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Will Rewarding Farmers for Providing Public Goods Help Wetland Restoration?

Katarzyna Zagórska, Sviataslau Valasiuk and Aleksandra Pępkowska-Król (OTOP)

International Online Conference Within the Framework of the Project :
Nature-Based Solutions in Open Wetlands Restoration for Biodiversity, Water Quality Improvement and Climate Mitigation
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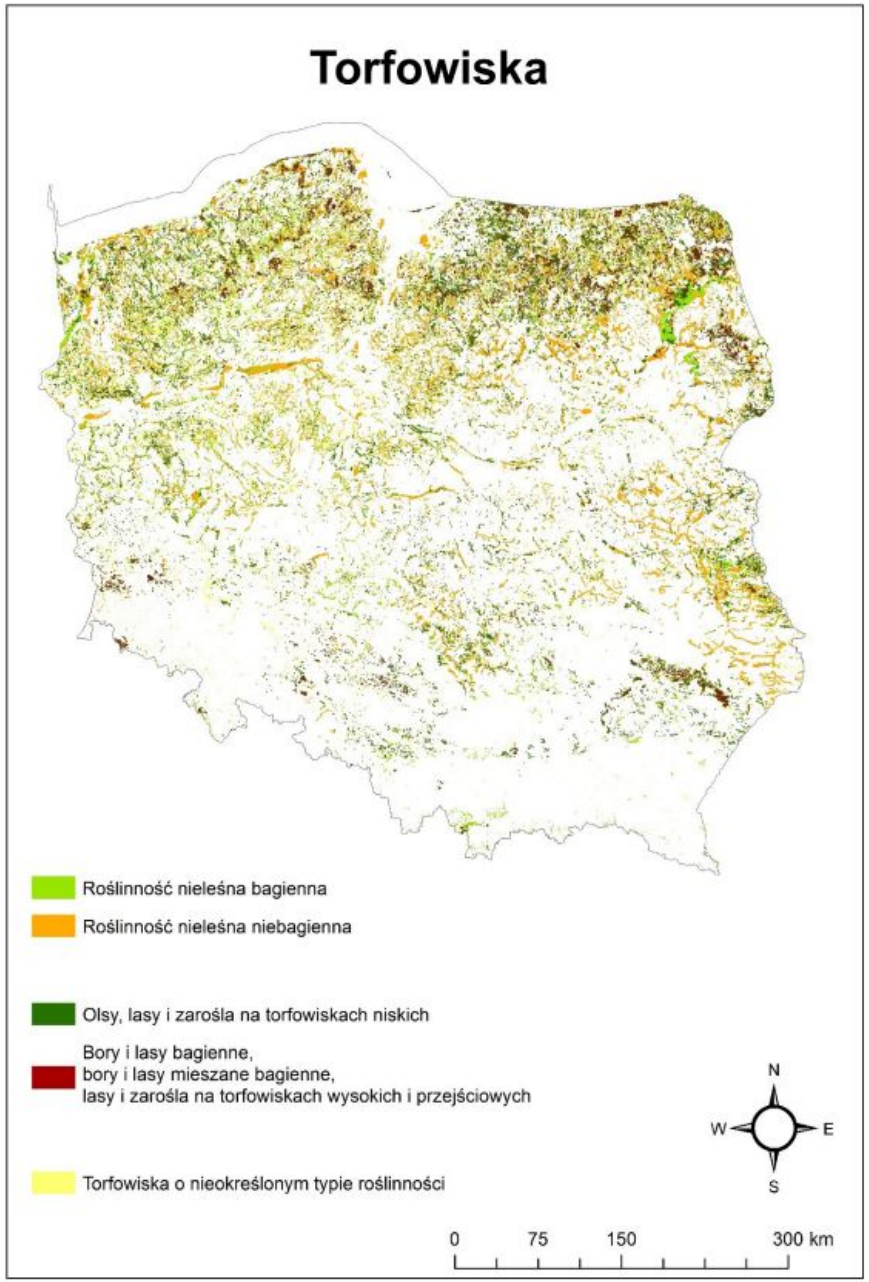
Wetlands in Poland

- In Poland there are approx. 1.6 million ha of peatlands. However, about 85 per cent of them have been drained to expand the area of agricultural land and commercial forests at their expense. Poland is, along with the Netherlands, Germany and Denmark, one of the countries with the largest scale of loss of these ecosystems in Europe.

- It is estimated that more than **900 000 ha** of degraded peatlands in Poland are **used for agriculture** (Kotowski, 2021).



Ryc. 2.1.2. Mapa rozmieszczenia torfowisk w Polsce (na podstawie bazy GIS Mokradła, Banku Danych o Lasach i Banku Danych o Zasobach Przyrodniczych).

Why farmers?

- Drought and flood maps available – Poland in Warning Zone, with sever consequences for farmers and general population
- Re-wetting of peatlands is usually a few to several centimetres increase in groundwater levels

Current drought situation in Europe

The latest status of drought in Europe using a combined drought indicator.

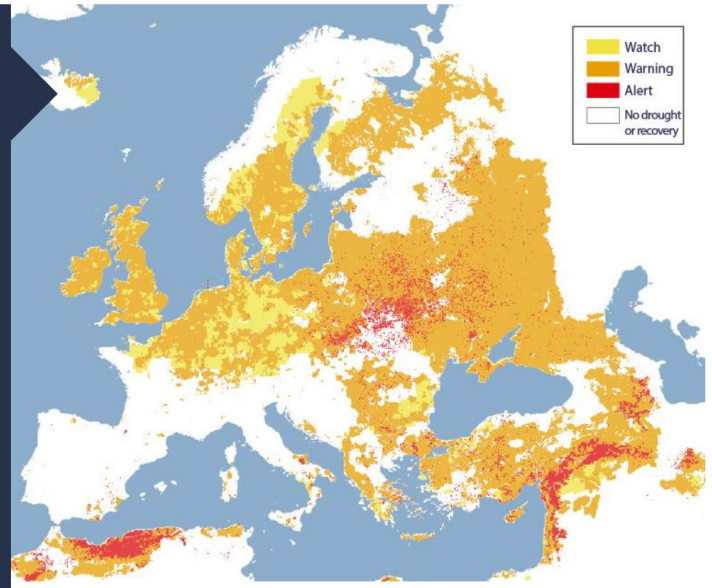
Drought in Europe - May 2025 - 2nd ten-day period

The Combined Drought Indicator (CDI) for the period 11-20 May 2025 shows worsening drought conditions in central and eastern Europe.

Prolonged and critical drought conditions continue in the South-Eastern Mediterranean and the Middle East.

During this 10-day period, temperatures have been above the seasonal average in northern Europe.

Go to the European Drought Observatory's map viewer



Drought in Europe - May 2025 - 2nd ten-day period
EU, 2025

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Why farmers?

- "The main cause of peatland fires in the Biebrza National Park is not climate warming, but their regular drainage by man" - Prof. Mateusz Grygoruk, SGGW
- A conservation plan for the Biebrza National Park was developed in 2023. The section on water indicated that more than 1,000 dams should be made on unused drainage ditches to stop water run-off.
- "The government should develop a subsidy system that is attractive to farmers. Farmers make their living from cultivating the land, so to convince them to change, they need to be offered some kind of profit, commensurate with the objectives they are pursuing.„
  - Source: https://naukawpolsce.pl/aktualnosci/news%2C107637%2Cekspert-aby-zapobiec-pozarom-torfowisk-biebrzanskich-musimy-przestac-je

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Agricultural technology doesn’t save water

- "Water conservation technologies" (WCTs) should not be viewed as a tool for achieving water conservation, but rather as a means for stabilising and increasing agricultural water productivity and farmers' income in places where water is scarce. We conclude that, if the ultimate objective is water conservation, it is essential to adopt water conservation policies-that is, governance instruments aimed at reallocating available resources among uses (e.g., from irrigation to the environment)
- C. Dionisio Pérez-Blanco & Arthur Hrast-Essenfelder & Chris Perry, 2020. "**Irrigation Technology and Water Conservation: A Review of the Theory and Evidence**,". Review of Environmental Economics and Policy, University of Chicago Press, vol. 14(2), pages 216-239.

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Solution - stop draining, building ditches

- Damming of ditches in the peatland area, reduction of water run-off
- Observed results in Norway (Stachowicz el al., 2025):
  - Increase in water table location approx. 6cm on average over the years
  - Increase in average groundwater levels 12-35 cm
  - Impact range 17m
- Good examples in Poland (OTOP)

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Protection of wetlands in agricultural areas in Poland

- In 2021, commissioned by the General Directorate for Environmental Protection, the Centre for Wetland Conservation drafted the Strategy for the Protection of Wetlands in Poland for 2022-2032.
- 2 economic tools:
  1. **Ecoscheme "Water retention on the TUZ".**
  2. **GAEC 2** standard (Good Agricultural and Environmental Condition).
  - 400,000 ha are to be covered, which bans
  - conversion of peatlands and wetlands into arable land,
  - construction of new drainage ditches or the renewal of existing drainage systems,
  - peat extraction and vegetation burning.

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Subsidies for water retention

- The ecoscheme "Water retention on TUZ" introduced (piloted) in 2022 in Poland and then continued under the "Strategic Plan for the CAP" implies a payment for achieving an adequate meadow or pasture (TUZ) condition
- Payment rate - in 2024 it is **242.86 PLN/ha (ap. 57 EUR/ha/year)**. In 2023 it was 291.05 PLN/ha.

year	Area paid for (2022) or declared by farmers (2024) [ha].	Strategic Plan area target [ha]
2022	63 774	Here the stategic plan was not yet in place, this payment was introduced on a pilot basis
2023	116 855	315 000,00
2024	147 278	315 000,00

  - Interest at 47% of target, versus other ecoschemes 3056% target fulfilment
    - Limited interest from farmers, means the payments are considered low

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Subsidies for water retention

- The Institute of Agricultural and Food Economics - National Research Institute states: „The estimated payment rate is the full amount of lost benefits and additional costs associated with the eco-scheme payments. The payment rate under the eco-scheme is the result of the *balance due to the flooding of the harvest value and the limitation of incurred collective costs from the meadow.*" → 2.4-3 hundred PLN/ha/y
- Meets formal requirement of the EU, compensated for cost foregone.
- The European Commission allows for the possibility of *additionally taking into account the economic value of ecosystem services* (Regulation 2021/2115, Article 31, point 7a)

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Economics of the problem

- OECD report „Making Agri-Environmental Payments More **Cost Effective**"
- Overcompensation to production units that have low compliance costs and relatively low environmental benefits
- Uniform and practice based payment (most common) ignore the fact that foregone income and extra costs may vary considerably among farmers
- Selected points:
  - Targeting increases budgetary cost-effectiveness by 34%, that is, 34% more environmental benefits are achieved with the same expenditure
  - Assurance of strong additionality that contributes to budgetary cost-effectiveness by limiting budgetary outlays that do not directly deliver environmental benefits.
  - Tailored payment rates that do not overcompensate but cover income forgone from practice adoption (opportunity costs) and farmers' private transaction costs associated with participation in the payment scheme
  - ~~Results-based payment (or Hybrid payments): units with relatively high potential~~

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Economics of the problem

1 Farmer

- $level\ of\ subsity\ \geq WTA$
- Willingness to Accept (WTA) is the average payment level required by farmers to

Big picture: Society

- $Social\ Benefit > Social\ Cost$
- Various methods of estimation, that make assuptions on the benefits and costs

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Neman River Basin

- Stachowicz, M., Manton, M., Abramchuk, M., Banaszuk, P., Jarašius, L., Kamocki, A., ... & Grygoruk, M. (2022). To store or to drain—To lose or to gain? Rewetting drained peatlands as a measure for increasing water storage in the transboundary Neman River Basin. *Science of the Total Environment*, *829*, 154560.
- The *benefit* from increased water storage exceeds rewetting *costs* in most scenarios
- Select optimal areas for returning to near-natural conditions
- Increase of water retention volume due to rewetting ranged between 69 and 344 m3·ha−1 (Total from 23.6 up to 118 M m3)
- Water retention value: market approach of building retention units and water storage capacity, to evaluate the gains provided by peatland rewetting
- Estimated water retention value ranged between 12 and 60.2 M EUR·year^{-1}
- Cost from 6.8 M and 51.5 M EUR·year−1 depending on the selected scenario
- Benefits > Costs
- Later used as a baseline for servipeat project: servipeat.sggw.edu.pl

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NEVO UK

- https://www.leep.exeter.ac.uk/nevo/
- The NEVO Tool is a web application to help users explore, quantify and make predictions about the benefits that are derived from existing and altered land use.

NEVO is a freely accessible online tool that allows users to select an area anywhere in England or Wales, from the scale of a county or catchment down to a 2km grid cell, and then view estimates of the value of that area for delivering a range of ecosystem services (agricultural production, timber production, greenhouse gas emissions reduction and sequestration, recreation, water quantity and water quality) and its value for biodiversity (estimated number of species present).

Users can explore the data, alter the land cover or market prices to see how that affects the ecosystem services both now and in the future (taking into account mid-range climate change projections from UKCP09), and optimise land cover to deliver particular services.

Information Requirements

Input

All input data is provided internally by the tool – the user just has to choose an area by clicking on the map, or specify an alteration of the land cover to test.

Output

Maps; Quantitative data on ecosystem services; Tables / statistics / reports; Economic assessment;

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Classic *benefit transfer*

"Benefit Transfer of Environmental and Resource Values - A Guide for Researchers and Practitioners".

Step 1: Identify impacted ecosystem services

Water retention, drought and flooding prevention

Describe baseline level of provision — **GIS Wetlands in Poland, Kotowski 2021**

Describe potential change in provision

Water retention potential: — *** Servipeat - hydrological model with assumptions, 1 valve per 50m**

Quantification of water storage capacity

Describe the population of beneficiaries — *** NEVO Leeds Manual**

Step 2: Select study site data — ** www.ESVD.info*

Collect existing value information = meta-analysis

** Stachowska - reservoirs*
** NEVO + ELMS UK Environmental Land Management*
** Drought payments*
** Flood insurance*
** Land costs*

Figure 1.3. SERVIPEAT dialog window in the simplified mode – selection of calculation path that depend on the number of drainage ditches in the system to be rewetted.

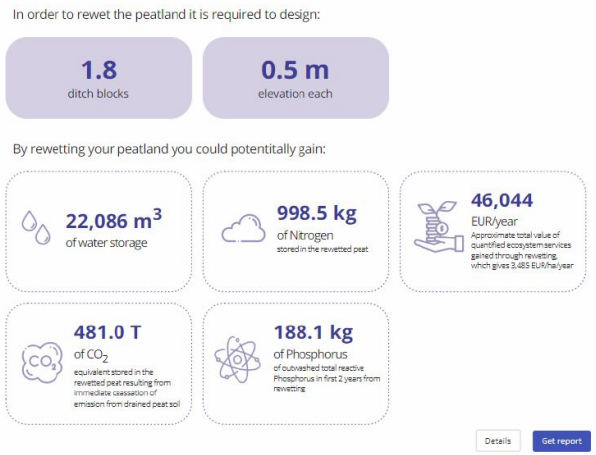

Figure 1.4. SERVIPEAT output dialog window.

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Classic *benefit transfer*

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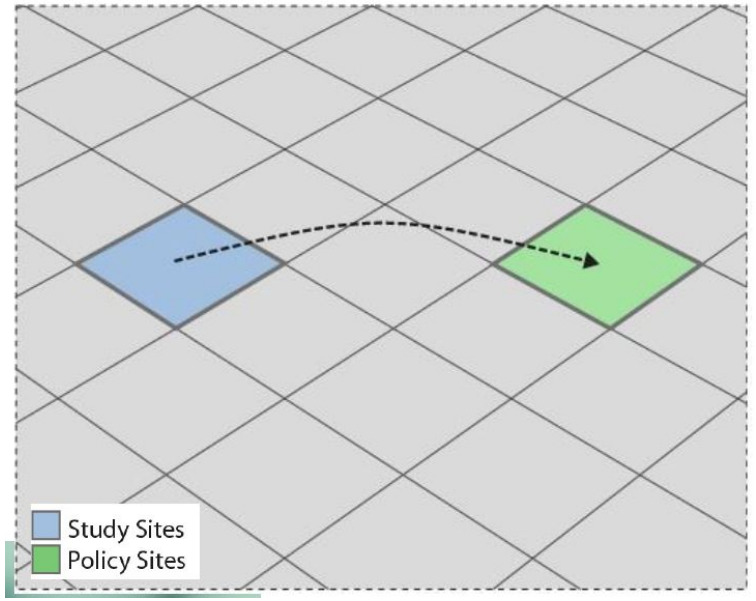
Step 3: Transfer values

- a) Select appropriate units
- b) Select transfer method
- c) Estimate policy site unit values
- d) Aggregate across policy site population and change in ecosystem service provision
- e) Assess uncertainties



Step 4: Report results

- a) Report results
- b) Communicate uncertainties

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Summary

- To make a case, it is good to talk about money (*benefit* vs. *costs* of various policy scenarios)
- Restoration could be an investment, if we can show that the benefits exceed costs
- We need better economic data about valuation of ecosystem services offered by wetlands - lack of *primary* studies focusing on the economic valuation of wetlands in Poland
- Monitoring of the results of ecoschemes and agri-environmental measures to assess their cost-effectivness

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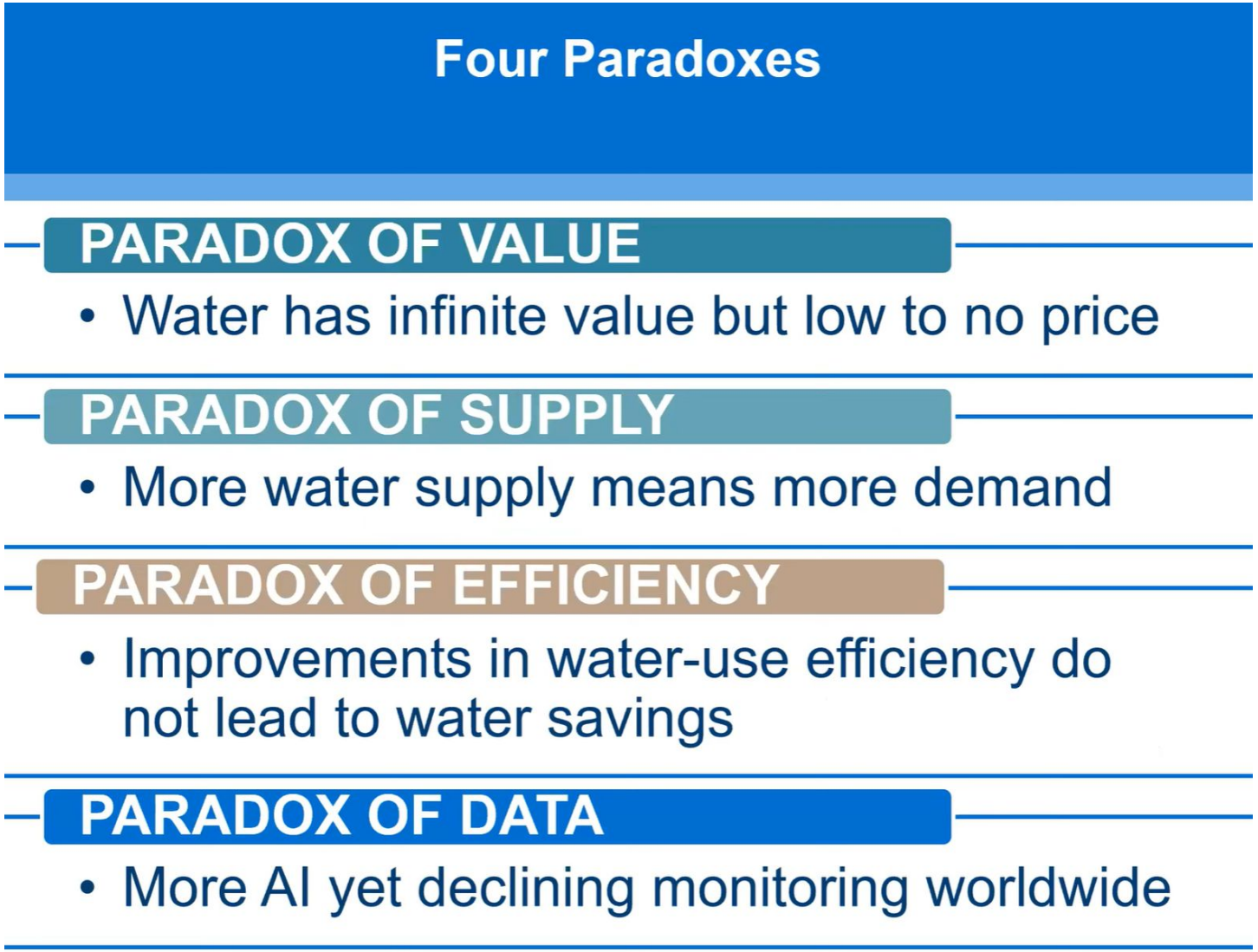
6 czerwca 2025 r.

"Fixing water? The paradoxes holding back progress on global water security"

- Edoardo Borgomeo, University of Cambridge



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