

# EUROPEAN RIVER SYMPOSIUM 2021



**Participatory basin management:  
how to do it  
&  
why it matters!**

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**Citizen Observatory for water management:  
a new participation approach  
in the Eastern Alps River Basin District**

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***Eastern Alps River Basin District Authority, Italy***

Thursday, 27<sup>th</sup> May 2021



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# The Hydrographic District of Eastern Alps

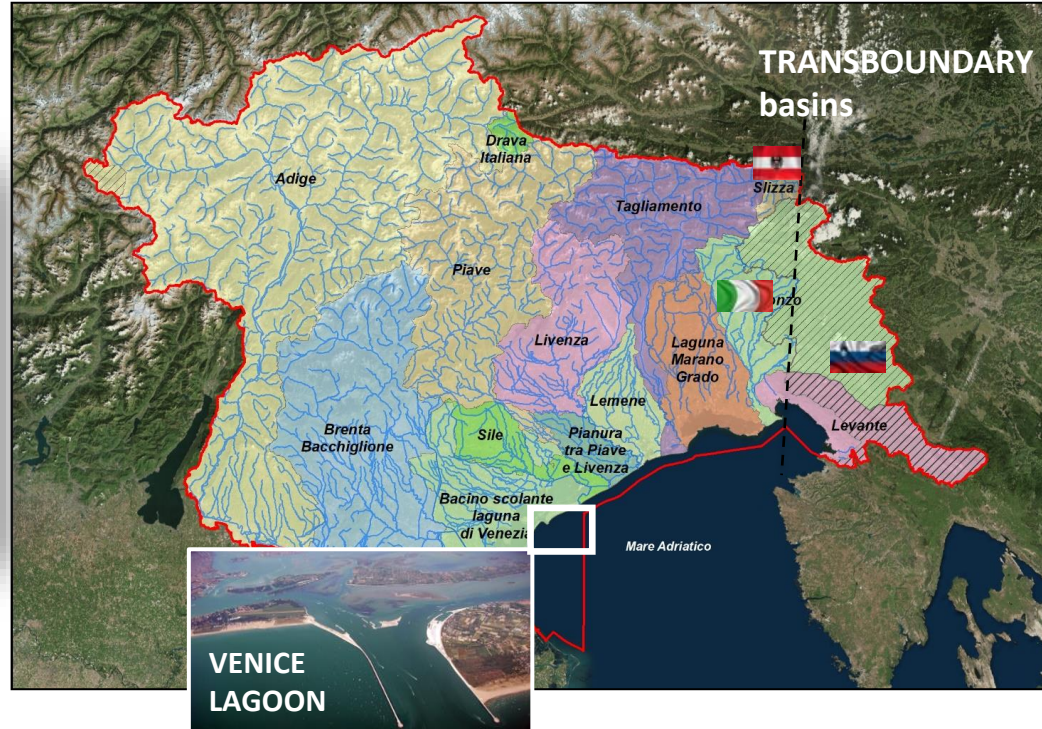
extension of about 40,000 Km<sup>2</sup>

average rainfall ranges  
from 700 to 3000 mm/year



People  $\cong$  7.100.000  
Municipalities 1.100

10 Units of Management



The Flood Risk Management Plan (FRMP) highlights the hazards and risks of flooding from rivers, the sea, surface water, groundwater and reservoirs, and set out how Risk Management Authorities (RMAs) work together with communities to manage flood risk

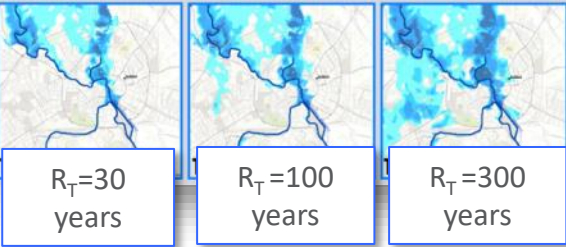
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- flood hazard and risk maps
- objectives for the purpose of managing the flood risk
- proposed **measures** for achieving those objectives

# THE FLOOD RISK MANAGEMENT PLAN

## HAZARD

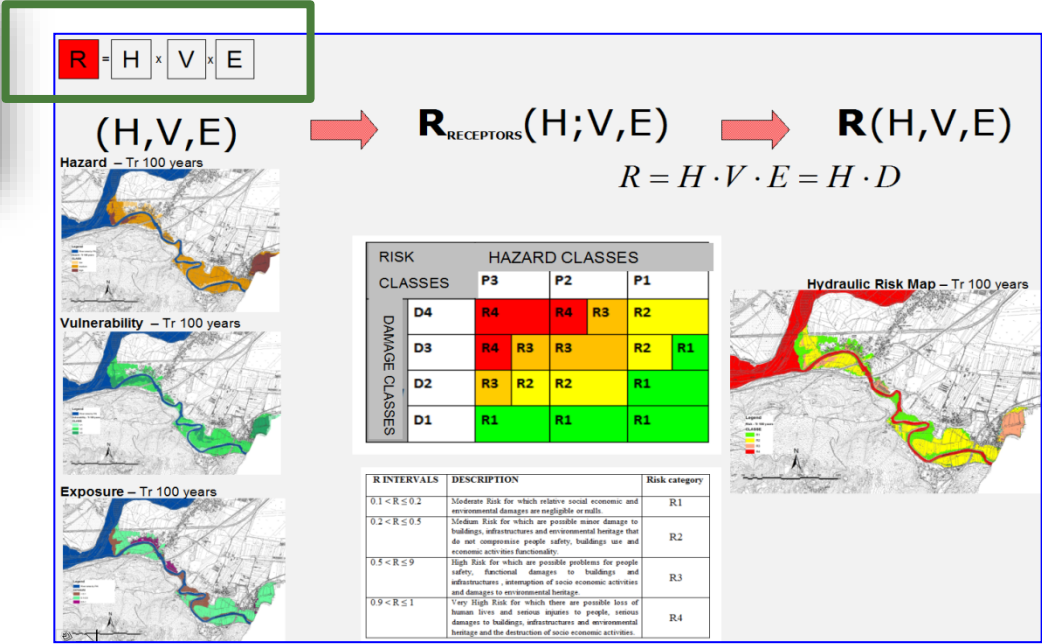


flooded area extension =  
**1200 km<sup>2</sup>**

flooded area extension =  
**2200 km<sup>2</sup>**

flooded area extension =  
**3900 km<sup>2</sup>**

highest priority in the non-  
structural measures of  
prevention and preparedness



## EXPOSURE and VULNERABILITY

- Population
- Economical assets
- Environmental and cultural heritage

presence of people, livelihoods,  
environmental resources, or economic,  
social, or cultural assets in places that  
could be adversely affected



Adaptive capacity  
Coping capacity  
Resilience



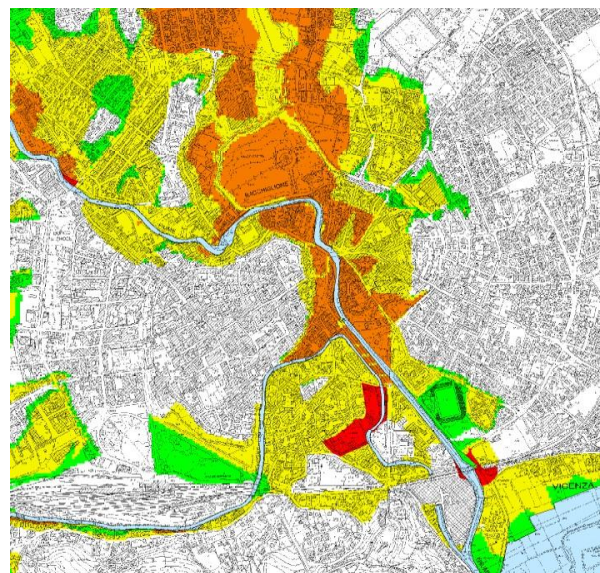
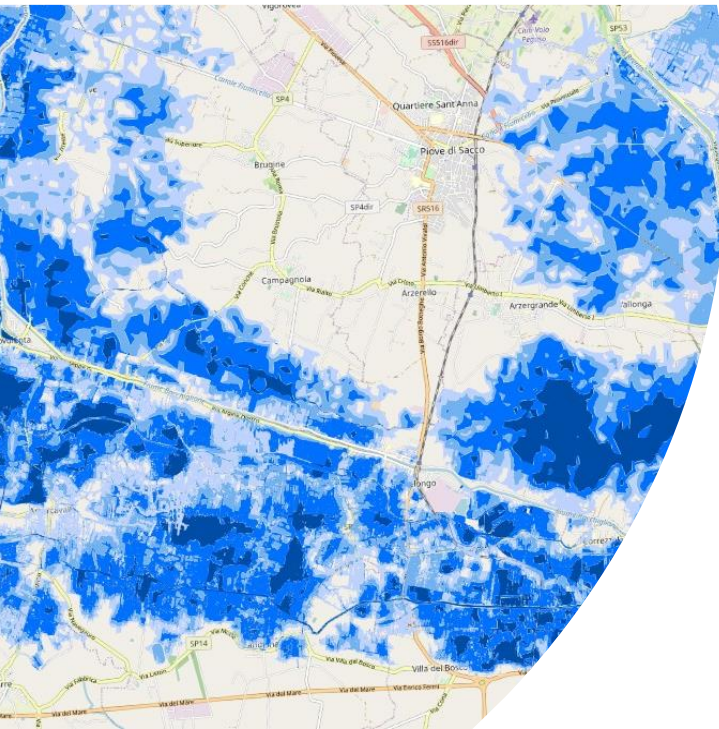


**Citizens' observatories** are emerging as a means to establish interaction and co-participation between citizens and authorities both during emergencies but also during the day-to-day water management

virtual place of the two-way communication between citizens and decision-makers

Authorities and citizens cooperate in:

- sharing information about events and places
- supporting a shared **situation awareness**, not only to improve response and recovery, but also to improve **prevention, protection and preparedness** for future emergency situations
- implementing new approaches to participation in planning, decision making and governance



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# A Citizen Observatory for Water Management as flood risk mitigation measure

Training  
Education  
campaigns

Students  
Civil volunteers  
Technicians

**Citizens**



Social Sensors



Data collection of real-time  
information on weather  
conditions, river levels and  
floodings



communication

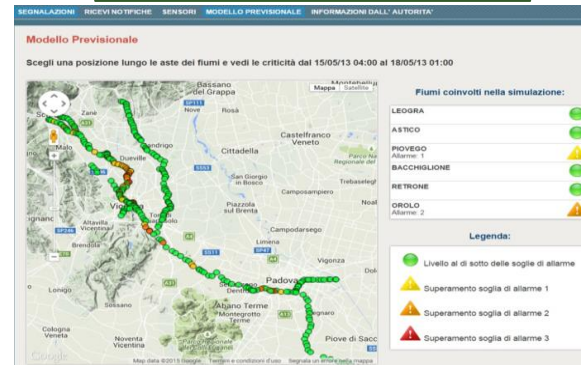
Data Assimilation

**Flood Forecasting and  
Decision Support  
System**

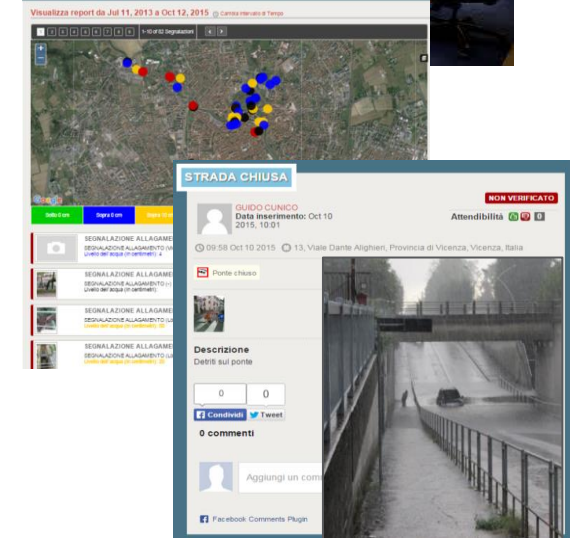
Emergency/danger  
alerts, Floods and  
road practicability  
reports



**Authorities**



Existing Monitoring network  
(Physical sensors)



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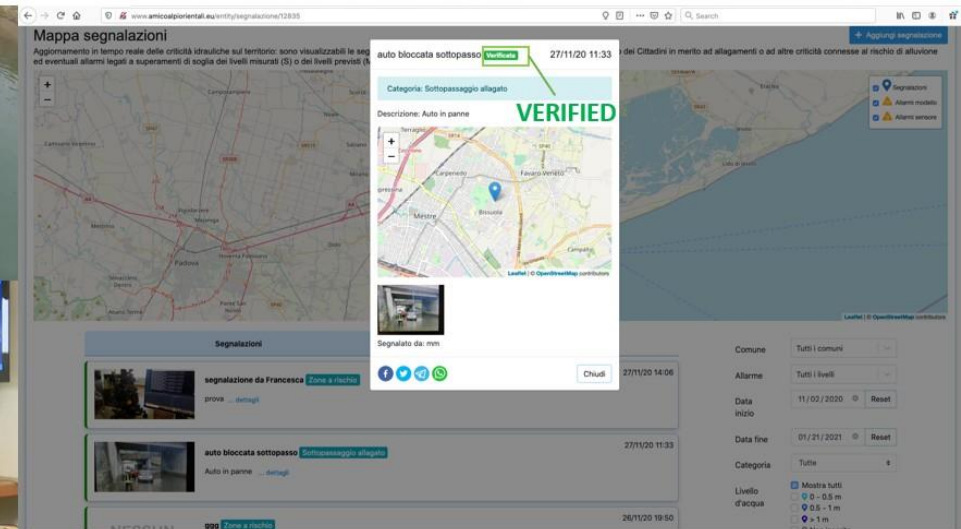
# A Citizen Observatory for Water Management as flood risk mitigation measure



complementary source of data for hydrological/hydraulic monitoring

more spatially distributed coverage

dedicated apps, easy-to-use physical sensors and other monitoring technologies linked to a dedicated platform



**two-way communication between Citizens and Authorities**

citizens receive in exchange alerts setting from weather forecast and flood warnings, sensors data, information from the Authority

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# A Citizen Observatory for Water Management as flood risk mitigation measure



## TRAINING activities

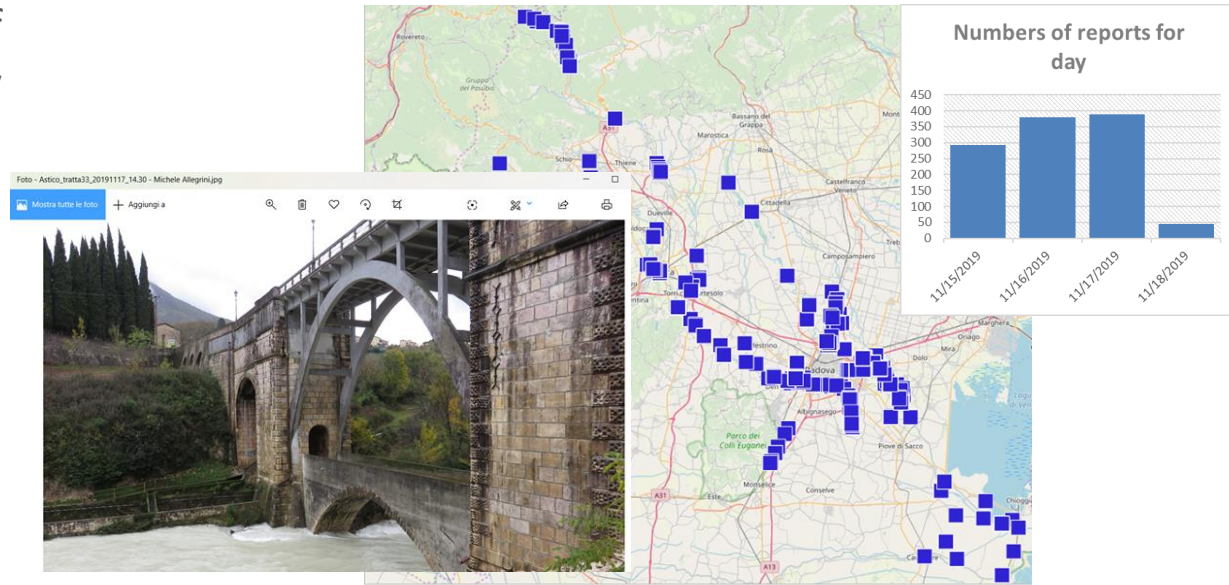
to learn to use the CO supporting technologies but also to better understand the dynamics of flood events

**Supporting communication with the teams of volunteers during an emergency**

transmission of the position of the volunteers and sharing of useful information in order to optimize emergency management

**Involvement of technicians and professionals (expert citizens):** agreements anche formative sessions

when an extreme event (i.e. heavy rain) is forecast, AAWA calls upon any available participants to acquire high-quality data to feed the models and databases





# A Citizen Observatory for Water Management as flood risk mitigation measure

Engagement of schools is currently ongoing, including the development of educational programs for teachers, approved by the Italian Ministry of Education

The aim is to raise student awareness of existing flood risks in their own area, and to help students recognize the value of the Citizen Observatory in protecting their families

(300 primary schools and 300 middle and secondary schools involved)



## EDUCATION campaigns



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# The Citizen Observatory for water management is a step forward in achieving important Sustainable Development Goals



capacity for early  
warning, risk reduction  
and risk management  
for national health



the **participation of  
local communities** in  
improving water  
management



- ✓ **protection of the world's cultural and natural heritage**
- ✓ **reduction in the number of deaths** and the number of people affected **and economic losses caused by disasters**, including water-related disasters
- ✓ **increase in the number of cities with the adoption and implementation of policies aimed at mitigation and adaptation to climate change, integrated resilience to disasters**



**resilience and adaptability to climate-related risks  
and natural disasters**

Improvement of **education, awareness and  
institutional capacity on climate change mitigation,  
adaptation**, impact reduction and early warning



effective and transparent institutions  
at all levels

a responsive, inclusive,  
**participatory decision-making**  
process at all levels

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# A Citizen Observatory for Water Management as flood risk mitigation measure



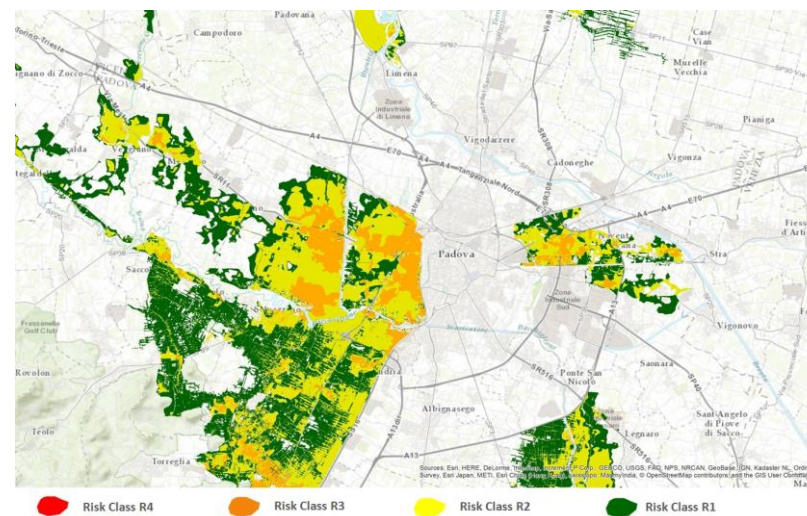
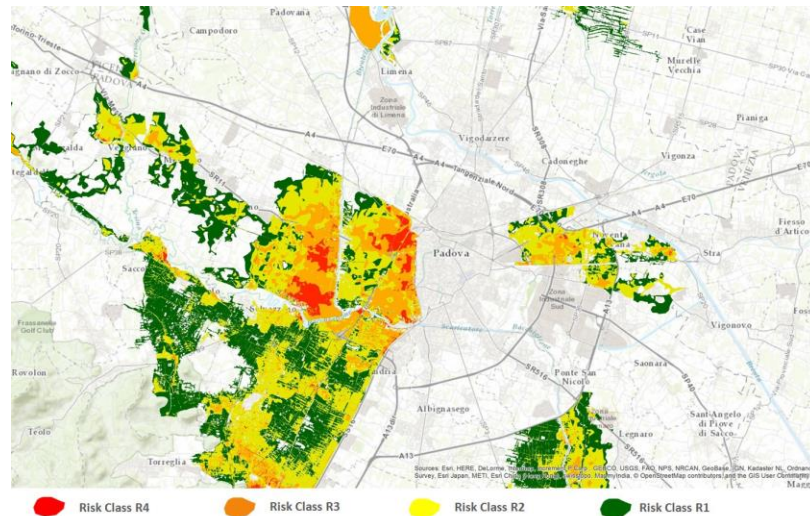
WSI pilot was adopted by the European Commission as a "good practice" example of the application of 2007/60/EC

The citizen observatory was adopted as a not structural **mitigation measure** for flood risk in the FRMP



**€ Economic value** the citizen observatory is assumed to **decrease the social vulnerability** of the flood risk

Risk Map of Padua territory (RT 100 years)



*The Value of Citizen Science for Flood Risk Reduction: Cost-benefit Analysis of a Citizen Observatory in the Brenta-Bacchiglione Catchment (Ferri et al. 2020)*

Cost of the Citizen Observatory measure **5 million €** (annual benefit in terms of avoided damage: approximately 135 million €)



**Social value** The citizens are the heart of the alert system: they are involved in data collection and are made aware of the risk that characterizes the place in which they live  
**ACTIVE PARTICIPATION IN WATER MANAGEMENT**

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## Participatory basin management: how to do it & why it matters!

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