



## PLASTIX

# Research of **micro** and **macroplastics** in and along **small rivers**

**Anja Bubik, Aljoša Krajnc, Natalija Špeh & Nataša Uranjek**

*Faculty of Environmental Protection (FEP)*

*[anja.bubik@fvo.si](mailto:anja.bubik@fvo.si); [akrajnc42@gmail.com](mailto:akrajnc42@gmail.com); [natalija.speh@fvo.si](mailto:natalija.speh@fvo.si), [natasa.uranjek@fvo.si](mailto:natasa.uranjek@fvo.si)*



Savinja-Šalek Region


## **POLICY INSTRUMENT**

### **The Territorial Development Program of the Savinja-Šalek Region 2021-2027**

transition the regional economy into a green economy, focusing on the principles of sustainability and circular economy.

FEP committed to contribute to strategic objectives for a **low-carbon, green and connected SAŠA region 2030:**

- ✓ preserving and improving the environmental quality
- ✓ reducing waste
- focus on water environments



**the pioneer micro and macroplastics research in surface water bodies in the region.**





**MICROPLASTICS**

**+ MACROPLASTICS**

**ENVIRONMENT**



**RIVERS**





- ➔ 80% of marine (plastic) litter is of surface origin
- ➔ smaller streams and water bodies play a vital role in understanding localized pollution and identifying pollution sources
- ➔ plastic emissions for smaller rivers may even be underestimated
- ➔ lack of unique methodology and standards

# ACTIVITIES

1. **Pump filtration** of **Microplastics in the SAŠA region**
2. **Field Survey** of Riverine Litter



# The **Microplastic** sampling conundrum

## Most used sampling methods:

For water samples:

Manta net

Pump and sieve

Plankton net

For sediment samples:

Van Veen grab sampler

## Methods for plastic identification:

Visual inspection under magnification

Chemical determination

FTIR spectroscopic identification

## No standard for sampling

The issue of there not being any standardised methods for sampling microplastics is that there is no way for researchers to compare results from their studies with results from others.

This makes determining the pollution of the environment with microplastics almost impossible on a large scale

# A potentially **good solution?**

## **Fast, precise, versatile**

Fuel powered water pump with inbuilt flow calculation and filtration chamber for an all-in-one package; catchment, volume calculation and filtration in one go.

Filtering large quantities of water while measuring flow minimizes chances for loss of sample material

Spare and quick to change filters make preparation for a new sample fast

Concentrating large volumes into small samples makes handling samples easy





# Results of the **first test**

1 cubic meter of filtered water within 15 minutes

No issues on pump operation and filtration nor the waterflow calculation

The sample was separated into a water phase and the remains on the filter

Preparation for the 2<sup>nd</sup> sampling was done on the spot within a few minutes





# Results of the **first test**

After a laboratory sample preparation, the samples were checked under a stereomicroscope

A006 2592x1944 2024/02/15 12:25:11 Unit: mm Magnification: 92.1 x Stereo lupa



Potencialna mikroplastika, 20 x povecava, (Paka CCN 3)

A004 2592x1944 2024/02/15 11:23:17 Unit: mm Magnification: 92.1 x Stereo lupa



Potencialna mikroplastika, 20 x povecava, (Paka CCN 1)



A001 | 2592x1944 | 2024/02/13 12:05:40 | Unit: mm | Magnification: 92.1 x | Stereo lupa



4 presumable fibers under 20 times magnification, lengths

A003 | 2592x1944 | 2024/02/13 12:10:52 | Unit: mm | Magnification: 1833.6 x | Stereo lupa



Presumable plastic fiber under 40 times magnification, length and width

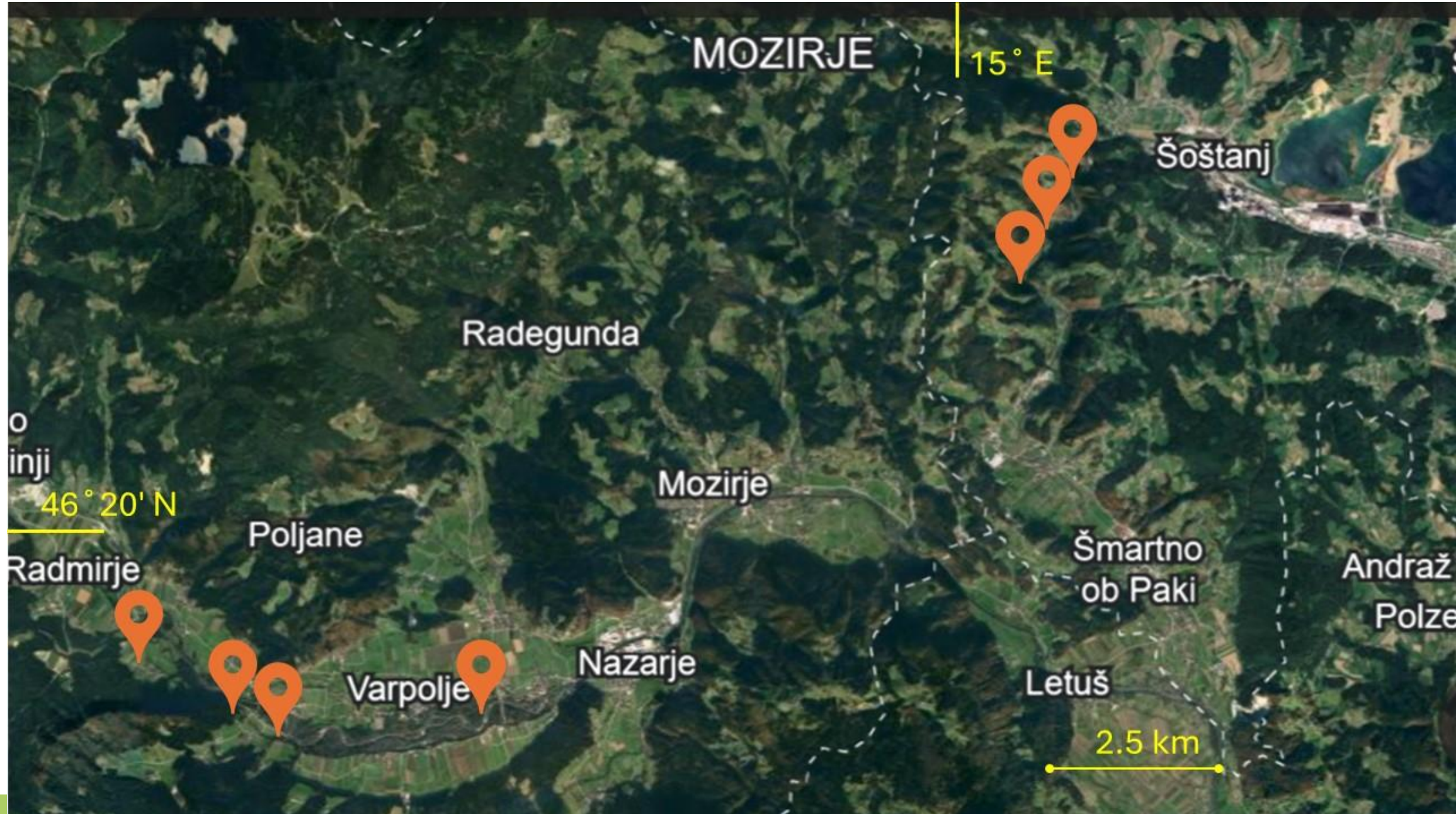
Measurement of  
smaller fibres spotted  
under the microscope

Most visible fibres are  
coloured green or  
blue, presumably  
from fabric

Modern equipment  
and tools for  
identification planned  
soon



# Selected sites, riverine litter (7): Savinja (4), Paka (3)





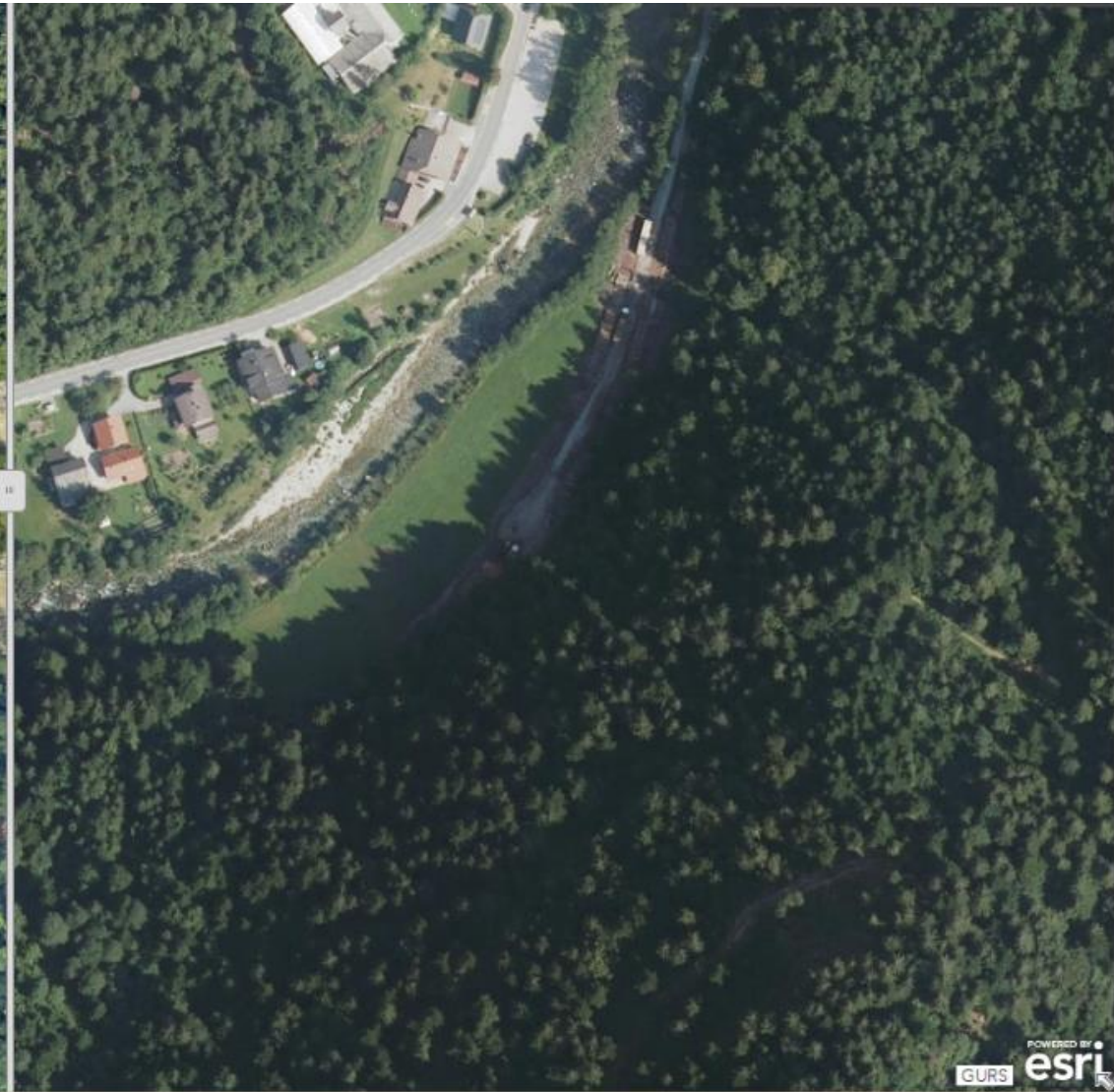
4th avgust, 2023

SLIDE 13





# 7th August 2023





# Methodology

## 2 steps survey plan

Indicators' concept:

1. Basic information
2. Litter characteristics



# Survey list

## 1. Basic information (100 m transect)

Site number, nearest settlement, Community, geo-features (riverbank, riverbed or floodplain), accessibility, visibility, pedological and vegetation conditions, average area dimensions (width, for further litter density calculation).



# Survey list

## 2. Litter characteristics

Litter volume ( in m<sup>3</sup>); share of plastic litter (in %); materials (in %): plastics, textile, glass, and metal (tins, cans); type and percentage of litter:1) household - bottles, bags, other (textile, metal), 2) biomass (agricultural, wood), 3) construction, and 4) other (car remains, tires, oil tank).

# Assessment

- .... of the real impact on the quality of the geographic environment: river/forest ecosystem/smell/landscape view, and other.
- Estimation of potential impact on activity: tourism, recreation, agriculture, forestry, fishing, or potential impact cannot be determined
- Suggested sanitation measures: disposal of litter to municipal landfill, no measures are needed, and compost/wood-incineration.

Photo upload orientation:

- Most representative site
- Hotspot site
- Most special find

# Thank you!

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Co-funded by  
the European Union

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*The project PLASTIX is implemented in the framework of the Interreg Europe programme and co-financed by the European Union.*

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