

Client:
Rijkswaterstaat - National Centre for Water Management
Beneficiary: Directa Apelor Banat

Development of a strategy for improved protection against flooding and flood risk reduction along the Timis river

**Current situation report: Safety chain,
flood warning and evacuation system**

**HANDCOLLECTIE
WD**



C27270

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Current situation report: Safety chain, flood warning and evacuation system

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1 Introduction

1.1 Background

A project plan is developed for the project 'Development of a strategy for improved protection against flooding and flood risk reduction along the river Timis' [RIZA, 2006]. The project consists of different components:

- Inception phase
- Analysis of the cause of the 2000 and 2005 floods along the Timis river
- Analysis of the safety chain to determine key aspects, which have to be improved.
- Determining a strategy improving the protection against flooding and reducing the risk per event for the Timis river and the surrounding area.

In December 2006 the inception report is written. In this inception phase the problem analyses and the feasibility for the different project results were analysed [HKV,2006].

Amongst others the report concluded that the Directia Apelor Banat is interested in:

- Public awareness by communicating the proper information,
- Public participation,
- Exercise on communication and decision making during an event.

The inception report gives an update of the original project plan. In this update there is special interest for the safety chain and the earlier presented topics. The project plan includes a *workshop on public participation, communication and exercise*.

December 2006 a draft version of the Safety Chain report was available. That report is updated and extended with the experiences from spring 2007. The final version is presented here. The report describes the current situation of the safety chain and the preparation, evaluation and results of the workshop.

1.2 Objective component

The objective of this component, analysis of the safety chain, is:

- The identification of key aspects in the safety chain that might need improvement
- Description of the current situation
- Workshop for knowledge exchange between Romania and The Netherlands & indoor exercise
- Evaluation
- Recommendations

1.3 Approach

To obtain the objectives of the project different meetings, interviews and a workshop have been organised. The meetings, interviews and workshop took place during three missions to Romania. These missions are prepared for in both The Netherlands and Romania:

- Mission 1, Timisoara: Preparation, collecting information for the inception report.
- Mission 2, Timisoara: Preparation of the workshop in Herculane
- Mission 3, Timisoara, Herculane: Workshop in Herculane

Together with the Romanian projectleader an evaluation has been carried out at the end of the workshop. Recommendations from this evaluation are collected in this report.

Mission 1

Objective

Collect information for the inception report and the safety chain report.

Activities

Preceding the first mission to Timisoara an interview list has been prepared in order to carry out the interviewing, analysing and reporting during the mission (Appendix F: Questionnaire).

From 4 till 6 October a mission to Timisoara has been carried out. During this mission information for the Inception report and the first version of the Safety Chain report was collected.

- On October 4th there was an interview day with people from the Banat Water Directorate (Appendix D: Attendees on October 4th). In a group we discussed all the points of the interview list. The main subject of the day was flood warning and the project plan.
- On October 5th we had a workshop with people from the Banat Water Directorate, mayors and the Vice-president of the County council (Appendix E: Attendees on October 5th). In the morning we discussed the different components of the safety chain and the previous floods of 2005 and 2006.
- On October 6th we visited the dispatch centre and we had a meeting with the Banat Water Directorate to further develop the project plan.

Result

- Inception report
- First overview of Safety Chain in Romania
- Plan for indoor evacuation & 3-day workshop

Mission 2

Objective

Planning, preparing and organizing three day workshop and indoor exercise.

Activities

Preceding the second mission to Timisoara a questionnaire (Appendix F: Questionnaire) has been prepared in order to prepare the workshop in the end of March.

From February 26th till March 1st a mission to Timisoara has been carried out. During this mission preparations for the workshop have been carried out.

- On February 26th there was a internal (HKV) project meeting about the workshop and the plans of this mission.
- On February 27th there was a project meeting with the Romanian partner and the preparation for the workshop started. The program was determined, the scenario, the presentations and the exercises were prepared. Interview scedules were developed and the

questionnaires were studied. These were ongoing activities during the mission and during the two weeks between the second and the third mission.

- On February 28th we had a meeting with the Timis subunit of Directia Apelor Banat, The Operational Department, the Hydrological Department and the Dispatch Centre of Directia Apelor Banat
- On 1st of March we had a meeting with the the Emergency Inspectorate Timis County and the GIS department of Directia Apelor Banat

Result

- Program for the workshop
- Indoor exercise scenario's
- Presentations for the workshop

Mission 3

Objective

Three day workshop in Herculane on knowledge exchange, exercises and communication.

Activities

From March 12th till March 16th a mission to Timisoara has been carried out. During the mission we stayed in Herculane for 3 days (Chapter 5).

- On March 12th the final preparations for the workshop were carried out. The scenario was defined and a schedule for the next day was made.
- On March 13th the workshop handouts were prepared, together with the tools for the workshop. Together with the Romanian project partner the final preparations were carried out.
- From March 14^h till March 16th the workshop took place in Herculane

Result

Successful workshop on all of the mentioned topics.

1.4 Reading Guide

Chapter 2 gives an overview of the Romanian crisis organisation, which institutions are involved, what are the different warning procedures and what are the experiences of the municipalities. Chapter 3 describes the flood early warning procedures and the evacuation system is described in chapter 4. A description of the results of the workshop in Herculane is available in chapter 5. In chapter 6 conclusions and recommendations are presented.

2 Crisis organisation Romania

2.1 Organisations involved

In case of an (expected) crisis, the crisis organisation will become active. This crisis organisation contains people from different institutions and is shown in Appendix A (Hydro-geological Water Management Information Flux of the National Administration 'Apele Romane' Directia Apelor Banat) and Appendix B (Timis county synoptic scheme of the hydro-meteorological and operational system, source: 'Apele Romana').

Institutions involved during crisis situations are:

- The National Committee for Emergency Situations will be active in case of an (expected) crisis. This Committee is supported by different ministries and communicates with the County Committee for Emergency Situations. The task of the national committee is to 'manage' the disaster on national level.
 - The County Committee for Emergency Situations (during flood) is the decision making centre during a (potential) flood situation and 'manages' everything during a disaster on county level. The chairman of the County Committee for Emergency Situations is the county prefect. In this Committee different counties may be involved. Representatives of Directia Apelor Banat and the Emergency Situation Inspectorate are also in the Committee. The Committee will be active in case of an (expected) flood crisis. During other crises than flood, other representatives will be seated in the Committee. The Committee communicates with all organisations in the crisis organisation. The County Council (responsible for the financing) will participate in the County Committee as well. The County Council represents the mayors of the municipalities. The chairman of the County Council is the deputy chairman of the county Committee.
 - The Emergency Situation Inspectorate (EMI) is a permanent organisation for all possible catastrophes. The EMI communicates with Municipalities and the County Committee for Emergency Situations. Warnings and predictions from Apele Romana and the regional and local agencies are send to the municipality by the EMI.
 - The mayor is responsible for the municipality, and the safety of the people living in the municipality.
 - National Administration Apele Romane (NAAR) and the regional and local agencies (eg. for environmental issues) contact the Emergency Situation Inspectorate in case of a crisis. The Directia Apelor Banat is represented in the County Committee and sends warnings and forecasts to EMI and the County Committee. The Subunit of the Directia Apelor Banat also guards the dikes and advises the EMI and County Committee about high water strategies that can be carried out.
- The dispatch centre in Directia Apelor Banat regulates information flows concerning forecasts and warnings. During flood situations they do this for Timis county. The dispatch centre in Resita regulates information flows during flood situations in Caras-Severin county (the second county within Banat region). Resita dispatch centre also sends information to Timisoara dispatch centre (Directia Apelor Banat).

Figure 2-1 shows the organisation and information flow in the Banat during potential flood situations. Figure 2-2 shows the organisation and information flow in the Directia Apelor Banat during potential flood situations.

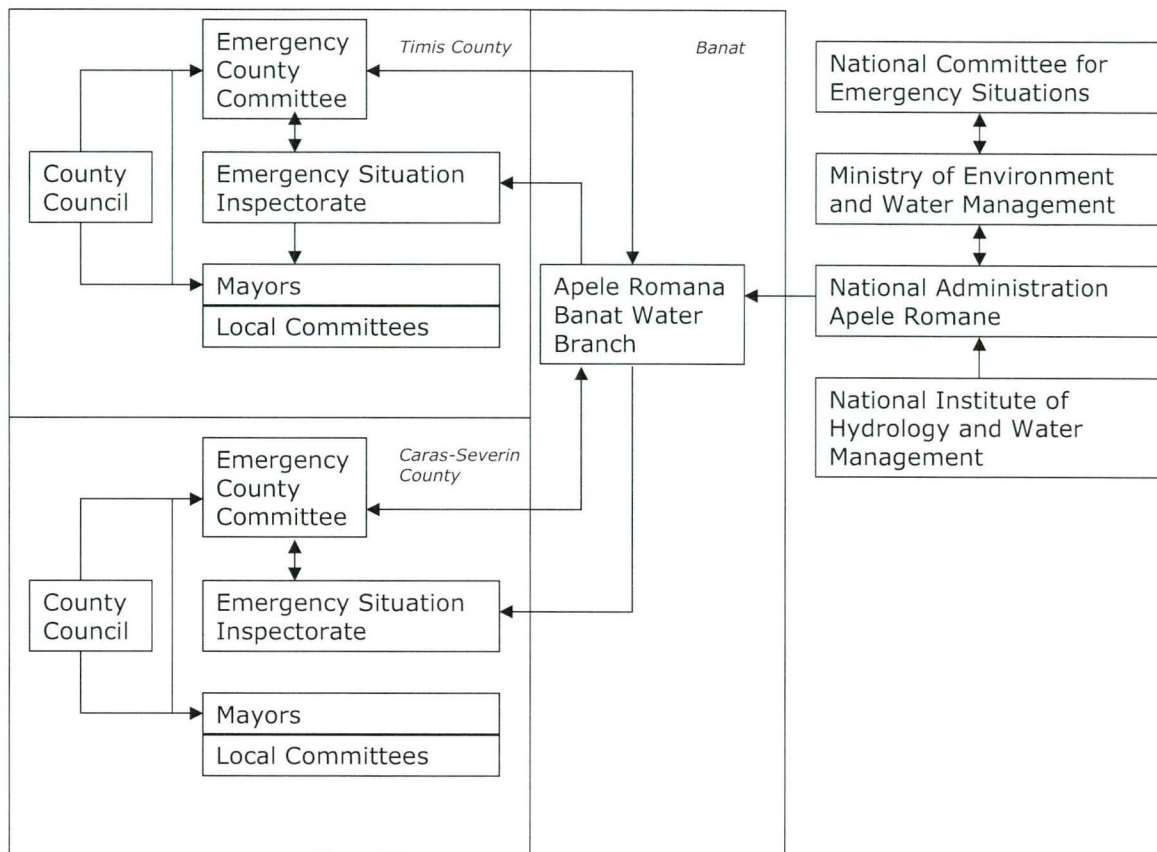


Figure 2-1 Organisation disaster management during flood situations in the Banat region

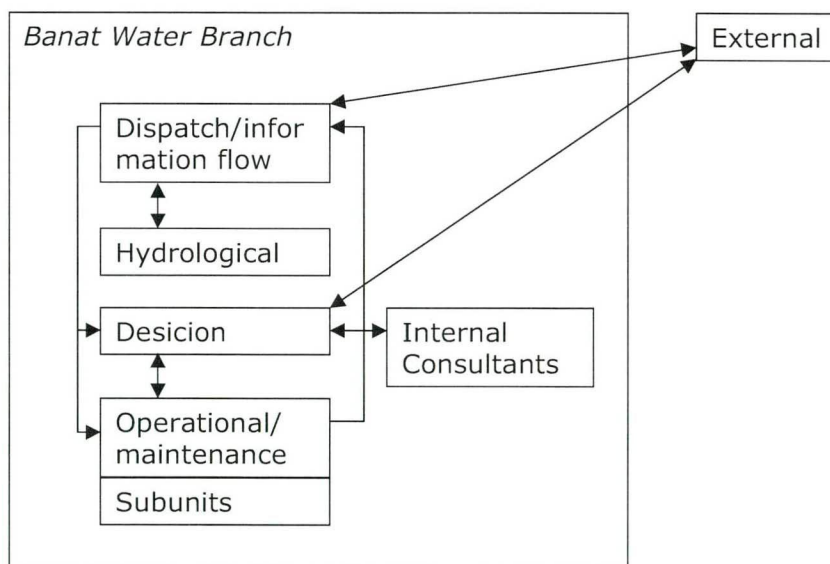


Figure 2-2 Organisation disaster management during flood situations within Directia Apelor Banat

In the project WATMAN (see also Inception Report) a proposal is made for quick intervention centres, falling under the responsibility of the Minister of Environment and Water Management / Water Directorate. These centres work on the spot and work together with the EMI. The centre will contain all kinds of equipment needed in case of an (expected) flood. The project started in 2006, buying and installing equipment is now tendered.

A detailed description of responsibilities of the different organisations concerning parts of the safety chain can be found in "Romania, National flood risk management strategy, flood prevention, protection and mitigation" [Ministry of Environment and Water Management, 2006].

2.1.1 Transboundary organisation

In the Timis region transboundary issues are important. At this moment a special structure for teams is being prepared. This team contains members from foreign affairs and the leaders of the three countries. This team functions during and after a flood.

2.2 Warning procedure crisis organisation

The procedure for a warning is as follows (see also Figure 2-1):

1. Hydrological warning by the National Institute of Hydrology via National Administration Apele Romane to regional administration Apele Romane (i.e. Banat).
2. Apele Romana forwards the warning to EMI
3. EMI forwards the warning to the mayors
4. By law (prefect resolution) a local committee should be installed, but in 99% this is not done because warnings normally don't result in flooding.
5. When the warnings and forecasts get worse the Emergency County Committee will become active and the Hydrology department of the Directia Apelor Banat will make regional forecasts and warnings.

The Directia Apelor Banat warning codes are:

- Green: F1, water at the toe of a dike
- Blue: F2, water halfway the dike
- Red: F3, water at the top of the dike (without the freeboard)

The warning codes from Bucharest to the Directia Apelor Banat (and than to the EMI) are:

- Green: normal situation, this 'warning' is not forwarded to the mayors
- Yellow: F1: water at the toe of a dike, warning to mayors
- Red: F2: water halfway the dike
- Blue: F3: water at the top of the dike (without the freeboard)

A warning is valid for a certain time frame. This is indicated on the fax. When no warning is issued after this time frame, the danger has disappeared. So there is no 'scaling-down' of the alarm levels.

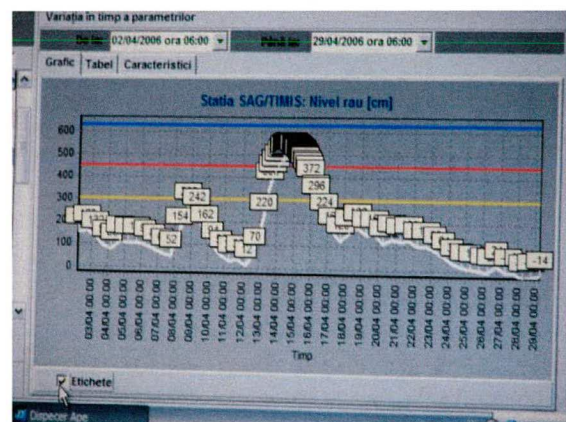
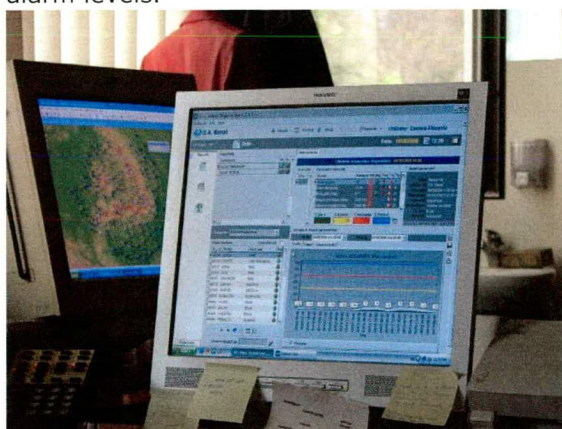


Figure 2-3 Dispatch centre, Directia Apelor Banat Timisoara, right the water level April 2006

More information about the flood warning is available in the chapter Flood Early Warning System.

For the communication before, during and after a flood different communications methods are used:

- Phone;
- Fax;
- E-mail.

2.3 Components of the safety chain

2.3.1 Resolution

In Romania flood protection is regulated by law. There is a resolution of the Ministry of Internal Affairs and the Ministry of Environment and Water management. About this resolution:

- The whole chain, defined as before, during and after a flood is covered;
- All possible flood situations are foreseen;
- Responsibilities are defined on all levels: local authorities, EMI up to organisations under the jurisdiction of the ministries;
- The relationship between the ministries is indicated;
- Distinction is made between areas protected by water works and areas that are not protected by water works;
- Emergency plans should be available on different levels
 - National
 - Regional (Directia Apelor Banat level)
 - Local (Municipality level)
- Emergency plans should be updated every 4 years and after floods.

2.3.2 Flood preventing strategies, flood mitigation

Flood preventing strategies like inundation areas (so-called inundation polders) are already functioning along the Timis river. Research on more and other strategies should be carried out. In addition Apele Romane is mainly responsible for developing additional protection and mitigations plans.

2.3.3 Emergency plans

Emergency plans are available on different levels:

- National level: plan by different ministries
- Regional level:
 - River basin: plan by Water Directorate and approved by National Administration Apele Romane and Ministry. In these plans oa. water works are described but also which action should be carried out at which (critical) level;
 - County level: plan made with technical support (Apele Romane, EMI, Irrigation department). This plan is approved by the prefect;
- Local level: plan by municipality, made by the mayor. The mayor can get technical advice to make these plans. There should be (by law) also an inspector supported by 6 volunteers.

The emergency plans are available for more than 10 years now and are updated every 4 year and after floods (by law). For this updating capacity should be available in institutes and Municipalities. After the recent floods all plans have been updated. These updates did not contain changed responsibilities, because this would require a change of law. The updates contained adaptations of quantities of equipment, cartography and technical aspects (e.g. measurements).

The plans are available for different stages of a disaster. There are alarming plans, 'fighting' plans, evacuation plans and also return plans (after a flood). Evacuation and return plans are made on a local scale (more information is available in the chapter Evacuation system).



Figure 2-4 Emergency plans at Directia Apelor Banat

2.3.4 Flood event exercises

The last few years a lot of (nearly) floods occurred in the Directia Apelor Banat region. During these floods all plans came into action. Specified indoor flood simulation exercises have not been carried out. These exercises can be carried out on different organisation levels and on different scales (basin level or local level) using a fake flood simulation as a start. Different institutions take part in outdoor exercises where the staff is trained. After these exercises the communication flows are evaluated.

2.3.5 Flood Risk Maps

Flood risk maps can be used in disaster management. These maps are under development in a pilot setting in the component Flood Mapping of this project.

2.4 Experiences Municipalities

During the recent floods the municipalities gathered a lot of experience with emergency plans, evacuation and return of the people. This chapter gives an overview of some of these experiences.

Warnings

Warnings from the government are normally forwarded to mayors. These warnings are general warnings and not detailed to local level. Mayors feel that EMI should provide tailor made warnings and not just forward the rough forecast.

Action on so-called 'green' and yellow warnings and (lowest level) could cause unnecessary panic. Also because of the amount of general warnings (mostly without effect for municipalities) it is sometimes hard to stay focussed.

Warnings in the Municipalities can be done by using church bells, mechanical alarms or even people in the street.

During a flood the mayors of different Municipalities stay in contact by using the phone.

Responsibilities

Municipalities complain about responsibilities without appropriate funding and technical knowledge. The mayors think that plans are good, but that resources are not sufficient. Maybe not sufficient use is made of the knowledge of Directia Apelor Banat?

There seems to be an overlap now and then of the responsibilities. For example dike improvement during floods. Is Directia Apelor Banat responsible, the Municipalities or both? Some Municipalities even promote the idea that they should co-ordinate and carry out dike-strengthening (before a flood). Other forces (rightly) argue that this task should be a central responsibility.

Mayors feel that more attention should be paid to preventive measures (e.g. more retention polders). Mayors should be included in the processes to decide which preventive measures are possible.

If there is a wish for changes, the change of plans does not seem to be enough. But then a change of law is required.

Volunteers

Volunteers are difficult to get because the companies they work for want to be paid for the temporarily non availability of the employee.

Controlled flooding

Mayors are not against controlled flooding, but they should be informed further in advance (safety chain, before the flood) and not in a crisis situation. During the last flood opposition of a mayor and his Municipality was experienced (not in my backyard). Better communication before the flood could improve this situation from opposition to understanding and support.

3 Flood Early Warning

3.1 General

In Romania flood forecasts are made on national and local level. For these forecasts identical information is used from the monitoring system in place. Rainfall measurements are the responsibility of National Hydrological Institute. Water level measurements are collected and validated ¹by the "Dispatcher" at the Banat Water Directorate and distributed to the Ministry of Environment and Water Management.

Flood forecasting in the Timis concentrates on the lower Timis (roughly from the Caransebes border). The reasons for this are:

1. In the lower Timis flood threats occur often, especially near the border.
2. In the Upper Timis (mountains) floods (roughly upstream Caransebes) do not cause much damage and the lead-time is too short.

The lead-time to forecast the maximum water level at Graniceri (at the border with Serbia) based on rainfall measurements in the mountains is 4-5 days. The lead-time at Graniceri based on the measured water levels at Lugoj is 2-3 days. The lead-time for the other gauging stations in lower Timis is of course shorter.

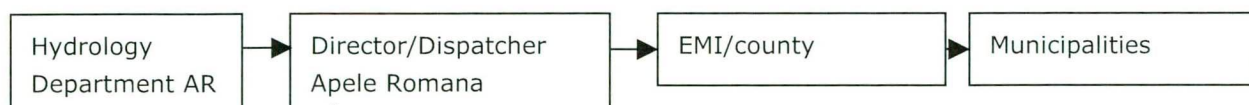
3.2 Methodology

Using measured and forecasted (rainfall, temperature) information a national forecast is made and issued as follows:



When the flood situation gets more serious (measured rainfall in the mountains over 50-60 mm) also forecasts are made at the Banat Water Directorate. This is done by one expert from the hydrological department using statistical relations between snow cover, rainfall and water levels. Based on measured rainfall and water levels at gauging stations, predictions for more downstream gauging stations are made. Coefficients used in the formulas are updated during flood when new rainfall measurements are available. Based on water levels measured at Lugoj the (maximum) water levels at the gauging stations Brod, Sag, Rudna, Gad and Graniceri are forecasted. The "correspondent values" method is used for this. Measurements from Bega are also used in the forecasting method, because water levels in Bega define the discharge from Bega to Timis.

The forecasts are disseminated according to the following scheme.



¹ Although automatic gauging stations are installed, these measurements are still found to be unreliable. Therefore these measurements are only used as an indication for tendencies in the catchment.

The forecasts are also distributed to managers and operators of dams and weirs. The operation of these structures is defined in operation rules.

3.3 Accuracy

According to the flood forecasting expert of Banat Water Directorate analyses of the national and regional forecasts after various floods have proved that regional forecasts of maximum water levels done by Directia Apelor Banat are more accurate and faster than the national forecasts. Therefore Directia Apelor Banat is not using the national forecasts.

The forecasting accuracy varies from 0,50 m to 0,00 m (2005 flood).

3.4 Validation of forecasting relations

Maximum water level relations between the different gauging stations are updated after every flood event. Linear and non-linear relations are available based on historical measurements (EXCEL is used for this). E.g. maximum water levels of Lugoj on x-axis and Graniceri on y-axis.

4 Evacuation system

4.1 Evacuation and return responsibilities

The mayor of a Municipality is responsible for the evacuation and return of its inhabitants. The mayor decides when to evacuate. The moment for evacuation is also written in the flood protection plan of the municipality. The EMI informs and supports the mayors. The procedure of an evacuation is (Figure 4-1):

1. Population alarmed by the mayor;
2. Preventive evacuation initiated and co-ordinated by the Local Committee Emergency Situation and regulated by the police (blocking non-accessible and minor roads guiding traffic);
3. Volunteers are assigned actions.

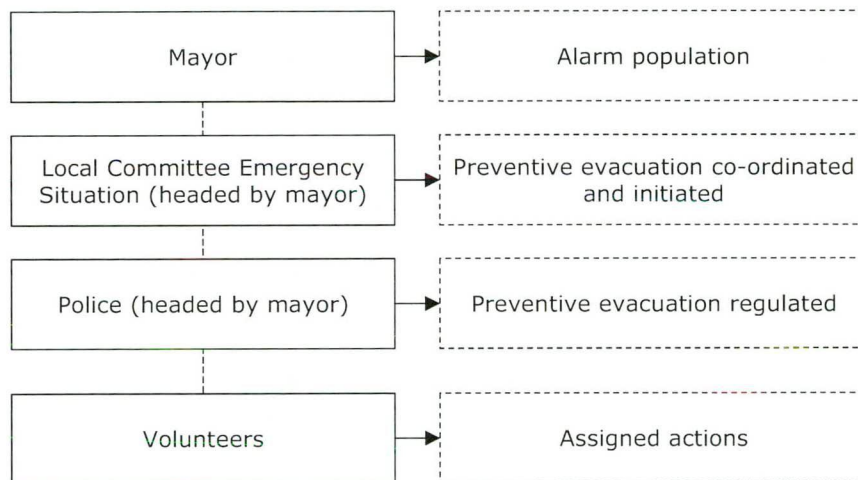


Figure 4-1 Procedure of an evacuation

In case of people resisting to leave their properties the army comes into action. People not willing to leave are a big problem according to the mayors. The mayor and the police guard the deserted properties.



Figure 4-2 Help from the Red-cross during a flood (source: Romanian Red Cross)

The return process is a shared co-ordination of the mayor and the health organisation (because of the danger of diseases). The return of the people depends on the state of the village after a flood. If houses need to be rebuild the time for return will be longer. Some people don't want to return because of experiences of the flood or the evacuation (mental issues).

In case of damage damage experts from the government are sent. Together with the mayor the damage is assessed. The government has the final responsibility for reconstruction (e.g. money, building of the houses).

4.2 Evacuation and return plans

Each Municipality has his own evacuation and return plans. There are so-called sending and receiving Municipalities; de Municipalities that evacuate to other areas and the Municipalities that receive evacuated people from other Municipalities. The plans contain escape roads, the areas that should be evacuated first, locations to evacuate to and names of people and organisations involved in the evacuation process.

For the receiving cities the locations where to shelter the people are known and also basic needs as where to get food are in the plan (as is told).

Normally evacuation time is short. Sometimes this results in difficulties concerning the evacuation. It is important to know when to evacuate and when not. The mayors have great interest on how this is dealt with in The Netherlands.

4.3 Evacuation experiences

In Peciu Nou in 2005 more than 800 refugees from neighbouring Municipalities were received. There was shelter and food for the refugees available.

In 2005 Serbia constructed a crisis dike. By backwater effect the water threatened a village in Romania. With volunteers and large equipments an emergency dike was constructed which saved the village.

5 Workshop on Public participation, communication and exercise

5.1 Preparation of the workshop

After the first mission in the winter of 2006 the goals of the workshop were defined:

- Exchange of information about public participation, communication and indoor exercises between The Netherlands and Romania.
- Give the participants the possibility to take part in an indoor exercise.
- Informal opportunity for participants to meet outside a crisis situation and on the same location.

These goals were the guideline for the preparation of the workshop that took place both in Romania and The Netherlands. People from Directia Apelor Banat (translators, gis experts, hydrological experts), from RIZA and HKV CONSULTANTS prepared the workshop. The fire brigade was not present at the workshop but they provided us with very nice material for the workshop (news broadcasts and pictures of previous floods in Romania).

The following items were prepared:

- The invitation of the participants
- The program for the workshop
- Different presentations
- Scenario development for the exercises
- Preparations at the workshop location

5.2 Participants of the workshop

People from different organisations were attending the workshop. The following organisations participated in the workshop in Herculane:

- Directia Apelor Banat including subunits
- Emergency Situation Inspectorate
- National Administration Apela Romana
- Ministry of Environment and Water management
- Mayor and deputies of the Mayors
- Vice Prefect and Prefect of the County Council

A list of all the participants is presented in Appendix G: Participants workshop Herculane.

From the Dutch project 5 people were attending the workshop (3 HKV, 1 RIZA, 1 DWW). The language of the workshop was English and Romanian. There were 4 translators available.

5.3 Workshop location

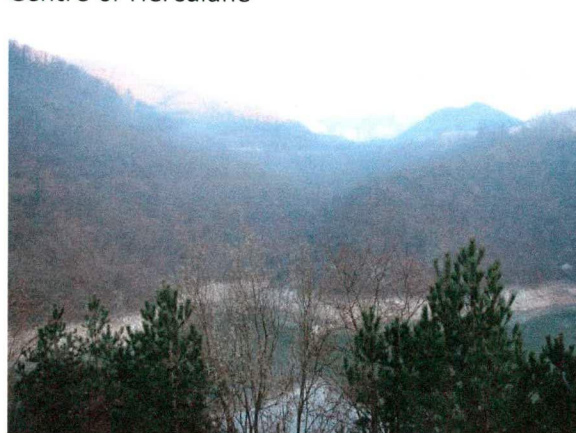
The location of the workshop was Herculane. The workshop took place at the same hotel the participants stayed during the workshop. This was an extra motivation for the people to participate all sessions.



Centre of Herculane



Centre of Herculane

View from workshop location
Figure 5-1 Workshop location

View from workshop location

5.4 Workshop in Herculane

The workshop took 3 days, each day with a different subject of interest:

- Day 1: Disaster management during floods in Directia Apelor Banat
- Day 2: Disaster management during floods in the Banat Region
- Day 3: Communication and evaluation

The detailed program is available in Appendix H: Workshop program.

Almost all documents during the workshop were available in English and in Romanian. The presentations were given in English and translated to the Romanian language.

5.4.1 Day 1

Participants were mostly employees of Directia Apelor Banat. In the morning there were 3 presentations about: the Role of Dutch Water Branch before, during and after a flood, Projects on Flood Protection Strategies in the Netherlands and a short overview of exercises in water & disaster management. There was a lot of interest for the way we handle floods in The Netherlands and of course also the way it is handled in Romania. In the afternoon the indoor exercises took place. This exercise was especially prepared for Directia Apelor Banat.

Scenario

The scenario that was presented was a scenario where in 6 days a possible emergency situation developed. First there was some heavy rainfall in the mountains of the Banat Region. After some time the rainfall decreased, but all reservoirs were full. Then all of a sudden the heavy rainfall increased again, the temperature raised and snow was melting. On day 6 there were two alarming forecasts for day 7 (+90 FII, this means water level 90 cm above level II, see chapter 2.2) and day 8 (+100 FIII). At this point the scenario was stopped and the exercise started.



Figure 5-2 Left: Floods in Romania. Right: Map used in the scenario

Work in groups

The participants were divided in 4 different groups:

- The hydrology department
- The dispatchers
- The operational group
- The decisional group

Each group was given the same set of questions for the presented situation in the scenario:

- What kind of information do you want to receive from whom?
- What kind of information do you want to give to whom?

Short evaluation

At first this was a bit new for the participants, but after a while they understood the concept of the indoor exercise and participated with lots of enthusiasm. They all work with standardized protocols and because they are all of the same organisation they knew quite well what to do. This made the results of exercise not surprising for the participants, but it gave them a good view of the goals of an exercise. In this way this first exercise was a good introduction for the participants and a good exercise for the organisation of day 2, when the big exercise, with more different organisations was planned.

Some images of the first day are presented in Figure 5-3.



Figure 5-3 Impression of the first day of the workshop

5.4.2 Day 2

On day 2 the other participants, besides Directia Apelor Banat arrived. The day started with a project introduction by the Romanian project leader. Then there were two presentations, one about 'Information exchange before and during a flood, HIS & FLIWAS' and a presentation about 'Exercises in water & disaster management: introduction exercise constructions, goals and examples'. Again there was a lot of interest for the way we handle floods in The Netherlands and of course also the way it is handled in Romania. In the afternoon the indoor exercises took place.

Scenario

The scenario of day 2 started the same as the scenario of day 1. Only now on the seventh day there is a new forecast with FIII warnings for Lugoj and Carancebes. The emergency county committee was activated. Than on day 8 the situation gets worse:

Measured water level Lugoj +95 cm F II, peak 8th April evening. Observers from Emergency Inspectorate and Maintenance Units report holes in the ground in the protected area on both sides of the river. Water is flowing out through these holes. This process called "piping" takes place around km 117, 1 km upstream gauging station Lugoj. Possible collapse of the dike. At this point the scenario was stopped and the exercise started.

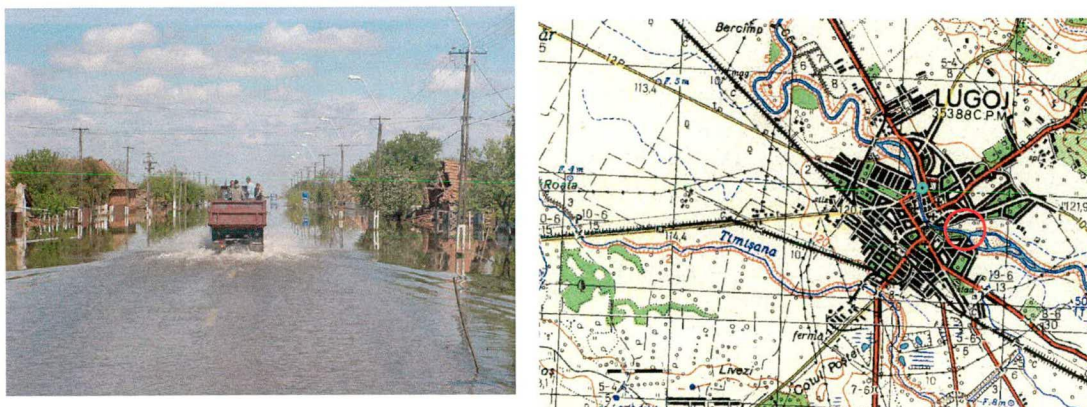


Figure 5-4 Left: Floods in Romania. Right: Map used in the scenario

Work in groups

The participants were divided in 5 different groups:

- Bucharest: National Administration Apela Romana + Ministry of Environment and Water management
- Emergency County Committee
- Mayors & County council
- Emergency Situation Inspectorate
- Apela Romana, Directia Apelor Banat + subunits

Each group was given the same set of questions for the presented situation in the scenario:

- What kind of information do you want to receive from whom
- What kind of information do you want to give to whom

Short evaluation

The participants took part in the exercise with great enthusiasm. The feedback on the presentations was good and during the exercise each group prepared well for the discussion. It was important for the people to get to know each other another way than by phone and talk about this subject in not a real crisis situation but in an exercise environment. The discussions were useful and full of power. For Directia Apelor Banat it was a good opportunity to show their skills. For the people from Bucharest the scenario was not 'bad' enough, they had no big specific role. Nevertheless they thought it was very interesting to participate in the indoor exercise. The representatives for the Emergency Situation Inspectorate called the exercise very useful, especially because of the opportunity to discuss together with all the other organisations about a certain crisis situation without being in 'the real situation'.

Some images of the second day are presented in Figure 5-5.



Figure 5-5 Impression of the second day of the workshop

5.4.3 Day 3

On day 3 we started with a presentation about risk and crisis communication in The Netherlands. After this presentation we had the so-called presentation on demand. On request of the participants there was a presentation about water level measurements and policy making and about evacuation. After these presentations there was a short evaluation of the total workshop. This evaluation is presented in Chapter 5.5.

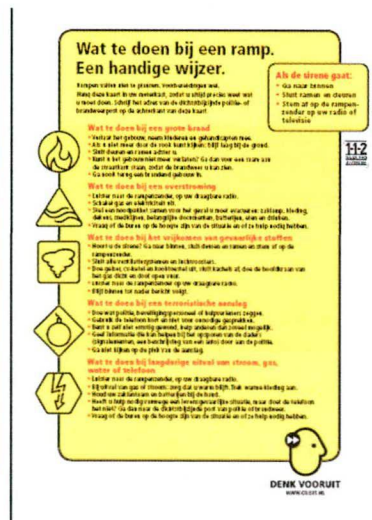


Figure 5-6 Two screenshots from the communication presentation. Left: a dutch commercial about sea level rise and right: a dutch list in case of a crisis

5.5 Evaluation of the workshop

At the end of the workshop there was a short evaluation where all the participants could give their comments about the workshop. Here is an overview of the remarks:

- Romania and The Netherlands can learn a lot from each other on flood protection and disaster management
- Indoor exercises are different than outdoor exercises that are more common in Romania. The participants found it useful to participate in the indoor exercise. The participants saw possibilities to use it in their own organisation, but they also mentioned the problem of time and priority.
- It was very useful for the people to meet each other en learn from each other by participating the exercises.
- A remote and nice location for the workshop was appreciated by the participants and made it possible to concentrate totally on the workshop.



6 Conclusions and recommendations

General

After the first workshop it became clear that the disaster organisation of Romania is well prepared. Different institutes are involved and participate in a well defined organisational structure. It helps that the administrative bodies in Romania are organised in accordance with river catchments. For instance: Timis County roughly covers Timis-Bega-Aranca catchments and Caras-Severin County covers Caras-Nera-Cerna catchments. Both counties are covered within Directia Apelor Banat.

Procedures, activities and communication are recorded in different disaster plans on every administrative level, as described in this report. The focus of the project shifted to information exchange and the 'indoor' exercise. This chapter gives some recommendations for the future and some lessons learned.

Romanian crisis organisation

The Romanian crisis organisation is well organised and consists of different institutions on national, regional level and local level. The Directia Apelor Banat is a regional institute (river basin based).

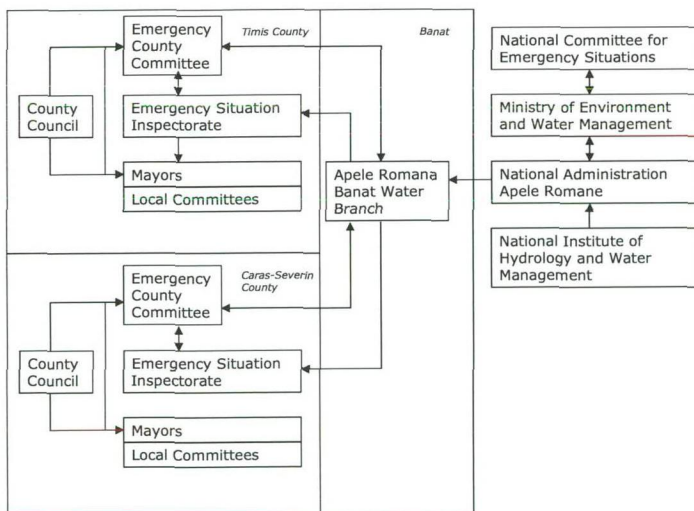


Figure 6-1 Organisation disaster management during flood situations in the Banat region

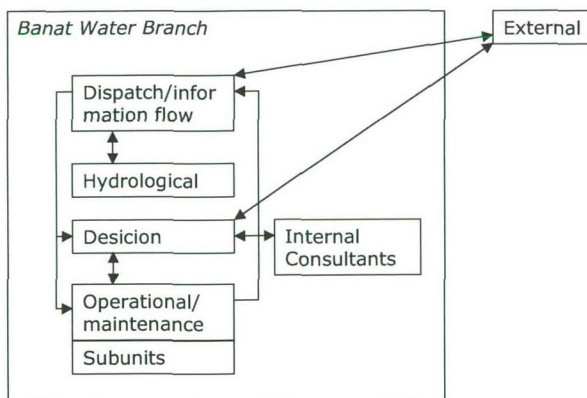


Figure 6-2 Organisation disaster management during flood situations within Directia Apelor Banat

During a disaster the different institutions communicate with each other according a predefined strategy, the plan. People hardly ever meet in person, but have contact by phone. All people involved know the procedures well, but they do not (always) know or care what happens with their information in the disaster process.

Flood Warning, Communication and Evacuation

Some remarks about flood warning, communication and evacuation are:

- The automatic gauging stations are not used because according to local experts the stations are not calibrated properly. The measured series are stored, but 2-day manual measurements are still made as well. It is recommended to recalibrate the automatic stations because they can be very useful for instance to support a automated flood early warning system.
- The reference levels used by different departments and gauging stations should be made consistent.
- The warning forecasting codes used by NAAR and Directia Apelor Banat should be made consistent.
- According to specialists at Directia Apelor Banat the forecasts made by the national institute are not very accurate, also because different forecasting methods are being used. We recommend to make the forecasting on national and regional level more consistent. Discussions about methodologies should be made in national level.
- Down-scaling is not part of the current warning procedure. We recommend to include this in the flood warning strategies.
- The information flow and communication in general with mayors and municipalities should be improved.
 - It should be more clear when warnings are "important".
 - Mayors and municipalities should be included in the planning and design of flood protection measures before the flood. This was also made clear during the project component "Flood Protection Strategy" as described in the final report [HKV, 2008].
 - Improve communication with the people (municipalities) living in flood prone areas. Non-structural measures like flood maps and inundation movies (Sobek 1D2D) can be used for this.

Exercise

Some remarks about the (indoor) exercise:

- Exchanging knowledge and practicing decision making and information exchange in an exercise has a positive effect on the skills of the professionals.
- Meeting in a less formal way than during a flood situation has a positive effect on the cooperation during a flood.

7 References

HKV, 2006 Development of a strategy for improved protection against flooding and flood risk reduction along the Timis River. Inception report

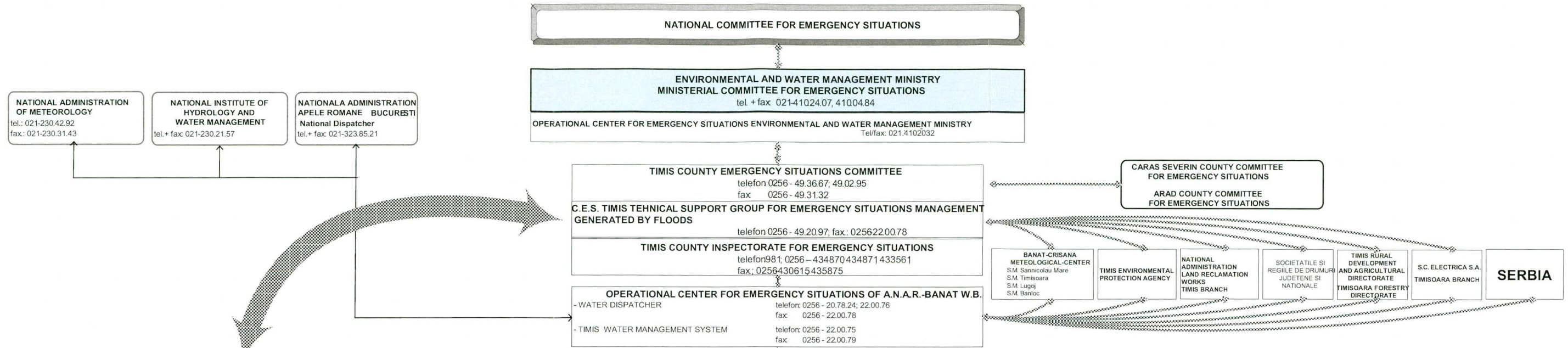
RIZA, 2006 Development of a strategy for improved protection against flooding and flood risk reduction along the Timis river.

Ministry of Environment and Water Management, 2006 Romania, National flood risk management strategy, flood prevention, protection and mitigation

Appendices

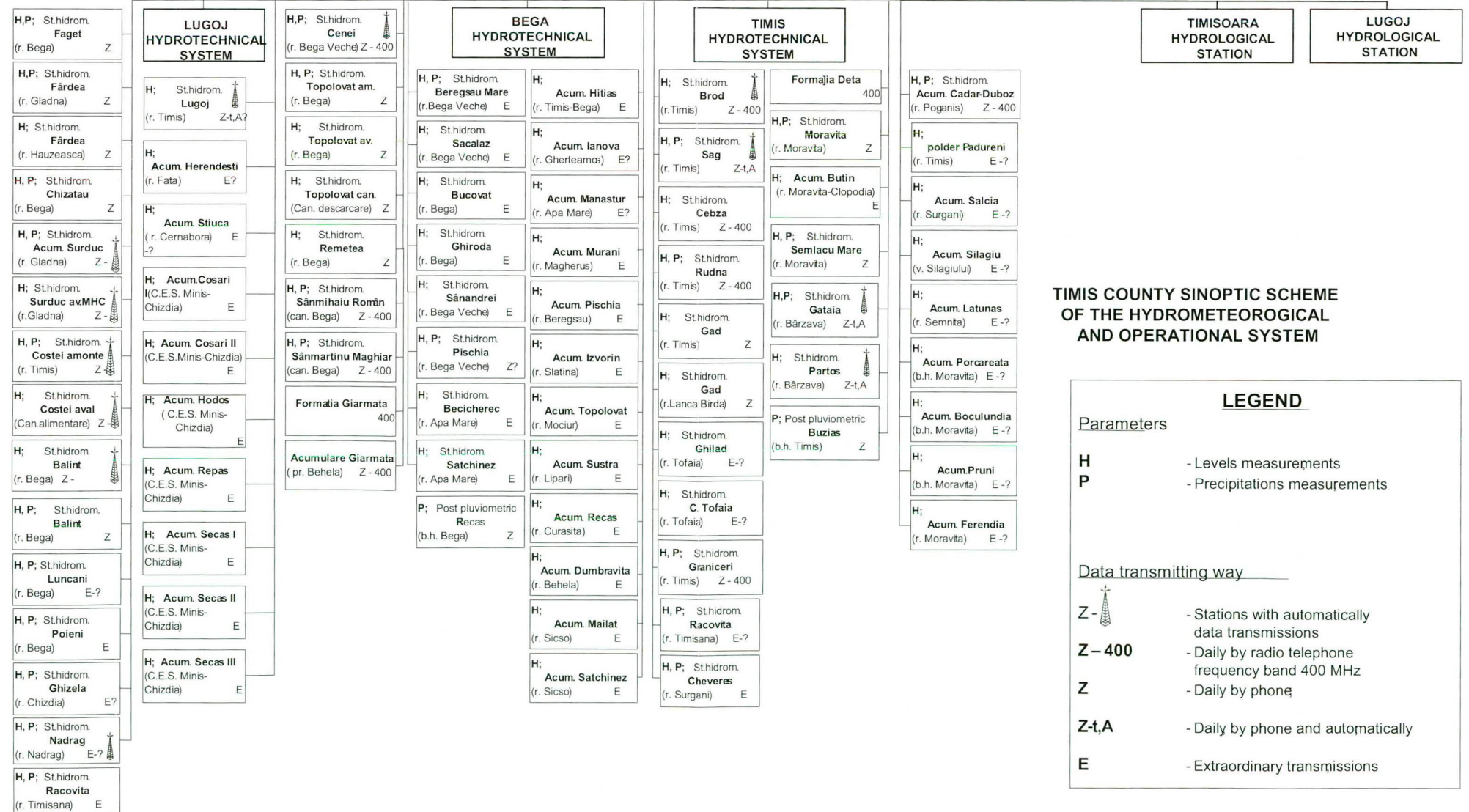
Appendix A: Hydro-geological Water Management Information Flux of NAAR

Appendix B: Timis County synoptic scheme of the hydro-meteorological and operational system



95 LOCAL COMMITTEES FOR EMERGENCY SITUATIONS

1 Bara	33 Faget	65 Peciu Nou
2 Balin]	34 Fibiș	66 Periam
3 Banloc	35 Foeni	67 Pi]chia
4 B\$rna	36 Gataia	68 Pietroasa
5 Beba Veche	37 Gavojdia	69 Racovi]a
6 Becicherecu Mic	38 Ghilad	70 Reca}
7 Belin]	39 Ghiroda	71 Remetea Mare
8 Bethausen	40 Ghizela	72 Saco]u Turcesc
9 Biled	41 Giarmata	73 Saravale
10 Birda	42 Giera	74 Satchinez
11 Bogda	43 Giroc	75 S@c@laz
12 Boldur	44 Giulv@Z	76 S\$ndrei
13 Brestovat	45 Gotlob	77 S\$nmihaiu Rom\$
14 Buzia}	46 Ieccea Mare	78 S\$nnicolau Mare
15 C@rpini]	47 Jamu Mare	79 S\$npetru Mare
16 Cenad	48 Jebel	80 Seca}
17 Cenei	49 Jimbolia	81 Șandra
18 Checea	50 Lenauheim	82 {ag
19 Chevere]u Mare	51 Liebling	83 {tiuca
20 Ciacova	52 Lovrin	84 Teremia Mare
21 Co]tei	53 Lugoj	85 Timi]oara
22 Comlo]u Mare	54 M@n@]tur	86 Tome]ti
23 Criciova	55 Ma]loc	87 Tomnatic
24 Curtea	56 Margina	88 Topolov@]u Mare
25 Darova	57 Mo]ni]a Nou@	89 Tormac
26 Denta	58 Moravi]a	90 Traian Vuia
27 Deta	59 N@drag	91 Uivar
28 Dude]tii Vechi	60 Ni]chidorf	92 Valcani
29 Dude]tii Noi	61 Ohaba Lung@	93 Varia}
30 Dumbrava	62 Or]i]oara	94 Victor Vlad Delamarina
31 Dumbr@vi]a	63 Par]a	95 Voiteg
32 F\$rdea	64 Pădureni	



Appendix C: Interview list

Project : Inception phase, Timis river
 Date : 21 september 2006
 Subject : Questions for Interviews
 From : Elmi Vermeij - Van den Braak, Hermjan Barneveld, Job Udo
 To : Mihaela Madar (contact person Directia Apelor Banat), management Directia Apelor Banat
 CC : Robert Slomp (RIZA)

This memorandum describes the basis of the interviews to be taken place the 4th, 5th and 6th of October in Timis region, Romania. The discussions based on the questions as stated below should result in the following:

1. Inception Report which describes
 - o the feasibility of the project plan of "Development of a strategy for improved protection against flooding and flood risk reduction along the Timis river",
 - o potential problems that may arise during the implementation of the project plan and
 - o objectives of the Banat Water Directorate.

The inception report can be seen as an updated project plan for the project.

2. Current Situation Report describing the current flood management situation in the Timis/Bega system. This should include the different aspects of the "safety chain" and the current flood warning and evacuation system.

We kindly ask the Directia Apelor Banat to analyse the proposed questions stated below and if necessary correct or complete them. After this we ask you to propose an interview agenda during the 4th, 5th and 6th of October so the questions below can be answered as efficient and effectively as possible. We assume translations during the interviews and transportation will be organised by the Directia Apelor Banat.

Questions concerning the Safety Chain (Banat and Timis County)

General

1. Is the term safety chain known? How is it constructed? For example, before-during-after

Before a flood

1. To what extent does Directia Apelor Banat cooperate and communicate with the Ministry in Bucharest?
2. Are risk analyses carried out?
3. Are risk maps available yet
 - a. Yes, which areas?
 - b. No, because...
 - c. We have plans to make them...
4. Are inundation maps available yet?
 - a. Yes, which areas and which events?
 - b. No, because...
 - c. We have plans to make them...
5. Are emergency plans for floods available?
 - a. For which organisation?

- b. For different organisations together?
- c. Who is responsible?
- d. Does the plan use disaster/emergency levels?
- e. Hardcopy or digital?
6. Are emergency plans for floods practiced regularly?
 - a. No, because
 - b. Yes...
 - i. In the organisation?
 - ii. Between organisations?
7. Are emergency plans updated?
8. Is there a management system for the plans available?
9. Are evaluations of previous floods available?
 - a. What is evaluated?
10. Are lessons learnt and implemented in flood management plans from previous floods?
11. Which measures are available to protect area and people when a flood occurs? E.g.:
 - a. Sand bags
 - b. Emergency dikes
 - c. Inundation areas
12. Who is responsible for these protective solutions? Is the availability of this measures guaranteed?

During a flood

1. To what extend does Directia Apelor Banat cooperate and communicate with the Ministry in Bucharest?
2. Who or which organisation is in charge?
3. what organizations are involved?
4. How are the responsibilities distributed during a flood?
5. How is communication organised between all participants/organisations?
6. Is there a pool of people available on call for these situations?
7. Are operational emergency plans available?
8. Who is responsible for these plans?
9. What does these plans contain?

After a flood

1. To what extend does Directia Apelor Banat cooperate and communicate with the Ministry in Bucharest?
2. Are plans available for the return of people after an evacuation (no flood occurred)
3. Are plans available for the return of people after an evacuation (flood occurred)
4. Is it known what needs to be done after a flood and before the return of the people?
 - a. Reconstruct houses
 - b. Reconstruct water, electricity....
5. Are plans available to rebuild areas?
6. Is mental care taking of the people available?

Extra Evaluation of a recent flood based on (a part of) the questions above.

Questions concerning the Evacuation System (Banat region and Timis County)

1. Is there an Evacuation System?
2. What is the Evacuation system?
3. What are the components of the Evacuation system?

4. Who makes the final decision to evacuate?
5. Based on what information (provided by what organisation) will be decided to evacuate?
6. Who is in charge of the evacuation process?
7. Which parties are involved in the evacuation process?
8. Are evacuation plans available?
9. When is decided to start evacuation?
10. How are people informed?
11. Is there special attention for e.g. elderly?
12. Is there something like 'concept of people taking care of themselves'?
13. What is the average size of the evacuated area?
14. Is it known how long it takes to evacuate certain areas
 - a. Is there information about the number of people
 - b. Is there information about the number of people that need help?
 - c. Is there information about available roads for evacuation?
 - d. Is there information about the locations where people should go?
15. What time frame is necessary for a successful evacuation (for e.g. Banat region)?
16. What are the experiences with evacuations?
17. Are the citizens prepared on an evacuation?
18. How is communication about evacuation arranged?

Questions concerning the Flood Warning System (separate subject)

1. does a flood forecasting system exist?
2. who is responsible for the forecasts?
3. on which method (e.g. flow simulation, statistical, data-assimilation) or models (rainfall-runoff, flood routing, hydraulic modelling,..) is the forecast based?
4. forecast period and accuracy of the forecast?
5. which data is required for the forecasting system (e.g. rainfall measurements and predictions, measured water levels and discharges, temperature, initial situations)? How is the data acquired (real time?) and from which institutes?
6. For which purposes are the flood forecasts used:
 - a. Warning → who is responsible for the dissemination? Who are informed (mayors, population, operators, Serbia, ..)
 - b. Operation of dams and weirs → who operates?
 - c. Operation of inundation areas → who operates?
7. Is the performance of the forecasting system evaluated after a flood event?

Questions concerning the project plan (according to the project results 4-11)

For the inception phase we would like to address the following topics:

4. Workshop on the analysis of the safety chain (in the Netherlands)
 - a. Which topics do you feel need most attention in this workshop?
 - b. Which institutes should be invited to attend the workshop?
 - c. At what moment during the project (preferably in 2006) would you prefer to have the workshop?
5. pilot for risk maps according to the EU Flood Directive
 - a. is a Digital Elevation Model available yet?
 - b. What experience is available within the Banat Water Directorate on flood mapping?
 - c. Are flood levels, affected frequencies and damage estimates as a result of floodings readily available.

- d. What methods are available for estimating flood damage and what parameters (water depth, flow velocity, bank erosion, ..) play a role?
6. improvement of the safety chain (see also above)
 - a. which items of the safety chain are most urgent to be studied and improved?
7. training of decision makers and staff on strategies for improving the flood protection and risk reduction (in the Netherlands):
 - a. how and by whom are alternative solutions for flood protection and flood risk management defined in Romania, and which criteria (e.g. safety, environment, costs, damage reduction, cost benefit analysis, up- and downstream effects, ..) are applied for assessing priorities.
 - b. Is public consultation part of the process?
 - c. Which institutes are responsible should be involved in such a training?
 - d. What would be the best moment for this training and the connected fieldtrip for water managers?
8. (see 7)
9. Strategy development for flood risk management:
 - a. Studies:
 - i. What studies have been carried out on causes of flooding, and flood protection up to now?
 - ii. What studies are ongoing or planned?
 - iii. Who has initiated the studies and who has financed them?
 - iv. Are reports or results available?
 - b. System
 - i. What are the main causes of high flood levels (downstream: backwater effects, dam operation, morphological changes, vegetation growth; upstream: climate change, deforestation, dam operation, intense rainfall, normalisation works; local: morphology, vegetation, narrowing, does the flood on Bega propagate faster than on Timis,..?)
 - c. Protection level and scenario's:
 - i. What protection level do you use (e.g. 1/100) and how has this level been determined?
 - ii. For which period do you normally design measures?
 - iii. Do you reckon with climate change in design? How?
 - d. Solutions
 - i. What is your experience with structural (e.g. dikes), room for the river (e.g. flood polders, river widening) and emergency measures (e.g. mobile walls, sand bags, dam operation)?
 - ii. Which measures do you think are promising and which measures would you consider not feasible?
 - iii. Which tools do you apply for estimating the hydraulic and morphological effects of measures?
10. Scenario development
 - a. Which institutes are normally involved in defining scenario's and alternatives?

Appendix D: Attendees on October 4th 2006

4th October		
Function	Company	email
General director	Directia Apelor Banat	mihnea.stanca@dab.rowater.ro
Hydrologist	Directia Apelor Banat	ionel.morariu@gmail.com
Hydrologist	Directia Apelor Banat	bogdymocanu2003@yahoo.com
Head of Dispatcher and Flood Protection Dept.	Directia Apelor Banat	gabriel.muntean@dab.rowater.ro
Engineer in Dispatcher and Flood Protection Dept	Directia Apelor Banat	carmen.dascalu@dab.rowater.ro
Engineer	Directia Apelor Banat	ana.ciucuzan@dab.rowater.ro
Physicist	Directia Apelor Banat	daniela.paulescu@dab.rowater.ro
Adviser of the director	Directia Apelor Banat	
Head of Water Works Operation and Maintenance Dept.	Directia Apelor Banat	luci.bociort@dab.rowater.ro
Head of Water Patrimony and Kadaster Dept.	Directia Apelor Banat	rodica.preluschek@dab.rowater.ro
Geographer	Directia Apelor Banat	catalin.aldescu@dab.rowater.ro
OTL HMWB	ARCADIS	alexander_m_mueller@hotmail.com
Consultant	HKV consultants	e.vandenbraak@hkv.nl
Consultant	HKV consultants	h.barneveld@hkv.nl
Projectleader/Modeling specialist	HKV conslutants	j.udo@hkv.nl

Appendix E: Attendees on October 5th 2006

5th October		
Title	Company	email
General director	Directia Apelor Banat	mihnea.stanca@dab.rowater.ro
Head of Dispatcher and Flood Protection Dept.	Directia Apelor Banat	gabriel.muntean@dab.rowater.ro
Engineer in Dispatcher and Flood Protection Dept.	Directia Apelor Banat	carmen.dascalu@dab.rowater.ro
Head of Water Works Operation and Maintenance Dept.	Directia Apelor Banat	luci.bociort@dab.rowater.ro
Adviser of the director	Directia Apelor Banat	
Head of International Cooperation Dept.	Directia Apelor Banat	mihaela.madar@dab.rowater.ro
Geographer International Cooperation Dept.	Directia Apelor Banat	catalin.aldescu@dab.rowater.ro
Vice-president	Timis County Council	
High Counsellor	The Prefect Institution–Timis County	
Counsellor	Timis County Council	
Mayor	Şag community	
Mayor	Peciu Nou community	
Mayor	Giera community	
Mayor	Giulvăz community	
Mayor	Foeni community	
Editor	Radio Fuerrilla Timișoara	stiri@eliberadio.ro
Jurnalist	Renasterea Banateana - newspaper	renasterea@renasterea.ro
Editor	Ziua de vest - newspaper	redactor@ziuadevest.ro
Editor	Timis Expres	
Reporter	Radio Timișoara	rtmstiri@yahoo.com

5th October		
Title	Company	email
Jurnalist	Andyma Image	
Presse attache	Directia Apelor Banat	daniela.paulescu@dab.rowater.ro
HMWB expert	ARCADIS Euroconsult	r.a.nieuwenhuis@gmail.com
MEP expert	ARCADIS Euroconsult	a.a.a.swenne@arcadis.nl
Consultant	HKV consultants	e.vandenbraak@hkv.nl
Consultant	HKV consultants	h.barneveld@hkv.nl
Projectleader/Modeling specialist	HKV consultants	j.udo@hkv.nl

Appendix F: Questionnaire

This questionnaire was sent to Directia Apelor Banat as a part of the preparation of the workshop.

Introduction

In the Inception Report [HKV, 2006] a three day workshop on public participation and communication will be organised. An exercise is foreseen as part of the workshop (day 3). The workshop is planned in the second week of March next year.

An exercise gives insight in strengths and weakness of the emergency organisation and communication during a flood. The main goals of the workshop are:

- Better communication/information management between different stakeholders active in a (n expected) flood situation
- Improved understanding of the responsibilities and closer participation from stakeholders in all phases of the safety chain.

On the 2nd day of the workshop a short introduction will be given about the exercise, the flood scenario and the main goals of the next day. Based on this information the participants can prepare for the next day.

The exercise on day 3 will be divided in three sessions:

- Session 1: Introduction of the flood scenario and exercise
 - goals
 - scenario
 - expectations
 - additional information
- Session 2: Exercise
 - part 1: first indication of expected extreme water levels (before)
 - part 2: extreme high water level, potential dike breach in predicted time frame; preparation water system and public safety (before).
 - part 3: dike breach (during)
 - part 4: Care taking after the flood (after)
- Session 3: Short evaluation

The flood scenario for the exercise will be developed by HKV consultants, based on the interviews with stakeholders and persons involved. These interviews will be carried out in the beginning of February 2007. This document contains an overview of the questions that will be asked in the interviews.

Suggestion people for interviews (potential participants exercise)

- Person from Directia Apelor Banat (data center, decision makers, field staff)
- Mayor
- Person from Emergency Situation Inspectorate
- Person from County Committee

Suggestion date workshop

We would like to suggest to have the three day workshop in week 11 (12 – 16 March). Preferably on a remote locations.

Questionnaire for interviews

Setting

- What was your role during the flood of 2005
- What were the (local) circumstances
 - Before the flood (threat was there)
 - During the flood
 - After the flood

Stakeholders and communication

- With which stakeholders of persons did you have contact **before** and **during** and **after** the flood and for which purpose?
 - Before the flood
 - Local level:
 - Regional level:
 - National level:
 - During the flood
 - Local level:
 - Regional level:
 - National level:
 - After the flood
 - Local level:
 - Regional level:
 - National level:
- Based on your experiences, do you want think you need contact with different stakeholders?
- What kind of information do you want to receive and for what goal?
 - E.g information:
 - Measurements
 - Actions and measures
 - Tasks and responsibilities
- What kind of information do you want to give and for what goal?
- Was your role clear to you?
- Was your role clear for your counterparts?
- Was the role of your counterparts clear to you?
- Were you able to do your task?
- How did you stayed in contact before and during the flood (e.g. phone, e-mail, fax?)
- When were you alarmed (e.g. early, in time, late)
- What information did you get
- How were you alarmed (phone, fax)
- Were you satisfied with the information you received from your counterparts (and why)

General

- What went very well during the flood?
- What could/should be better in the future?

- What is your opinion about the contact with the other stakeholders?
 - E.g.:
 - What was successful
 - It was frequently enough, because.....
 - It was not frequently enough, because.....
 - It was in time, because.....
 - It was too late, because.....
 - There were problems establishing the contact, because.....
 - All messages were clear, because.....
 - What could have been better
 - What can be improved in the near future

Disaster plans

- Did you use your disaster plans?
- Which disaster plans did you use?
- Were the disaster plans usable?
- Are any adaptations made to the disaster plans after the flood
- Are the disaster plans compared with the plans of the other local, regional and national organisations?

Experiences during the most recent floods

- What are your positive experiences before, during and after the flood, concerning
 - Communication:
 - Organisations:
 - Alarming:
 - Before the flood
 - During the flood
 - After the flood
- Where there points for improvement before, during and after the flood, concerning
 - Communication:
 - Organisations:
 - Alarming:
 - Before the flood
 - During the flood
 - After the flood

Exercise

- If you want to prepare your organisation for a flood situation(before-during-after) in a exercise- environment:
 - what would you like to learn
 - what would you like to be simulated
 - what would you like to practice
 -

Appendix G: Participants workshop Herculane

Name	Organisation
Elmird Boak	HKV
Maaïke Ritzen	Rijkswaterstaat
Job Udo	HKV
STANIA GEORGESCU	TRB (BWB)
PREDA DAN-COSTEL	I.G.S.U. - BUC.
TONCIAGA VASILE	ISU "SENEVIC" - CARAS SEVERIN
PRELUSHEK KODICA	D.A. BANAT
Choungou Aua	D.A. Banat
MERAI DANIELA	D.A. Banat
Teclorescu Mularu	D.A.B.
Aura DRAPA	M.M.G.A.
Gabriel ION	ringa
Ambrusche Netei	ANAR
Morasib Ionel	D.A.B.
VARESCU CARMEN	J.V.J.O. - LESJ
MARECHIS ION	CONSTRUCTIILE JUD. TIMIS
CAMPANU GEORGETA	ISU "BIMBAC" JUD. TIMIS
Intila Dina	Caransebes - "Ureche" JUD. CARAS SEVERIN
STANCA MIHAILA	D.A.B.
LEUCU GEORGETA	D.A.B.
VIZITIU SOFIN	SGA CARAS SEVERIN
SEABO VILHELM	SGA CARAS SEVERIN
Catalin Aldescu	D.A. Banat
Mihaela Madar	D.A. Banat (BWA)
Mihaela Sarocac	D.A. Banat
Carmen Seriale	D.A.B.
JARES PETRU ALBERT	Inspectorat Caras - Frum County
Jorescu Ion	Primar Baile Herculane
Coplescu Nicolae	Primaria B. Herculane
Lorincz Neaga	D.A.B.
BAS ROHLEN	

Appendix H: Workshop program

Program Day 1: disaster management during flood in Directia Apelor Banat

- 8.00 – 9.00 Breakfast
- 9.00 – 9.15 Welcome and introduction project team Mr. Stanca, Job Udo
- 9.15 – 9.30 Introduction of the program Job Udo
Program and workshop objectives
- 9.30 – 10.30 Presentation Robert Slomp/Maaïke Ritzen
Role of Dutch Water Branch before, during and after a flood
- 10.30 – 10.45 Break
- 10.45 – 11.45 Presentation Robert Slomp/Job Udo
Projects on Flood Protection Strategies in the Netherlands
- 11:45 – 12:15 Presentation Bas Kolen
Short overview of exercises in water & disaster management
- 12.15 – 12.20 Close morning session Job Udo
- 12.05 – 13.30 Lunch break
- 13.30 – 15.15 Exercise Bas Kolen/ Elmi Vermeij - Van den Braak
 - 13.30 – 13.45 Explain exercise and prepare groups
 - 13.45 – 14.00 Introduction of the scenario
 - 14.00 – 14.15 Discuss role, info exchange per group
 - 14:15 – 15:15 Discuss role, info exchange together
 Depending on time one or two scenario's
- 15.15 – 15.30 Break
- 15.30 – 16.15 Evaluation exercise and the day Bas Kolen/ Elmi Vermeij - Van den Braak
- 16.15 – 16.30 Close afternoon session and short introduction program day 2 Job Udo
- 16.30 – 19.30 Free time
- 19.30 Start diner

Program Day 2: disaster management during flood in the Banat region

- 8.00 – 9.00 Breakfast
- 9.00 – 9.15 Welcome and introduction project team Mr. Stanca, Job Udo
- 9.15 – 9.30 Introduction project Mihaela Madar
- 9.30 – 9.45 Introduction of the program Job Udo
Program and workshop objectives
- 9:45 – 10:45 Presentation Maaïke Ritzen
Information exchange before and during flood, HIS & FLIWAS
- 10.45 – 11.00 Break
- 11.00 – 12.00 Presentation Bas Kolen
Exercises in water & disaster management: introduction exercise constructions, goals and examples
- 12.00 – 12.05 Close morning session Job Udo
12.15 – 13.30 Lunch break
- 13.30 – 15.30 Exercise Bas Kolen/ Elmi Vermeij - Van den Braak
 - 13.30 – 13.45 Explain exercise and prepare groups
 - 13.45 – 14.00 Introduction of the scenario
 - 14.00 – 14.15 Discuss role, info exchange per group
 - 14:15 - 15.30 Discuss role, info exchange together

Depending on time one or two scenario's

- 15.30 – 15.45 Break
- 15.45 – 16.15 Summary exercise and experiences Bas Kolen/ Elmi Vermeij - Van den Braak
- 16.15 – 16.30 Close afternoon session and short introduction program day 3 Job Udo
Questions and subject for presentation on demand on Friday
- 16.30 – 19:30 Free time
- 19.30 Start diner

Program Day 3: Communication and evaluation

- 8.00 – 9.00 Breakfast
- 9.00 – 9.15 Introduction of the program Job Udo
- 9:15 – 10:00 Presentation Elmi Vermeij - Van den Braak
Transferring Information by Communication: communication between organisations and between organisations and inhabitants
- 10.00 – 11.00 Time for questions or 'presentation on demand'
- 11.00 – 11.15 Break
- 11.15 – 12.15 Evaluation workshop & exercises by participants
Evaluation results of exercise, evaluation of exercise as a tool in water & disaster management, remaining questions from previous interviews
- 12.15 – 12.30 Final Evaluation moderator Bas Kolen/ Elmi Vermeij - Van den Braak /Mihaela Madar
- 12.30 – 12.45 Close workshop Mr. Stanca/Job Udo
- 12.45 – Lunch

Organization workshop

Elmi Vermeij - Van den Braak (HKV CONSULTANTS), Project leader Workshop

Bas Kolen (HKV CONSULTANTS), Moderator exercise/expert exercise disaster management

Job Udo (HKV CONSULTANTS), Overall project leader

Robert Slomp (RIZA), Project leader beneficiary Dutch side

Maike Ritzen (DWW), Expert communication and information exchange in disaster management

Mihaela Madar (BWB), Project leader beneficiary Romanian side

Catalin Aldescu (BWB), Translator

Octavia Georgescu (BWB), Translator

Mihaela Soroceac (BWB), Translator



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