CLEAR ANCE

CircuLar Economy Approach to River pollution by Agricultural Nutrients with use of Carbon-storing Ecosystems

University of Warsaw, Poland
Warsaw University of Life Sciences, Poland
Aarhus University, Denmark
University of Greifswald, Germany
Greifswald Mire Centre, Germany
Radboud University, the Netherlands
Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Germany
Green Management Group, Poland

Water JPI; WaterWorks2015 Cofunded Call, 6 April 2017, Stockholm

MOTIVATION

- Improved water management on the agricultural land = **circular economy**
- **Wetland buffer zones (WBZ)** =
  - nutrient retention = capturing nutrient-rich runoff water from arable land to reduce nutrient loads in surface waters
  - **paludiculture** = "wet" land use, reduction of GHG emissions through rewetting drained peatlands
  - WBZ biomass = source of fertilizers to arable land & energy
  - water retention = retaining water in the landscape (also for agriculture)

OBJECTIVES

- **Aim**: to develop an integrated landscape-ecological, socio-economic and policy framework for using WBZ in circular economies of water purification and nutrient re-use in agriculturally used catchments; to be achived by:
  - assessing synergies and constraints between nutrient removal in WBZ and biomass utilisation;
  - analysing market and non-market values of rivers and river ecosystem services (as co-benefits of WBZ),
  - quantificating costs and benefits of WBZ at catchment scale,
  - policy and social network analysis,
  - market assessment of WBZ-related ecosystem services, including nutrients removal and biomass production.

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CONSORTIUM DESCRIPTION

UW - University of Warsaw, Poland

SGGW - Warsaw University of Life Sciences, Poland

AU - Aarhus University, Denmark

UG - University of Greifswald, Germany

Greifswald Mire Centre, Germany

UN - Radboud University Nijmegen, the Netherlands

IGB - Leibniz-Institute of Freshwater Ecology & Inland Fisheries, Germany

GMG - Green Management Group, Poland

WP1. Upland sources recharging WBZ

- Objective: **To build a tool and framework for identification of spatially explicit nutrient input hotspots toward existing and projected WBZ.**

- Participants:

IGB – Dominik Zak

(with involvement of

SGGW, UW and UN)

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WP2. Wetlands as buffers

- Objective: **To establish methods of quantifying nutrient capture in WBZ and apply them to case catchments.**

- Participants:

AU – Carlos C. Hoffmann

(with SGGW)

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WP3. Closing the loop: biomass use, nutrient removal & commodification of nutrient recycling

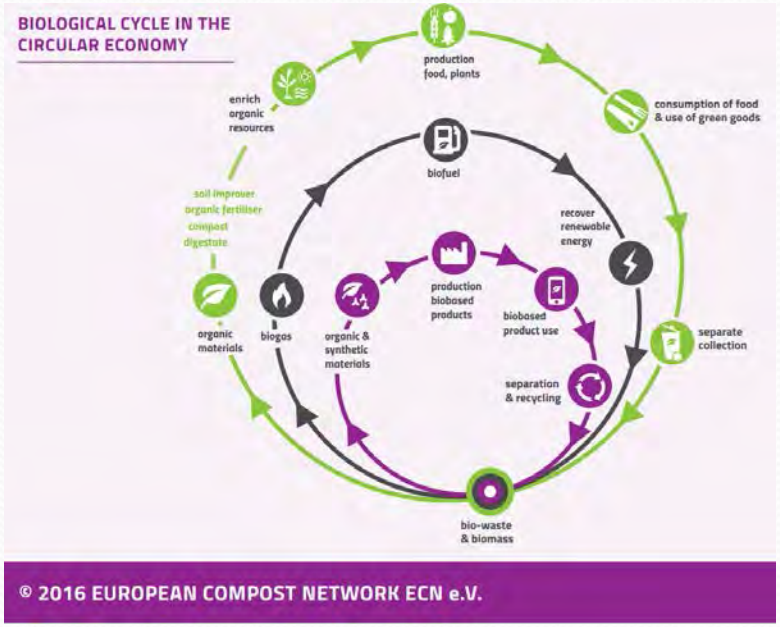
- Objective: **To analyse options of combining nutrient removal including nutrient recycling (ashes, substrates) potential and biomass utilisation.**

- Participants:

UG – Wendelin Wichtmann

(in collaboration with

GMG and UN)



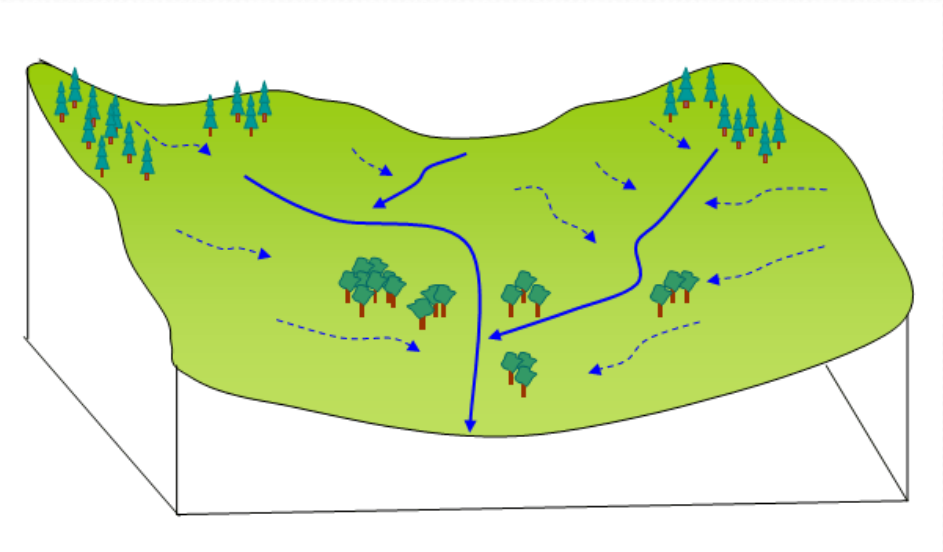
WP4. Water cycles and hydrological boundary conditions

- Objective: **To localize & delimit WBZ & quantify available water in case catchments; assess hydrological co-benefits?**

- Participants: SGGW

– Mateusz Grygoruk

(with contribution of AU)



WP5. Co-benefits: evaluation of ecosystem services

- Objective: **To estimate cultural services and pure non-use values related to different WBZ scenarios**

- Participants:
- UW / WOEE

– Marek Giergiczny (with UG; including subcontracts)

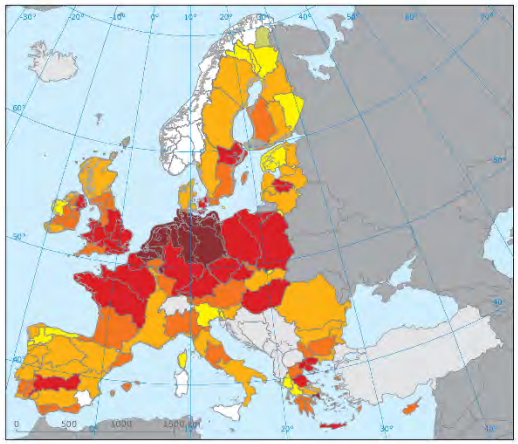
WP6. Policy and civil society: barriers and opportunities

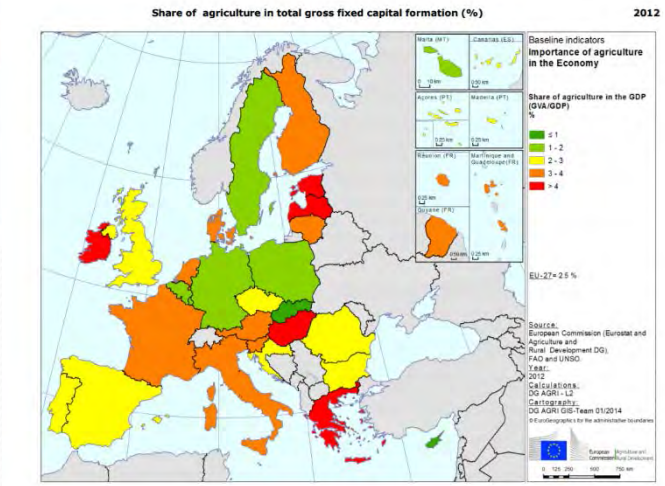
- Objective: **To identify policy and social constraits and opportunities of implementing WBZ.**

- Participants:

UG –

Rafael Ziegler





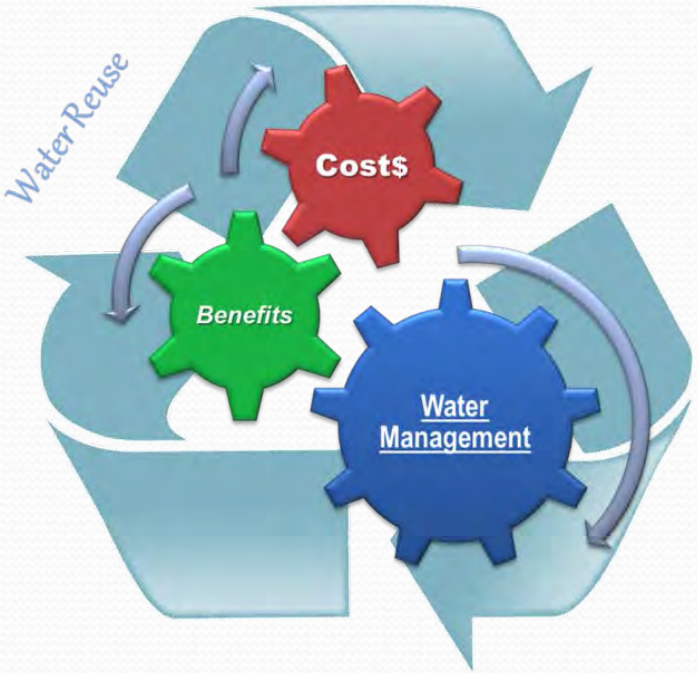
WP7. Integration & upscaling

- Objective: **To integrate information on different ecosystem services and benefits from WBZ and synthesise in form of costs and benefits analysis on the catchment scale.**

- Participants:

UW – Wiktor Kotowski

(contribution - all partners)



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Expected Impact of the Project

- better use and protection of European natural resources
- implementation of existing and breakthrough scientific knowledge in agricultural practices (paludiculture), while in addition contributing to biodiversity conservation, GHG emissions reduction and flood mitigation
- quantification, monetarisation and commodification of nutrient retention (through WBZ) is an innovative exemplary approach to valuation of ES
- integration of different (country-specific) approaches will provide synergies for implementation from research into practice

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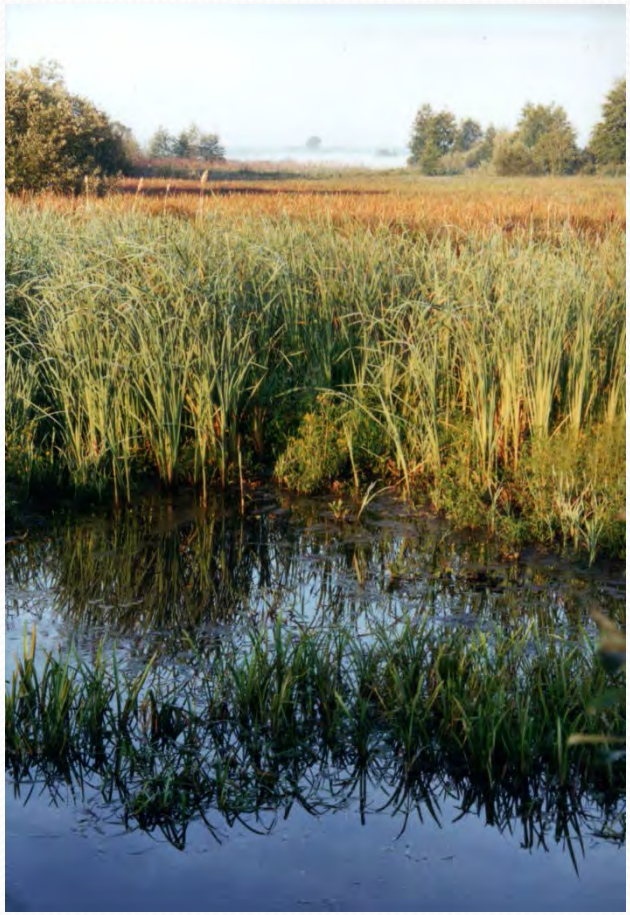
clearance



- promotes multi-disciplinary work by addressing trans-disciplinary questions
- encourages application of knowledge from various fields
- stimulates mobility by series of regional workshops
- enhances collaborative research and innovation during the project life and beyond by the involvemet of SME and development of new concepts in circular economy

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