



Water Contingency Management in the Sava River Basin

**Cluster 1 – Pilot table-top exercises
simulating the incident and the
response of transboundary accidental
pollution**

Output T3.1

(4/5)

*(Report from Exercises simulating the incident and the response of
transboundary accidental pollution in Zvornik)*

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Introduction

On the 23 May 2022, WACOM project reached one of the key project milestones, the execution of the fourth table-top exercise, carried out in Brčko, Bosnia and Herzegovina. This document represents the summary of the main objectives, outcomes and organisational activities of the TTX. It also describes how it was performed and points out the lessons learned from it.

1 Table-top exercise objectives

The general objectives of the TTX are aimed on verification, utilisation and confirmation of existing protocols and procedures of response to emergency situation. Additional objective is related to the use and evaluation of the new WACOM tools used in the emergency situations. More specifically (as it was already explained in the preparatory elaborate of the TTX (*D.T3.3.2 - Report on the requirements and planning of table-top exercise*)), the objectives of the Table-top exercise are the following:

- to introduce the methodology of the TTX execution in the form of the explanatory – coordinated type of the table top exercise
- to introduce the “imaginary” scenario of the accidental pollution
- to involve all active participants to cooperate and jointly develop the strategy of the response to the accident,
- to familiarize the participants with the set of the new WACOM tools and to utilize them during the execution of the TTX,
- to assess the usability of the new WACOM tools.

The project partners have identified and capitalized the importance of the execution of the exercise for the active groups, who are participating in the realistic events of accidental pollution or other types of the any other type of hazardous events. Execution of such TTX have proved that keeping the response institutions, forces or even administration employees aware of emergency situations and letting them get to know each other and share their on-field experiences or response plans helps to build the strong response body with high level of awareness on the emergency situation response plans.

2 Execution of the Table-top exercise: Accidental pollution in Zvornik (BA)

The TTX was organised by the project partner International Sava River Basin Commission and conducted on the 23 May 2022 in Brčko, Bosnia and Herzegovina, in the Hotel Jelena. The space could accommodate up to a fifty participants, for which reason some could not be accepted as exercise participants. The passive participants, observers were placed in the back of the hall.



Figure 1: The participants of the TTX

For the participants who were not able to join the TTX at the venue the on-line link (ZOOM) was established. However, it was not foreseen that the on-line participants cooperate in the active face-to-face communication. Nevertheless, they were able to leave the comments, ideas, etc. in the chat area of the on-line platform.

The TTX was chaired and lead by the Primož Banovec, representative of the lead partner of the WACOM project, University of Ljubljana. He introduced the scope of TTX, WACOM tools, narrated the accidental pollution scenario and encouraged the intercommunication among all participants of the TTX.

Additional support on the presenting and utilising the WACOM tools was given by other members of the partner UL, the developer of the WACOM tools.



Figure 2: The Narrator, Promož Banovec (UL), conducting the TTX

2.1 Participants of the Table-top exercise

The TTX was attended by 28 participants in total, 14 from project partners and 14 from external institutions representing the target groups.

As shown in the table below, several headquarters were involved in the active participation at the TTX. Especially at the municipality lever, the headquarters joined several institutions that form the multiagency headquarter. Some institutions form a single-agency headquarter.

Table 1: Active Headquarters (Active participating headquarters at venue)

Headquarters	Other companies or institutions in the Headquarter
Bosnia and Herzegovina	
Port Master Office Brčko	University of Ljubljana (SI)
Federal Ministry of Agriculture, Water Management and Forestry	HESS (SI)
Civil Protection of Gradiška	Delegation of the EU in BA
Department of Public safety of Brčko District	AZUR
Civil protection administration of the Republika Srpska	
Federal Administration for Inspection, Inspectorate for water inspection	
Port of Brčko	
“NESTRO PETROL” a.d. Banja Luka	
Civil protection Administration of Šamac	
Part Master office of Brčko	
Public Institution “Vode Srpske”	
Department for Public Safety	
Civil protection of Brod	
Serbia	
University of Belgrade, Department of algology, micrology and lihenology	

2.2 Introduction to the Table-top exercise

The introduction of the TTX began with a short presentation of the WACOM project, its main objectives and developments. Mr. Primož Banovec introduced the purpose of the TTX in relation to the WACOM project.

Following the introduction, the active participants who played important roles in the TTX accidental pollution scenario introduced themselves and briefly explained their activities and roles in the emergency situation. They were gathered in an improvised headquarters that operated as a single unit in the further TTX activities (reporting, measures, etc.).

The narrator proceeded with the initial information about the TTX and introduced the provisional methodology of TTX execution to all participants. He explained the role of participants, their tasks during TTX, and tools they will be using during the TTX, WACOM tools.

The scenario for this exercise (pollution of the Drina River as a tributary of the Sava River) was developed after exercises held in the Republic of Slovenia (Zidani Most) and the Republic of Croatia (Slavonski Brod). The exercise also implied the cross-border nature of the impact (BiH and Serbia) and uses a scenario of sudden pollution, due to an accident with a tanker truck in the wider area of Zvornik in BiH, with a pronounced consequence on the Drina River.

It was planned that the exercise would involve representatives of authorities and institutions, as well as business entities from Bosnia and Herzegovina and the Republic of Serbia, since the scenario is of a cross-border nature. Given that it was agreed, the simulation exercise for this scenario was not held in the wider area of the Zvornik region (more precisely, the municipality of Milići), where the scenario was projected, but was held in the Brčko district of Bosnia and Herzegovina, under the name "Simulation of sudden pollution in Zvornik".

As part of this exercise, a simulation of an accident, and the accompanying decision-making process for accidents, with the spilling of a large amount of petroleum products from a tanker truck, with the accident in the Drina River bed, was carried out.

2.3 Introduction to the WACOM tools

During the TTX, the tools developed and prepared for the use among stakeholders, were presented and demonstrated. These include:

- The tool for improving the coordination of the activated headquarters,
- The tool for improving the situational awareness about the accidental event, and

- The tool for improving the modelling of the accidental pollution propagation.

Table-top exercise participants gathered in headquarter groups utilised those tools via mobile phones and laptops.

3 Execution of the Table-top exercise

The TTX execution can be divided in several activities: simulations/predictions; discussions; use of existing tools (e.g. WACOM tools, AEWS, etc.). In this part, the dynamic of TTX will be briefly presented.

Initiation of the incident and entering data in WASP DSS

At the start, all the headquarters were asked to enter the WASP DSS.

Civil Protection Administration of the Republic of Srpska (RUCZ) opened the pollution event entitled “Zagađenje na Drini/Prevrtanje cisterne v Zvorniku” and informed the Public Institution Vode Republike Srpske water inspector and the Ministry for Internal Issues.

The following headquarters entered in the system successfully: Department of Public safety of Brčko District, Public Institution “Vode Srpske”, Civil protection administration of the Republika Srpska, Civil Protection of Gradiška, Civil Protection of Šamac, Port Master Office Brčko, Civil protection administration of the Republic of Croatia, International Sava River Basin Commission, Civil protection administration of the Republic of Slovenia. Each headquarter submitted its data (Name, Country, Level, Location on map). Some problems were encountered in determination of the location on map if the application was used on mobile phones.

It was demonstrated how the HDQ structures could be defined by command “Enter my current shift” and entering information on Incident Commander, Public Information officer, Safety Officer, Liaison Officer, Operations Section, Planning Section, Logistic Section and Finance/Admin Section entering the information on the staff.

Coordination of operational activities

The HDQ were asked to define the operational measures in case of oil spill to the Drina River from the tank truck at Zvornik. The following steps were defined:

- Police and firefighters should be informed when location of pollution is reported,
- RUCZ: Provides information to downstream units of CZ, Ministry of Security, public institution of Vode Srpske and Harbour Master Office (e.g. Sremska Mitrovica) through no. 112 and according to agreement with RS the RUCZ could inform the municipalities in RS as well. The RUCZ have teams to act in case of pollution, but they are activated in later stage.
- PI Vode Srpske: According to water law they inform main water inspectors (e.g. in Sarajevo or in Banja Luka. They are in communication with HR and RS. They order the monitoring and analysis of samples in accredited laboratory. The PI Vode Srpske close the

gate to stop the propagation of oil spill and inform the municipalities to close the water supplies if necessary. PI Vode Srpske with regional water inspector monitor the situation and take samples every hour.

- CZ Gradiška: They are informed by the RUCZ, but they don't have equipment to stop the oil spill. It would be necessary to exchange information on equipment which is stored at different institutions.

Safety measures during the intervention

The participants were asked to prepare the information on safety measures during the intervention and how to implement protection at work. They stressed the following issues:

- The institutions involved in the rescue measures should check if the personal obey the safety,
- The safeguard with boat should be at the site,
- The personnel should be educated and trained,
- The navigation should be stopped,
- The access to the river at pre-defined locations should be maintained,
- The list of boats on the river should be maintained,
- The HDQ should check the equipment of the personnel and they should be informed on equipment which might be used, enough drinking water and first aid should be ensured.
- More teams should be ensured

Communication with public

The participants were asked to discuss on the communication with the public. They agreed that the communication should be done by authorities.

4 Analysis of the Table-top exercise

The main part of the Table-top exercise was the analysis of the performed activities, with a critical overview of the TTX execution, preparation and involvement of the participants (target groups), as well as the assessment of the new WACOM tools.

The analysis of the TTX was based on four activities:

- Analysis done by the TTX participants (anonymous questionnaire for the participants),
- Analysis done by the TTX evaluation group (questionnaire for the evaluators),
- Analysis done by the individual institutions participating in the TTX,
- Lessons learned by the project partners (which will be shown in chapter: **“Findings (lessons learned) and conclusions of the Table-top exercise” (Chapter 5)**).

4.1 Analysis of the Table-top exercise – Hot-wash

After termination of the TTX, the hot-wash was carried out, which was based on the predefined questions, and allowed each headquarter to give their assessment of the TTX.

The main conclusion and findings of the participants were the following:

- the research conducted for the preparation and elaboration of TTX scenario showed that this projected scenario did not occur on the Drina River in an earlier period. Also, there is no assessment and plan for protection and rescue from natural and other disasters, neither at the entity level nor at the level of Bosnia and Herzegovina. In the case of an event of this or a similar nature, a problem would arise in terms of handling, because there are no prescribed procedures. The pollution that is primarily related to the Drina River is mainly related to accidents that are related to floating plastic waste, which has no direct connection with this type of scenario. Therefore, this scenario and acting through it, was a great challenge for those who prepared this scenario and those who implemented it. Given that the participants were directly and indirectly involved in the discussion and conclusions that emerged from the topics, they can be elaborated and used for the management of sudden pollution, for a specific accident scenario, but also for similar pollution scenarios;
- in the realization of the TTX, the participants concentrated on the positive points that appeared during the implementation of the exercise, but also on the weak points or places for improvement that are present in the real situation and the existing system;

- during the exercise, the participants identified both their own mistakes and those of others, and indicated the need for their correction. The approach used for TTX "management of interventions in case of sudden pollution" was assessed as an effective and significant tool;
- during TTX, on several occasions, the experiences used from the TTX exercises held in Slovenia and Croatia, as part of the WACOM project, were referred to;
- positive attitudes were expressed regarding the Table-top exercise, and it was emphasized several times that in the coming period such and similar exercises should be held in order to play out scenarios that may happen in the future, and when it will be much easier to react.

The discussion was conducted with regard to the identified problems, and the conclusions and lessons learned are a subject for solving on other occasions and are good material for some future exercises (or workshops). The participants formed conclusions, lessons and recommendations that can be made after the TTX, which are:

- there is a need to develop and update procedures in the field of action in accident situations caused by pollution with an emphasis on the projected scenario and location;
- there is a need for constant improvements in action through playing out scenarios;
- Bosnia and Herzegovina is a very specific country with a specific arrangement, and therefore also a way of commanding action in natural and other disasters, therefore this is an additional reason to additionally fill, equip and train the existing structure.

The following improvements are required:

- it is necessary to approach the development of protection and rescue procedures (assessments and threat plans, with an emphasis on this scenario), since there is currently no such scenario developed at any level of activity and jurisdiction in Bosnia and Herzegovina;
- additional elaboration is needed, as well as the use of WACOM tools, especially in the part that treats the temperatures and pollution levels of the Sava River.

4.2 Analysis of the Table-top exercise – the survey

As already mentioned, analysis was conducted on several levels. This analysis of the TTX was performed through the survey. The questionnaires were prepared both for the participants and the evaluators.

4.2.1 Analysis of completed anonymous questionnaires from participants

The questionnaire had a total of 15 questions, from which some questions had sub-questions. A total of 15 exercise participants completed a questionnaire. The questions and short observation on answers are presented below.

To the question under number 1. *Is the material presented at today's workshop as you expected? If not, what did you expect differently?*, all participants responded positively. That means that the materials prepared for the workshop were beneficial.

To the question under number 2. *Do you think that emergency response protocols and the development of IT tools need to be tested in such exercises involving actual participants in interventions?*, most of participants (thirteen) answered affirmatively, while two participants answered negatively.

To the question under number 3. *Should other significant headquarters participate in such exercises? If so, which ones?*, part of the participants (six) responded positively and stated the following: Water inspection, Firefighters, Emergency services. The challenge in implementing this workshop was that there was no full response from Serbia, so this is probably the reason why not all institutions that could have been here were not represented.

To the question under the number 4. *What grade would you give today's exercise? (1-poor... 5-excellent)*, part of the participants (ten) rated the exercise with the highest grade, and five with a very good grade.

To the question under number 5. *Do you estimate that the topic of the exercise is sufficiently elaborated for quality pilot testing of new IT tools? If not, please suggest, which in your opinion is not sufficiently elaborated.* Here, all participants answered positively. That shows the correctness of the chosen approach to testing new IT tools in such exercises.

To the question under number 6. *Do you have access to data on the headquarters and management structures of various institutions in the event of an emergency and intervention?*, the answers are very different: five participants answered “Yes”, eight participants answered “No”, and two participants did not write any answer. Distribution of answers indicates that a significant number

of participants do not have access to data on the headquarters and management structures of various institutions in the event of an emergency and intervention, or they did not know what to answer, which is also a very important indicator. Therefore, WACOM project partners believe that new IT tools developed and presented within this project – if implemented in practice – could significantly fill the gap in this challenge.

To the question under number 7. *Assess the quality of information on the functioning of individual headquarters during interventions? (1-poor... 5-excellent)*, distribution of responses is very wide: eleven participants responded “4”; while one participant answered “5”; one participant answered “3”; one participant answered “2”, while one participant did not respond. As with the previous question, it can be observed that applying new IT tools in practice could reduce the gap between the need for information and its use by different actors.

To the next question 8. *How do you assess the availability of data on the operation of individual headquarters during the interventions? (1-poor... 5-excellent)*, the distribution of answers is extensive wide, while one participant did not answer to this question. That again shows how exercise participants need greater data availability, where technology can address these challenges. So we believe that the IT tools being developed within the WACOM project can allow actors to address their data availability challenges at different levels.

To the question under number 9. *Do you often communicate with other headquarters during interventions?*, the most significant number of answers (twelve) was “Yes”, as same time three participants answered “No”.

To the question under number 10. *Has there been a situation in which you found it difficult to establish communication with other headquarters or found it difficult to find contacts with other headquarters?*, eight participants answered “Yes”, and seven participants answered “No”. WACOM project partners believe that the tools developed in this project with their full and active practical application by all headquarters could solve this challenge regarding solving difficulties to establish communication with other headquarters and to find contacts with other headquarters.

Answer the following three questions (*11. Would a platform, which would offer information on the activities, organization and contacts of individual headquarters, be useful for you?; 12. Would such a platform make it easier for you to operate during interventions?; 13. What is your assessment of the presented WACOM platform?*) confirms the analysis of the answers to the previous questions. Most of participants think that the presented tools / platform would be useful for their work and enable them to work more easily during the intervention. In addition, all participants are very positive

towards individual applications (Pollution propagation in the Sava River area, ICS 207, ICS 209) with different distribution of responses between very useful and useful.

To the question under number 14. *What is your assessment of today's workshop?* (1-poor... 5-excellent), all participants gave very high or high grades to the conducted workshop.

Comments and suggestions written in free form on the last question 15. *Please provide additional comments, remarks and/or suggestions*, are: Initiate the topic "Preventive action" which is just as important as operational but also cheaper; All praise; Elaborate on and improve every situation in detail; It was a great pleasure to participate in today's presentation of the exercise; Professional interaction with workshop participants.

4.2.2 Analysis of completed questionnaires from evaluators

The questionnaire had a total of 19 questions, of which some questions had sub-questions. A total of three evaluators completed a questionnaire. The questions and short observation on answers are presented below.

The first three questions (*1. Have you read the documents for TTX preparation (scenario, contingency plan, master scenario list, elaborat)?*; *2. Are purpose and goals of simulation of TTX understandable? (1-not understandable...5-fully understandable)*; *3. Do you find the structure of master scenario event list understandable and adequate? (1-not understandable...5-fully understandable)*), referred to materials prepared for the exercise. The evaluators rated this part very positively.

To the question under number 4. *How do you estimate the participants' understanding of their tasks and TTX objectives? (1-not understandable...5-fully understandable)*, evaluators had very different answers. One evaluator gave a score of 5, another a score of 3, and a third a score of 1. The above shows us how the evaluators experienced the participants' understanding of their tasks and TTX objectives in a very different way.

To the question under number 5. *Other comments relative to the preparedness of the TTX*, all evaluators answered very affirmatively.

Also on the next question 6. *How do you evaluate the introduction to the TTX? (1-poor...5-understandable and well done)*, evaluators answered very affirmatively.

To the question under number 7. *Assess the narrators role during the TTX and provide the suggestions for improvement. (1-poor...5-understandable and well done)*, all evaluators answered very affirmatively, and one of them gave one suggestion: "More headquarters of different

institutions should be present due to nature of national organization in BiH. All headquarters should have computer to follow TTX adequately.”

To the question under number 8. *Assess the role of active participants (participating headquarters) – all and individually (1-poor...5-well done)*, one evaluator answered with score “4”, second evaluator answered with score “3”, and third evaluator did not provided his/her answer.

To the question under number 9. *Assess the timeline following the master scenario event list (1-poor...5-well done)*, two evaluators answered with score “5”, and third evaluator answered with score “2”.

The next seven questions related to the level and quality of participation in the exercise and usage of the IT tools (10. *Assess the adequate activation/deactivation of the headquarters and information exchange on activation of headquarters (ICS 207) – did all the HQ used it and how? (1-poor...5-well done)*; 11. *Assess the overall usage of the situational awareness tool (201, 209) – did all the HQ used it and how it was accepted. (1-poor...5-very usable)*; 12. *Assess the usage of forecasting tools (oil spill - forecasting model) (1-poor...5-very usable)*; 13. *Assess the quality of communication among the active headquarters during the exercise (1-poor...5-well done)*; 14. *Other comments*; 15. *Assess the de-activation progress and closure procedures of the TTX (1-poor...5-well done)*; 16. *Assess the hot-wash procedures after the TTX (1-poor...5-well done)*), the evaluators' answers are very different with a mean average score between “3” and “4”.

To the question under number 17. *Overall assessment of the contribution of the WACOM project to the improved transnational response based upon the TTX (1-poor...5-important contribution)*, one evaluator answered with score “5”, second evaluator answered with score “4”, and third evaluator did not provided his/her answer.

To the question under number 18. *Objectives of WACOM was to organize a first and basic level of TTX exercise. Please state any suggestions for the next level of TTX*, one evaluator wrote a comment: “Perhaps dedicate some time at the beginning of the exercise, up to 30 minutes, for showing information on how different systems are set up and functioning. The aim is to avoid/reduce much discussion during operational work.”

No relevant answers were provided to the last question 19. *Other comments*.

4.3 Analysis done by individual institution participating the TTX

From the very beginning, Civil Protection Administration of the Republic of Srpska (RUCZ), emphasized that it was proud to be a part of such a project, because the project paid attention to both preventive action, early warning, and responses to disasters. The WACOM project also provided guidelines for capacity building and coordination, and for the development of cross-border cooperation and data exchange of all institutions and services within protection and rescue in 4 countries (Slovenia, Serbia, Croatia, and Bosnia and Herzegovina). Following the work and results of the WACOM project, RUCZ expresses great satisfaction for everything that has been done so far, and suggests that this should be the first phase of the project, and that in the second phase of the project, the focus should be on strengthening capacity and increasing coordination, i.e. focusing on cross-border cooperation in responding to natural disasters and disasters.

Projects like WACOM directly contribute to the development of capacities, the development of cooperation and the development of interpersonal relations and personal contacts, which are sometimes, in protection and rescue situations, crucial because they act much faster and more efficiently.

5 Findings (lessons learned) and conclusions of the Table-top exercise

Lessons learned by the project partners

After the execution of the TTX in Brčko, the project partners of the WACOM project gained new experiences and insights related to the preparation and execution of a table-top exercise. The main lessons learned were as follows:

- Preparatory stage:
 - It would be necessary that all preparatory documents should be prepared well before the exercise itself so that they can be checked and delivered in a timely manner to the institutions that are invited to participate in the exercise.
 - The preparatory documentation should not be too extensive, because in this case the participants who came to the exercise have not enough time or will to read all the documentation and familiarize themselves with all the details of the exercise.
 - It is necessary to ensure that the minimum number of required participants attend the implementation of the exercise in common simulation spaces (to be physically present at the implementation of the exercise).
 - It would be necessary to foresee the participation of media representatives as participants in the exercises.
- Execution stage:
 - It would be necessary to ensure that all participants of the exercise bring a laptop, as this was necessary for the implementation of the exercise.
 - In order to avoid a situation where individual exercise participants cannot fully participate in the implementation of the exercise because they did not bring a laptop, in the following exercises it would be necessary to provide a certain number of laptops by the organizers in order to make the exercise as functional as possible.
 - Some participants were unfamiliar with what exactly they were supposed to do and with the competences of other institutions. This caused certain delays in the implementation of the exercise. In order to avoid such situations in the future, it is suggested that in the preparatory meetings before the implementation of an exercise, the future participants get to know each other and exchange basic information about what their institutions do.

- It would be necessary to involve media representatives in the implementation of the exercise.
- After-execution stage:
 - In addition to the hot wash up analysis, it would be very useful to ask all exercise participants to submit their observations about the exercise in writing.

In terms of exercise implementation, TTX had several initial objectives, as follows:

- To introduce the methodology of the TTX execution in the form of the explanatory – coordinated type of the table top exercise;
- To introduce the “imaginary” scenario of the accident;
- To involve all active participants to cooperate and jointly develop the strategy of the response to the accident;
- To familiarize the participants with the new WACOM tool set and to utilize them during the execution of the TTX;
- To assess the usability of the new WACOM tools.

All planned objectives were partially achieved due to the insufficient turnout of participants from Serbia. Therefore, in the following, the situation will be referred to the activities and achievements of representatives from Bosnia and Herzegovina.

The exercise was carried out in several parts. In the introductory part, the project and its purpose were presented. Then a demonstration of the WACOM toolbox was made, as it was used and tested in TTX. After that, the method of implementing the exercise itself and the tool was explained. **Looking at the implementation of the exercise and the use of WACOM tools, the above was carried out at a high level.**

After the end of the exercise, a Hot wash up analysis was performed. All participants of the exercise actively participated in the analysis of the exercise. The discussion was conducted with regard to the defined problems, and the conclusions and lessons learned are a subject for solving on other occasions and are good material for some future exercises (or workshops). The conclusions, lessons and recommendations that can be made after the exercise are: there is a need to develop and update procedures in the field of action in accident situations caused by pollution with an emphasis on the projected scenario and location; there is a need for constant improvements in action through playing out scenarios; Bosnia and Herzegovina is a very specific country with a specific arrangement, and therefore also a way of commanding action in natural

and other disasters, therefore this is an additional reason to additionally fill, equip and train the existing structure; it is necessary to approach the development of protection and rescue procedures (assessments and threat plans, with an emphasis on this scenario), since there is currently no such scenario developed at any level of activity and jurisdiction in Bosnia and Herzegovina; additional elaboration is needed, as well as the use of WACOM tools, especially in the part that treats the temperatures and pollution levels of the Sava River. **All expressed recommendations were valuable for all project partners, as well as all institutions in the countries of the Sava River basin.**

The next part refers to the analysis of the exercise based on four activities: “Analysis done by the TTX participants” (anonymous questionnaire for the participants); “Analysis done by the TTX evaluation group” (questionnaire for the evaluators); “Analysis done by the individual institutions participating in the TTX”; “Lessons learned by the project partners”. **All the aforementioned analyses show the need for further cooperation, investment of resources, higher levels of communication and training at all levels. It is precisely projects like WACOM that make these needs possible.**