

Instruction manual for tool application (version 1.0)

Project MicroDrink

*Prepared by University of Ljubljana, supported by
Croatian Geological Survey.*

Project MicroDrink

Lead Partner	Croatian Geological Survey
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1. Introduction

The MicroDrink project Decision-Making Support Tool (DMST) is a practical solution tailored to drinking water operators, authorities and other interested stakeholders, developed based on national discussion consultations with key users. It offers scenarios, best practices and guidance for informed decision-making to mitigate and solve microplastic (MP) problems at different levels.

Developed as an executable Windows operating system software based on Python programming language, the tool uses decision trees to guide the user depending on the nature of the particular water supply system.

The individual decision-making steps are not defined in an exclusive way but allow the user to build various possible scenarios to tailor further decision-making options through the DMST to the managed water supply system.

This deliverable is a guidebook with the instruction for tool application.

2. Opening the DMST

To open the tool, unzip the **MD_DMST.zip** file contents by right-clicking and choosing “Extract all”. The total size of the zip file contents is 25.9 MB.



Figure 1: MD_DMST.zip

Included in the zip are:

- **MD_DMST.exe** file
- **img** folder

To ensure proper execution of the tool, both need to be saved at the same location.

The DMST is opened by double-clicking the MD_DMST.exe file.

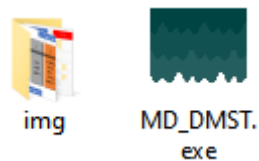


Figure 2: Folder img and the executable file of the tool

3. Main Page

The Main page of DMST is displayed when opening the tool file.

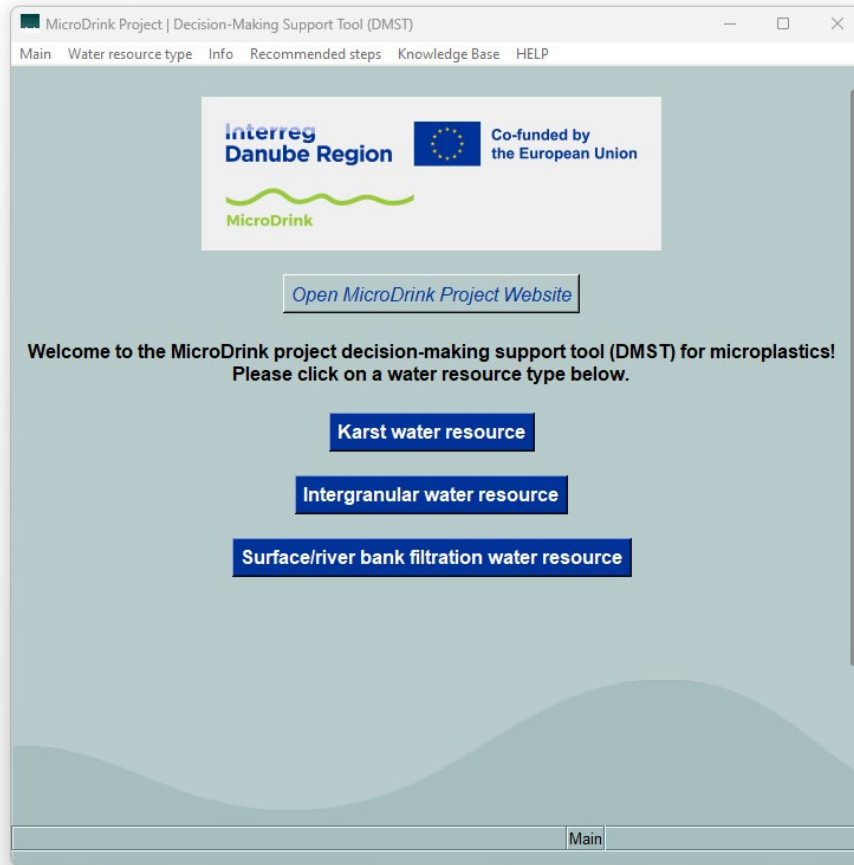


Figure 3: Main page of the DMST

It consists of a window with the following parts:

- Title bar, Minimize, Maximize, and Exit buttons
- Menu bar with drop-down menus (Main, Water resource type, Info, Recommended steps, Knowledge Base, HELP)
- MicroDrink project logo
- weblink button (Open MicroDrink Project Website)
- instruction text
- three blue command buttons (Karst water resource, Intergranular water resource, Surface/river bank filtration water resource)
- page status line (Main)

The window is opened in full-screen mode by default. It is resizable through the Maximize button or by dragging the edge in any direction. If the window's width is reduced, the text of a page automatically wraps on multiple lines and a vertical scrollbar can be used on the right side of the window to access all of its content.

The background colour of the window is also used for the background of the weblink buttons with blue italic text. When clicking on a weblink button, a new window of the default internet browser is opened with the webpage the button points to. If a browser window is already open, the webpage is opened in a new tab.

The command buttons of the tool are shown with a blue background and white bold text. Other text is shown in black. When clicking a command button, the command process of the tool is executed (opening a new page or window of the tool or showing a result).



Figure 4: Example of a weblink button

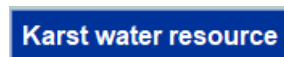


Figure 5: Example of a blue command button

The Main page can also be accessed from the **Main** menu item **New Scenario**. Items in the **Main** menu are:

- **New Scenario** (access the Main page and starts a new decision-making scenario)
- **Exit** (closes the tool)

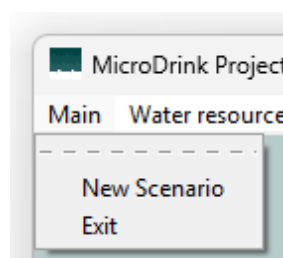


Figure 6: Main menu items

4. Water resource type Menu

The **Water resource type** Menu consists of four items:

- **Karst**
- **Intergranular**
- **Surface/river bank filtration**
- **Description of types**

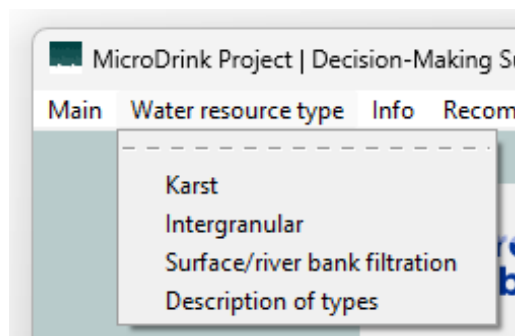


Figure 7: Water resource type menu items

Each of the first three items starts a new scenario for a specific type of water resource.

Choosing the item **Karst** is equivalent to clicking the button **Karst water resource** from the Main page. The same is true for the other two water resource types: choosing the menu item **Intergranular** is equivalent to clicking the button **Intergranular water resource** from the Main page and choosing the menu item **Surface/river bank filtration** is equivalent to clicking the button **Surface/river bank filtration water resource** from the Main page.

Description of types provides a short overview description of all three types of water resources.

5. Info Menu

The **Info** Menu is intended to offer information on the MicroDrink project activities and microplastics in drinking water without using the decision tree and consists of the following submenu items:

- **Definition and classification** (provides a description of the definition and types of microplastics)
- **Microplastic cycle** (offers three visual representations of the microplastics cycle – its sources, routes, and contamination)
- **EU Act** (briefs the user on the contents of the EU Delegated Decision and contains a weblink button to access the text of the Decision online)
- **Laboratories performing microplastics analysis** (enables the user to see the laboratories performing the analyses within the MicroDrink project by selecting a partner country and contains a weblink button to open the MicroDrink project Knowledge Hub Website)
- **MicroDrink sampling system** (shows a schematic representation of the sampling system used by the MicroDrink project and links to view videos and photos of samplings performed within the project)
- **Microplastics hotspots** (offers access to an example of a hotspot analysis) and
- **MicroDrink sampling results** (shows microplastic analysis results on graphs for each of the three water resource types clusters)

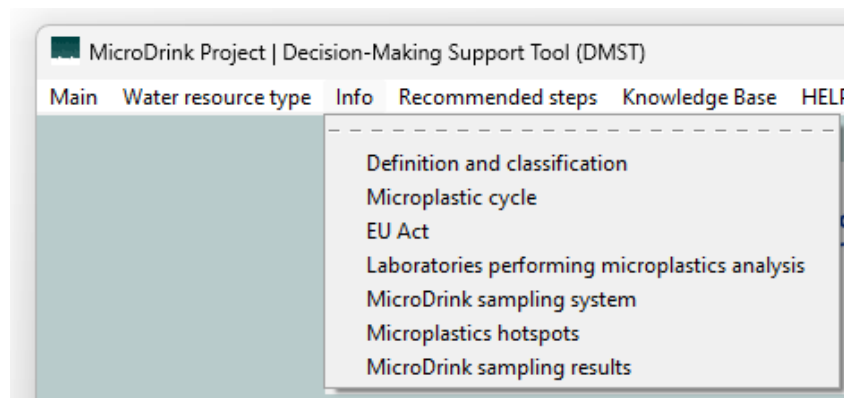


Figure 8: Info menu items

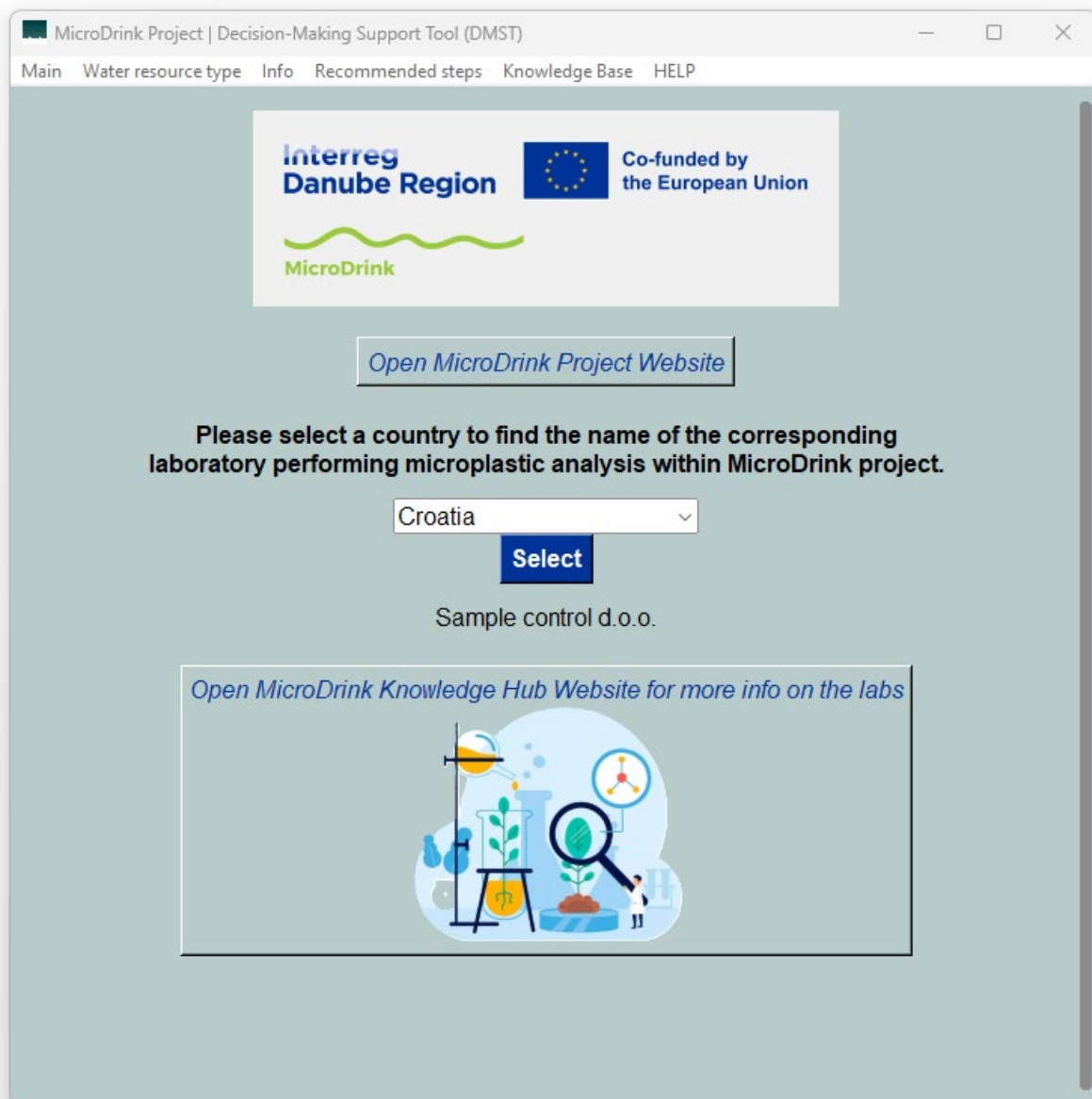


Figure 9: Laboratories performing microplastics analysis page with Croatia selected as a partner country to see the laboratory performing microplastics analysis

6. Recommended steps menu

The **Recommended steps** Menu consists of the following submenu items:

- **See recommendation flowchart** (provides a clear overview of steps to take in the process of mitigating microplastics in drinking water)
- **Check analysis compliance** (provides a checklist for evaluation of microplastic analysis compliance with the EU Delegated Act)

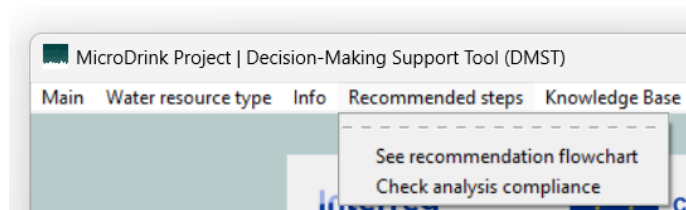


Figure 10: Recommended steps menu item

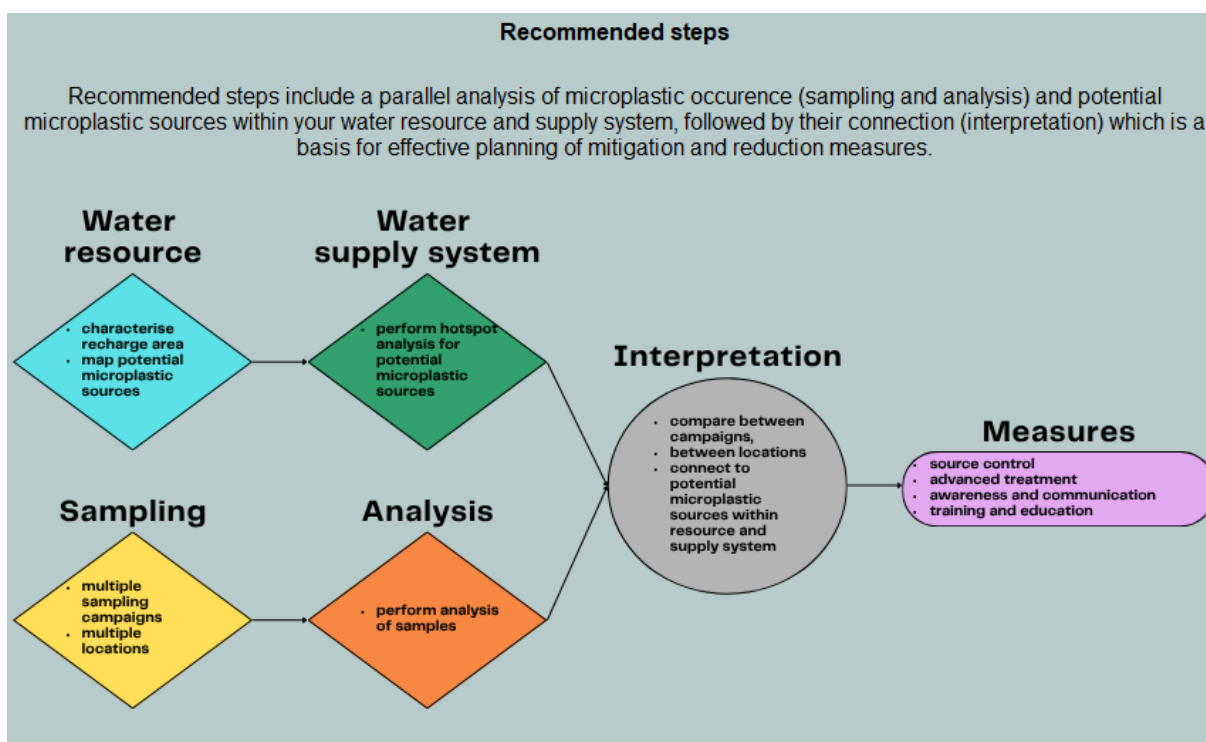


Figure 11: See recommendation flowchart page content

7. Knowledge Base menu

The **Knowledge Base** Menu offers access to another web based MicroDrink information hub and consists of the following submenu item:

- **Access MicroDrink Knowledge Base** (provides a link to the website)

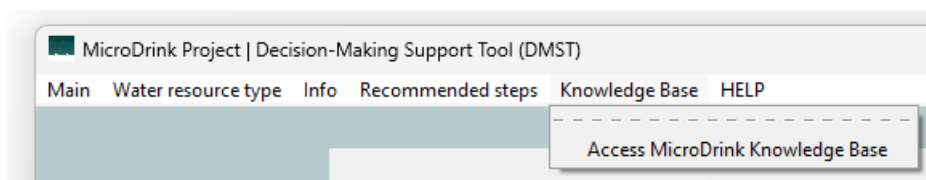


Figure 12: Knowledge Base menu item

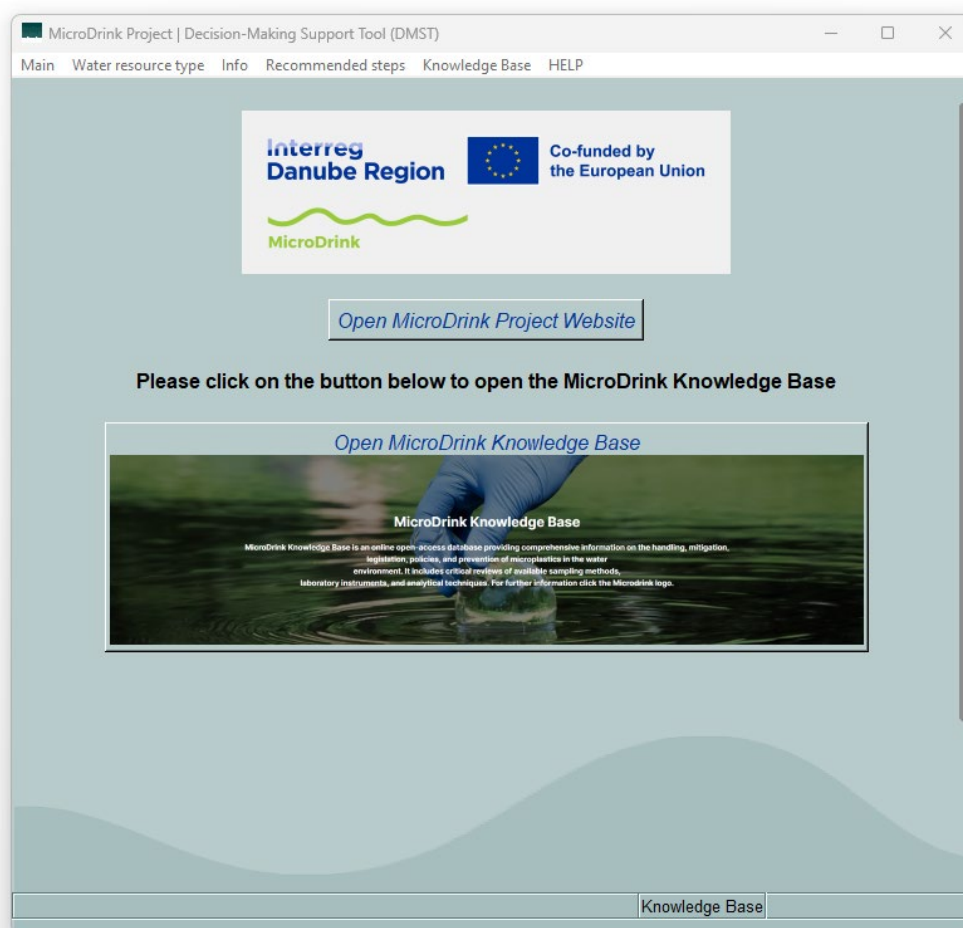


Figure 13: Access MicroDrink Knowledge Base page

8. HELP menu

The **HELP** Menu offers useful information on the DMST and MicroDrink project and consists of the following submenu items:

- **Instruction manual** (offers the option to view tool instructions in a pdf file)
- **About scenarios** (provides a schematic representation of the decision-making scenarios)
- **About DMST** (gives information on the tool creation)
- **About MicroDrink** (gives a brief overview of the project with a map of partner countries)

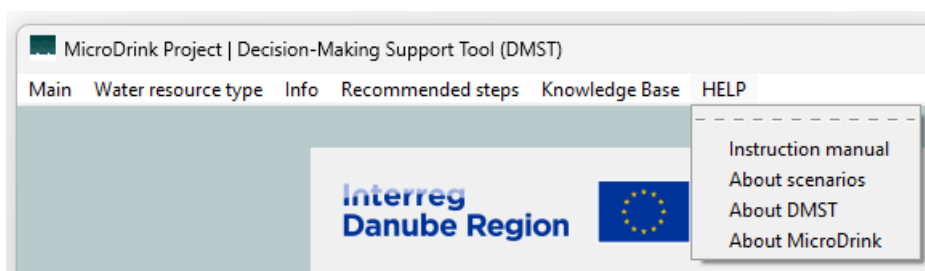


Figure 14: HELP menu item

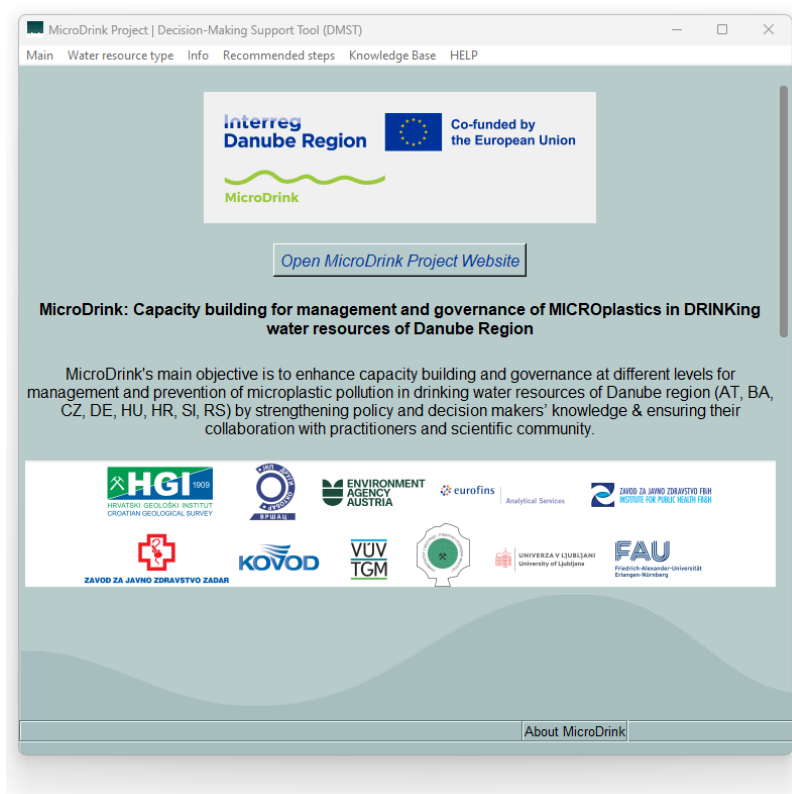


Figure 15: About MicroDrink page

9. Building a scenario

To start building a **new scenario** the user can choose one of the following three options:

- opening the DMST to access the Main page and clicking on one of the three blue command buttons,
- selecting the New Scenario item from the Main Menu or
- selecting one of the three water resource types from the Water resource type Menu.

The tool leads the user through a **series of questions** thus building a real or imagined scenario:

- *"Has your water source ever been sampled for microplastic analysis?"*
- *"Do you know the potential microplastic sources within your water supply system?"*
- *"Do you know the potential microplastic sources at the recharge area of your water source?"*

For each of the questions, the user selects a **"Yes"** or **"No"** answer and clicks on the **Confirm Selection** button. By clicking the **Back** button, the user can access and change previous answers.

If the answer to the first question was **"Yes"**, the user is offered two additional questions:

- *"Was the sampling for analysis conducted only once?"*
- *"Was the sampling for analysis conducted only at one location?"*

At the end of the series of three to five questions a list detailing the selected scenario is repeated back to the user and several possible command buttons with further information appear which are tailored to an individual scenario and can include:

- risk assessment for microplastics pollution, monitoring strategies, measures to reduce microplastics input,
- interpretation of microplastics analysis,
- requirements and best practices for conducting sampling and microplastics analysis,
- variability and uncertainties of microplastics sampling and analysis
- hotspot analysis or
- microplastics source mapping.

In case at least one of the questions was left unanswered, a warning is shown: *"The results might be incomplete. Please repeat the scenario and select an answer to every question."*

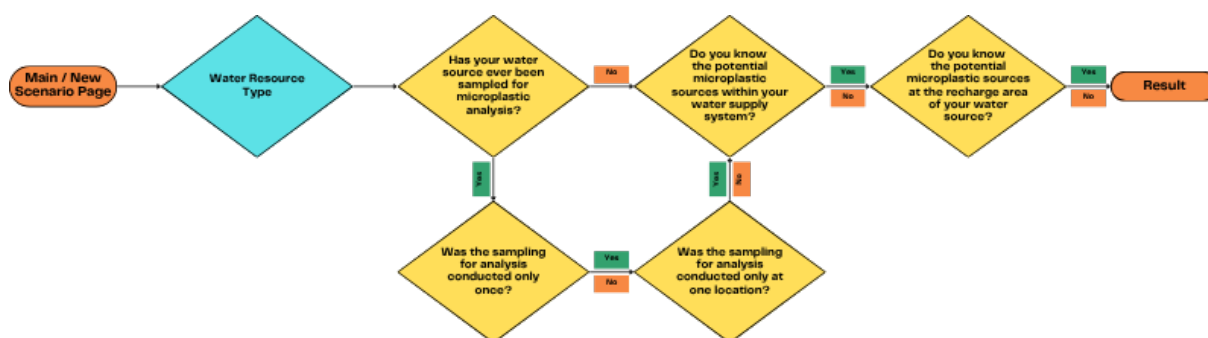


Figure 16: DMST scenario flowchart

MicroDrink Project | Decision-Making Support Tool (DMST)

Main Water resource type Info Recommended steps Knowledge Base HELP

Interreg Danube Region Co-funded by the European Union

MicroDrink

[Open MicroDrink Project Website](#)

Do you know the potential microplastic sources within your water supply system?

☐ Yes

☒ No

Confirm selection

Back

Karst water resource

Figure 17: One of the questions in a Karst water resource scenario

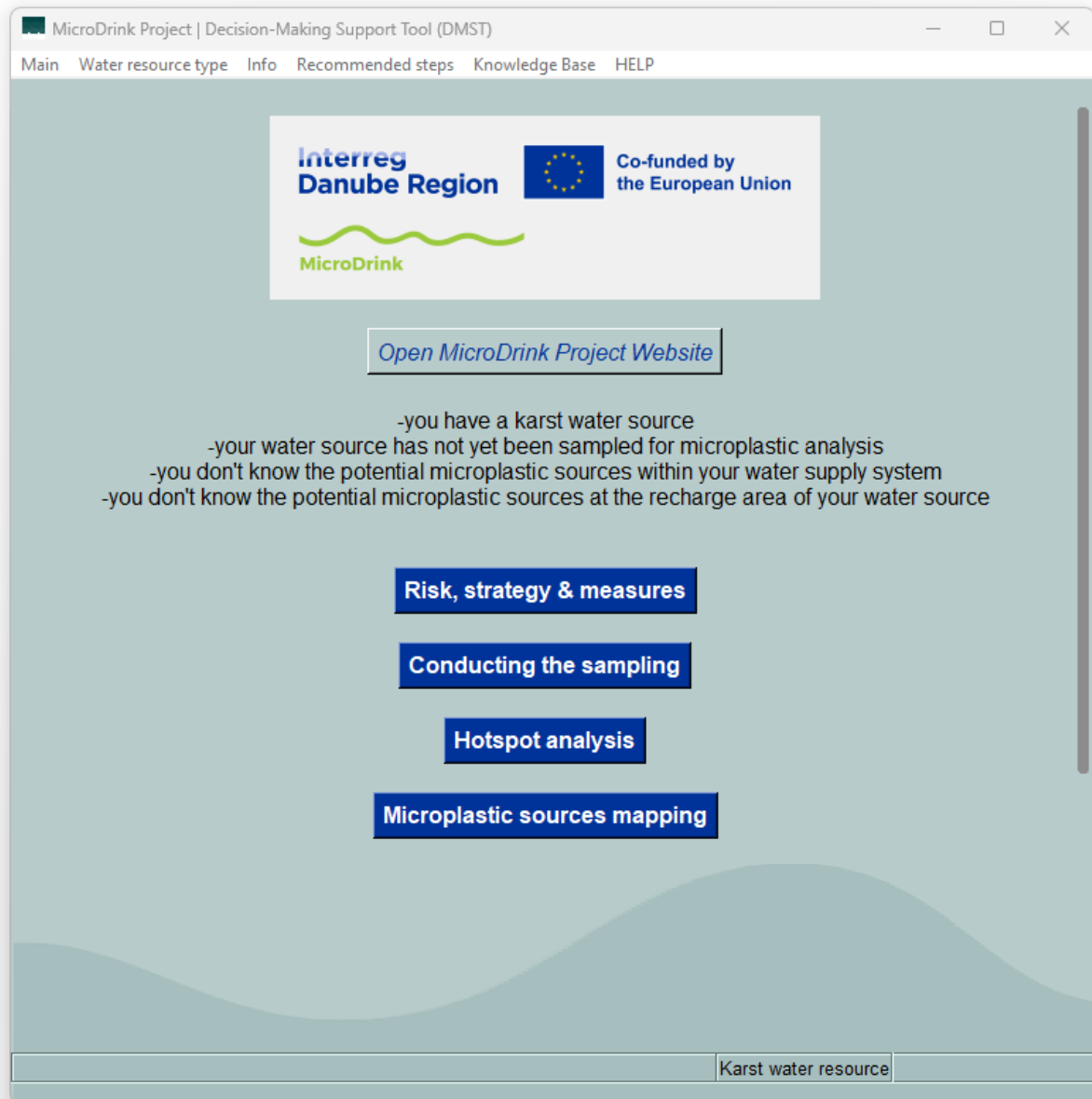


Figure 18: Results page in a Karst water resource scenario