LIFE20 CCA/HU/001604

CLIMATE ADAPTATION WITH NATURAL WATER RETENTION MEASURES AT LOCAL AND REGIONAL LEVEL

EXPERIENCES OF LIFE-MICACC & LIFE LOGOS 4 WATERS PROJECTS

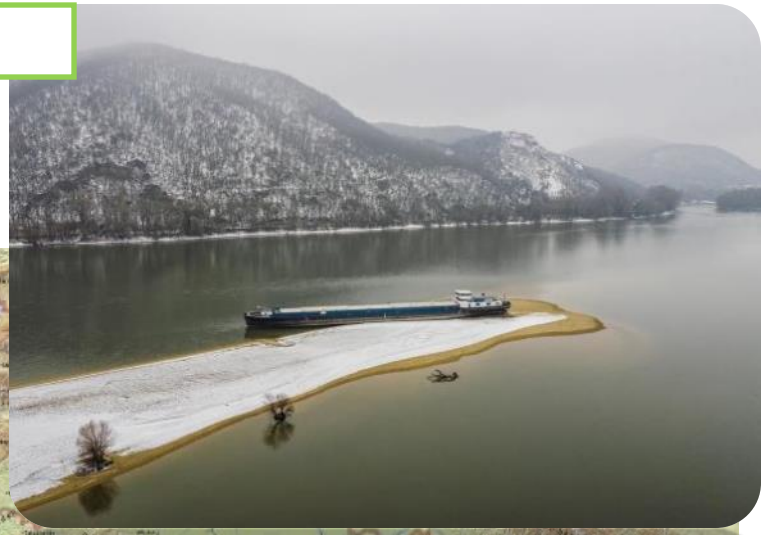
LIFE IP CleanEST project international conference–

25-26 October 2023, Narva

Effects of climate change

Flash flooding

Water shortage



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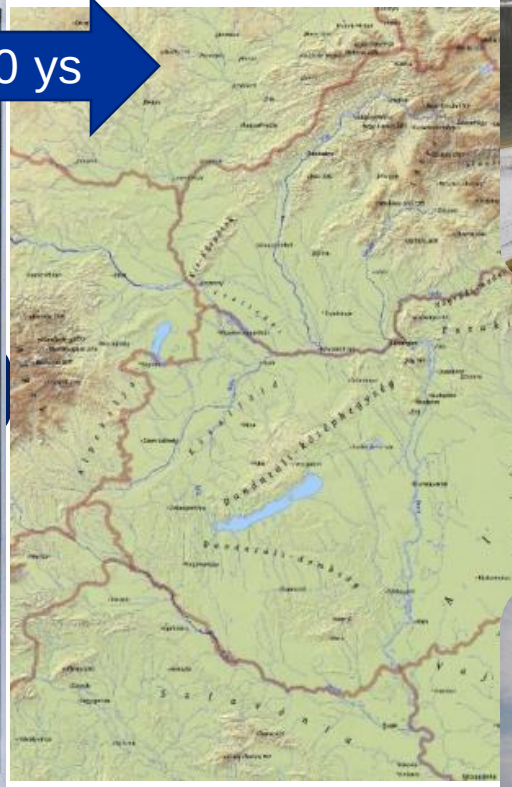


Inland water logging

Droughts

Natural water retention measures (NWRMs)

Natural

Water Retention

Measure

Using or mimicking nature

- Close-to-nature (but not only natural entities)
- Multifunctional
- Small scale
- Self-acting, natural process
- Improves and/or restore soil water retention capacity, aquatic ecosystems, aquifers
- Localized, but spillover effect

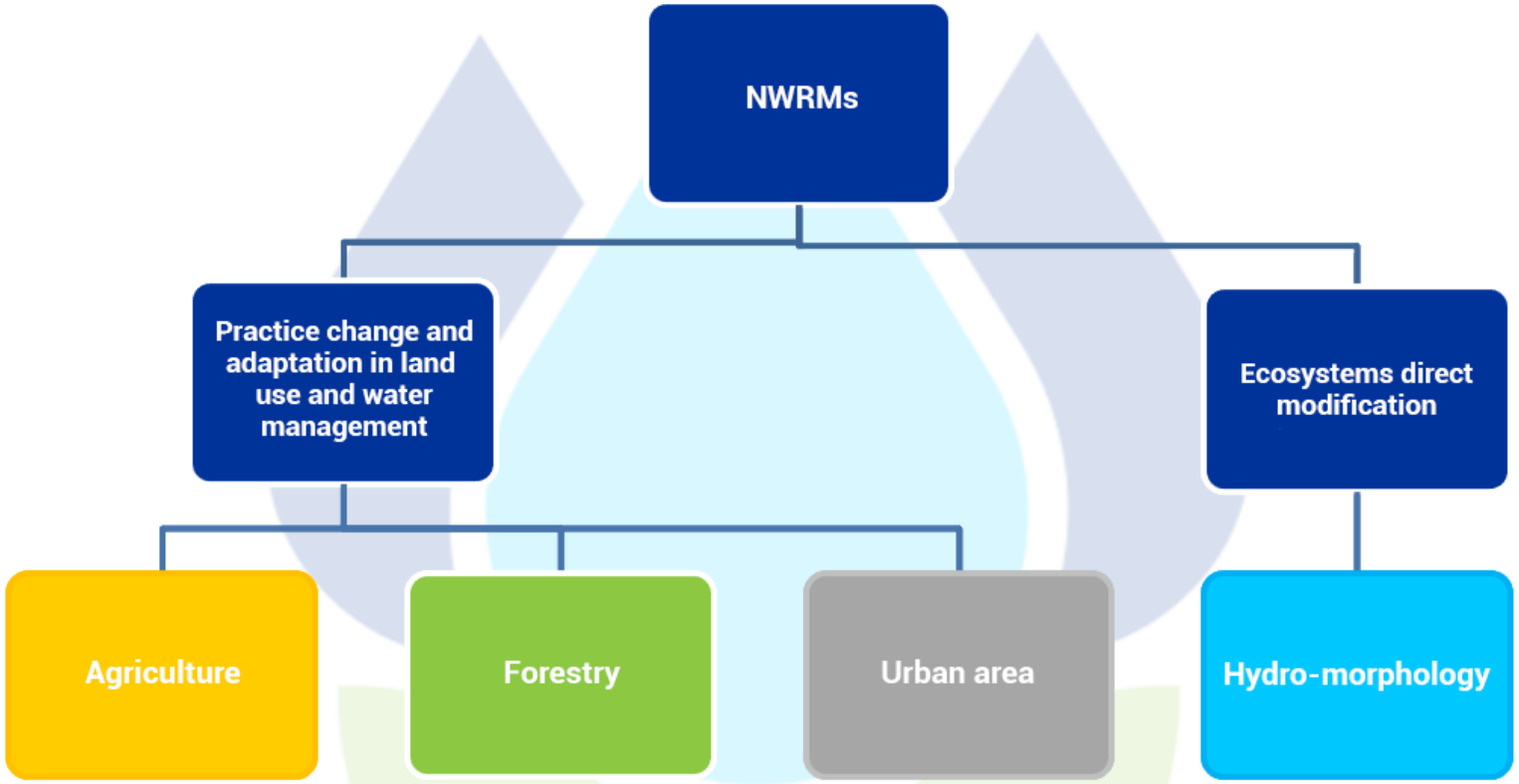
Direct effect: increase water retention in river basin (slow down, store, reduce run off), improve quantity and quality of surface and groundwater bodies

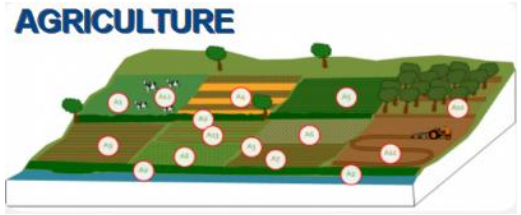
Indirect effect: erosion protection, soil protection, creation and preservation of natural wetlands, microclimate regulation, recreation

Set of techniques with objectives:

- Ecosystem direct modification
- Attitude change, adaptaion

Types and application areas of NWRMs





Why NWRMs?

- “Little streams make great rivers!”
- Cost-effective
- Close-to-nature
- Protects settlements
- Green spaces
- Attractive townscape

Why municipalities?

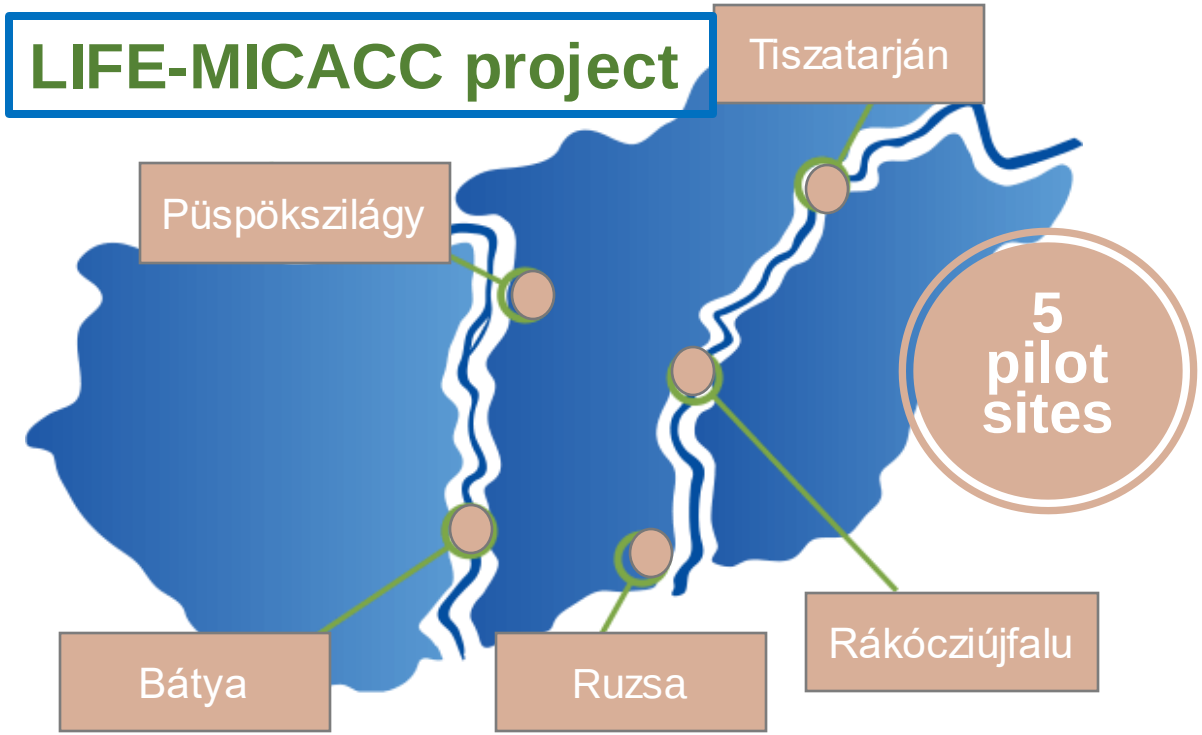
- Municipalities have first-hand experiences at the settlements

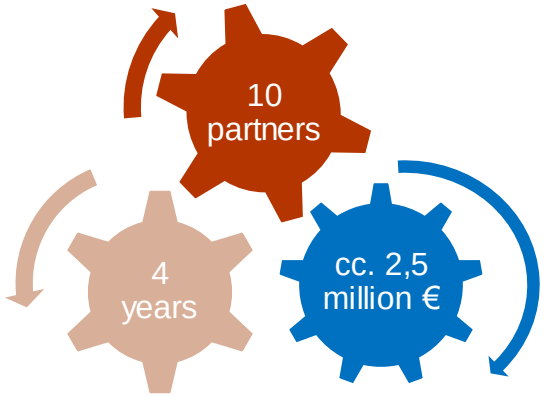
- Know the potential resources

- Know the local stakeholders

- Form local strategies and plans

LIFE-MICACC project

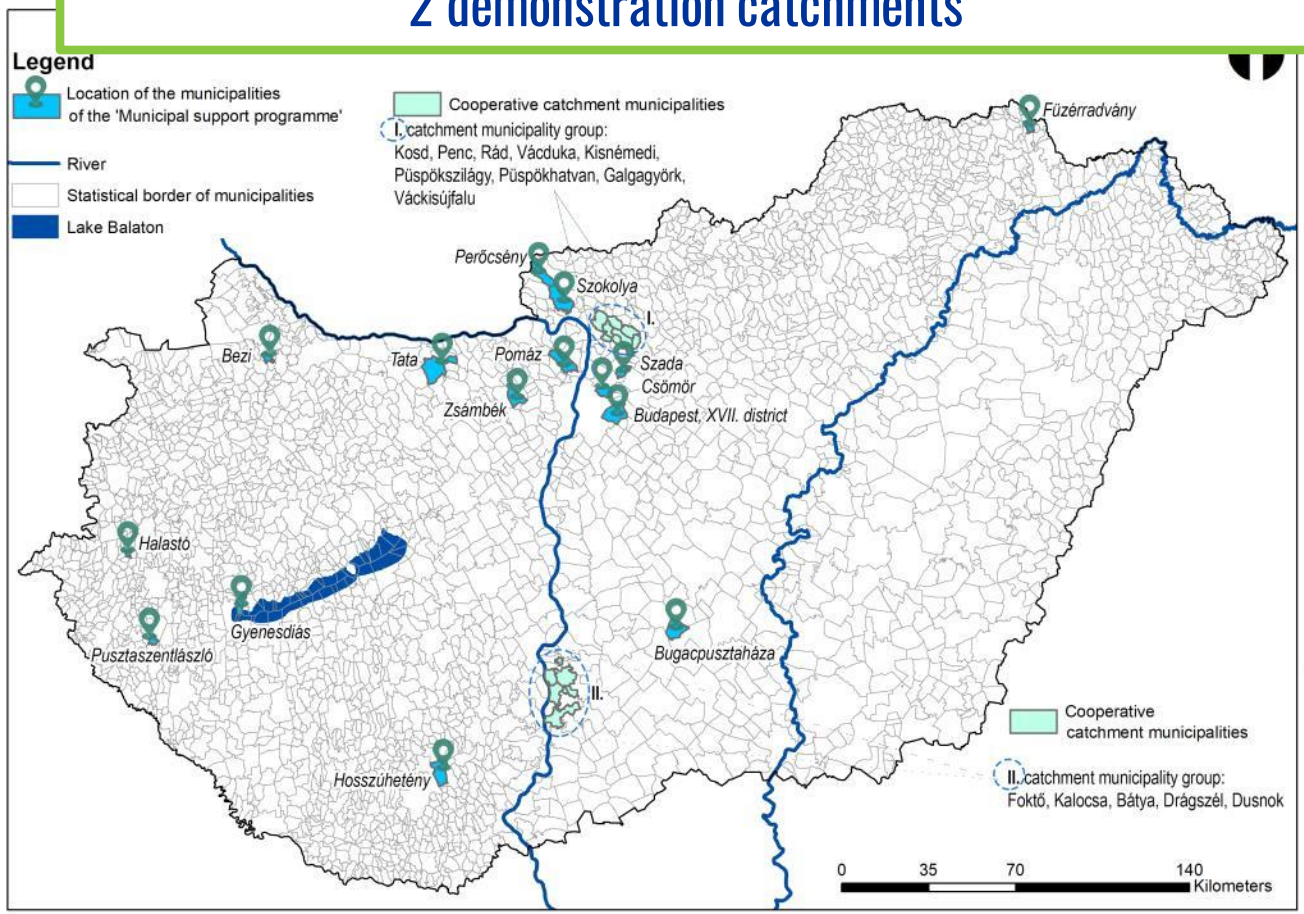




http://nwrm.bm.hu

LIFE LOGOS 4 WATERS project locations

2 demonstration catchments



8 partners

4 years

cc. 3,7 million €

https://lifelogos4waters.bm.hu

Multi-basin wetland to manage inland water inundation

Slowing the flow with leaky wooden dams

Complex floodplain adaptation model

Water retention by grey water reuse

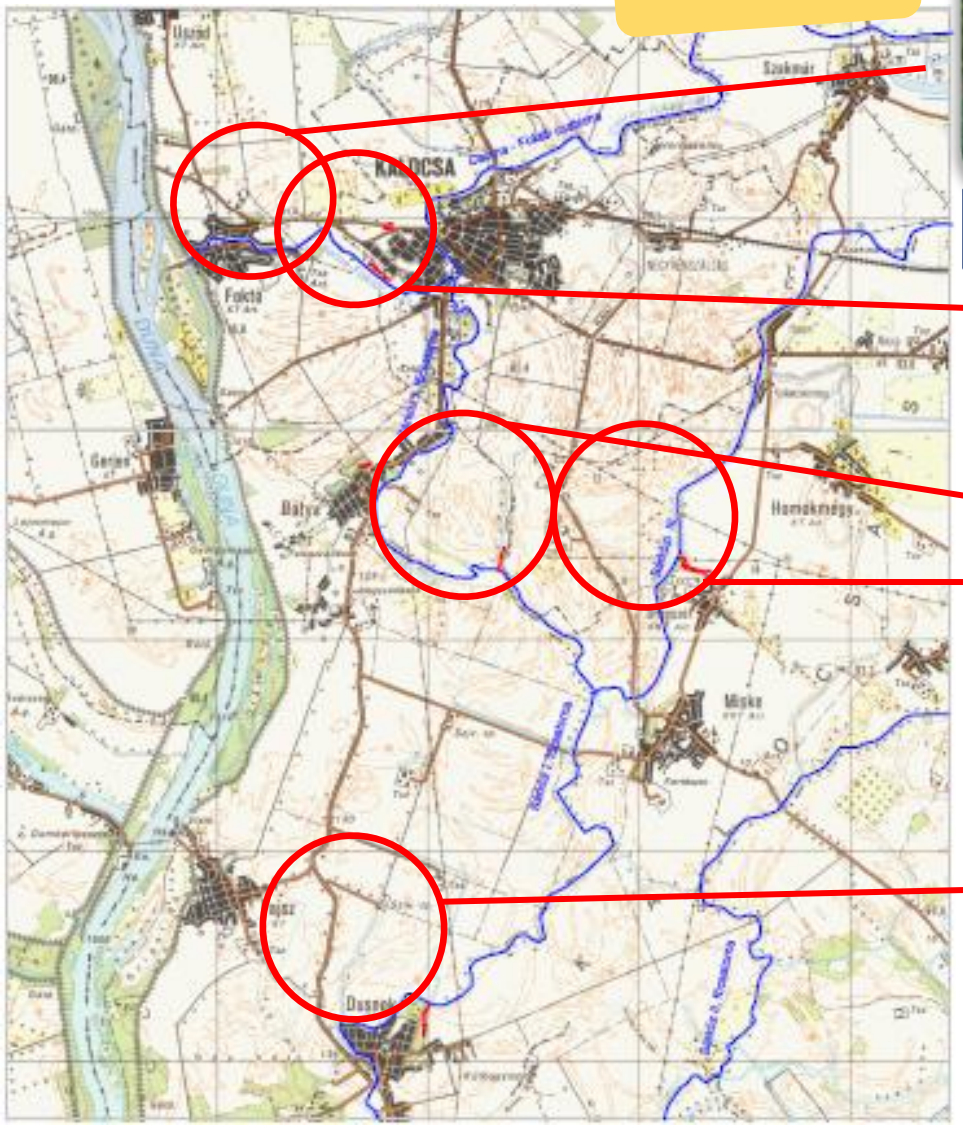
Drought risk management based on water retention

Lowland demonstration catchment

LOGOS 4 WATERS

5 settlements

5 NWRMs



Multi-basin wetland

Suburban water retention

Dead–arm restoration

Educational trail

LOGOS 4 WATERS

9 settlements

15 NWRMs

Hilly demonstration catchment

Log-dams

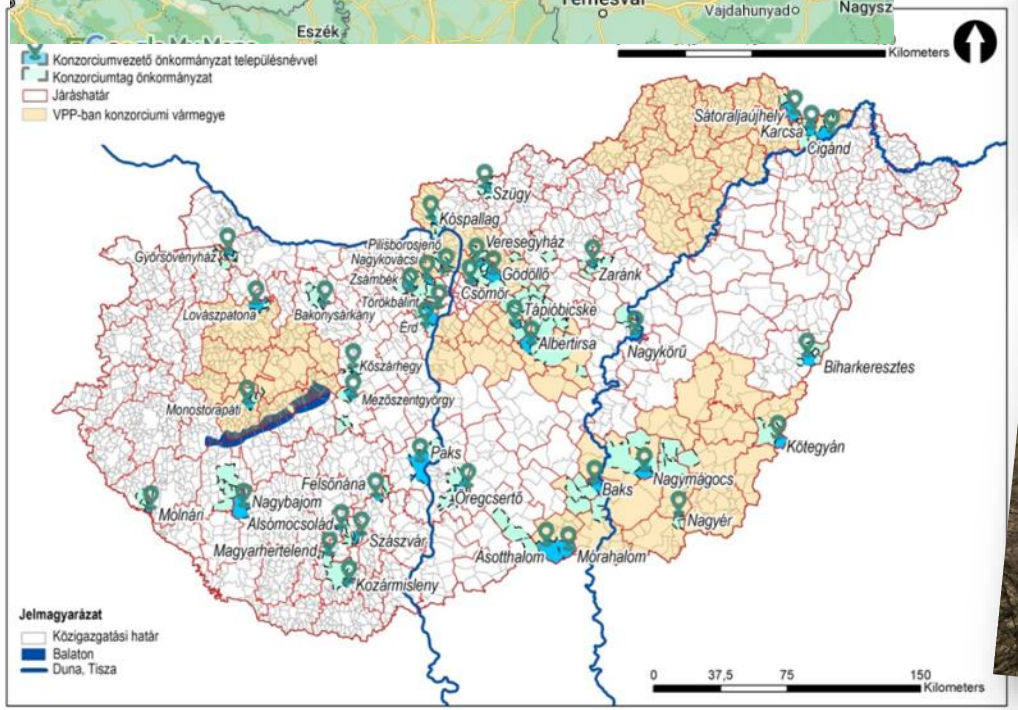
Side reservoir

Sedimentation

Mud reservoir

Slowing down, infiltration

2 support programme for municipalities – 286 participants

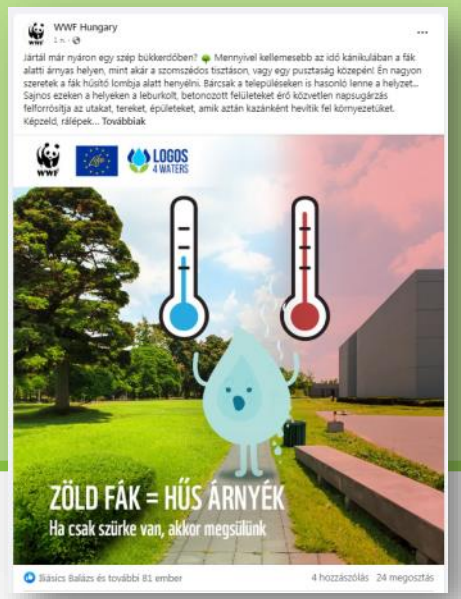


Successful implementation

Multi-stakeholder Catchment Forums

Key issues:

- Inform, involve and raise awareness of local residents
- Understand and address the needs of local stakeholders; bring them closer together
- Preliminary consultations with the licencing authorities
- Multi-sectoral cooperation
- Nationwide awareness-raising



More about our work …

- **MICACC project film:** https://www.youtube.com/watch?v=1oNLBn4N0GU
- **Adaptation guide:** https://vizmegtartomegoldasok.bm.hu/storage/dokumentumok/LIFE%20MICACC%20Adatptation%20Guide.pdf
- **Summary of 5 NWRMs:** https://vizmegtartomegoldasok.bm.hu/storage/dokumentumok/LIFE-MICACC_Summary%20of%20the%205%20pilot%20NWRMs.pdf
- https://vizmegtartomegoldasok.bm.hu/en/gallery/video
- **LL4W leaflet:** https://lifelogos4waters.bm.hu/wp-content/uploads/2022/05/LOGOS4Waters_LA4hajtottENG_JAVnezokep_veglleges.pdf

Thank you for the attention!

Petra Szatzker dr.,

LIFE LOGOS 4 WATERS project manager

petra.szatzker@bm.gov.hu

Bettina Lilla Hugyecz

LIFE LOGOS 4 WATERS project reginal coordinator

Bettina.lilla.hugyecz@bm.gov.hu

Dalma Erzsébet Varga,

LIFE LOGOS 4 WATERS project professional and event coordinator

Ministry of Interior of Hungary

dalma.erzsebet.varga@bm.gov.hu

life@bm.gov.hu

https://lifelogos4waters.bm.hu/en/home/

HUNGARIAN UNIVERSITY OF AGRICULTURE AND LIFE SCIENCES

The Role of Mining Ponds in the Hungarian Greenway Network

Dalma Varga, Nóra Hubayné Horváth, Ildikó Módosné Bugyi

Hungarian University of Agriculture and Life Sciences, Department of Landscape Protection and Reclamation

25-26. October 2023.

Actuality

- Mining ponds
  - **lack of data related to mining ponds**
  - **there are no national data on the nature protection role of mining ponds**
  - define and influence landscape → **lack of national overview**
  - mining ponds have natural, landscape values

Nádasdladány (Civertan S./B. Jászai)

Zalaszentmihály (Civertan S./B. Jászai)

Bugyi (Civertan S./B. Jászai)

Introduction

The area of Hungary is 93,000 km^2

- 6%: surfaces affected by mining activity
- 1.8%: area of standing water
- 75% of them are artificial ponds, lakes (such as mining ponds, reservoirs)
- 0.2%: proportion of mining ponds

Nyékládháza (Civertan S. / B. Jászai)

Tarcal (Civertan S. / B. Jászai)

Füzesabony (Civertan S. / B. Jászai)

Goals

Mining pond in Tarcal

Lake Király – protected mining pond

Mining pond system in the Szévíz valley) (photo made by Civertan Studio)

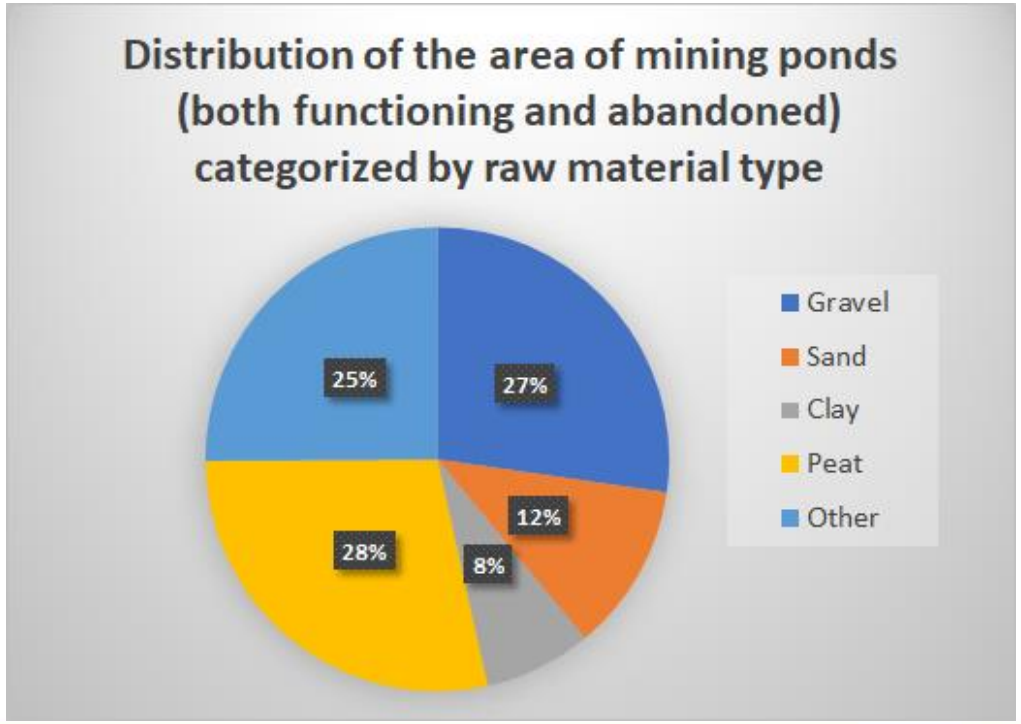
- Current state of mining ponds, wetlands → Location and characteristic parameters (size, age, surface area etc.)
- Mining ponds' nature protection importance → Distribution by type of protection and type of raw material
- Mining ponds' role in landscape protection → Proportion of mining ponds covered by a landscape protection area

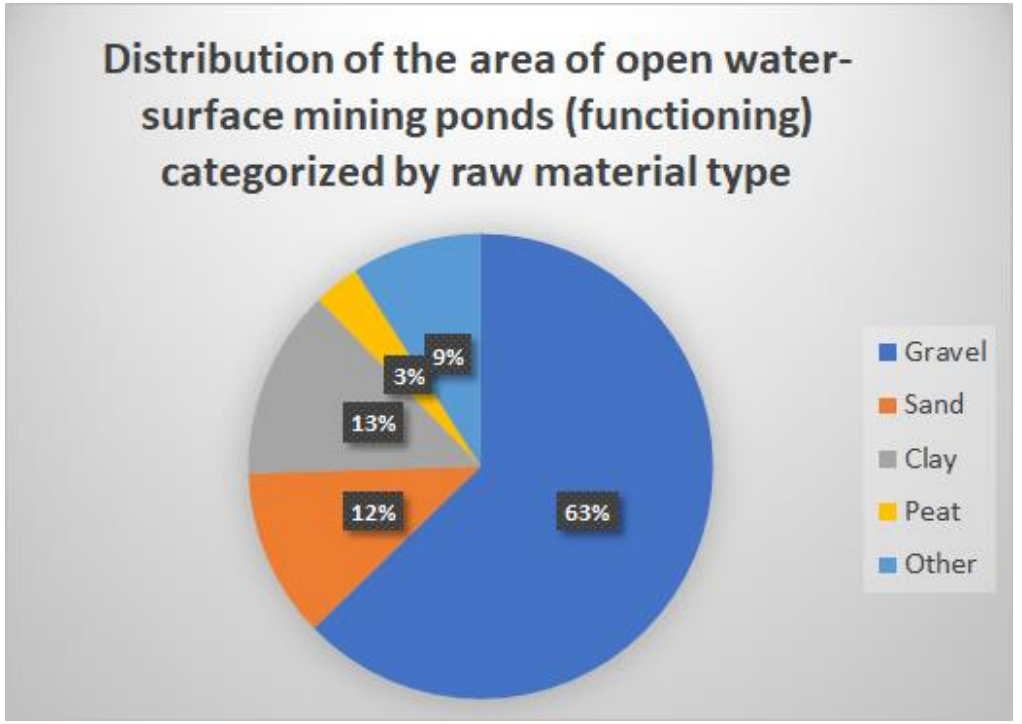
Results

- Method

  Comparison of (functioning and abandoned) mining sites' database and landcover → Selection and analysis of mining ponds

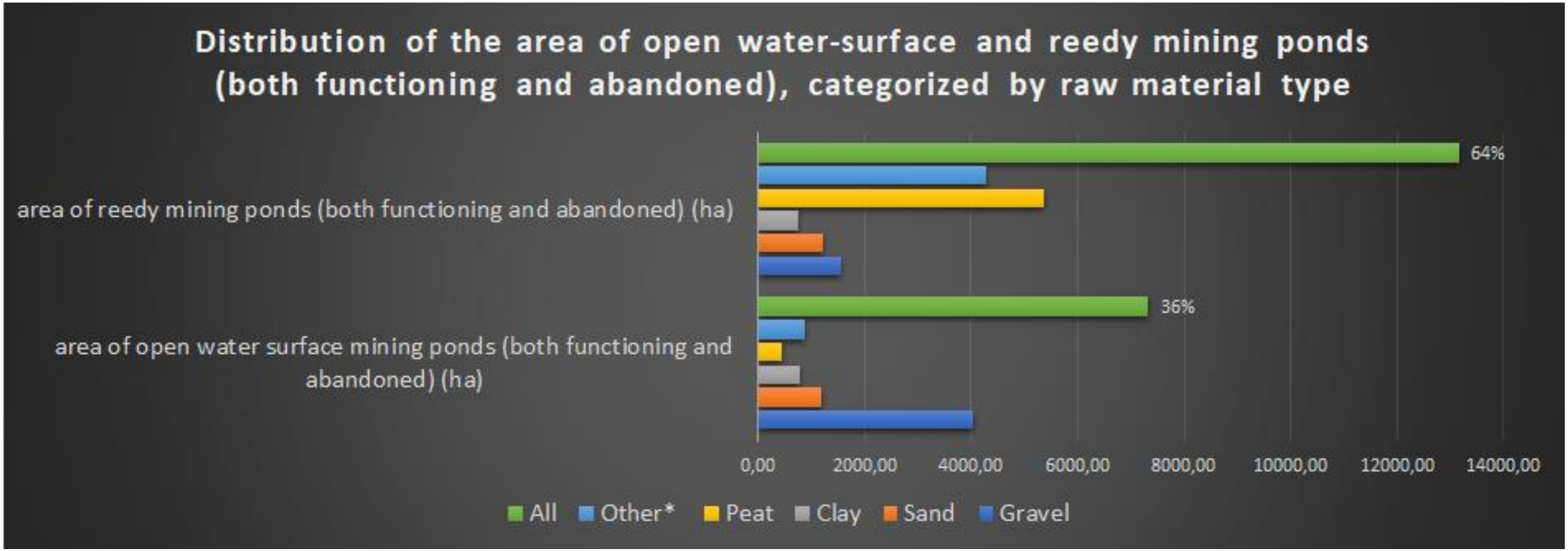
  - **Mining ponds' surface area – 20,470 ha** in Hungary





Results – surface area

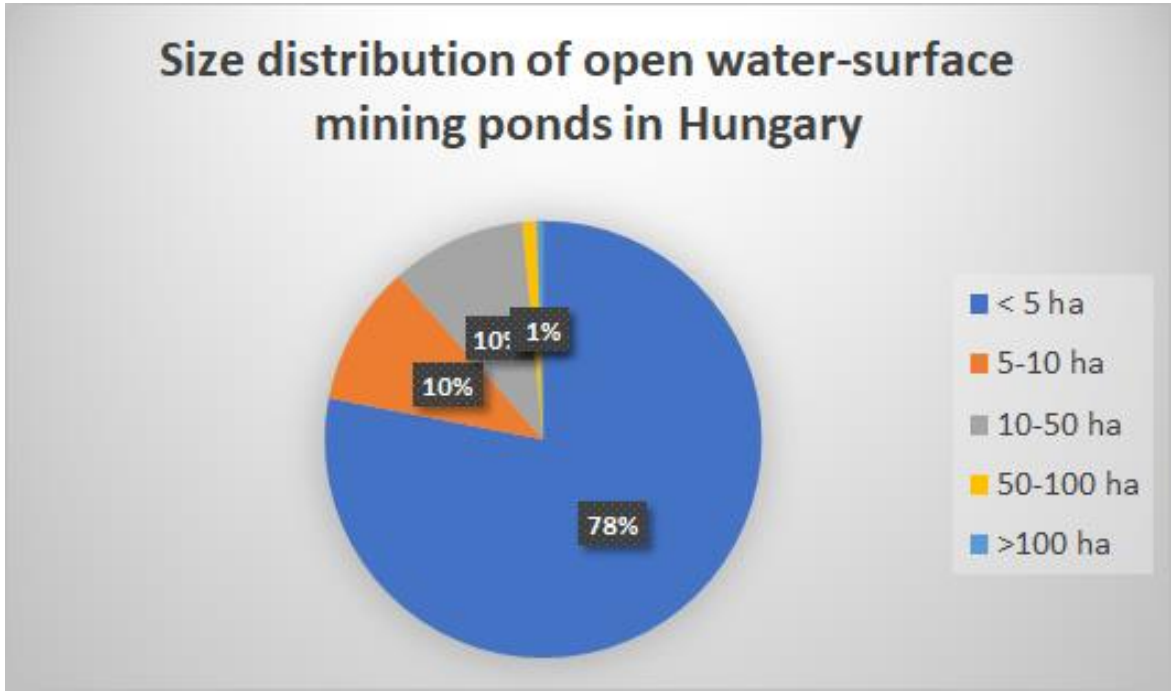
- Mostly reedy mining ponds – peat mines, 26%
- The gratest amount of open water-surface – gravel mines, 55%

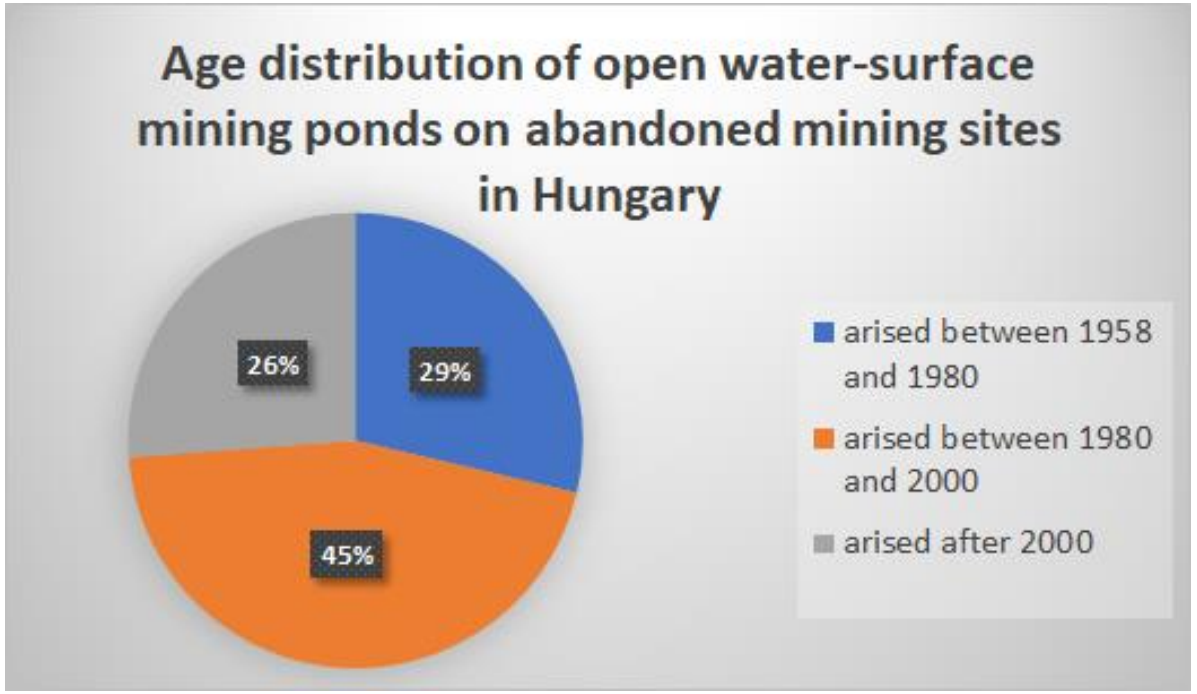


Results – size, age

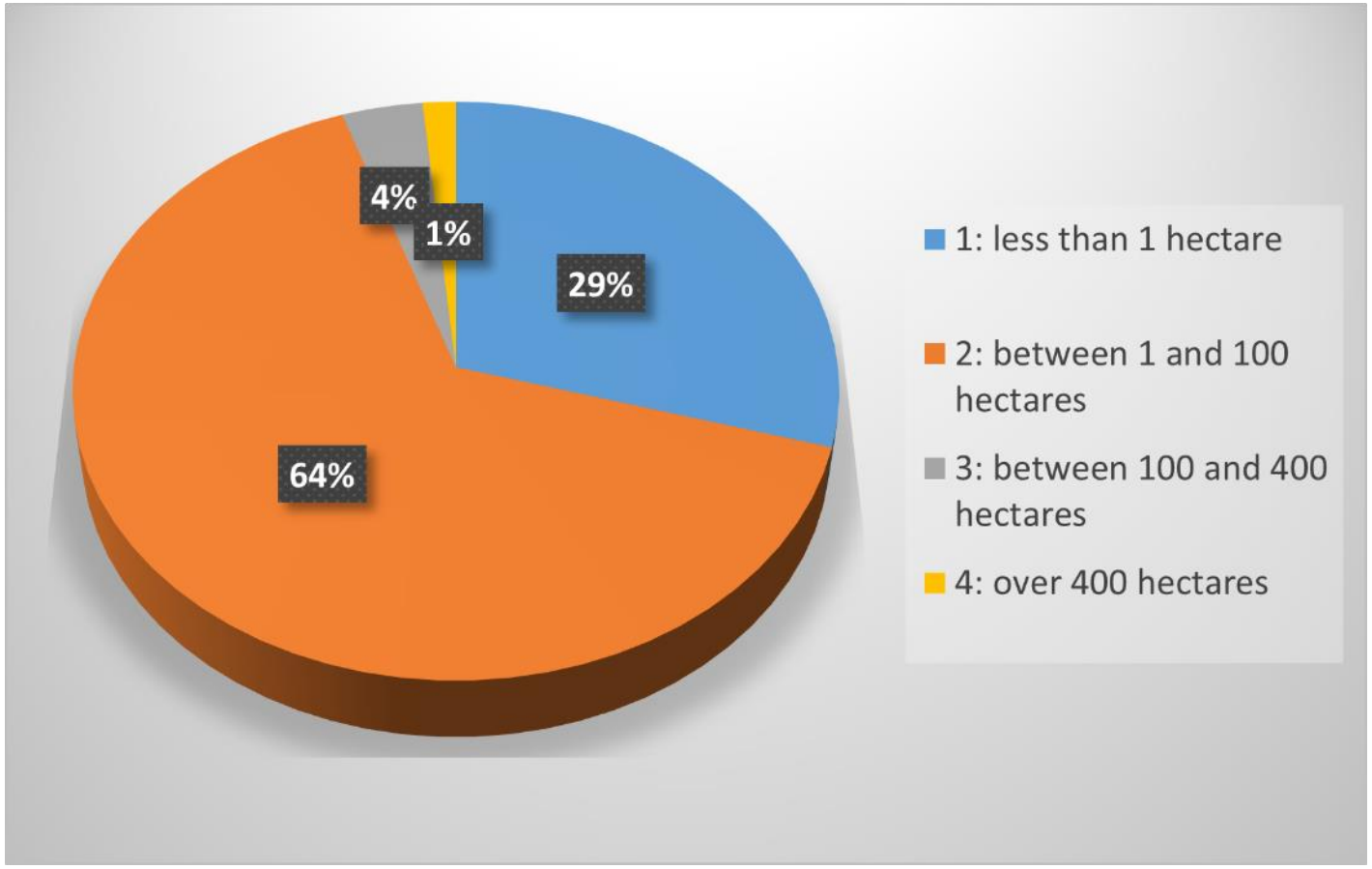
- Large variation in **size**: 0.5 ha – 273 ha
- Open water-surface mining ponds
  - 78% are less than 5 ha, 1.5% exceed 50 ha

- **Age**: the time after mine closing
- Spontaneous / supported succession
- Under undisturbed conditions – pond filling ⟹ *less open water-surface, more reeds, succession, filling*





Results – *role of mining ponds according to their size*



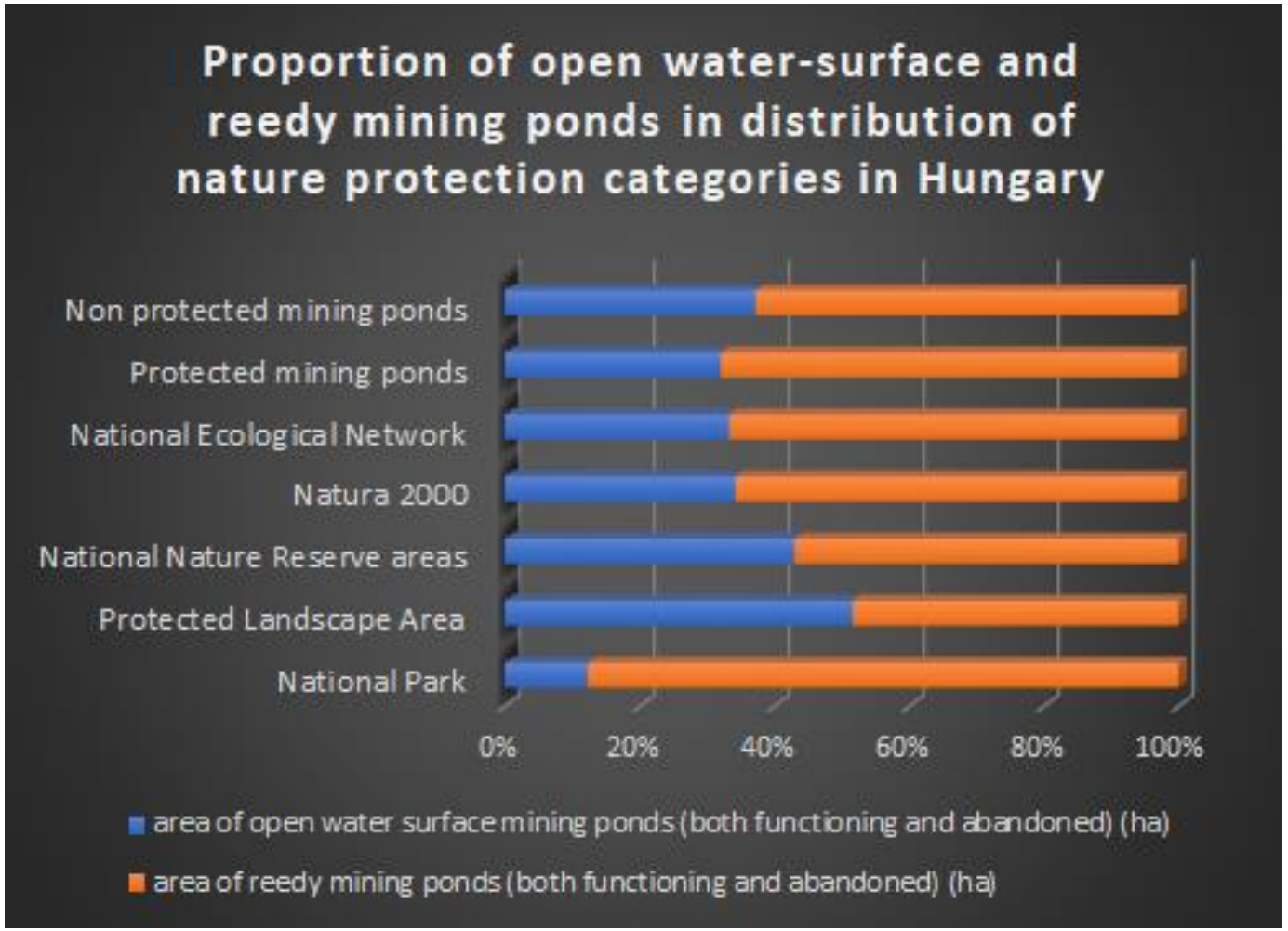
Distribution of mining ponds by size categories (own edited figure)

Results

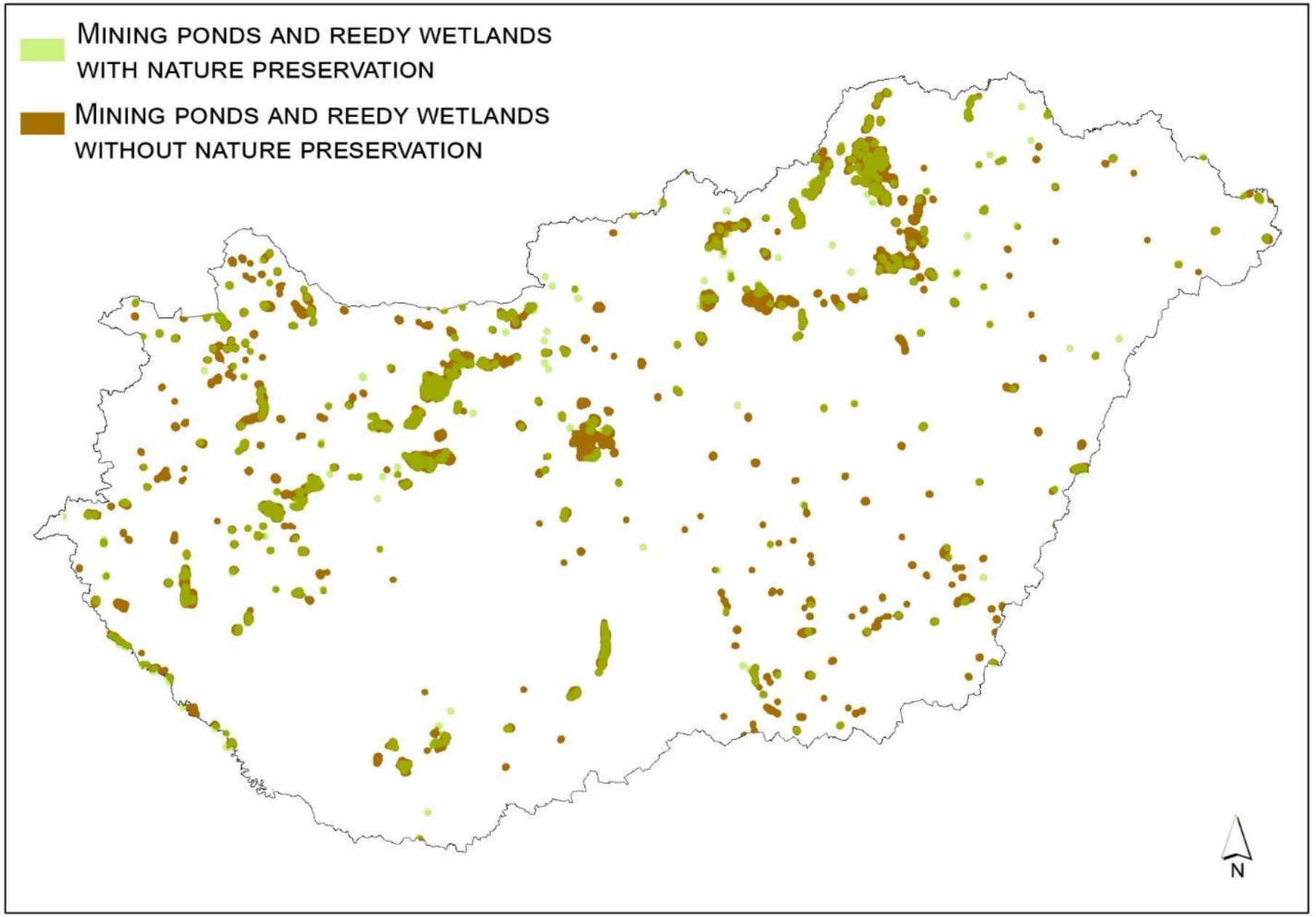
- Method:
  Comparison of mining ponds and nature protection areas

- Result:
  Nature protection importance of mining ponds

58.8% of them are covered by nature protection designation



Results


MINING PONDS AND REEDY WETLANDS WITH NATURE PRESERVATION
MINING PONDS AND REEDY WETLANDS WITHOUT NATURE PRESERVATION
N

Results – *role of mining ponds according to their size*

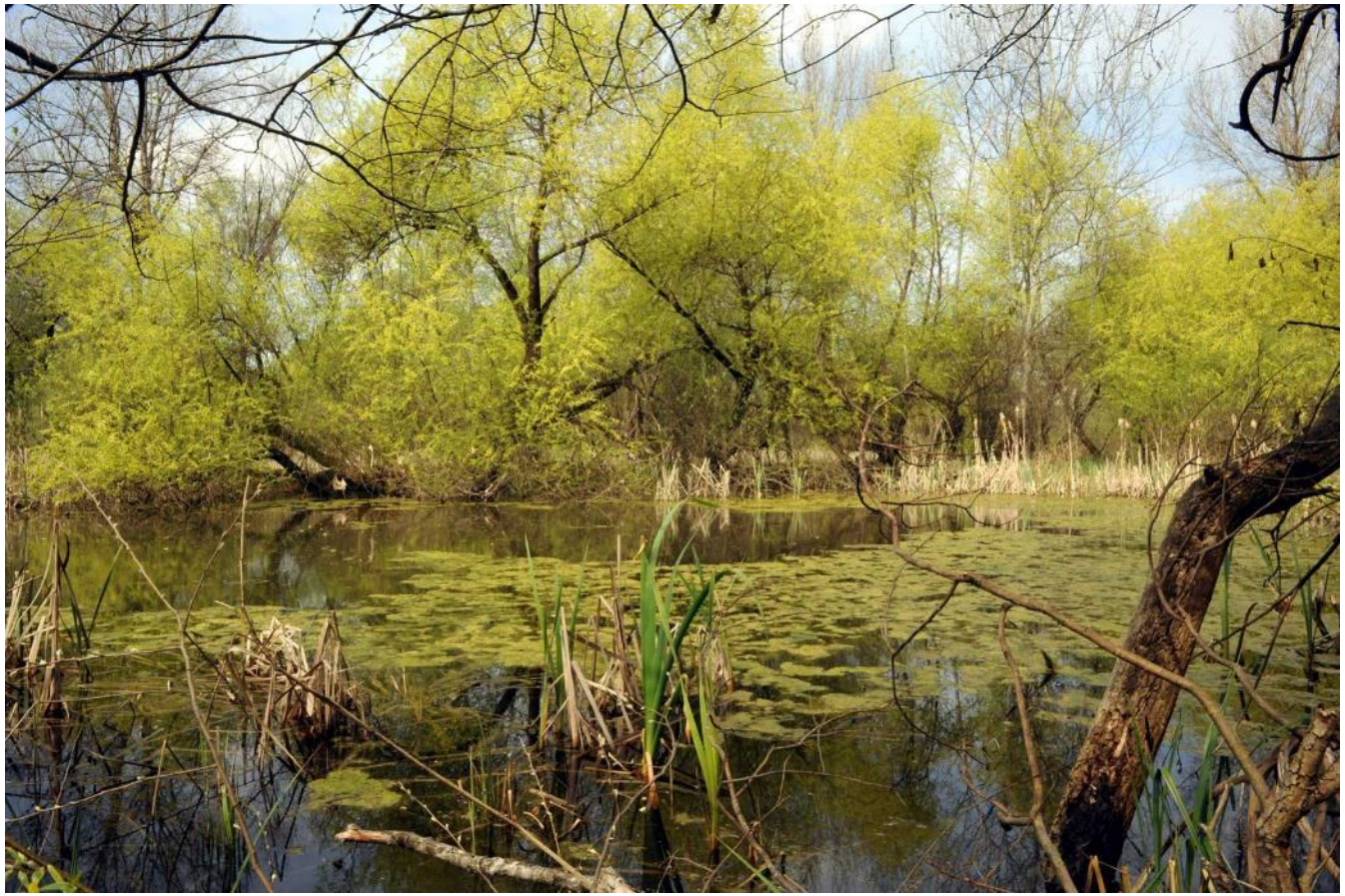
Above 400 hectares (13% - 7 mining pond systems) → their surface area represents 44% of the total area of mining ponds

Location	Quantity of mining ponds (number of pieces)	Total area of mining pond system (hectares)	Landscape character type codes	Extracted raw material
Nyékládháza	5	542.6	421	gravel, clay
Délegyháza (Picture 2)	68	675.5	421	gravel, sand
Kiskunlacháza	37	843.3	421	gravel, sand
Vindornya valley	4	488.8	431	peat
Red-marsh	11	1186.1	431	peat
Nádasdladány, Várpalota	28	1740.9	431	brown coal, peat
Csorna	8	447.9	432	gravel

*Note to landscape character type codes
421: 'Pond landscape'; 431: 'Water-dominated mosaic plain landscape'; 432: 'Woodland and water-dominated plain landscape'

Results

- Nature protection role of peat mining ponds
  - Unique features
  - Become diverse habitats (refugiums) by time (20-40 years after mine closing)
  - Rich in landscape values



Peat mining pond in Dunakeszi

Results – *role of mining ponds according to their size*

Above 400 hectares (13% - 7 mining pond systems) → their surface area represents 44% of the total area of mining ponds

The 675.5 hectares gravel mining pond system located in the east of Délegyháza (Pest county)
(photo made by Civertan Studio)

Conclusion

- Mining activity ⟹ paradox
  - Environmentally-destructive activity ⟺ new, valuable wetlands
  - High potential for rehabilitation, spontaneously rehabilitating mining ponds, especially peat ones
  - 58,8% of them are part of nature protection designation
  - Landscape values – especially mining pond systems
  - More than the half of mining ponds are related to landscape protection (in an aspect of aesthetics

⟹ Mining ponds can be potential wetlands – not just in Hungary

Importance of water management within global, national, municipal etc. level

Making plans → integrating them into projects → creating a cooperation between decision-makers, planners, engineers, mayors and the population to develop a sustainable future for us and the next generation

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Thank you for your attention!

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Hungarian University of Agriculture and Life Sciences, Department of Landscape Protection and Reclamation

Contact:
Varga.Dalma.Erzsebet@uni-mate.hu
Modosne.Bugyi.Ildiko@uni-mate.hu,
Hubayne.Horvath.Nora@uni-mate.hu