LIFE GOODWATER IP EXPERIENCE IN WATER MANAGEMENT IN LATVIA

Linda Fībiga
Project Deputy Manager
09.02.2023. Lithuania
LIVE LAKE final conference

EU LIFE Programme integrated project
"Implementation of River Basin Management Plans of Latvia towards good surface water status"

THE OVERALL AIM

To **improve the status of <u>water bodies at risk</u> in Latvia** by implementing the measures laid down in all 4 river basin management plans

19 partner consortium, consisting from:

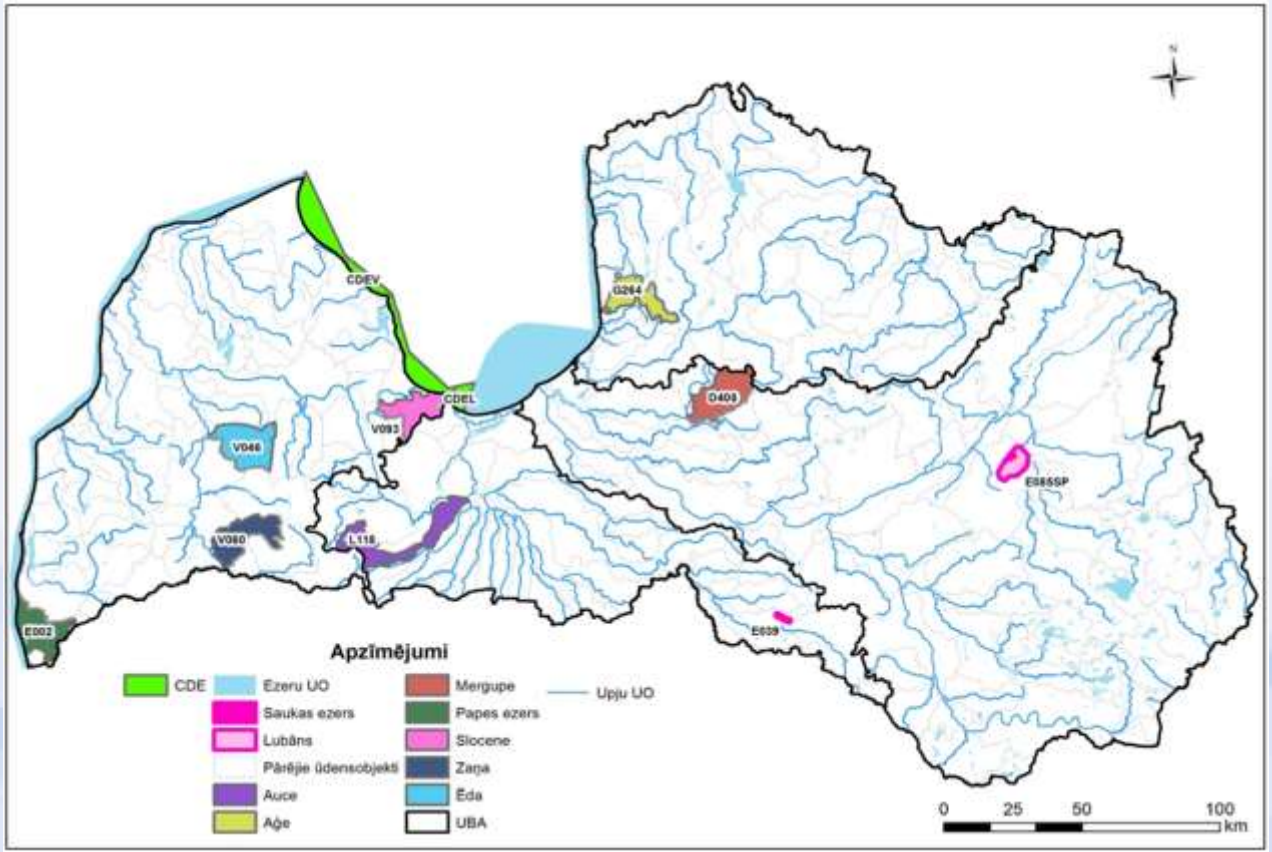
- public authorities;
- municipalities;
- scientific organizations;
- companies managing the State property;
- NGO`s (from farmers to environmental protection organizations)

EU LIFE Programme integrated project
"Implementation of River Basin Management Plans of Latvia towards good surface water status"

DURATION:
01.01.2020.–31.12.2027.

TOTAL BUDGET:
14 463 050 EUR

COMPLEMENTARY FUNDS:
101 890 569 EUR

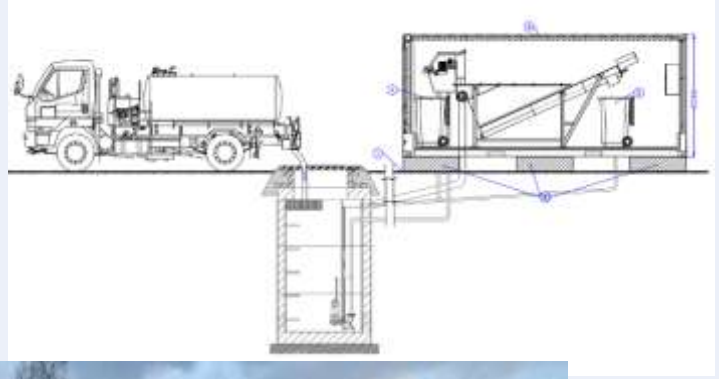


SPECIFIC OBJECTIVES

Reducing the point-source pollution

Engure village - improvements in the operation of existing WWTPs:

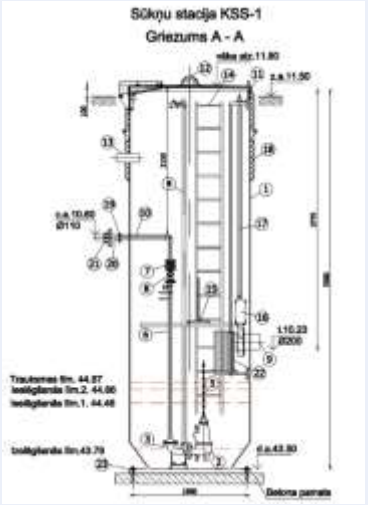
- detailed design elaborated (12.2021)
- building works finished (11.2022)



Reducing the point-source pollution

Nākotne village - construction initial stage of new WWT plant:

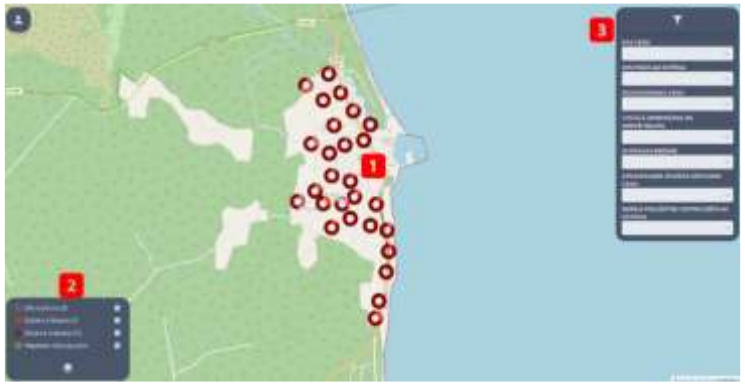
- detailed design elaborated (10.2022.)
- coordination of the construction project with the State Environmental Service (ongoing)
- procurement of construction announcement (next step)



Reducing the point-source pollution

Policy support and awareness rising actions:

- **mathematic model** for calculation of the impacts of decentralized WW systems on groundwater quality (validated on Engure village) – developed (03.2022)
- seminars for WW treatment sector (E2.2: 15.03.2022; C14.5: 02.11.2022)



Mathematic model on Engure village data

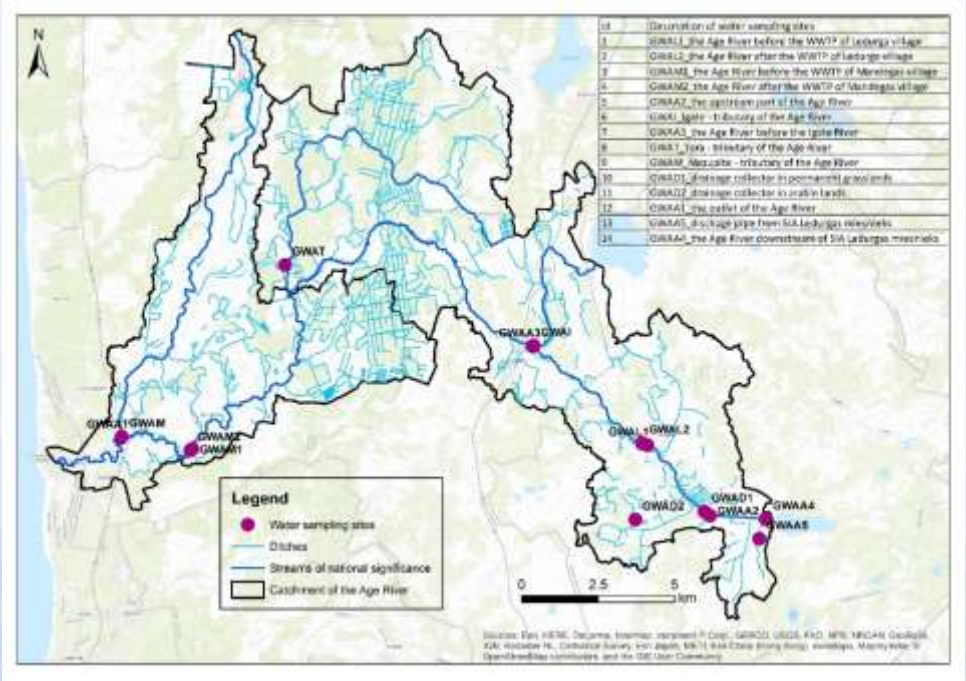
Valmiera (15.03.2022):
Participants 30 + (116-302) on YouTube

Valmiera (15.03.2022):
Participants 21 + 66 on YouTube

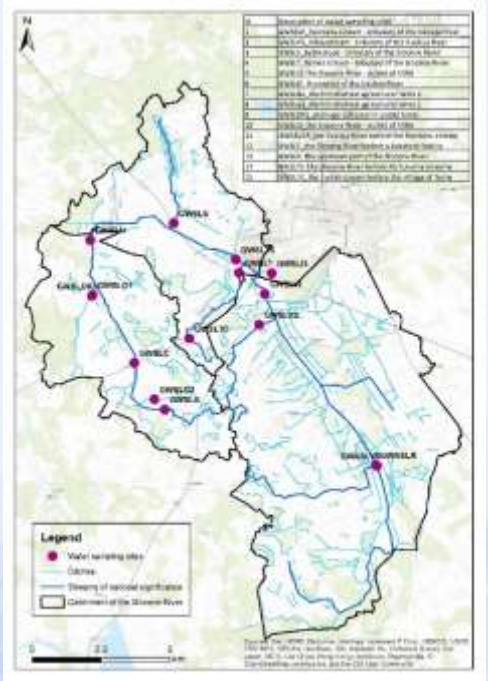
Reducing the diffuse pollution - agriculture

Research in the selected water bodies at risk (Aģe, Slocene, Auce and Ēda):

- monitoring activities (D1)



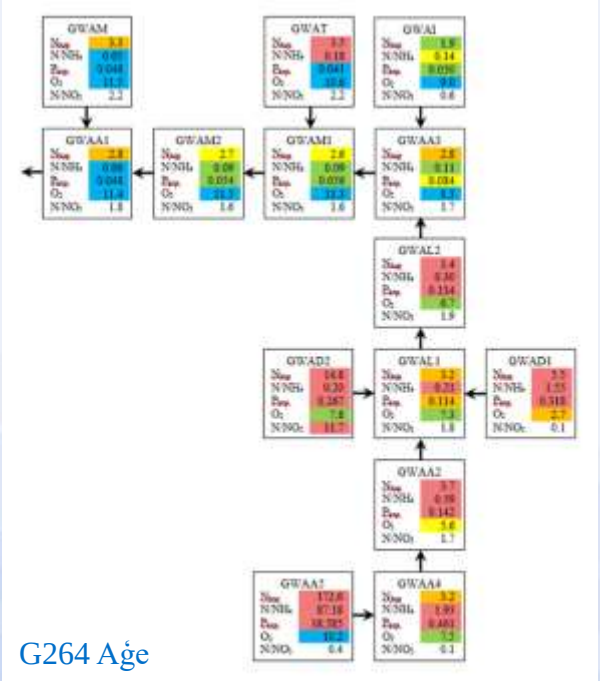
G264 Aģe



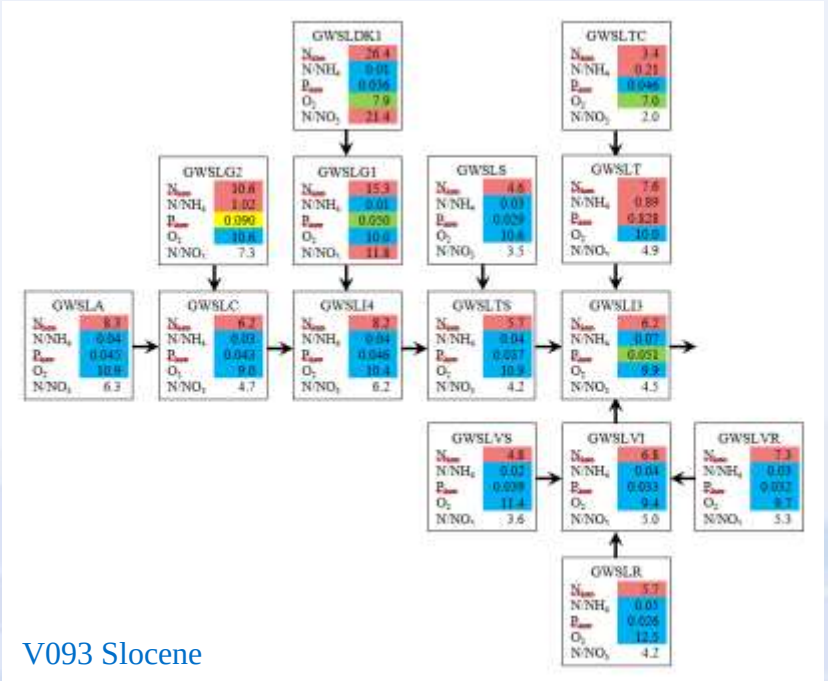
V093 Slocene

Reducing the diffuse pollution - agriculture

Evaluation of water quality monitoring results (A1.1.)



G264 Ağe



V093 Slocene

High | Good | Moderate | Poor | Bad

Reducing the diffuse pollution - agriculture

Evaluation of potential **sources of nutrient losses** (A1.1.)

The results of geospatial data analysis at L118 Auce:

- deliniation of the catchment area for each sampling site;
- Corine Land Cover 2018 for the catchment area of each water sampling site.

Nr.	Catchment ID	Catchment area, km²	Artificial surfaces, %	Agricultural areas, %	Forest and semi-natural areas, %	Wetlands, %	Water bodies, %
1	GWAUCR	47.6	3.9	68.2	27.9	0.0	0.0
2	GWAUCVG	22.3	1.1	63.7	35.1	0.0	0.0
3	GWAUCI	128.5	2.1	52.3	45.0	0.1	0.4
4	GWAUCK1	15.8	0.0	91.0	9.0	0.0	0.0
5	GWAUCK2	39.8	1.3	81.5	17.2	0.0	0.0
6	GWAUCĪ1	46.1	1.1	43.8	54.1	0.4	0.6
7	GWAUCG1	19.5	0.0	76.3	23.7	0.0	0.0
8	GWAUCG2	18.8	0.0	83.7	16.3	0.0	0.0
9	GWAUCĪ2	46.1	1.1	43.8	54.1	0.4	0.6
10	GWAUCDK	4.2	0.0	70.1	29.9	0.0	0.0
11	GWAUCEZ	31.4	2.1	28.5	45.9	11.4	12.1
12	GWAUCBH1	84.0	0.6	53.0	45.9	0.2	0.3
13	GWAUCB	90.7	2.7	52.4	44.0	0.2	0.6
14	GWAUCBH2	89.9	2.8	52.9	43.5	0.2	0.6
15	GWAUCAR	109.9	2.3	54.2	42.9	0.1	0.5

Reducing the diffuse pollution - agriculture

Evaluation of potential **sources of nutrient losses** (A1.1.)

G264 Ag̊e

V093 Slocene

Reducing the diffuse pollution - agriculture

Development of **practical recommendations and technical solutions** for **implementation of green infrastructure** elements in agricultural areas (A1.2.)

L118 Auce

Reducing the diffuse pollution - agriculture

Development of **practical recommendations and technical solutions for implementation of green infrastructure** in agricultural areas (A1.2.)

The **design project for a subsurface flow constructed wetland** to capture, store and treat stormwater from a large livestock facility nearby the Ile village in L118 Auce

Reducing the diffuse pollution - agriculture

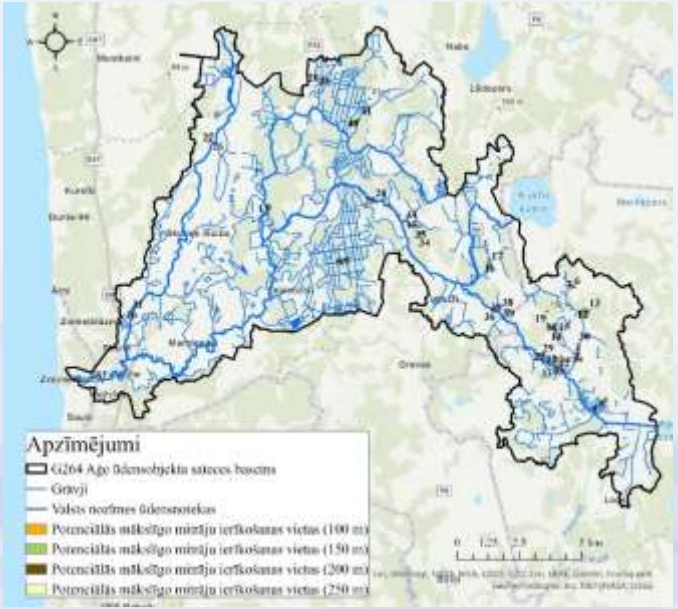
Development of practical recommendations and technical solutions for **reconstruction and maintenance** of sustainable and environmentally friendly land **drainage systems** in agricultural areas (A1.4.)

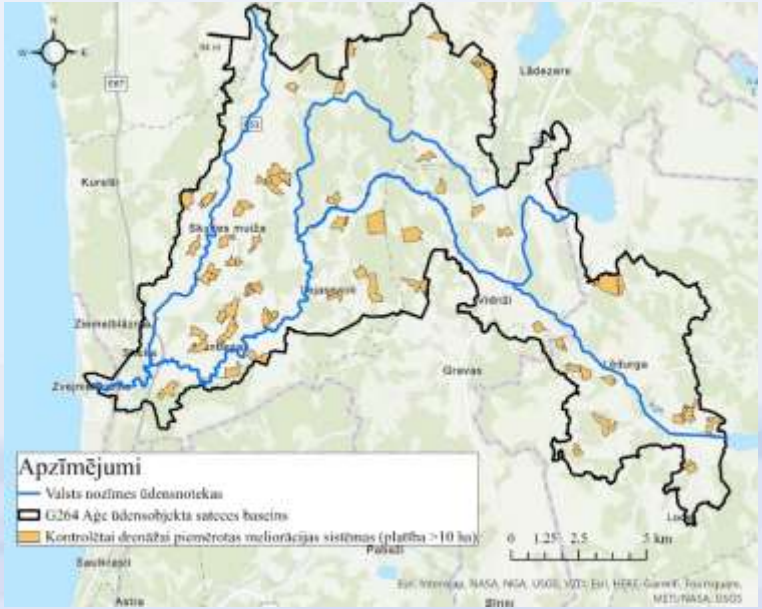
G264 Aģe (digital elevation model)

Reducing the diffuse pollution - agriculture

Development and applications of methodology for **selection of the most suitable sites for implementation of** sustainable and environmentally friendly land **drainage systems** in agricultural areas (A1.4.)

Suitable locations for surface flow **constructed wetlands** and **controlled drainage** in G264 Aģe

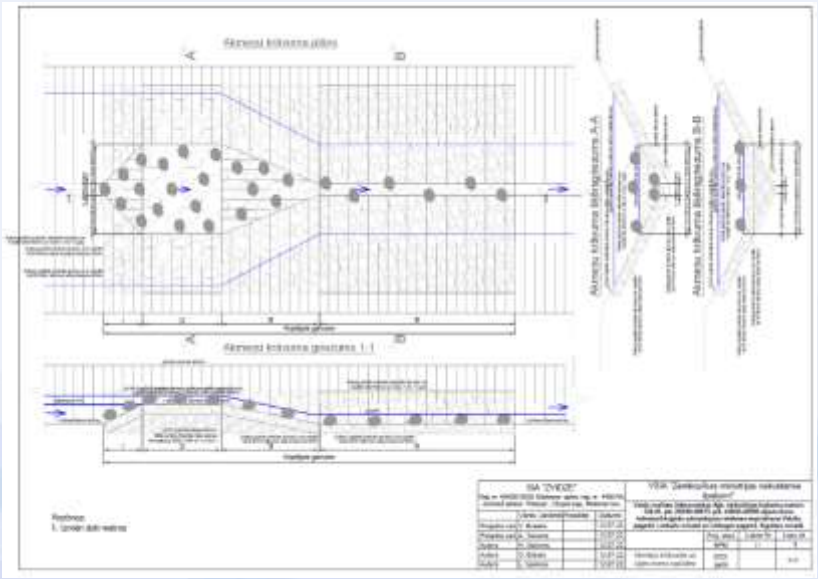




Reducing the diffuse pollution - agriculture

Preparation of design projects for reconstruction and maintenance of sustainable and environmentally friendly land drainage systems in agricultural areas (C5)

V093 Slocene

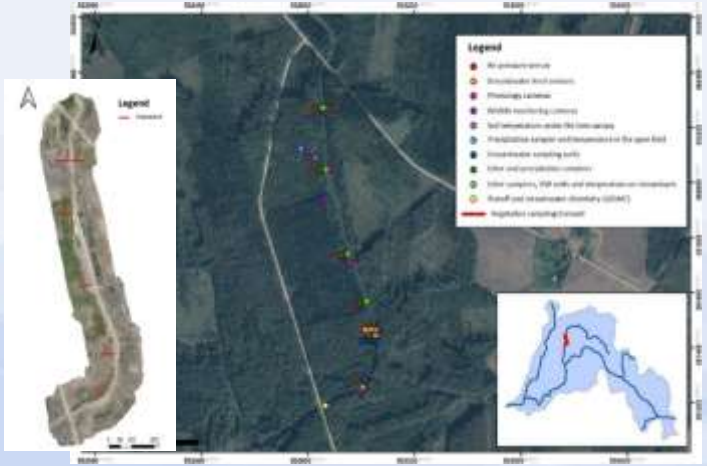


G264 Aģe

Reducing the diffuse pollution - forestry

Research in Aģe and Tora rivers:

- **monitoring** (D1) to evaluate the effect of green and blue infrastructure establishment in the watercourse (sw/gw runoff, chemical composition, nutrient input with precipitation and litter, soil chemistry, tree stand structure and ground vegetation, leaf area index, systematic **aerial photos** and **phenology photos** of sites)

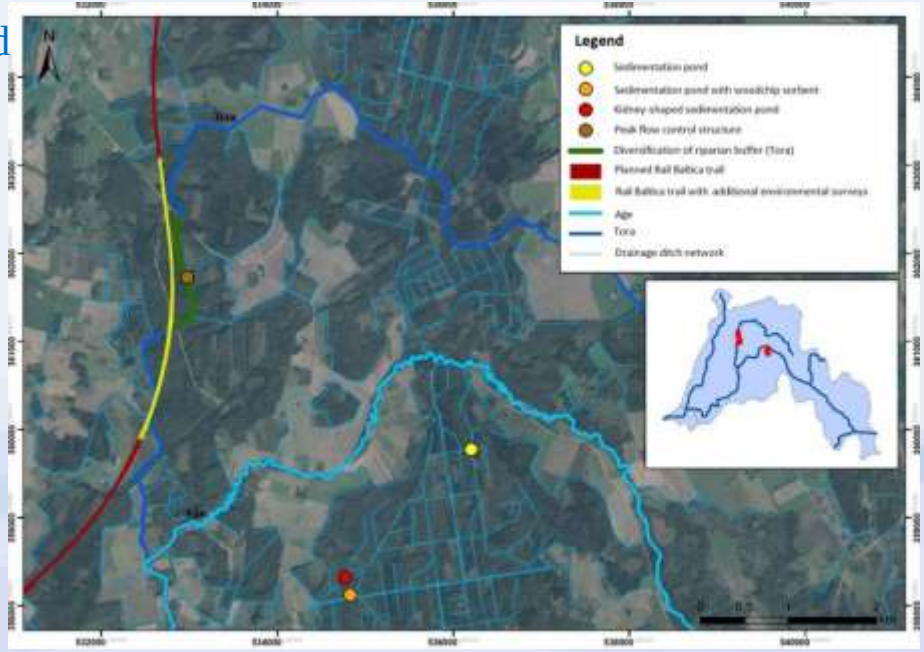


Planned measures (above), example of monitoring points along Aģe tributary Tora (left) and monitoring equipment – precipitation, litter and groundwater samplers

Reducing the diffuse pollution - forestry

Blue infrastructure solutions

- **methodology** for the selection of the most suitable places developed
- detailed **technical designs** (2) developed:
  - three (3) pilot sedimentation ponds
  - one (1) over-flow dam with sedimentation pond
- preparation of building work procurement specification



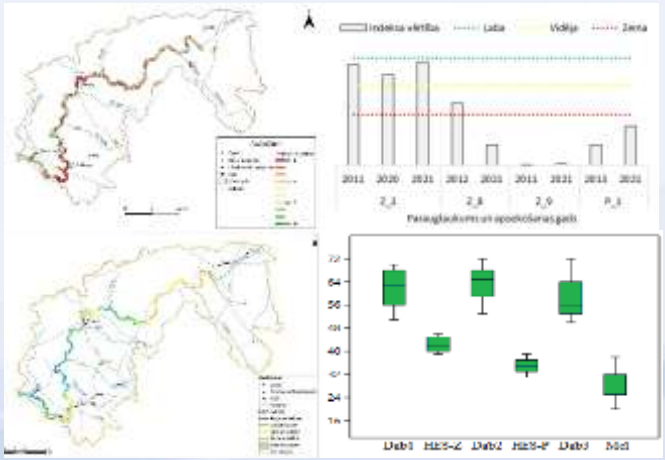
Reducing the impact of hydromorphological alterations

Survey of the existing situation (completed in 2020 and 2021):

- **Four rivers** (Aģe, Mergupe, Zaņa, Auce) and their tributaries **surveyed**, altogether >200 km;
- **Mapping** (River Habitat Survey & Trout Habitat Score) and **fish survey** (electrofishing)

Mapping of Mergupe river

Electrofishing in Auce river



Some results from Zaņa River

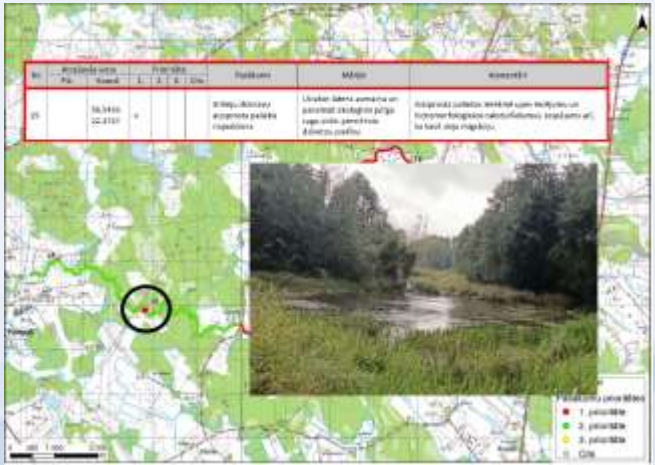
Reducing the impact of hydromorphological alterations

Preparing and discussing the **first list of actions** to be implemented in C9 (Aģe, Mergupe completed in 2021, Zaņa, Auce in 2022):

- Initial list of actions in **three priority groups** (high, moderate and low);
- **Discussion** of list of actions **in seminars** (project partners, local municipalities, NGOs and other)

Seminar regarding Zaņa river

Seminar regarding Auce river



Slide for discission of planned actions (Zaņa)

Reducing the impact of hydromorphological alterations

Preparing the **final list of actions** to be implemented in C9 (Aģe, Mergupe completed in 2021, Auce, Zaņa – to be completed in December 2022):

- **Field visits** with project partners and stakeholders;
- Preparation of final list of actions (report handed to LEGMC)

Field visit in Mergupe river

Field visit in Auce river

Field visit in Zaņa river

Reducing the impact of hydromorphological alterations

Construction of a fish pass (on Ağe HPP):

- agreement with the owner concluded;
- hydrological parameters (ecological flow) measured/calculated;
- preliminary investigation started (surface data, engineering conclusions);
- detailed technical design to be developed in 2023

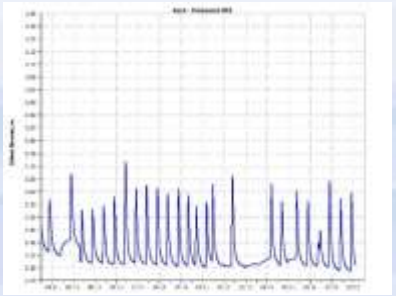
Semi-natural fish pass in Estonia

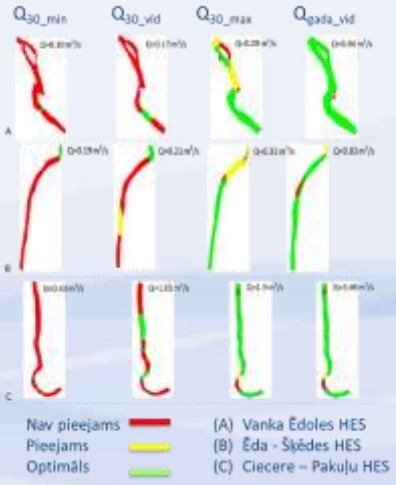
Ağe HPP and planned location of the fish pass

Reducing the impact of hydromorphological alterations

Assessment of ecological flow regime in rivers impacted by small HPPs

- Comprehensive **assessment of flow regime alterations** due to regulations by small HPPs (analysis of fish fauna, river habitat mapping and hydrological measurements)
- Web-based **modelling platform** for the MesoHABSIM model application and training
- River habitat modelling and **E-Flow evaluation**

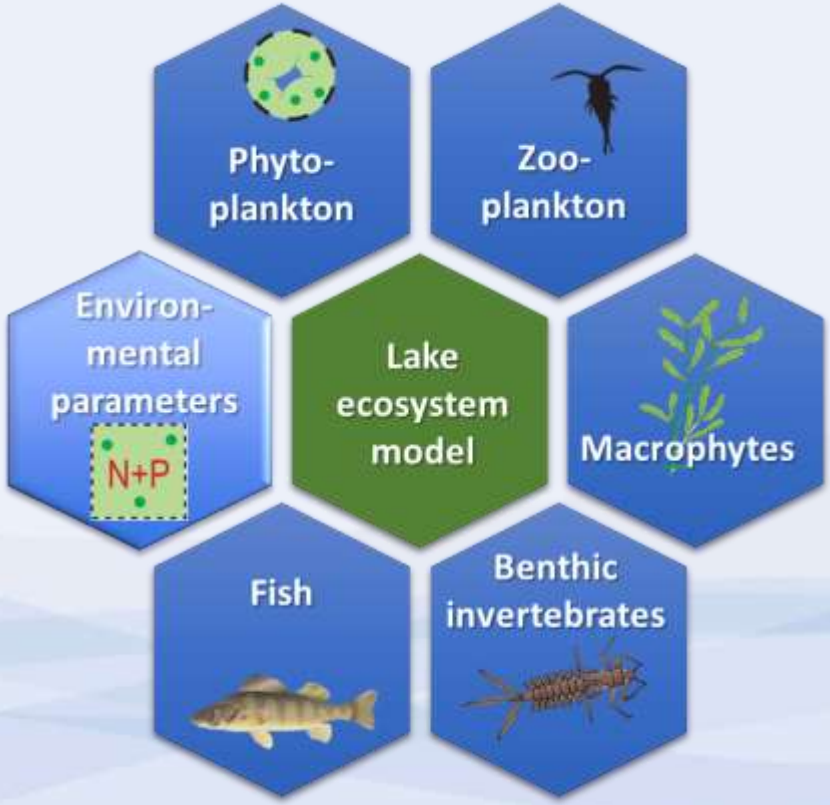




Complex hydrobiological, hydrochemical, and hydromorphological assessment of the lake Saukas

Intensive field sampling in 2022:

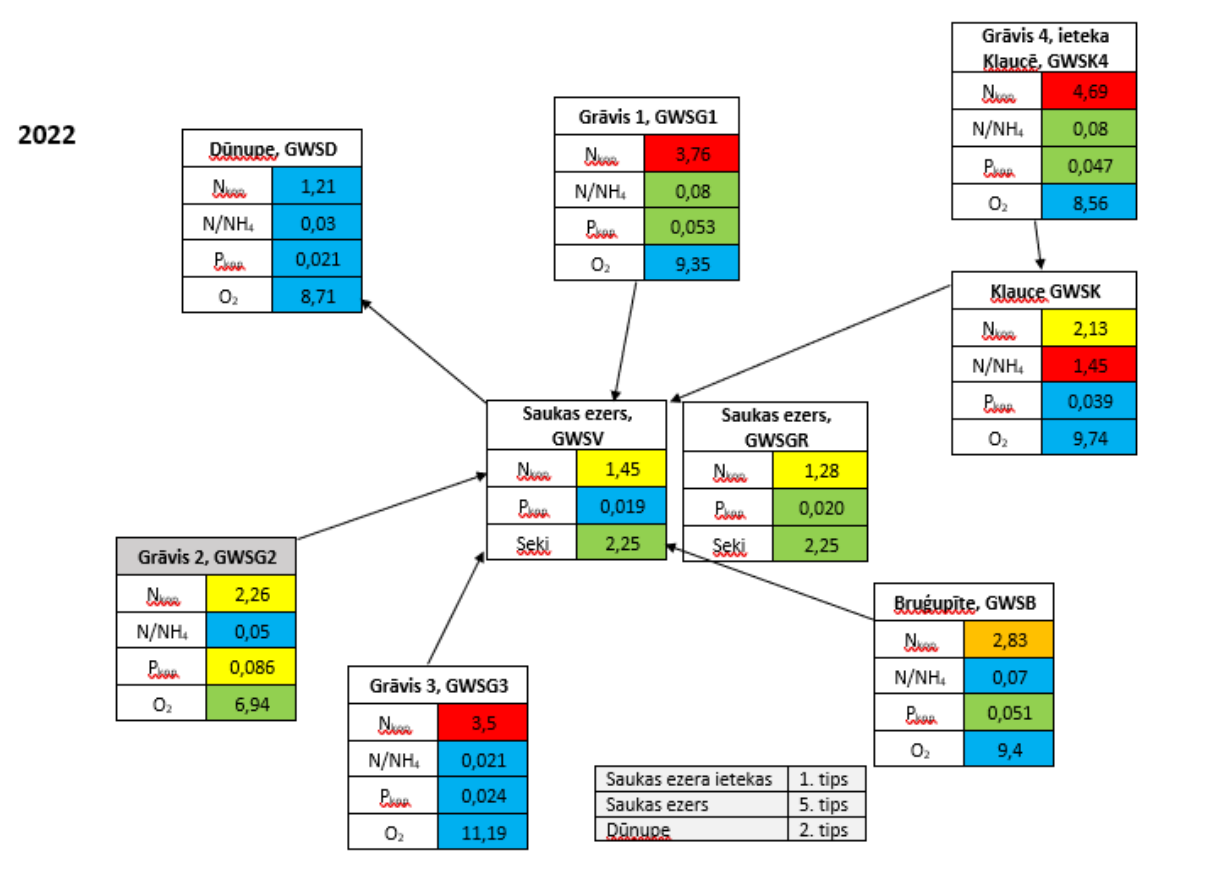
May	✓	✓	n.a. (compleated in 2020-2021)	✓	n.a.
June	✓	✓		n.a.	n.a.
July	✓	✓		n.a.	n.a.
August	✓	✓		✓	n.a.
September	✓	✓		n.a.	✓
November	✓	✓		✓	n.a.
∑	18	48		27	



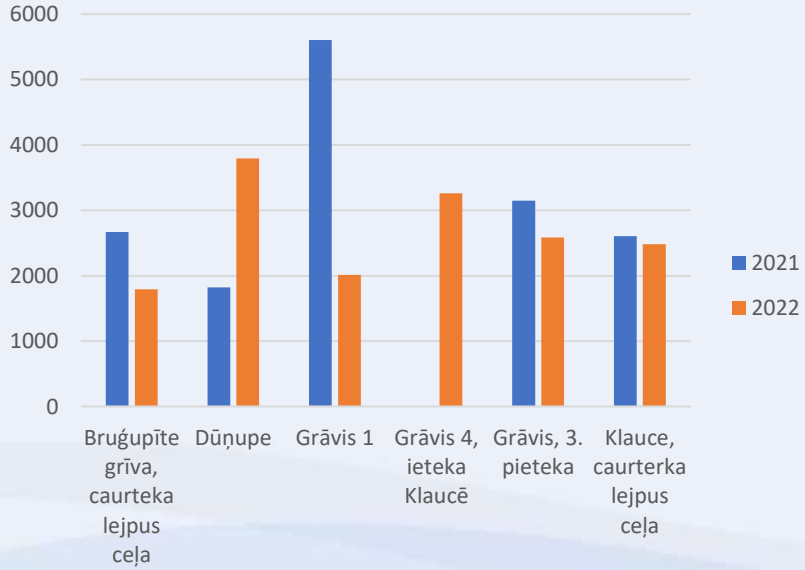
Complex hydrobiological, hydrochemical, and hydromorphological assessment of the lake Saukas

Monitoring of Sauka lake (physico-chemical)

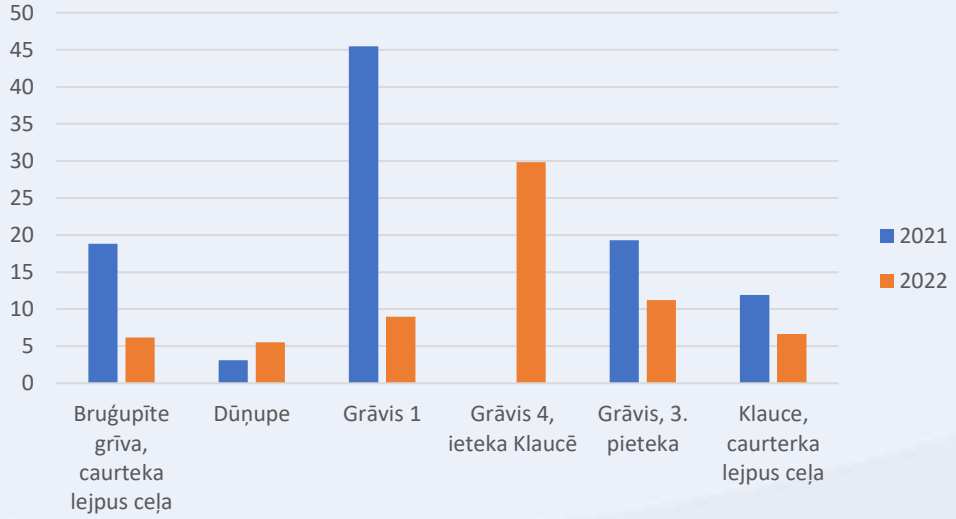
Sauka lake – monitoring results, 2022



Monitoring results of Sauka lake, 2021-2022



Runoff, W (m3/ha/y)

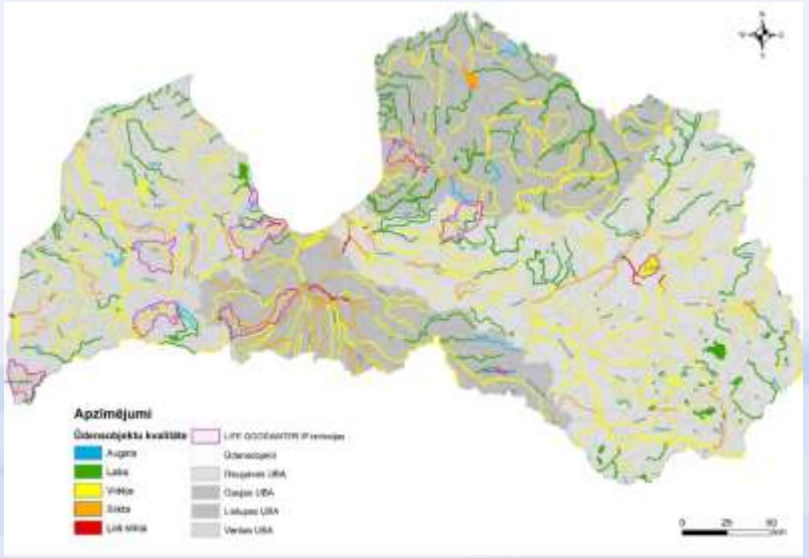


Ntot, kg/ha/y

Improvement of river basin management planning

Intensive **monitoring** in the project's rivers and lakes:

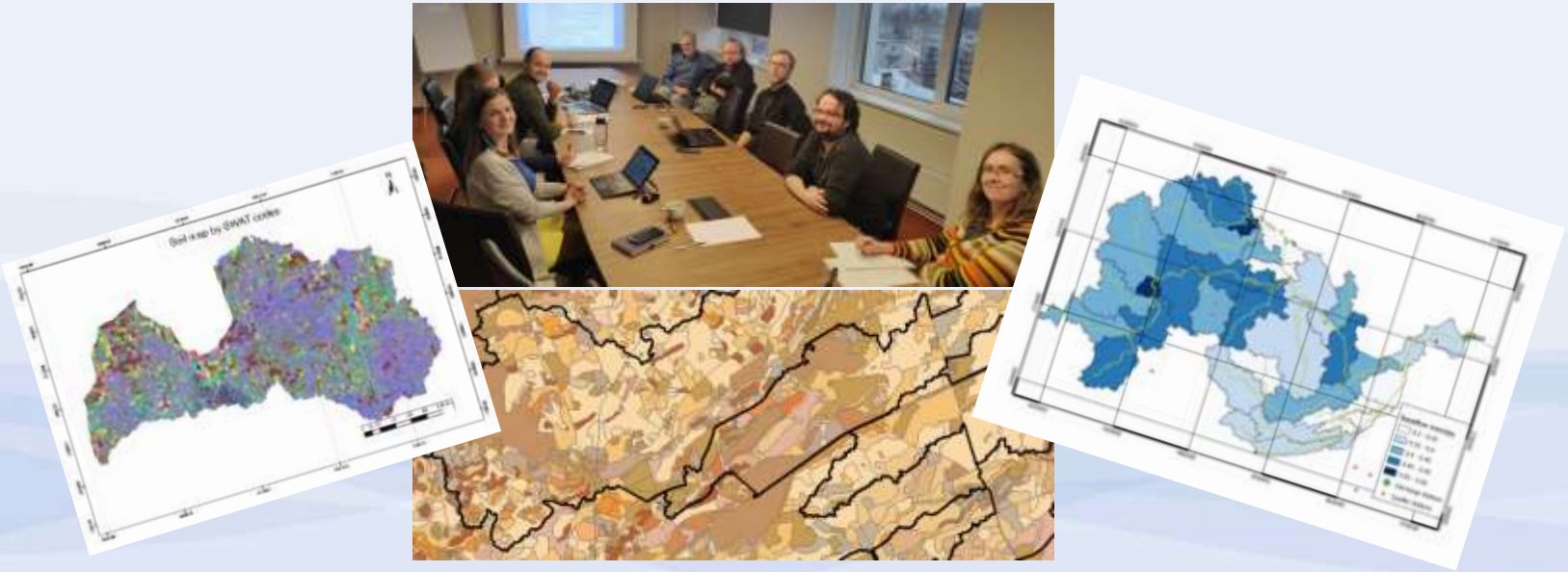
- **WFD** compliant ecological and chemical **quality monitoring**;
- pressures from **agriculture**;
- pressures from **forestry**;
- lake **Sauka** monitoring;
- lake **Lubāns** monitoring;
- **WWTP** monitorng in Engure village;
- impact from **fish farms**



Improvement of river basin management planning

SWAT+ model for determination of nitrogen and phosphorus loads:

- modelling system developed
- work on validation and calibration ongoing



Improvement of river basin management planning

Support for development of 3rd and 4th cycle **river basin management plans:**

- **improvement** of the significant pressures assessment **methods**;
- improvement of the identification of pressures affecting the water environment
- **assessment of the** actual **status** of water bodies and establishment of specific environmental objectives, via data analysis and scenario modelling performed using SWAT model
- **cost-effectiveness assessment** of measures
- **development of the Programme of Measures**, based on the results from demo projects within LIFE IP, SWAT modelling results and other inputs

euSurfaceWaterB	swSignificantPressureType
LVD400SP	1.5 - Point - Contaminated sites or abandoned industrial sites
LVD400SP	2.7 - Diffuse - Atmospheric deposition
LVD400SP	4.2.2 - Dams, barriers and locks - Flood protection
LVD400SP	4.1.3 - Physical alteration of channel/bed/riparian area/shore - Navigation
LVD401DA	1.5 - Point - Contaminated sites or abandoned industrial sites
LVD401DA	2.7 - Diffuse - Atmospheric depo
LVD401DA	4.1.3 - Physical alteration of cha
LVD401DA	7 - Anthropogenic pressure - Oth
LVD402	2.7 - Diffuse - Atmospheric depo
LVD402	4.1.4 - Physical alteration of cha
LVD402	4.3.6 - Hydrological alteration - C
LVD402	7 - Anthropogenic pressure - Oth
LVD403	2.7 - Diffuse - Atmospheric depo
LVD403	4.2.1 - Dams, barriers and locks
LVD403	4.1.4 - Physical alteration of cha
LVD403	4.3.6 - Hydrological alteration - C
LVD404	2.7 - Diffuse - Atmospheric depo
LVD404	4.2.8 - Dams, barriers and locks
LVD405	2.7 - Diffuse - Atmospheric depo
LVD406	4.2.1 - Dams, barriers and locks
LVD406DA	2.7 - Diffuse - Atmospheric depo
LVD407	2.7 - Diffuse - Atmospheric depo
LVD407	4.2.1 - Dams, barriers and locks
LVD407	4.1.4 - Physical alteration of cha
LVD407	4.3.6 - Hydrological alteration - C
LVD407	7 - Anthropogenic pressure - Oth

euSurfaceWaterB	swSignificantImpactType
LVD400SP	CHEM - Chemical pollution
LVD400SP	HHYC - Altered habitats due to hydrological changes
LVD400SP	HMOC - Altered habitats due to morphological changes (includes connectivity)
LVD400SP	OTHE - Other significant impact type
LVD401DA	CHEM - Chemical pollution
LVD401DA	HHYC - Altered habitats due to hydrological changes
LVD401DA	HMOC - Altered habitats due to morphological changes (includes connectivity)
LVD401DA	OTHE - Other significant impact type
LVD402	CHEM - Chemical pollution
LVD402	HHYC - Altered habitats due to hydrological changes
LVD402	HMOC - Altered habitats due to morphological changes (includes connectivity)
LVD402	OTHE - Other significant impact type
LVD403	CHEM - Chemical pollution
LVD403	HHYC - Altered habitats due to hydrological changes
LVD403	HMOC - Altered habitats due to morphological changes (includes connectivity)
LVD404	CHEM - Chemical pollution
LVD404	HHYC - Altered habitats due to hydrological changes
LVD404	HMOC - Altered habitats due to morphological changes (includes connectivity)
LVD405	CHEM - Chemical pollution
LVD405	HHYC - Altered habitats due to hydrological changes
LVD405	HMOC - Altered habitats due to morphological changes (includes connectivity)
LVD406DA	CHEM - Chemical pollution
LVD406DA	OTHE - Other significant impact type
LVD407	CHEM - Chemical pollution
LVD407	HHYC - Altered habitats due to hydrological changes

Support for the respective authorities

Results of measures implemented in practice - efficiency indicators;

Development of the **National sewage sludge management strategy:**

- strategy document – **finished;**
- **approval by the Cabinet of Ministers** – Q1, 2023

Incorporation of the research results into the **Common Agricultural Policy** document;

Additions to other **regulatory documents**

Public engagement and awareness raising

4 capacity building programmes (wastewaters, agriculture, forestry, aquaculture) developed to increase knowledge and skills of the target groups on integrated aspects of the water management to ensure sustainability of water resources

Capacity building platform **https://macies.goodwater.lv/** available online (from 06.2022.)

First **trainings/capacity building events** held (2021-2022)

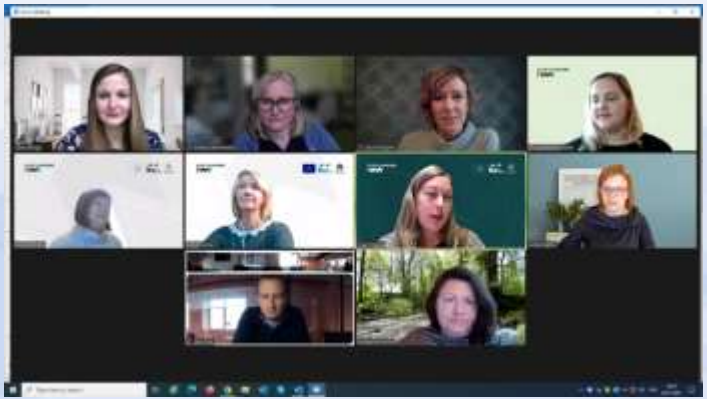
Public engagement and awareness raising

Active networking with other thematic LIFE and non-LIFE projects ensured

Project partners participated in the **thematic events** to present the LIFE GoodWater IP project, research and findings (~60 events until end of 2022)

2 **experience study trip visits** organized to increase the capacity of the LIFE GoodWater IP project team:

- LIFE-Goodstream project (Sweden)
- establishment of fish passes and dams removal (Estonia)



Public engagement and awareness raising

2 Baltic-Nordic region **thematic workshops organised** (1st on synergies and trade-offs between nature, water, climate and flood prevention policies in local and regional context (Lubāna, 2021) and 2nd on agriculture and good water quality: policy and management measures (Jelgava, 2022))

1st **international conference** organised “Nature-based solutions for improvement of water quality and river basin management” (Rīga, 2022)

Awareness raising: Landscape tours (I)

2021 - 2 landscape tours (Līgatne, Imula rivers)

2022 - 6 landscape tours:

- on average, 53 participants participated in 1 tour;
- 318 participants in all tours in total

Landscape tours *are an exploratory hike organized by LFN together with nature and culture experts, complete with a concert in harmony with the landscape*






Landscape tour in the Dviete floodplain (spring 2022)

Awareness raising: Landscape tours (II)

5 landscape tours in city area – in Riga, Jugla and Bierini areas along Jugla lake and Bābelīte lake and Mārupīte river (2022 spring and autumn)

LFN habitat of the year 2022 – **city**








Awareness raising: Landscape tours (III)





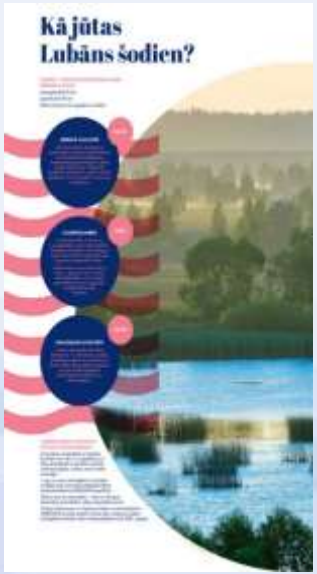



Awareness raising: Exhibition «Lubāns - where nature and human meet»

1. In 2022:
- the graphic design is developed
- the procurement of exhibition stands was announced

2. The **opening** is planned in **beginning of 2023**

3. The development of the exhibition within the deadline specified in the project was influenced by:
- increase in the price of stand materials and production costs;
- search for a cheaper technical solution for billboards;
- difficulties in agreeing on the content; Lubāns – a controversial lake connected with various interests



Public engagement and awareness raising

Small grant program for local cooperation and involvement:

- ✓ 1st stage = 35 proposals (31/05/2021)→ 6 for detailed elaboration (25/06/2021)→ 4 detailed applications (02/08/2021) → 1 implemented and 3 in progress
- ✓ 2nd stage = 8 proposals (30/09/2022) → 4 for detailed elaboration (28/10/2022)→ 2 detailed applications (22/11/2022)
- ✓ 3rd stage = is planned in March 2023

Informative webinars on small scale grant and local cooperation initiatives for sustainable surface water resources management:

- ✓ 1st stage (2021)= 4 webinars targeted to each river basin → 209 participants in total.
- ✓ 2nd stage (2022) = 1 webinar → 61 participants in total

Implemented project: Removal of an obstacle (old bridge) on the Pededze river

Main challenges

- Covid-19 and related restrictions
- war in Ukraine, resulting in higher resource costs
- limited capacity of other institutions, e.g. State Environmental Service
- communication with the landowners

EU LIFE Programme integrated project
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LET THE WATERS FLOW!

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