MONITOR II

2011

MONITOR II –WP5: Contingency Plan for Varbitza River

Consortium “Bauer Consult” Ltd

Version 1.0

August 2011

Tel.: +359 2 48 990 71

Fax: +359 2 48 990 72

SOUTH EAST EUROPE
Jointly for our common future

Programme co-funded by the EUROPEAN UNION

Content

1. Introduction

The present Contingency Plan for Varbitza River is prepared in accordance to the execution of the project №SEE/A/118/2.2.x, MONITOR II of Operational Program for South East Europe, Practical use of Monitoring for natural disaster management.

The floods are natural disasters against which is impossible to assure full protection. Some measures to limit their negative impacts could be undertaken on the base of investigations and the experience gained. According to the Directive 2007/60/EC flood means temporary coverage of earth area with water, which usually is not covered by water. For the municipalities that are included in the Varbitza river watershed the catastrophically flood means flood with more than 1,0 m water level.

1.1. Legislation

Water management is described in Water Law. According to the law waters are managed on national and basin level. Water management on national level is executed by the minister of environment and water, with help of High consultative water council. Water management on basin level is carrying out by the basin administrations. Two ministries are responsible for flood risk management policy – Ministry of regional development and public works – for protection from the adverse water impact in the settlements boundaries; and Ministry of agriculture and foods - for protection from the adverse water impact out of the settlements boundaries.

The minister of internal affair is carrying out the state policy for disaster protection. At the moment in the Ministry of internal affairs there is a Chief Directorate "Fire safety and protection of the population" that has regional offices.

1.2. Scope of activity

Varbitza is a river in south Bulgaria, part of Arda river watershed. It flows from west part of Zlatograd and discharges in Studen kladenetz dam close to Kardzhaly. It flows entirely on the territory of Bulgaria and in the regions of Smolyan and Kardzhaly. The watershed of Varbitza River is situated in the central part of east Rhodope mountain (Figure 1). The average altitude of the mountain is 800 m.

Figure 1. Varbitza River watershed

The area of Varbitza watershed is around 1203 km^2, the length of the river is 98 km, average slope 11 ‰, coefficient of cure – 2,40. The watershed altitude varies between 222 and 1439 m. The rain falls in Arda watershed are between 650 and 1000 mm. The maximum flow of Varbitza river is in autumn - winter period. Varbitza river is one of the most torrent rivers in Bulgaria.

The watershed of Varbitza is not heavily populated and also not economically developed, especially the infrastructure is not enough developed. In the upper part of the watershed there are erosion processes. Some measures are undertaken in order to limit the floods – these are mainly forestation and building of technical constructions. For the future decrease of floods it is important the forestation processes to be continued.

1.3. Administrative structures and responsibilities

The main section which is dealing with population protection during periods of natural disasters is the Chief Directorate "Fire safety and protection of the population" within the Ministry of internal affairs. The main tasks of this directorate are:

- Protection during natural disasters;
- Ensuring access of the people to the sections for emergency through the National system for urgent call with the European uniform number 112;
- Ensuring fire protection and safety activities in cases of fire and emergency situations;

The structure of this management is given in Figure 2. Except the administration of the Ministry of internal affairs, the mayors of the municipalities have also very important part.

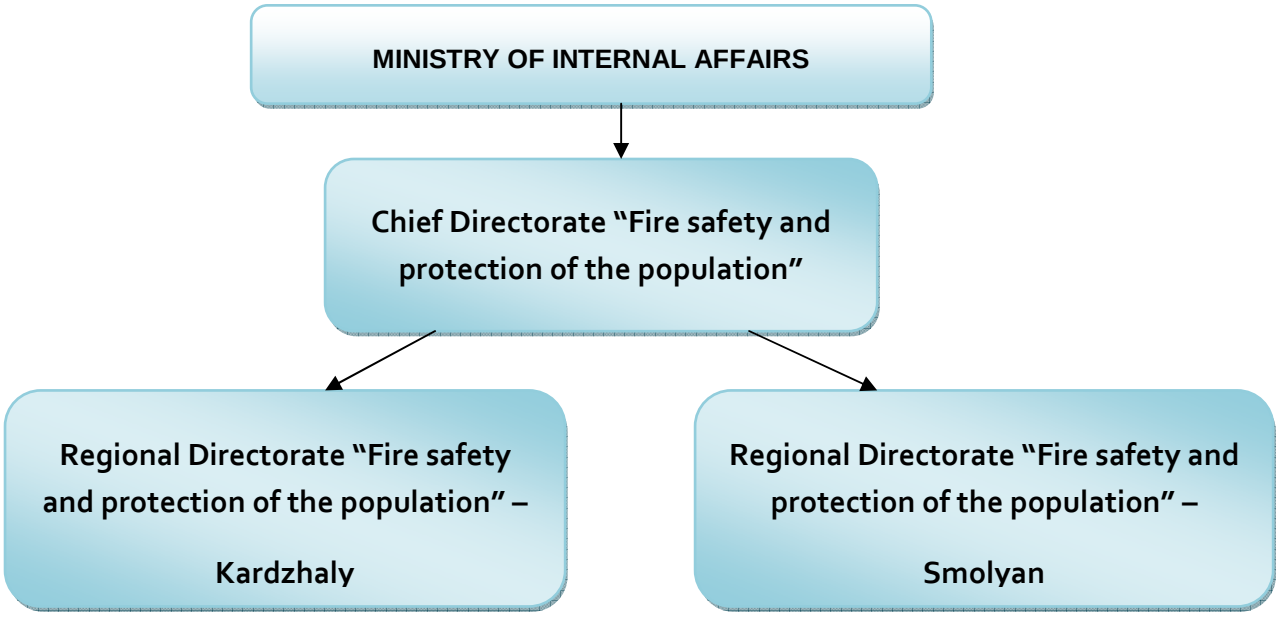

Figure 2. Structure of the sections under the Ministry of internal affairs responsible for the protection of the population in Varbitza watershed

2. Available resources

The resources to react in situations of natural disasters could be divided on two main parts:

- Financial;
- Technical.

The planned financial resources are mainly for flood risk prevention. In the municipality's budgets there are resources for:

- Elaboration of territory management plans, in which there should be restrictions for construction in flooded areas;
- Elaboration of plans and measures for flood protection;
- Construction of technical facilities for flood risk limitation – dams, etc.;
- Clearing of river beds from waste;
- Forestation of some area with a purpose to decrease the erosions and floods;
- Control of inert materials extraction;
- Control in construction of water electrical stations

The technical or practical resources include the materials that are used for population protection during disaster conditions, namely:

- To limit the water spread – sand bags, fence equipment, etc.;
- To help the population with drinking water supply, medicaments, etc.;
- To organize the safety and recovery activities;

3. Description of flood risk

3.1. Methodology for flood risk map elaboration

A simplified methodology was used for elaboration of model for flood risk maps elaboration.

- The facilities constructed in the river are not taken into account for model elaboration.
- For the value of HQ_{100} is used the measured maximum flow value in the Djebel station - 2.640 m³/s.

The main data base used for the elaboration of methodology is:

- DGM raster 100 x 100 m
- CORINE Land cover – data for land coverage (land use from 2009)
- Information about the size and location of settlements
- Information about location of:
  - Rivers and lakes
  - Streets and rail transport
  - Stations for water level measurement and rain measurement
  - Watershed borders
- Text documents about:
  - Annual water flow regime
  - Max. Flow from separate floods during the last years (partially water levels and quantities)
  - Average rain quantities
  - For some flood events – rain quantity and intensity

3.2. Short description of the content of risk maps

The presented maps in Attachment №2 of the report show the water depth for max. water quantity, and the maps in Attachment №3 show the number of the threatened population and industry. The presented maps show five places on the watershed territory which are very crucial in terms of threatened population or industry, and in which the damages in eventual floods could be biggest.

3.3. Risk maps

The Attachments № 2 and №3 of the report to be seen.

3.4. Conclusions

The most flood threatened territories are around the river in the town of Zlatograd, and around village Stareishino, Sadovitza and Balabanovo. In this respect it is necessary the

people living in the above mentioned settlements to be informed for the eventual flood risk as well as for the activities that could be undertaken for flood risk limitation and prevention.

4. Measures for decrease of flood risk

Part of the measures included in the Arda river basin Management Plan, in which watershed falls also Varbitza river, should be used for the increasing the flood risk protection. These measures are described in Figure No.3:

№	Water body	Measures	Municipality
1	From the spring of Varbitza river till Zlatograd	1. Forestation of the watershed with suitable local sorts. 2. Encouraging cultivation of plants, requiring less water 3. Investigation of the river bed erosion and identifying of measures for its stabilization 4. Felling prohibition of natural wood vegetation on the riverbanks and islands in the river	Zlatograd
2	Varbitza river and its tributary from Zlatograd till its mouth	Felling prohibition of natural wood vegetation on the riverbanks and islands in the river	Momchilgrad, Kirkovo
3	Varbitza river and its tributary from Zlatograd till its mouth	Forestation of riverbanks with wood sorts (4 numbers on 15 m)	Momchilgrad, Kirkovo, Zlatograd Djebel
4	Varbitza river and its tributary from Zlatograd till its mouth	Prohibition of inert materials extraction, construction of small water electrical stations, river bed clearing, discharges, river corrections and strict control in winter period	Момчилград
5	Varbitza river and its tributary from Zlatograd	Prohibition of construction of small water electrical stations, restriction of	Момчилград, Кирково, Джебел

	till its mouth	inert materials extraction	
6	Varbitza river and its tributary from Zlatograd till its mouth	Control of the quantity of inert materials extraction	Momchilgrad, Kirkovo, Zlatograd Djebel
7	Varbitza river and its tributary from Zlatograd till its mouth	Restriction of inert materials extraction	Джебел
8	Varbitza river and its tributary from Zlatograd till its mouth	Рекултивация на участъци, засегнати от добива на инертни материали	Momchilgrad, Kirkovo, Zlatograd Djebel
9	Varbitza river and its tributary from Zlatograd till its mouth	Prohibition of inert materials extraction	Momchilgrad, Kirkovo, Zlatograd
10	Varbitza river and its tributary from Zlatograd till its mouth	Investigation of the river bed erosion and identifying of measures for its stabilization	Momchilgrad, Kirkovo, Zlatograd Djebel
11	Varbitza river and its tributary from Zlatograd till its mouth	1. Залесяване на водосбора с подходящи местни видове 2. Изграждане на технически съоръжения за борба с ерозията на водосбора – прагове, баражи и др.	Momchilgrad, Kirkovo, Zlatograd
12	Varbitza river and its tributary from Zlatograd till its mouth	Encouraging cultivation of plants, requiring less water	Momchilgrad, Kirkovo, Zlatograd Djebel

Figure No.3. Measures for improving flood risk protection in Varbitza watershed, attached in the Plan for management of Arda river

5. Stakeholder involvement, public information

According to the Bulgarian legislation:

- Every municipality must prepare Flood protection plan
- Every company should have Emergency plan for prevention of natural disasters

REFERENCES:

- Law on natural disaster protection
- Water Law
- Regulation for the activities of the Ministry of internal affairs
- Project MONITOR I – Hazard Monitoring for Risk Assessment and Risk Communication
- Project №SEE/A/118/2.2.x, MONITOR II of Operational Program for South East Europe, Practical use of Monitoring for natural disaster management
- Flood protection plan for the Momchilgrad municipality