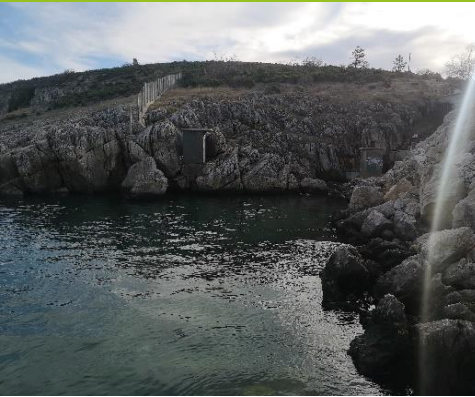


# Newsletter No. 2

## MultiHazard framework for water related risks management

MUHA



### Contact person

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Work Package  
Communication



### Institution

Croatian Geological  
Survey



## THE PROJECT MAIN OUTPUTS OF THE WORK PACKAGE T1

### Multihazard risk assessment procedures

The development of the Water Safety Planning Procedures Decision Support System (WASPP - DSS tool) started during the third period of the MUHA project. The tool has been partially tested in pilot areas, suggesting improvements that are currently ongoing. The tool will guide users on the preparation of Improved Water Safety Plans and support the UNAS community (Users Network Adrion water Safety plan). Mainusers of the tool will be Water Utilities and the two main institutions are:

- ✓ Civil Protection, as a part of Improved Water Safety Plans, supported by the WASPP tool,
- ✓ Water management system - Water administrations, supporting EU Water Framework Directive and Floods directive.

## TIMELINE



First  
period

Second  
period

Third  
period

Fourth  
period

Fifth  
period

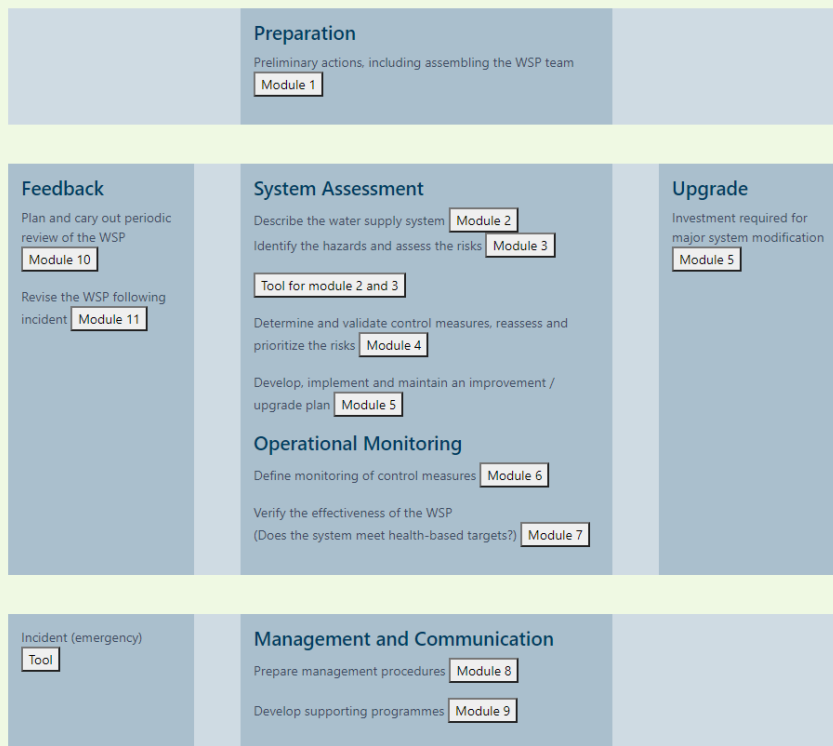
# The objectives of the Toolkit for Water Safety Planning Procedures Decision Support System (WASPP - DSS)



Toolkit for Water Safety Planning Procedures Decision Support System (WASPP - DSS) is aiming to manage and prevent natural and manmade hazards through the development of Improved Water Safety plans. The online toolkit will support a user's network (UNAS - Users Network ADRION water Safety plan) of water utilities, water agencies, civil protection agencies and associations of water utilities, project associated partners and target groups reached through communication work package. WASPP - DSS will be tested at a local level through its implementation on pilots and the results will be discussed in dedicated "table-top" exercises to ensure its appropriateness with respect to the stakeholders' needs and the possibility to enlarge the network. The Toolkit was developed by the University of Ljubljana with the support of the National Research Council of Italy and the Civil Protection Department of the Italian Presidency of the Council of Ministers.

## GENERAL STRUCTURE OF THE WASSP-DSS

### How to prepare a water safety plan (WSP)



*The tool guides the user through the implementation of a robust and effective water safety plan following the step-by-step procedure suggested by the World Health Organization (WHO, 2009). In particular, WASSP-DSS at the current level of development supports modules 2 («description of the water supply system») and 3 («hazards identification and risks assessment»).*

MUHA toolbox will be made available soon to the entire UNAS network at:  
<http://muha.apps.vokas.si/>





# Water Safety Planning Procedures - Educational Toolbox (WASPP - ET)

The Educational Toolbox (WASPP - ET) will be used for a learning process for the WASPP - DSS and a general learning process regarding the resilience management of water supply systems. The Educational Toolbox will support a user's network (UNAS) and will provide and encourage the durability of the project.

## User Network Adrion water Safety plan: UNAS



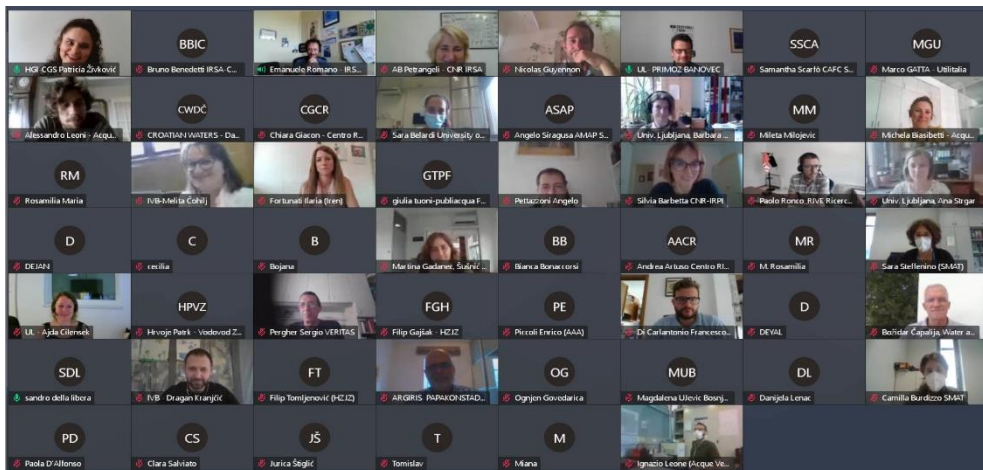
UNAS is a community forum hosted by the MUHA toolboxes server aiming at giving the users an easy, effective and safe transnational platform for sharing knowledge and experiences on MUHA toolboxes and Water Safety Plan elaboration. Water utilities, Civil protection agencies, and Institutions can use the MUHA toolboxes. Access to the MUHA toolboxes requires registration, allowing the use of the tools and the interaction with other users through the UNAS forum. UNAS will not only enable the MUHA toolboxes users to share knowledge and experiences, but it will also make the MUHA toolboxes ongoing by giving the users the possibility to provide structured feedback during and after the MUHA project.



## Transnational pilot management workshop

Implementation in the pilot areas is related to the presented beta version at the Transnational pilot management workshop. The online workshop was held on the 15<sup>th</sup> of July 2021 and it was organized by the lead partner National Research Council of Italy and communication manager Croatian Geological Survey. The first application on the pilot was presented by Water Utility of Istria and it was concluded that one of the major benefits of the toolkit is the existence of an elaborated hazard event catalogue which saves a lot of time in the process of implementation of the Water Safety Plans, and produces a more standardized Water Safety Plans among all the future Water utility companies who will use the toolkit.

*The stakeholders were able to be involved in the section „Comments, questions and conclusions“ and discuss how to improve procedures for developing water safety plan.*





## ITALY

Implementation on **the water supply system connected to the Ridracoli artificial reservoir** encompasses several activities related to the four hazards mainly faced in the MUHA project (drought, flooding, accidental contamination, earthquake), namely: implementation of the tool INOPIA<sup>Qgis</sup> for the early detection of incoming water shortage condition (drought); hydrological modelling for improving the dam management; testing of innovative techniques for the early detection of microbiological contamination (accidental pollution); a straightforward analysis of the main features of a water supply system, specifically focusing on its resilience and on the impact that a single pipe failure (due to external causes) may cause on the overall system operation (earthquake).

## SLOVENIA

The pilot **Municipality of Kamnik** will address improved knowledge of water supply system's hydraulics by modelling different disaster scenarios on the Kamnik Water supply system with hydraulic model. Pilot action focuses on: an analysis of past hazardous (risk) events of water supply systems in Slovenia, a software for the integration of early warning indicators into Kamnik civil protection, an organization of table-top exercise, a software for the management of probabilistic events, and an arrangement of the measuring location for the real time identification of accidental oil spills and cameras.

## CROATIA

The key activities on the **pilot area of spring Golubinka** are directed to hydrogeological research in the Zadar hinterland in the area managed by the Water supply of Zadar. Determining the mixing zone of fresh and saltwater (seawater intrusions) was done by geophysical method - geoelectrical tomography. Aerial mapping of the discharge zone with drones, thermal and RGB cameras will be performed to define different hydrological and temperature conditions.

**Water utility of Istria** focuses on the development of a mathematical (hydraulic) model of the water supply system which will be used for simulating various hazardous scenarios and will help in defining strategies and Water Safety plans.

## SERBIA AND MONTENEGRO

Regarding the **drinking water supply of the city of Nikšić**, it is planned to conduct the following activities: research of the current status of the Gornji and Donji Vidrovan water bodies and hydrogeological research for the purpose of capturing additional quantities of water at Vidrovan springs.

## GREECE

**The municipal water supply & sewerage company of Larissa** focuses on the monitoring of the most significant parameters of the drinking water. The main objective of DEYAL is the provision of water supply and sewerage including wastewater treatment for all the agglomerations within the municipality of Larissa. Development and operation of an integrated information system for the improvement of the Water Safety Planning Mechanism for the water supply system of DEYAL which will be launched as a study and will be supported by software.





# Main hazards on the pilot areas

## ITALY RIDRACOLI ARTIFICIAL RESERVOIR

|         |           |                        |              |
|---------|-----------|------------------------|--------------|
| Flood + | Drought + | Accidental pollution + | Earthquake + |
|---------|-----------|------------------------|--------------|

## SLOVENIA WATER UTILITY OF KAMNIK

|         |           |                        |              |
|---------|-----------|------------------------|--------------|
| Flood + | Drought - | Accidental pollution + | Earthquake + |
|---------|-----------|------------------------|--------------|

## CROATIA THE SPRING GOLUBINKA

|         |           |                        |              |
|---------|-----------|------------------------|--------------|
| Flood - | Drought + | Accidental pollution + | Earthquake + |
|---------|-----------|------------------------|--------------|

## CROATIA WATER UTILITY OF ISTRIA

|         |           |                        |              |
|---------|-----------|------------------------|--------------|
| Flood + | Drought + | Accidental pollution + | Earthquake + |
|---------|-----------|------------------------|--------------|

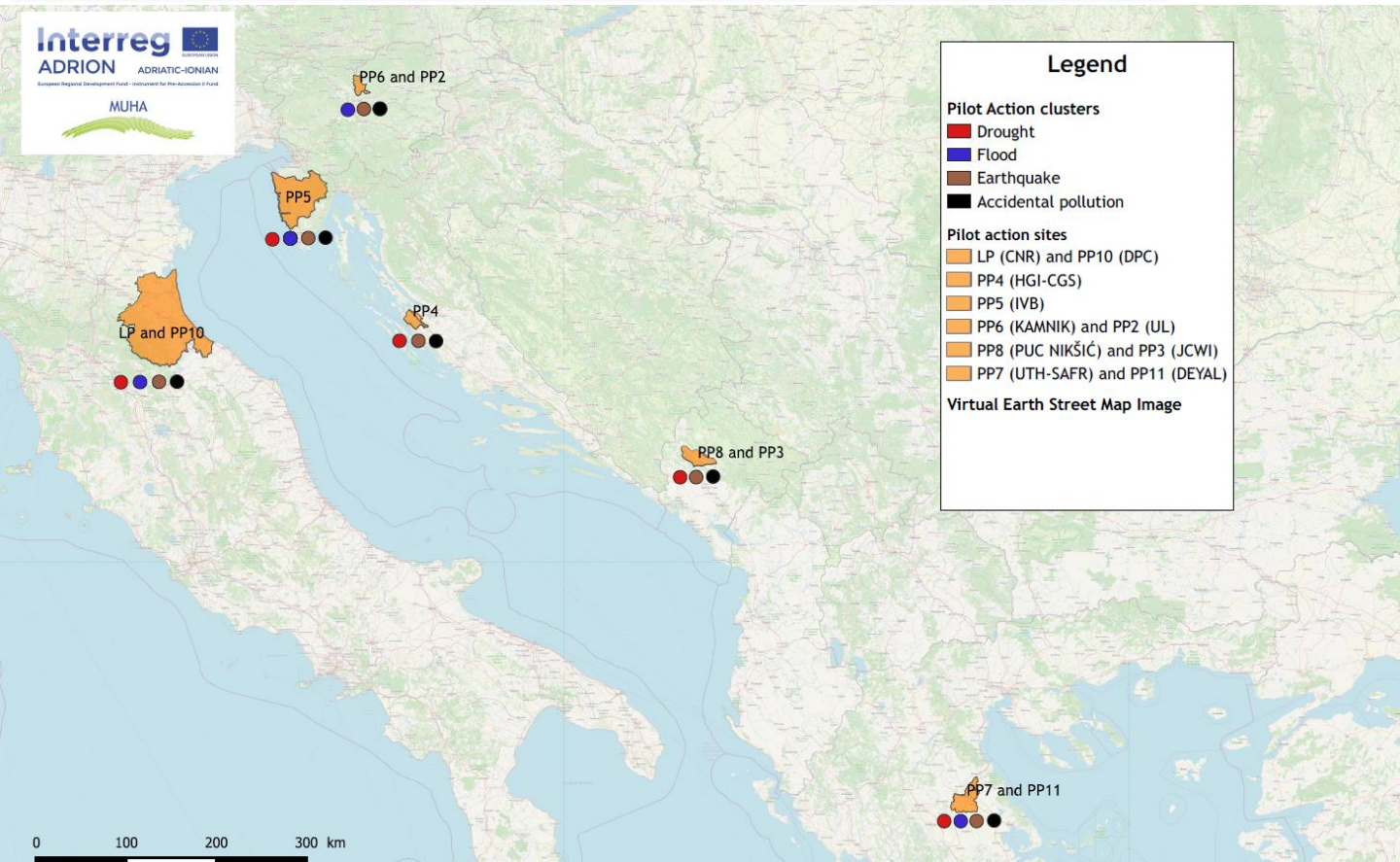
## SERBIA AND MONTENEGRO DRINKING WATER SUPPLY OF THE CITY OF NIKŠIĆ

|         |           |                        |              |
|---------|-----------|------------------------|--------------|
| Flood - | Drought + | Accidental pollution + | Earthquake + |
|---------|-----------|------------------------|--------------|

## GREECE MUNICIPAL WATER SUPPLY & SEWERAGE COMPANY OF LARISSA

|         |           |                        |              |
|---------|-----------|------------------------|--------------|
| Flood + | Drought + | Accidental pollution + | Earthquake + |
|---------|-----------|------------------------|--------------|

## Transnational map of the pilot action sites



The transnational map of the pilot sites related to the four hazards (drought, flood, accidental pollution and earthquakes).

## Project figures



03/2020 -  
08/2022



10 PPs / 13  
ASPs



2.396.858,00  
€

## Lead Partner



National Research Council of Italy

## Project Partners



Občina Kamnik



University of Ljubljana



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<https://www.researchgate.net/project/Multi-hazard-framework-for-water-related-risks-management-MUHA>