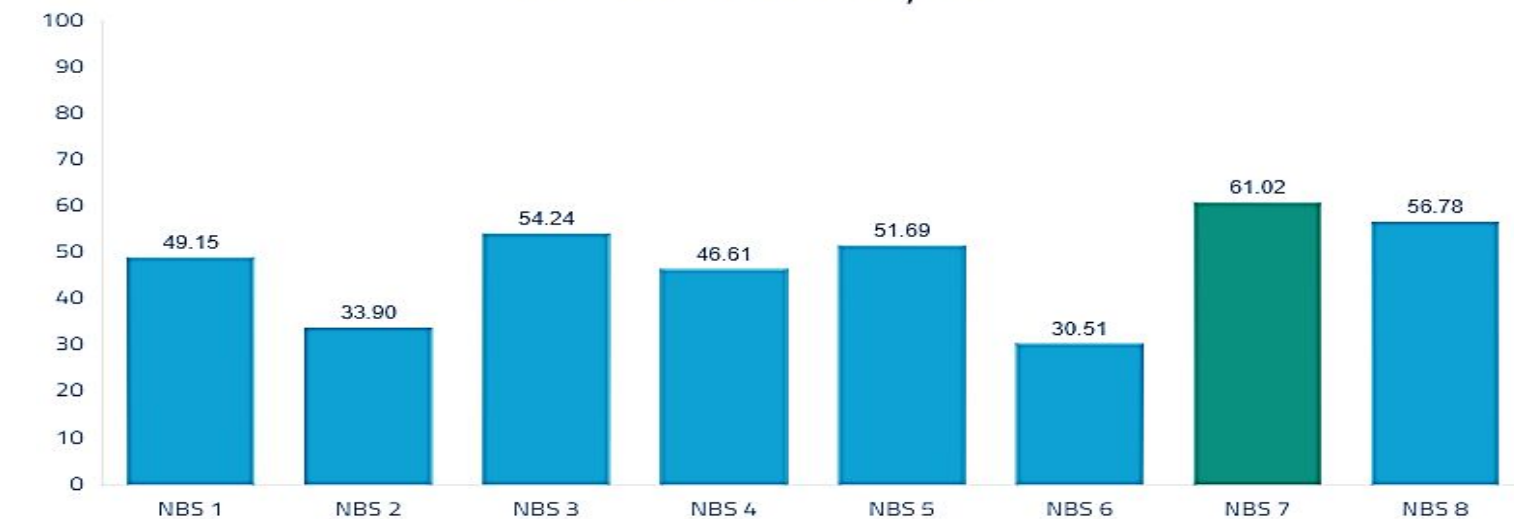


NBS for comfort and well-being

Severity of Issues/Concerns at the Site



NBS Total Efficiency Index



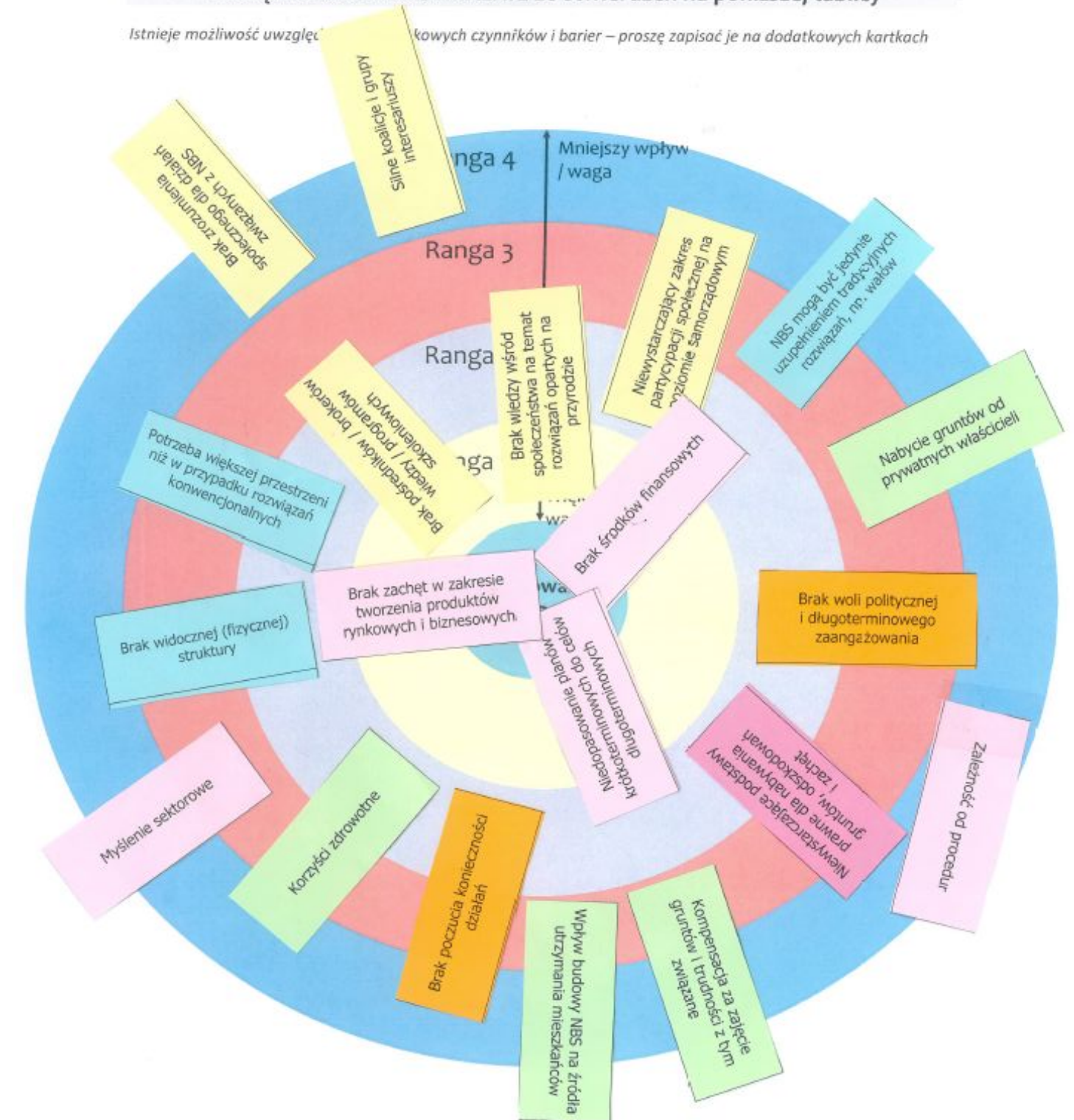
NBS 1- Street shading and cooling (tree trenches)
NBS 2- Rainwater harvesting NBS
NBS 3- A sensory garden
NBS 4- Water playground
NBS 5- Vertical gardens (green walls /façades)
NBS 6- Rainwater based drinkers / shelters for animals
NBS 7- NBS conditioned pathway
NBS 8- Multifunctional canopy



Identyfikacja czynników wspierających i barier

- Proszę umieścić **MAKSYMALNIE 20** stwierdzeń na poniższej tablicy

Istnieje możliwość uwzględnienia dodatkowych czynników i barier – proszę zapisać je na dodatkowych kartkach



Institutional and political feasibility of NBS

- ❑ Overall, current institutional frameworks are not conducive to the use of NBS for hydrometeorological risk management
- ❑ Political decision-makers often not yet convinced of the (e.g. financial) advantages of NBS over traditional management measures
- ❑ Fear of public resistance e.g. due to unclear land ownership situation, insufficient compensation mechanisms, lack of trust in NBS due to lack of experience of the public with non-traditional risk management measures and their lower visibility

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- ❑ Lack of political conviction translates into lack of NBS-related provisions in legal documents, administrative and legal procedures and few incentives for the use of NBS
- ❑ Administrative culture, e.g. silo-like decision-making without coordination across organisational boundaries, and expertise of responsible actors oriented towards use of traditional measures



SUMMARY OF: GERMANY, DENMARK, CATALONIA, ITALY, THE NETHERLANDS, AUSTRIA, FRANCE, SWITZERLAND, BULGARIA, POLAND, CROATIA, SERBIA, BOSNIA AND HERZEGOVINA



Institutional and political feasibility of NBS

- ❑ In theory, relevance of NBS is recognised by local experts and actors from relevant public authorities, but in practice its application is extremely limited
- ❑ So far, comparatively small amounts, often from EU subsidies or research funding, spent on NBS pilot projects
- ❑ At present, few institutional reforms are foreseen that could change the status quo
- ❑ Nevertheless, some potential triggers for the increased use of NBS identified, e.g. measures:



- Obligation to implement the EU Water Framework Directive, Habitat Directive, Nature Restoration Law
- Recently adopted national climate adaptation strategies,
- Revised planning laws that take green infrastructure measures into account
- Increasing environmental awareness of the public and the rising popularity of nature-related measures



Thank you!

Kinga Krauze: k.krauze@erce.unesco.lodz.pl

