



Water Contingency Management in the Sava River Basin



**Third national workshops on
improved transboundary cooperation
and interoperability in the field of
water emergencies**

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1 The 3rd WACOM workshop in Croatia

On Tuesday, October 25, 2022, the 3rd national workshop of the WACOM project was held between 10:00 and 13:00 in conference room of Art hotel, Slavonski Brod and through the online platform ZOOM.

The central challenge of the WACOM project is to improve transboundary coordinated responses to accidental pollution and flooding on transboundary watercourses in the Sava River basin, which includes an analysis of responses in individual countries.

The third Croatian WACOM national workshop was attended by 30 participants. In addition to the organizers and project partners, representatives of the following institutions were also present:

- Vodovod d.o.o.
- Područni ured civilne zaštite Osijek
- Služba civilne zaštite Slavonski Brod
- Stožer civilne zaštite grada Zaprešića
- Javna vatrogasna postrojba grada Zaprešića
- Hrvatska gorska Služba spašavanja
- Luka Brčko
- Društvo građevinskih inženjera Zagreb
- Radio 92 FM Slavosnki Brod
- Radio Slavonija
- Radio Langanini FM
- SBTV
- DE-FOS-2
- Ministarstvo regionalnog razvoja i fondova EU

2 Agenda of the 3. National workshop of the WACOM project, 19. 10. 2022

09:30 – 10:00	Registration and testing of connection	
10:00 – 10:10	Welcome and presentation of the participants	MMPI, UL
10:10 – 10:20	Overview of the WACOM project and activities of the Sava Commission	<i>Primož Banovec, Samo Grošelj</i>
10:20 – 10:30	Presentation of the key findings of the table-top exercise	<i>Davor Čuljak</i>
10:30 – 11:00	Presentation of the WACOM catalog of measures related to strategies for the introduction of measures - General measures - Measures related to the case of floods - Measures related to the case of accidental pollution	<i>Primož Banovec Tomislav Novosel</i>
11:00 – 11:15	Break	
11:15-12:45	Participants' discussion of actions by group: - Action in case of floods - Action in case of accidental pollution	<i>Primož Banovec Tomislav Novosel</i>
12:45-12:55	Discussion summaries	<i>Tomislav Novosel</i>
12:55-13:00	Conclusions and further work in the WACOM project	<i>Primož Banovec</i>
13:00 – 14:00	Lunch	

3 Introduction

After a welcome by the project leader, Primož Banovec, UL of the Faculty of Civil Engineering and Geodesy, and Lana Deraković-Rakas, MMPI, according to the agenda, the WACOM project, the project partners and the purpose and content of the project were presented.

3.1 Overview of the WACOM project and Sava Commission activities

The WACOM project builds on the activities and protocols of the International Commission for the Sava Basin (ISRBC, Sava Commission), and various international protocols (on transboundary pollution, ICPDR - International Commission for the Protection of the Danube River) and builds on the logic of the EU Civil Protection Mechanism and takes into account the sovereignty of interventions in various countries.

Then Samo Grošelj (ISRBC) presented the legal framework and activities of the Sava Commission.

The Commission coordinates the activities of 4 member states to the Framework Agreement on the Sava River Basin (BA, HR, RS and SI), and Montenegro with whom the MoU has been signed. The FASRB and the protocols to the FASRB concerns the management of emergency situations related to the waters of the Sava River Basin and sustainable management of waters, sustainable management of hazards (floods, droughts, accidents, etc.), regulation of international navigation.

Activities of the Sava Commission are aimed at controlling flood risk, establishing and improving the flood forecasting and warning system in the Sava River basin and prevention and control of accidents, which enables early information of potentially affected riparian states. They also inform the public on Sava GIS for exchange of data and information on river basin and flood risk and Sava HIS for exchange of hydrological and meteorological data. Within the WACOM project the update of Sava GIS is planned with the accident prevention and control and navigation modules.

3.2 Presentation of the main results of the table-top exercise

The purpose of the staff exercise is primarily that successful management of major disasters (e.g., transboundary flooding, accidental pollution) requires effective and coordinated action by institutions in all countries.

Knowledge of the disaster management mechanism in upstream countries improves the efficiency and effectiveness of the response in downstream countries (floods, extreme pollution)

It links both countries and sectors: disaster management, water management and navigation

It involves target groups, creating a broad platform needed for better prevention and response to floods and emergencies.

The WACOM project objectives include execution of five table top exercises which simulate several emergency situations of accidental pollutions and floods:

•3x simulation of accidental pollution to Sava River

–SLO-HR – accidental pollution
Zidani Most

–HR-BIH – accidental pollution
Slavonski Brod

–BIH-SRB – accidental pollution
Zvornik (Drina)

•2x simulation of floods

–HR-BIH (river area: Una, Vrbas)

–BIH-SRB (river area: Drina, Sava)

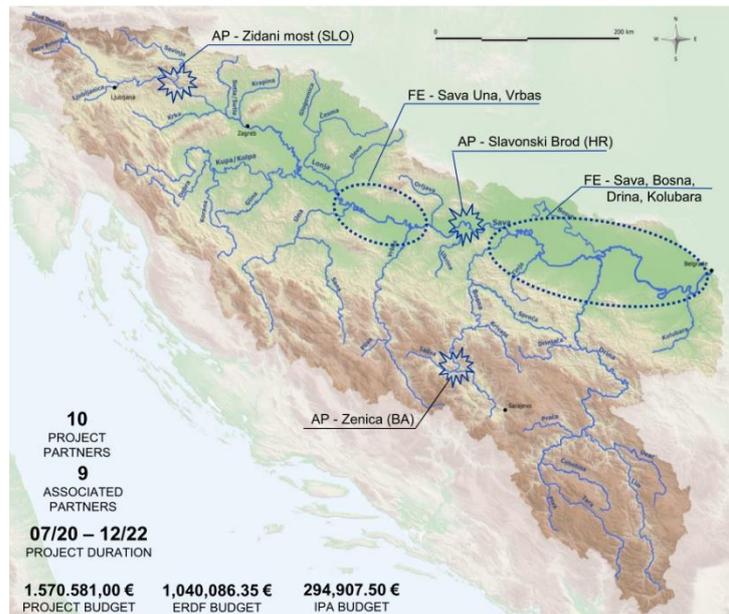


Figure 1: Five table top exercises were executed

Findings: Participants would like to see more key agencies involved in disaster response participate in such exercises. In this way, they would gain more hands-on experience, more

information and better insight into what actually happens during operations, and be able to better assess the usefulness of the tools.

Findings from the participants' experiences: TTX was positively received by the participants

- TTX provides better insight into what happens during interventions
- During TTX, participants learn about the operations of other institutions and their protocols for responding to accidents. This enables:
 - a better work of the incident commanders and
 - better interaction and coordination between headquarters
- Lack of exercises of this type (for some it was the first such experience)
- Overall rating of WACOM tools: 4.3

Organizers' findings:

- To ensure effective familiarization with TTX and implementation, it is necessary to conduct preparatory workshops in advance, and the implementation documents should not be too extensive
- A brief description of the purpose and the exact role of the participants is required
- The Master Scenario Event List must not be too extensive; it must reflect the main idea of the script, and during the TTX the script must be guided by the narrator so that changes can be made during the event
- It would be necessary to involve the media in such workshops (familiarity with what is happening during the interventions, importance of sharing selected information)
- Example of good practice: conducting group and individual analysis
- TTX is an efficient approach to testing new tools (for developers and users)
- TTX was used to successfully achieve the project goals in the WACOM project (testing and verifying new WACOM tools in an international environment)

3.3 Presentation of the WACOM catalog of measures related to strategies for the introduction of measures

Main conclusions and hot wash

The main purpose of the workshop was to present a set of measures and strategies that would contribute to an approach for improved response and cooperation in the event of such disasters at the national or transnational level. The measures refer to the case of floods as well as to the case of accidental pollution.

We presented WACOM's comprehensive list of measures as a starting point for prioritizing the following issues:

- The status of implementation of the measure in each country (SLO, CRO, BH, SRB) - the measure is already implemented - the measure is not implemented
- The priority of the introduction of the measure in the short term
- The priority of the introduction of the measure in the long-term period

We have divided the measures into groups, namely:

- Education
- Organization
- Knowledge
- Logistics
- ICT
- Infrastructure measures
- Control measures
- Planning
- HR measures
- Financing
- Other

Measures already included in water management plans and flood risk reduction plans are not part of the strategy.

	Ključno područje intervencije	Predložena mjera
1	Obrazovanje	Edukacija na svim razinama, što uključuje opću javnost, promotivne aktivnosti i rad s mladima, ICS 100 i praktičnu obuku (vježbe osoblja za poplave i iznenadna onečišćenja)
2	Financije	Primjena načela "onečišćivač plaća", koja podrazumjeva individualno razumijevanje financijske odgovornosti u slučaju nesreća
3		Osiguravanje javnih financijskih sredstava (razni izvori - nacionalni, izravne naknade, EU fondovi, fondovi za klimatske promjene)
4		Poboljšana praksa u području osiguranja i poticanje osiguranja protiv poplava i iznenadnih onečišćenja
5		Edukacija korisnika voda o aktivnostima i postupcima u slučaju izvanrednih događaja
6	Upravljanje	Osposobljavanje izabranih predstavnika, kako bi se adekvatno odgovorilo na dugoročne izazove koji nastaju kao rezultat poplava i onečišćenja te osigurala mogućnost sudjelovanja u odlučivanju
7	Ljudski potencijali	Mehanizmi praćenja zadovoljstva zaposlenika
8	Informacijsko komunikacijske tehnologije	Svjesnost situacije poplava i onečišćenja temeljena na GIS-u
9		Sustavi za prognoziranje, rano otkrivanje i upozoravanje u slučaju izvanrednih događaja
11		Centri za upravljanje poplavama, poboljšana informacijska veza, sustav svjesnosti o poplavnoj situaciji, informacijski sustav za upravljanje vodama
10	Nadzor	Praćenje ispuštanja otpadnih voda i izrada registra korištenja/zahvaćanja voda koje predstavljaju rizike od nastanka slučajnog onečišćenja
12	Informacije	Bolji nadzor i kontrola nad proizvodnjom, uporabom, skladištenjem i prijevozom onečišćujućih tvari te informiranje o opasnostima, nesrećama i načinima prelaska granice
13	Infrastruktura	Mjesta za siguran pristup rijeci (za provođenje mjera spašavanja i zadržavanja onečišćenja od daljnjeg raspršivanja)
14	Znanje	Nacionalni i međunarodni (EN) standardi i smjernice
15		Baze podataka o onečišćivačima
16	Logositika	Dostupnost opreme za odgovor na izvanredne događaje (onečišćenje i poplave)
17		Dostupnost ljudskih resursa i alata za operacije spašavanje i pružanja pomoći (kamioni, uređaji za zadržavanje onečišćenja, skimeri, crpke, rezervoari).
18		Identifikacija pružatelja usluga za izvanredne događaje i postojećih ugovora sa pružateljima usluga
19	Organizacija	Poboljšana komunikacija na svim razinama tijekom faze odgovora na izvanredne događaje (onečišćenje, poplavu)
20		Planovi upravljanja riječnim slivovima, planovi zaštite od poplava
21		Protokoli koji definiraju mehanizme odgovora na izvanredne događaje (poplave i onečišćenja)
22		Protokoli koji omogućuju suradnju osiguravajućih društava
23		Strateško krizno komuniciranje, priprema protokola te pokaznih vježbi za slučaj izvanrednih događaja
24		Unaprijeđen nadzor tijekom izrade i provedbe zakona
25		Poboljšan proces dokumentiranja izvanrednih događaja
26		Poboljšana komunikacija s tvrtkama tijekom odgovora na izvanredne događaje
27		Poboljšana komunikacija i uloga policije koja omogućuje njihovu podršku u slučaju izvanrednih događaja
28	Forenzika nakon izvanrednih događaja i nesreća	
29	Navigacija	Postupak reagiranja u slučaju onečišćenja s plovila u unutrašnjoj plovidbi (prijava događaja, reakcija nadležnih službi, provođenje odgovarajućih mjera, obavještanje javnosti)
30		Provođenje mjera za zaštitu voda zbog utjecaja plovidbe (dnevnik potrošenog goriva, kaljužnih voda, zbrinjavanje otpada i opasnih tvari sa broda zabrana plovidbe u slučaju izlivanja onečišćujućih tvari)
31		Poboljšane procedure i suradnja u slučaju onečišćenja s plovila (brzi odgovor nadležnih službi, razmjena informacija, tehnologija te tehnika zaštite voda)
32	Planiranje	Planovi upravljanja u izvanrednim i hitnim slučajevima na različitim razinama i sustavno upravljanje tijekom poplava
33		Planiranje, izvođenje i usavršavanje pokaznih vježbi
34	Provedba	Definiranje opasnosti, te procjena rizika za slučajeve izvanrednih događaja
35	Ostalo	Prilagodba klimatskim promjenama, definirane smjernice za održivost
36		Održavanje obale rijeke – održavanje obala (uređeni vodotoci)

4 Analysis of the voting on the measures according to the "Quick Fingers" principle

After a detailed presentation of the measures, we conducted a vote on the measures according to the "Quick Fingers" principle, where we individually prioritized each measure in Croatia in terms of:

- The status of implementation of the measure in the country: the measure is already implemented - the measure is not implemented

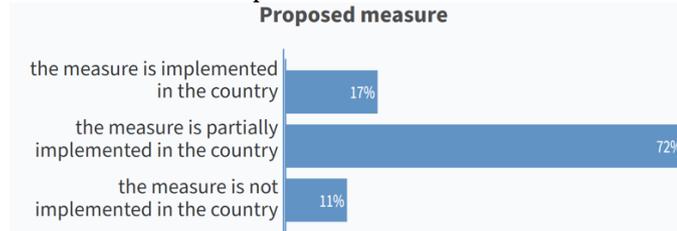


Figure 2: Assessment of implementation in the country

- Priority of the introduction of the measure in the short term period
- Priority of the introduction of the measure in a long-term period



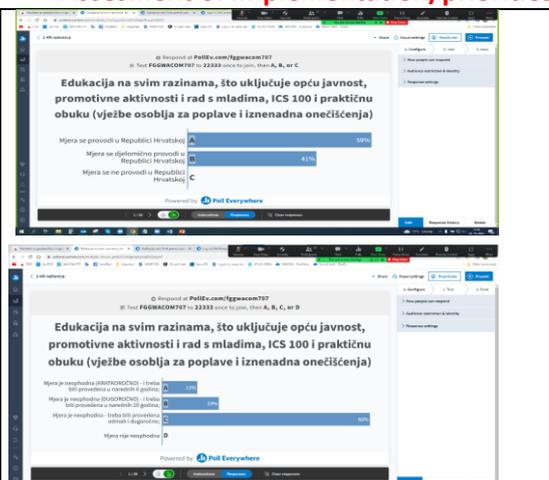
Figure 3: Assessment of priorities (short term/ long term)

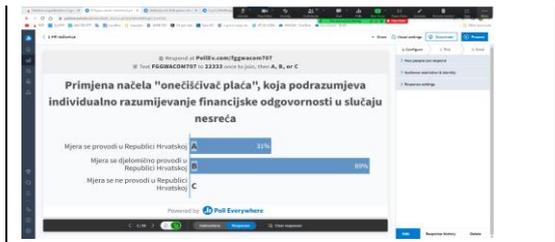
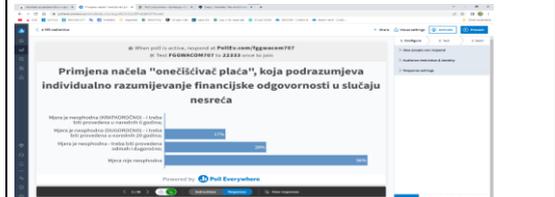
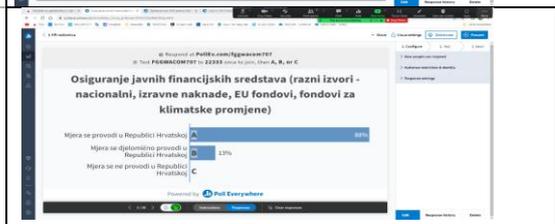
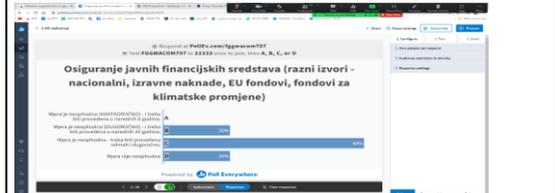
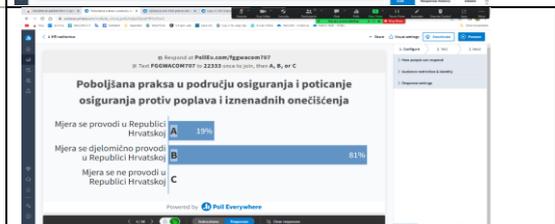
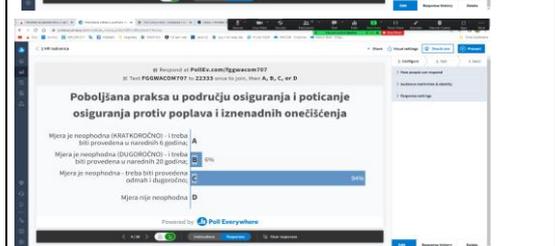
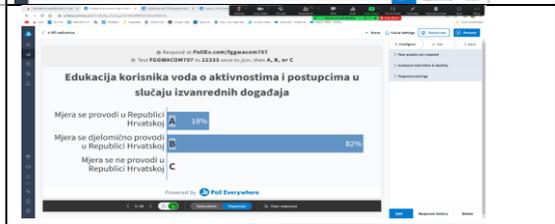
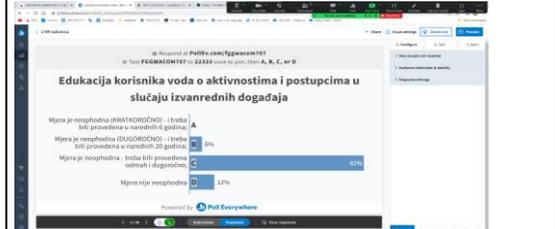
Key
intervention
area

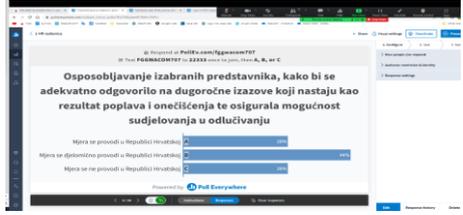
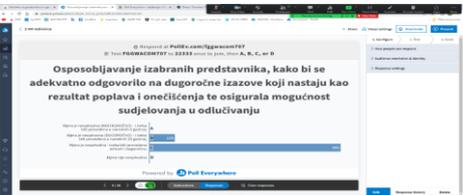
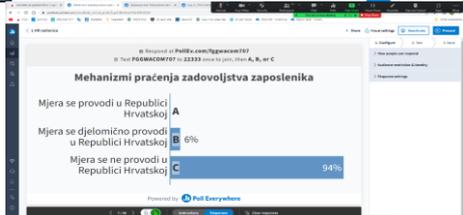
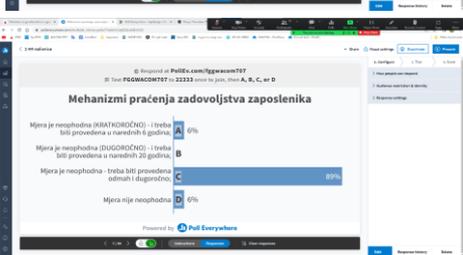
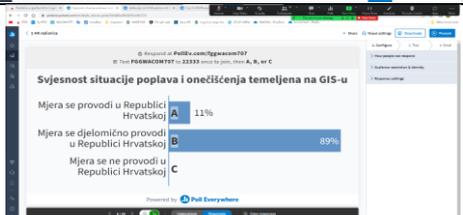
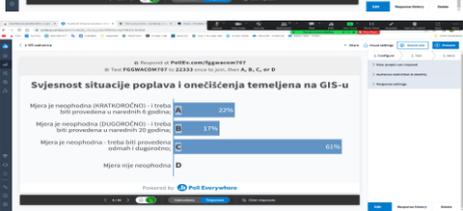
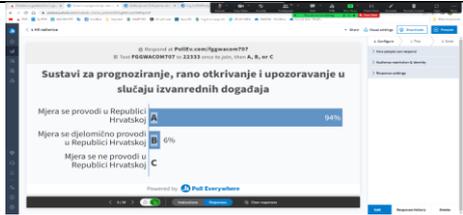
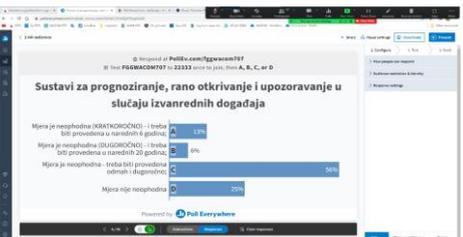
Proposed measure

Assesment of implementation/priorities

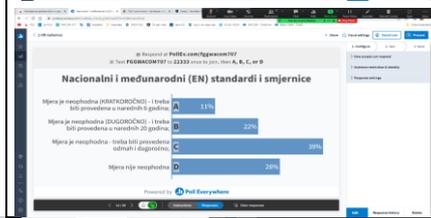
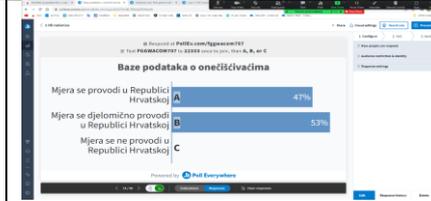
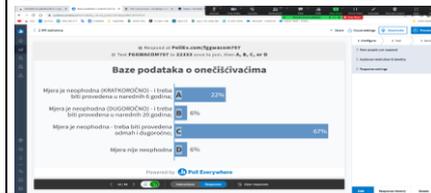
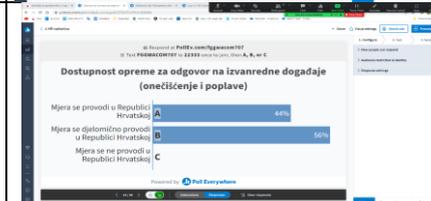
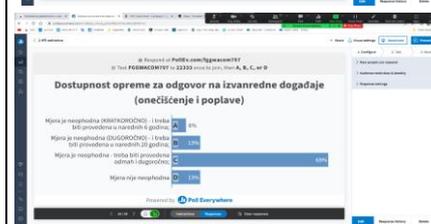
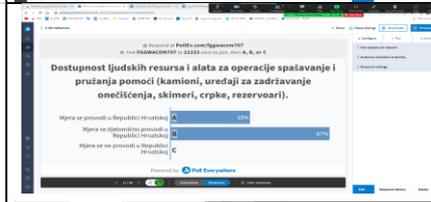
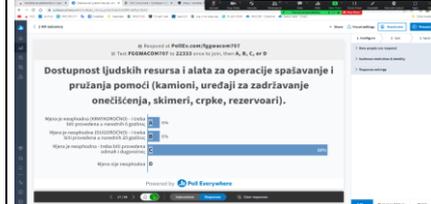
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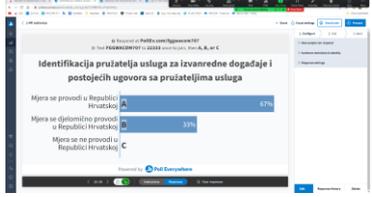
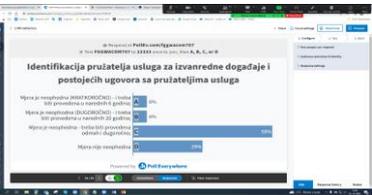
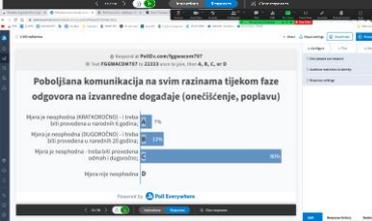
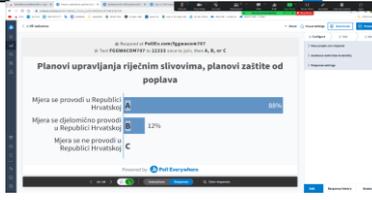
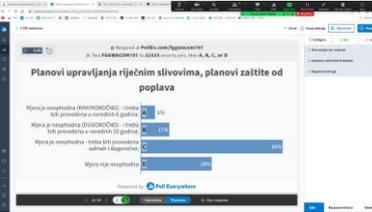
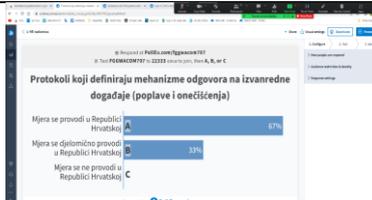
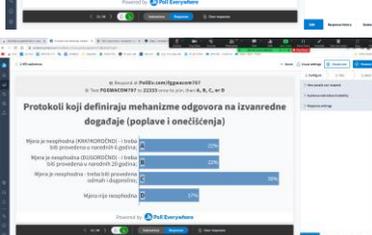
Key intervention area	Proposed measure	Assesment of implementation/priorities
1 EDUCATIONAL	Education on all levels, including Social, educational and awareness work with the youth, Education of general public and promotion activities and ICS 100 - incident command system standardized framework protocols	

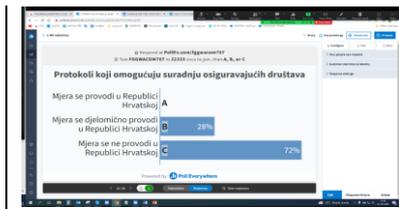
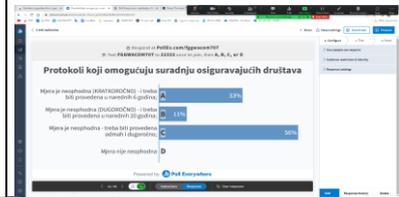
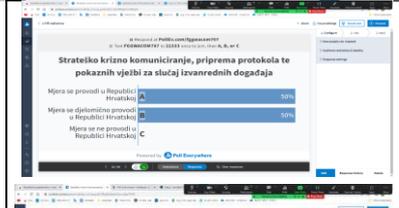
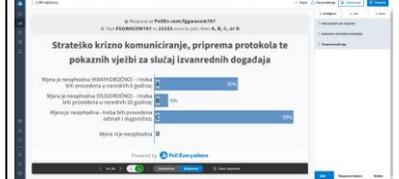
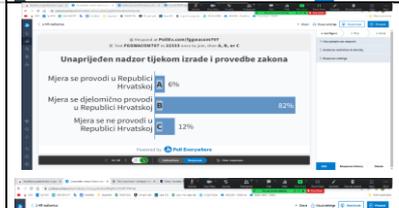
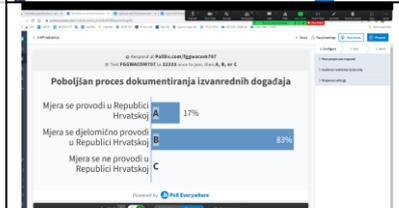
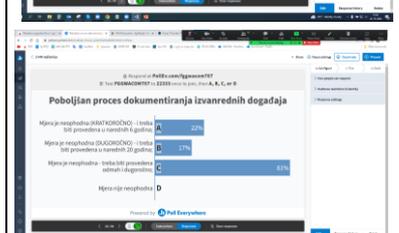
2	FINANCIAL	<p>Enforcing the polluter pays principle (compensations for the floods)</p>	 
3		<p>Securing public financial resources</p>	 
4		<p>Improved insurance practices and stimulations for wider penetration of insurance for floods and accidental pollution</p>	 
5		<p>Education of water users (abstractions) on emergency procedures (floods, accidental pollution)</p>	 

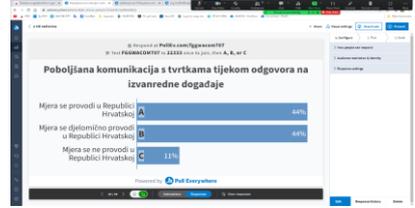
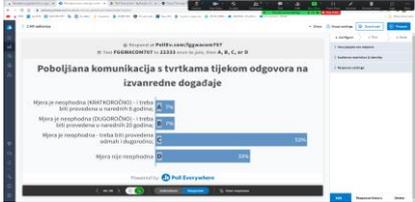
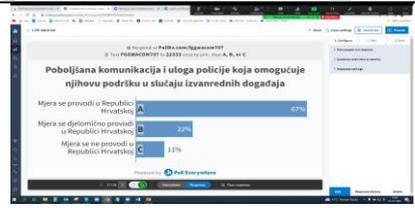
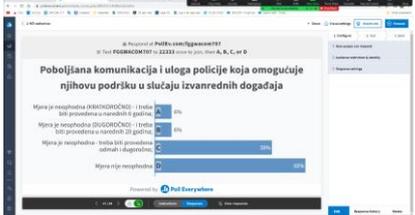
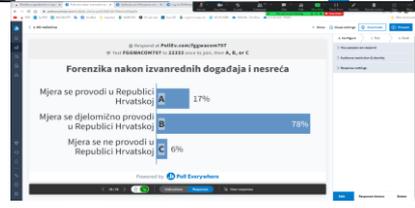
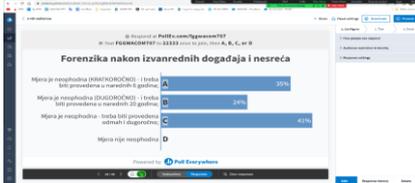
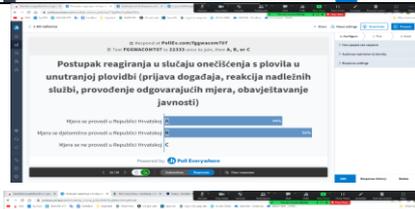
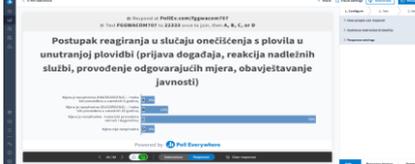
6	GOVERNANCE	Elective representatives for long-term challenges after the accident	 
7	HUMAN RESOURCES MANAGEMENT	Employee satisfaction	 
8	INFORMATION AND COMMUNICATION TECHNOLOGY	GIS based situational awareness	 
9		Now-casting and forecasting systems	 

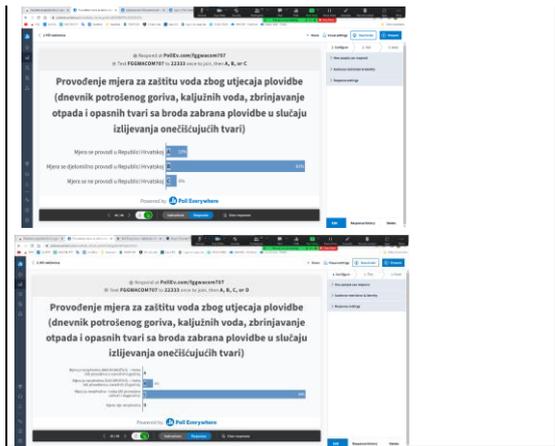
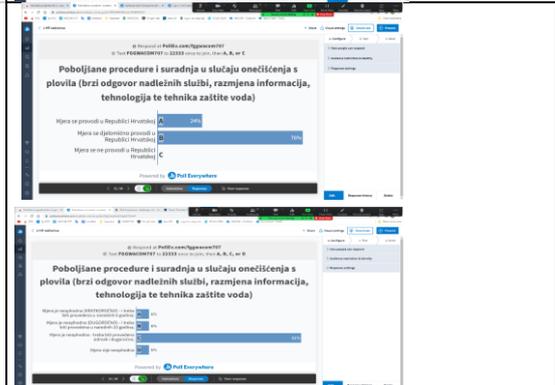
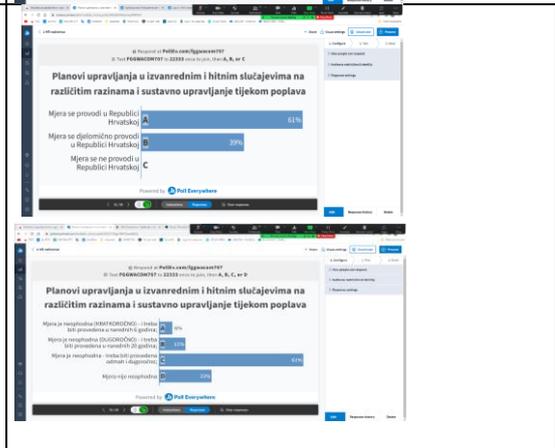
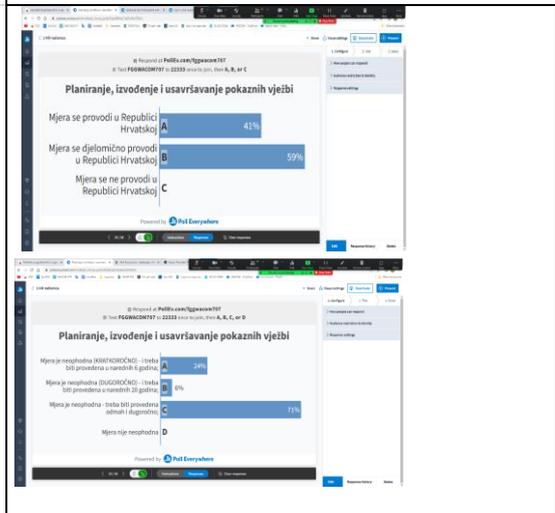
10		<p>Flood management centers and Improved data integration</p>	
11	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">MONITORING</p>	<p>Discharge/level monitoring</p>	
12	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">INFORMATION</p>	<p>Improved supervision and control over the transport of pollutants and Improved supervision and control over the production, use and storage of pollutants</p>	
13	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">INFRASTRUCTURAL</p>	<p>Safe river access locations (rescue)</p>	

14	KNOWLEDGE	National and international (EN) standards	 
15		Knowledge base of the polluters and Knowledge base of the pollutants and procedures	 
16	LOGISTICS	Availability of the emergency equipment (pollution) and Availability of the emergency equipment (floods)	 
17		Rescue tools and resources availability and Identification of service provides for emergency response	 

18		<p>Costing units supporting administration and finance processes</p>	 
19	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">ORGANIZATIONAL</p>	<p>Improved communication in response framework</p>	 
20		<p>River basin management plans and flood management plans</p>	 
21		<p>Protocols with the key water uses/abstractions</p>	 

22		<p>Protocols enabling involvement of insurance companies</p>	 
23		<p>Strategic crisis communication</p>	 
24	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">ORGANIZATIONAL</p>	<p>Control the of legislation implementation and enforcement</p>	 
25		<p>Improved documentation process of the incidents</p>	 

26		<p>Improved communication in response framework (companies)</p>	 
27		<p>Improved communication and role of the police in case of the incident</p>	 
28	ORGANIZATIONAL	<p>Disaster forensics after the accident</p>	 
29	NAVIGATION	<p>Response procedure in case of pollution from vessels in inland navigation (reporting of the event, reaction of competent services, implementation of appropriate measures, public notification)</p>	 

30		<p>Implementation of measures for water protection due to the impact of navigation (diary of consumed fuel, bilge water, disposal of waste and hazardous substances from the ship, prohibition of navigation in case of spillage of polluting substances)</p>	
31		<p>Improved procedures and cooperation in case of pollution from vessels (quick response of competent services, exchange of information, technology and water protection techniques)</p>	
32	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">PLANNING</p>	<p>Emergency management plans at different levels and systematic management during floods</p>	
33		<p>Planning, execution and improvement of exercises</p>	

34	IMPLEMENTATION	Hazard identification, risk assessment	
35	OTHER	River Adaptation to climate change	
36	OTHER	River corridor maintenance - floating debris and waste	

Number of responses: 18

5 Conclusions

After the successful completion of the third national workshop within the project WACOM DTP - Management of Emergency Situations Related to Water in the Sava River Basin - we can say that the participants are aware of the importance of response preparedness and disaster management in case of exceptional pollution of watercourses and floods in Croatia.

In general, the participants expressed positive views on the presented measures and strategies that would contribute to an approach for improved response and cooperation in case of such disasters at national or transnational level. The measures refer to the case of floods and accidental pollution, which is a sufficient spectrum, but could be extended to other types of disasters.

Participants expressed concern about the inconsistent reporting instructions and the forms they have to fill out in case of accidents, as they should be harmonized, especially in case of serious accidents that require the collection and analysis, as well as the unnecessary coordination of a large number of different reports. Communication and recognition of the different actors and their roles, responsibilities and methods of collaboration are also very important, which is crucial for the management of interventions. Above all, the participants emphasized that the implementation of the protocols in practice is extremely important, since the courses of action were written and should be followed in order to organize quickly and well after the accident. We must also pass on the problem of flowing waters to the managers of flowing waters, so that they try to prevent undesirable processes and events that could affect the action in advance of accidents, thus reducing or even preventing the extent of accidents.

The evaluation of the answers to the individual questions will take place within the framework of the handover of the catalog of measures, together with the evaluation of the implementation and the importance of the rapid start of the implementation of each measure in the formed strategy. Regardless of this, we can already state that the participants have clearly identified the measures that are already implemented to a large extent and that probably need to be strengthened, as well as the measures for which they have recognized that the level of implementation is low and the priority of their introduction is high. Among them, we can highlight the following:

(4) Improved insurance practices and stimulations for wider penetration of insurance for floods and accidental pollution

(18) Cost accounting centers to support administrative and financial processes

(20) River basin management plans and flood management plans

(23) Protocols enabling and better involvement of insurance companies in preparing for and responding to disastrous events.

(30) Implementation of measures for the protection of waters due to the impact of navigation (diary of consumed fuel, bilge water, disposal of waste and hazardous substances from the ship, prohibition of navigation in case of spillage of pollutants)

(35) Adaption to climate change

The participants of the stakeholder workshop welcomed the efforts made so far and welcomed the objectives of the project, namely to improve transboundary coordinated response to exceptional pollution and flooding on transboundary watercourses in the Sava River Basin. Finally, we invited the participants to the final conference of the WACOM project, which will take place on November 15, 2022 in Sarajevo via video streaming, where all the results of the WACOM project will be presented.