



CONTINGENCY PLANNING: PROCESS, TEMPLATES, CURRENT STATE IN BULGARIA

Intermediate report – WP5

Project period 5

(01.03.2011 – 31.08.2011)

Krassimira Ivanova

Iliya Mitov

Stefan Dodunekov

Radoslav Pavlov

Maria Sendova

31th August 2011



**INSTITUTE
OF MATHEMATICS
AND INFORMATICS
BULGARIAN
ACADEMY
OF SCIENCES**

*bl. 8, Acad. G Bonchev St
1113 Sofia
BULGARIA
fax +359 (2) 971 36 49
tel +359 (2) 870 10 72
+359 (2) 979 38 28
director@math.bas.bg*



MONITOR II

Project: **SEE/A/118/2.2/X MONITOR II**

Institution: Institute of Mathematics and Informatics

Period: 1/03/2011 – 31/08/2011

CONTINGENCY PLANNING: Process, Templates, Current State in Bulgaria

Authors

Krassimira Ivanova

Iliya Mitov

Stefan Dodunekov

Radoslav Pavlov

Maria Sendova

Date

31th August 2011

Version

1.6

Status

Final

Summary

This document presents a survey of the proposed methodologies and techniques for preparing a contingency plan. Special attention is paid to the Bulgarian national frame.

The survey is structured as follows:

A brief description of the concept of **contingency planning** is made. The benefits and the process of making contingency plans for mitigating disaster damages are outlined.

The main steps of the process include:

- Analysing hazard and risk;
- Identifying, defining and prioritizing contingencies;
- Developing scenarios for the planning process;
- Preparing a contingency plan for each selected scenario;
- Maintaining and updating the contingency plan.

Links to templates for making contingency plans by various means are given.

Special attention is paid to the Bulgarian legislation for Critical Infrastructure Protection – the laws and regulations for disaster protection and especially for flood protection.

Practical plans for disaster protection in Bulgaria are also analysed. Three levels of plans and measures for disaster protection are introduced:

- national level;
- institutional level;
- municipality level.

The Bulgarian national plan for disaster protection was adopted on 29.12.2010 by the Council of Ministers and its implementation is mandatory for all government bodies, legal, individual and sole proprietors in the event of disaster. The main objective is to analyse and assess the risk of disaster in the Republic of Bulgaria, to identify preventive measures to reduce the adverse consequences of disasters, and to organize and coordinate actions to prevent or reduce the consequences of disasters. The structure of the plan is given. The

interaction between executive authorities in case of a disaster is shown. The appendix describes measures for preventing or reducing the effects of floods.

In case of floods, the executive in charge of monitoring the water management is the Ministry of Environment and Water. The following four *river basin directorates* are set up within the frame of the ministry: Danube River Basin Directorate (DRBD); Black Sea River Basin Directorate (BSRD); East Aegean Sea River Basin Directorate (EABD); West Aegean Sea River Basin Directorate (WABD). The plans for integrated water monitoring in these directorates have been prepared with the purpose of meeting the requirements of the Water Framework Directive 2000/60 of the European Union and the Water Act. The structure of the Management plan for river basins in the West Aegean region is presented here as an example.

The Gotse Delchev municipal plan for disaster protection is shown as an example of a *plan on municipality level*. The Gotse Delchev municipality is a beneficiary of the project. In spite of the fact that the municipal plan was adopted in 2008 – two years before the national plan – it is evident that the two plans follow a common structure (at different levels of granularity).

Table of Contents

Summary	3
Table of Contents	5
Glossary	7
Aims of and Responsibilities for Contingency Planning	9
1 What is contingency planning?.....	9
2 The purpose of contingency planning	12
3 Emergency scenarios	13
4 Contingency planning and mitigation of disasters	13
5 Participants and partnerships in contingency planning	14
The Contingency Planning Process.....	15
Main elements of the process	15
Templates of Contingency Plans	17
National Legislation of Bulgaria on Critical Infrastructure Protection (CIP)	19
1 General Overview	19
2 Laws and regulations in Bulgaria concerning disaster protection.....	22
Plans for Disaster Protection – the Bulgarian Case.....	25
1 Bulgarian national plan for disaster protection 2010.....	25
1.1 Purpose of the plan	25
1.2 Main objectives.....	25
1.3 Implementation in action	26

1.4	Structure	26
1.5	Interaction between executive authorities in case of disaster	28
1.6	Measures to prevent or reduce the effects of flood	32
2	Example of a plan for protection and management on institutional level	35
2.1	Regional institutions dealing with monitoring water management	35
2.2	Management plan for river basins in the West Aegean region	35
3	Example of a plan on municipality level – Gotse Delchev municipal plan for disaster protection	38
3.1	Introduction	38
3.2	Purpose	38
3.3	Key tasks	38
3.4	Geographical characteristics of the municipality	39
3.5	Analysis of possible disasters and forecasts of consequences.....	42
3.5.1	Analysis of possible disasters and a forecast of their effects on the population, national economy, infrastructure and environment	42
3.5.2	Determining potentially dangerous sites and critical infrastructure in the municipality	44

Glossary

* Note: the terms are defined in the description of the contingency planning process given by the World Food Programme¹:

Contingency A specific situation or event that could occur in the foreseeable future

Contingency planning The process of establishing programme objectives, approaches and procedures to respond to specific situations or events that are likely to occur, including identifying those events and developing likely scenarios and appropriate plans to prepare and respond to them in an effective manner

Contingency prioritisation The process of selecting contingencies for planning purposes

Mitigation of disasters Measures taken to reduce the likelihood of disasters and the impacts of those that occur, including preventive (“risk and vulnerability reduction”) measures, preparedness measures and remedial (“crisis avoidance”) measures

Emergency A situation that surpasses the capacity of a society, group, organization, etc. to cope with and requires that extraordinary action be taken and resources applied in order to deal with the situation

Emergency preparedness Actions taken in anticipation of an emergency to facilitate rapid, effective and appropriate response to the situation

Hazard A possible threat or source of exposure to injury, harm or loss, e.g., conflict, natural phenomena

Risk An evaluation of the probability of occurrence and the magnitude of the consequences of any given hazard, i.e., how likely is a hazard and what consequences will it have

Planning assumptions The key elements of a scenario that form the basis for developing a contingency plan (for example, projected caseloads)

Scenario An account or synopsis of a possible course of events that could occur, which forms the basis for planning assumptions (for example, a river flood covering a nearby town and wiping out the local crop)

Scenario-building The process of developing hypothetical scenarios in the context of a contingency planning exercise

¹ <http://www.fews.net/docs/special/1000284.pdf>

Slow-onset disaster Disasters that take a long time to produce emergency conditions, for instance natural disasters such as drought or socio-economic decline, which are normally accompanied by early warning signs

Sudden-onset disaster Natural disasters (e.g., earthquakes, hurricanes, floods) or man-made or “complex” disasters (e.g., sudden conflict situations arising from various political factors), for which there is little or no warning

Trigger An event, condition or indicator that sparks a disaster

Aims of and Responsibilities for Contingency Planning

1 What is contingency planning?

A **contingency** is a situation that is likely to occur, but may not.

A **contingency plan** is a plan devised for a specific situation when things could go wrong. Contingency plans are often devised by governments or businesses which want to be prepared for anything that could happen.²

Contingency planning is the preparatory process of identification of and planning for such situations. A contingency plan may never need to be activated. However, if the anticipated situation does arise, the plan will provide a basis for rapid and appropriate actions.

Thus the contingency planning consists of:

- anticipating and analysing potential hazards, and
- determining the kind of response.

This involves:

- identifying and describing possible crisis scenarios and selecting one or more as a basis for planning; and
- determining
 - the type and scale of intervention that could be called on to organize or support,
 - the probable means of implementation, and
 - the human resources and logistics, management and other support systems that could be required, as well as the way they could be mobilized when needed.

Business and government contingency plans need to include planning for marketing to gain stakeholder support and understanding. Stakeholders need to be kept informed of the

² http://en.wikipedia.org/wiki/Contingency_plan (consulted on 02.08.2011).

reasons for any changes, the vision of the end result and the proposed plan for getting there. The level of stakeholders' importance and influence should be considered when determining the amount of marketing required, the timescales for implementation and completion, and the overall effectiveness of the plan. If time permits, input and consultation from the most influential stakeholders should be incorporated into the building of any contingency plan, since without the endorsement of these people any plan will have limited success at best.

In times of crisis, contingency plans are often developed to explore and prepare for any eventuality. During the Cold War, many governments made contingency plans to protect themselves and their citizens from nuclear attack. Examples of contingency plans designed to inform citizens of how to survive a nuclear attack are the booklets *Survival under Atomic Attack*, *Protect and Survive*, and *Fallout Protection*, which were issued by the UK and US governments. Today there are still contingency plans in place to deal with terrorist attacks or other catastrophes.

The National Institute of Standards and Technology³ has published a contingency planning guide for Information Technology Systems (2002).

In the United States, Contingency Plans include industrial regulatory requirements for all operations with dangerous goods, also called hazardous materials.

The United States Environmental Protection Agency⁴ has defined specific formats for Local Emergency Planning and a National Contingency Plan.

Contingency planning is a systematic approach to identifying what can go wrong in a situation. Rather than hoping that everything will turn out well, that "luck will be on our side", a planner should try to identify contingency events and be prepared with plans, strategies and approaches for avoiding them, coping with them, or even exploiting them.⁵

Contingencies are relevant events anticipated by a planner, including low-probability events that would have major impacts. Contingency planning is a "what if?" skill important in all types of planning domains, but especially in contested and competitive domains. The objective of contingency planning is not to identify and develop a plan for every possible contingency. That would be impossible, and an attempt would be a formidable waste of time. Rather, the objective is to encourage one to think about major contingencies and possible responses. Few situations actually unfold according to the assumptions of a plan. However, people who have given thought to contingencies and possible responses are more likely to meet major goals and targets successfully.

³ <http://csrc.nist.gov/>

⁴ <http://www.epa.gov/>

⁵ Power, D. J., Gannon, M., McGinnis, M. and Schweiger, D., *Strategic Management Skills*, Reading, MA: Addison-Wesley, 1986, ISBN: 0201139782

The following questions can help developing contingency plans:

- What events may occur that require a response?
- What disasters might happen during the execution of the plan?
- What scenarios are possible in the situation?
- What is the worst-case scenario of events for the situation?
- What event would cause the greatest disruption of current activities and plans?
- What happens if the cost of the plan is excessive?
- What happens if delays occur?
- What if key people leave the organization?
- What are the expected moves of antagonists and competitors?
- Who or what might impede the implementation of the plan?

The term **infrastructure**, introduced in the 19th century by the Swiss military theorist Antoine-Henri Jomini, emphasizes its strategic and operational importance to the leadership of warfare. Until about the middle of the 20th century this was a military term which meant the territorial organization of the system for maintenance and operation of the army. Gradually, the term *infrastructure* began to be used in economic theory and management theory. Now it is widely used in computer science, economic geography and security studies.⁶

At the end of the 20th century **Critical Infrastructure Protection (CIP)** became an essential element of the security policy in many countries, especially in NATO and EU member states. This involves the processes of globalization as well as the fight against international terrorism. There is a direct link between the threat of terrorism and CIP. The immediate occasion for strengthening the CIP was the terrorist attack in the US of 11.09.2001, as well as the terrorist attacks in Madrid in 2004 and London in 2005. The other main reason is the development and control of large infrastructure projects to transport oil, gas and other strategic raw materials.

⁶ Stefan Hadjitodorov. Critical infrastructure protection in national law of the Republic of Bulgaria and normative acts of the European Union. 2007.

http://www.expert-bdd.com/index.php?Itemid=38&id=745&option=com_content&task=view

2 The purpose of contingency planning

The purpose of contingency planning is to help ensuring a **rapid, appropriate and effective** response if and when a crisis occurs. The process of contingency planning should identify operational and other difficulties that could be encountered in responding to potential crises and enable thinking ahead and finding ways in which such problems can be avoided or overcome before a crisis actually occurs.

Contingency planning should be undertaken both:

- in a country not presently experiencing an emergency, in anticipation of foreseeable crises, and
- in an ongoing emergency or protracted relief and recovery operation (PRRO), in anticipation of significant changes that could occur in the situation.

Contingency planning is a vital element of preparedness. Other, complementary elements include:

- up-to-date baseline data on the areas and populations disaggregated by gender, age, ethnicity and other relevant variables likely to be affected, and on logistic and other resources, capacities and constraints;
- links to relevant early warning systems at regional, national and international levels;
- clear policies, procedures and guidelines for action in response to early warnings;
- clear definitions of responsibilities and authorities for action to meet emergency needs;
- clear policies and procedures, agreed upon with potential partners, for the provision and distribution of emergency assistance;
- arrangements and capacity to undertake rapid assessments of the food security situation and possible food needs, and to update logistics capacity assessments, when a crisis occurs;
- access to food, other material and human resources and/or mechanisms to rapidly locate and deliver them;
- staff appropriately trained in all functions and, ideally, joint training among staff from different agencies and government entities which would be expected to work together in the event of an emergency.

Contingency planning provides a basis for assessing the adequacy of these other aspects of preparedness in relation to specific, potential emergency response requirements. Measures can then be taken to strengthen particular preparedness capacities as needed.

The identification of these preparedness measures is an integral part of the contingency planning process.

Apart from the field of protection from natural disasters, CIP can be applied in various management activities of the state, municipal companies, etc. All these plans are subject to the same general requirements as each course is completed with specific features of problem solving in:

- ecology: global warming, ozone layer protection, protection of endangered species, etc.;
- agriculture: fighting drought at local, national and global levels;
- the problems of feeding the population and fighting poverty;
- Information Technology security, etc.

3 Emergency scenarios

Most emergency scenarios are generally categorized as resulting from “sudden-onset” or “slow-onset” hazards.

- SUDDEN ONSET hazards include both natural hazards (e.g., earthquakes, hurricanes, floods) and man-made or “complex” hazards (e.g., sudden conflict situations arising from various political factors);
- SLOW ONSET hazards are those whose effects take a long time to produce emergency conditions (for instance, natural hazards, such as long-term drought, that over a long time may contribute to severe food scarcity, malnutrition and eventually famine).

Emergency scenarios can also be envisioned as the actual outcome of drastic changes in ongoing (protracted) emergency operations. Planning for these various types of emergency scenarios will necessarily be very different.

4 Contingency planning and mitigation of disasters

Contingency planning can be an essential complement to **mitigation of disasters**. Elements of contingency planning should be incorporated into and support disaster-mitigating activities. At the same time, mitigation of disasters should be incorporated into contingency plans. For example, contingency planning should not be restricted to preparing

for a massive response to a major emergency: where possible, planning for crisis aversion (or early intervention) should also be undertaken.

5 Participants and partnerships in contingency planning

The response to the needs of a stricken population usually depends on coordinated action by the government, local authorities, non-governmental organizations (NGOs) and the communities themselves. Contingency planning, therefore, should normally involve all those parties – those expected to be involved in the eventual organization and implementation of an emergency response.

The process of contingency planning concerns all organizational levels:

- REGIONAL (INTERNATIONAL) LEVEL: The regional governance should provide overall guidance and coordination for contingency planning, analyse the potential inter-country impacts of particular scenarios, advise country offices to consider such impacts in their own contingency planning, where appropriate, and prepare a regional contingency plan for the coordination and management of a regional emergency where such might be needed. In our case, this level is EU, as well as different kinds of bilateral agreements.
- NATIONAL LEVEL: Contingency planning at the country level is the responsibility of the Country Director supported by all functional units of the country office. The plan will involve aspects related to programming, logistics, finance, personnel, administration, etc. So all units must be involved.
- MUNICIPALITY LEVEL: Such plans have to conform to higher-level plans and directives. In the future, such plans have to be examined as parts of an integrated environment which contains rules and actions in different types of disasters (local, national or international).

The Contingency Planning Process

Contingency planning is a **process** in which individuals within an organization or from different organizations work together to establish shared perspectives on potential crisis scenarios and likely humanitarian needs, agree upon common objectives, define how they would make decisions and carry them out in the event of a crisis.

The plan is a record of what has been envisaged and agreed upon at a particular moment. It is not an end in itself. The understandings and relationships developed during the **contingency planning process** are as important as the plan itself. But a written plan is also essential for preserving the thinking and decisions over time and over staff changes. The plan must be regularly reviewed, and be updated as needed, by those who would be responsible for taking action in the event of a crisis.

The contingency plan may be brief and general if the hazard appears to be distant or is ill-defined. It should be in greater detail as a particular event or hazard becomes clear and imminent. It should then be adapted into and elaborated on in an operational plan when a crisis occurs and emergency action has to be taken.

An actual crisis will rarely correspond exactly to a scenario adopted for contingency planning purposes. However, the general approach agreed upon in the contingency planning process will probably still be valid, and a coherent operational plan can be prepared much more quickly by adapting and elaborating on a well-thought-out contingency plan than by starting from scratch.

Main elements of the process

There are five main steps in a contingency planning process:

1. Analysing hazard and risk;
2. Identifying, defining and prioritizing contingencies;
3. Developing scenarios for the planning process;
4. Preparing a contingency plan for each selected scenario; and

5. Maintaining and updating the contingency plan.

During the first stage of the process, hazards are identified and risks assessed. Based on this initial evaluation, contingencies are examined and prioritized in order to focus planning activities and resources on the most important contingencies. Scenarios are then developed that envision the potential effects of the selected contingencies.

Scenarios provide the underlying planning assumptions used to estimate likely needs in terms of both response capacity and needs of resources. Contingency plans can then be developed based on scenarios. Finally, the plan must be revised and updated to reflect changing circumstances.

Each of the above steps requires careful judgement based on sound information and a thorough understanding of:

- potential hazards;
- the food supply situation of the country and the food security situation – the food economies – of population groups vulnerable to potential crises;
- the effects of previous crises on food supplies and household food security;
- the lessons learned from past emergency and recovery interventions; and
- partners and in-country capacities likely to support response to future crises.

Additional information will be available from: government documents and departments at national and local levels; local universities and research institutes; NGOs, especially those working in at-risk areas; and various websites.

Templates of Contingency Plans

“Man is a tool-using animal... Without tools he is nothing, with tools he is all” – so said Thomas Carlyle (1795–1881). When it comes to contingency planning, Carlyle could not have guessed how appropriate his observation would be. Software tools can streamline the disaster recovery or business continuity planning process – or turn it into a nightmare.⁷

A contingency plan typically consists of various *if-then* statements that define the solutions to deploy if certain problems occur.

Contingency plans should be developed for every critical process or function. The user should first review all alternatives and identify the best plan or alternative process for the observed situation. These plans will vary with each system, process, and intended purpose. This generic outline will help visualizing what a contingency plan should include and can serve as an outline for almost any process. Contingency plans can range from very simple to very complex, each plan being based on the organizational needs.

There exist various templates that help the process of making contingency plans. Some examples follow:

- Template of the Contingency Plan proposed by the National Institute of Standards and Technologies⁸
- Contingency Plan Template for Any Business by Robert Lengyel, Brains for Business, 2006⁹
- Minimizing Business Interruptions During Disasters by Steven Goldberg, Steven Davis, Andrew Pegalis¹⁰

⁷ Philip Rothshtein. Contingency planning software: the right tool for the right job. 2003. <http://www.rothstein.com/articles/contplansoft.html>

⁸ <http://csrc.nist.gov/>

⁹ www.brains.com.au/Sample%20Contingency%20Plan%20Template.doc

¹⁰ <http://www.davislogic.com/contingency%20planning.htm>

- Sample Contingency Plan – Loss of Power¹¹. This contingency plan template has been filled with data related to the operations of a pathology business when the business suffers a loss of power.

¹¹ <http://www.brains.com.au/downloads.htm>

National Legislation of Bulgaria on Critical Infrastructure Protection (CIP)

1 General Overview

In Bulgaria CIP activities were launched during the socialist period (under the name “protecting the national economy”). These activities were carried out by uniformed services – the Ministry of Internal Affairs (in particular State Security) and the Ministry of Defence (in particular Civil Defence). The Fourth, “Economic” department of State Security provided counterintelligence support for the national economy. Its activity was organized on a linear-site basis and covered almost all sectors of the economy – industry, energy, transport and communications, credit and exchange, construction, agriculture and forests. It was performed by so-called regime and security officers at the premises of the national economy, who were employees of the Fourth department of State Security.¹²

Within the frame of Ministry of Defence, the Civil Defence carried out the organization of activities and protection of the population and national economy (APPNE). The main focus was planning APPNE in terms of nuclear conflict. The active regulation connected with sustainability of critical infrastructure in Bulgaria was designed only for this context: “The technical rules of Civil Defence”, Annex № 2, Decree № 45 of the Council of Ministers, 1988 (unpublished).

Radical changes in the ownership in the economy (from state to private) largely obsoleted the existing system for protection of the national economy. However, some of the existing institutional traditions and terminology were preserved.

¹² Nickolay Pavlov. Analysis of normative rules on protection of critical infrastructure in the national legislation of the Republic of Bulgaria and regulations of the European Union. 2007, http://nikipavlov.files.wordpress.com/2011/05/analiz_normativna_uredba_cip_statija_v-final_2007.pdf

The term **critical infrastructure** was introduced in Bulgarian legislation in 2005 with the adoption of the Law on Crisis Management. Along with it, however, the Bulgarian legislation used four other terms of similar or even identical meaning.

The table below shows the basic concepts in Bulgarian legislation which partly or completely overlap with the term “critical infrastructure”:

Concept	Definition in Law	Act
Critical Infrastructure	set of facilities, services and information systems whose standstill, malfunction or destruction would have serious negative effects on the health and safety of population, environment, national economy or the effective functioning of the government	Law on Crisis Management, additional provision § 1 item 8
Potentially dangerous object; Potentially dangerous activity	Potentially dangerous object: an object which, due to its functions, size or service area could cause large-scale damage to human health, death, property damage or disruption of vital socio-economic activities upon repeated deviations from normal use or upon damage and destruction. Potentially hazardous activity: every human activity which may result in large damage to health, death, property damage or disruption of vital socio-economic activities if the technological requirements have not been met or for other reasons.	Law on Crisis Management, additional provision § 1, item 6 and item 7; Law for Disaster Protection, additional provision § 1, item 9 and item 10
Strategic objects and actions	Strategic objects and actions are such as have national significance and whose incapacitation, or the disruption of whose normal mode of existence and operation, could cause exceptionally high danger to the life, health, peace and property of the citizens, the public order, national security and government	The term is used in: – Law for the Ministry of Internal Affairs, Article 42, Par.1; – Rules for the implementation of the Law for Ministry of Internal Affairs, Article 45 and Article 46;

		– two lists approved by Decree of the Council of Ministers
National Economy	There is no definition in law	Concept for protection from natural disasters and accidents, approved by the Council of Ministers 12.01.2006
Technical Infrastructure	System of buildings, facilities and linear engineering transport networks, water and sanitation, electricity, heat, gas, telecommunications, land cultivation, waste treatment and geo-protection activities	Law on Spatial Planning, additional provision § 31

The existing partial or complete duplication of concepts in the field of CIP is a serious shortcoming of the current legislation in Bulgaria. The most comprehensive term is “national economy”, which is almost identical in meaning to the term “critical infrastructure”. The terms “potentially hazardous sites and activities” and “strategic sites and activities” effectively apply to the majority of critical infrastructure sites. The term “technical infrastructure” also means the majority of the critical infrastructure.

The duplication of concepts in the national law of Bulgarian CIP reflects the narrow departmental approach in this area and the duplication of powers and functions of various institutions. The term “strategic sites and activities” is established in the Law for the Ministry of Internal Affairs (Art.42, para.1), according to which the National “Security” provides counter-intelligence protection of strategic sites and activities jointly with other organizations. These functions are detailed in the Rules for the Implementation of the Law for the Ministry of Internal Affairs (Art.46, para.1), according to which “strategic sites and activities that are relevant to national security are determined by the Council of Ministers in a single list upon a proposal to the relevant ministers or heads of departments after prior consultation with the Director of the NSS”.

On the other hand, the Law on Crisis Management provides for the establishment of:

- A register in the ministries of the sites and systems of critical infrastructure within their respective areas (Art.15, para.4);
- A regional register of the sites and critical infrastructure systems (Art.16, para.11);
- A municipal register of the sites and critical infrastructure systems (Art.19, para.11).

It is important to emphasize that the Register of Critical Infrastructure (RCI) cannot be simply a list of items with certain qualitative and quantitative characteristics, but must be a complex information system with a distributed database (in various ministries and organizations), with centralized management (in CIP state authority, prescribed by a corresponding enactment) and multiple users – ministries, regional and municipal administrations. The RCI system is a highly dynamic and variable structure and organization.

The main functions and tasks of the RCI must be in the following areas:

- ensuring information on a wide range of critical infrastructure sites and allowing for responsible management decisions on prioritizing measures to protect the CI;
- making reports on the current status of CI objects;
- supplying input of target information from the CPI, changing the status of objects and relationships between them;
- classifying the CI objects by various criteria – importance, risk, financial resources to achieve a certain level of security, etc.;
- modelling external influences on CI – natural disasters, accidents, terrorist attacks and others, and assessing damage;
- reflecting the relationships between CI objects in case of external influences;
- making a preliminary assessment of damage and losses;
- formulating proposals for actions and elimination of the consequences of certain external influences, taking into account the mutual influence;
- estimating the finances needed to reach a certain level of security of a set of critical sites.

2 Laws and regulations in Bulgaria concerning disaster protection

The Bulgarian laws and regulations concerning disaster protection in force that were in recent years are presented below.

➤ ***Law for Disaster Protection (LDP)***

Publ. SG¹³ No:102/19.12.2006, last am. SG No:39/20.05.2011

¹³ SG – State Gazette.

Art.1. This law shall ensure the protection of life and health, environment and property during disasters.

Art.2. A disaster is an event or series of events caused by natural phenomena, incidents, accidents or other emergencies that affect or threaten life or health, property or the environment in amounts that require taking measures or the involvement of special forces and the use of special resources.

Art.3.(1) Executive power bodies, legal entities and sole traders organize disaster protection within the performance of their duties under this Act and other regulations governing their activities.

(2) The Authority and the persons under para.1 is coordinated in an integrated rescue system for disaster protection.

Art.4. The basic principles of disaster protection are: 1. right to protection of any person; 2. priority of saving lives over protecting other activities; 3. publicity of information on disaster risks and the activities of executive authorities in disaster protection; 4. priority to preventive measures in providing protection; 5. responsibility for implementation of protection measures; 6. phasing of forces and resources for protection.

Art.5. Disaster protection is achieved by: 1. implementation of preventive activities; 2. carrying out protection activities; 3. coordination of actions of a rescue system; 4. support and disaster recovery; 5. sourcing; 6. accepting help.

The law also includes the following chapters:

Chapter Two. PREVENTIVE ACTION

Chapter Three. INTEGRATED RESCUE SYSTEM (Section I. General rules; Section II. Planning and preparation; Section III. Coordination and management of rescue and urgent reconstruction works in the disaster area)

Chapter Four. PARTICIPATION AND SUPPORT OF INDIVIDUALS AND ENTERPRISES IN CASE OF DISASTER (Section I. Rights and obligations of individuals; Section II. Obligations of legal persons and sole traders; Section III. Voluntary units)

Chapter Five. DECLARATION OF AN EMERGENCY

Chapter Six. RELIEF AND RECONSTRUCTIONS

Chapter Seven. RESOURCE PROVISION

Chapter Eight. FUNCTIONS OF THE EXECUTIVE BODIES FOR DISASTER PROTECTION

➤ ***Law on Crisis Management (LCM) – cancelled***

This law was passed in 2005 – SG No:19/01.03.2005. From a theoretical standpoint the law of crisis management should be the second largest in each state after its Constitution. In practice, the 2005 Law on Crisis Management was a very weak law and received very low scores from experts and the professional community in Bulgaria. It was too abstract in nature. Its level of abstraction significantly distinguishes it from the Law for the Ministry of Defence and the Law for the Armed Forces, for example. In practice, in the Law on Crisis Management uses a narrow interpretation of the term “crisis” and is limited to natural disasters, accidents and catastrophes. Other types of crisis situations (disturbance of public order, terrorism, civil and ethnic conflict) are actually outside the remit of the Law approved by the National System for Crisis Response.

The existence of two laws – LDP and LCM – leads to the absurd situation of two parallel systems in our country: a national system for crisis management (in LCM) and an integrated rescue system (in LDP). This and other weaknesses led to the repealing of this law in 2009 – SG No:35/12.05.2009¹⁴.

➤ ***Law on the National Emergency Call System Using the Pan-European Number 112***

Publ. in SG No:102/28.11.2008, am. SG No: 93/24.11.2009, am. SG No:88/09.11.2010

This law is connected with the work of National emergency services comprising the National Medical Coordination Centre, centres for emergency medical assistance, general and regional directorates of the Ministry of Interior, the Executive Agency for Maritime Administration and the Mountain Rescue Service at the Bulgarian Red Cross.

➤ ***Regulation for Early Warning and Disaster Disclosure***

Adopted with Decree of the Council of Ministers No:70/27.03.2009. Publ. in SG No:26/07.04.2009; last am. SG No:7/21.01.2011

The regulation establishes the procedure and method for early warning and notification of the executive authorities, the components of the Integrated Rescue System and the population in case of disaster on the territory of the Republic of Bulgaria.

➤ ***Other laws***

Other laws related to the observed theme include: The Law on the Ministry of Internal Affairs; The Law on the Bulgarian Red Cross; etc.

Plans for Disaster Protection – the Bulgarian Case

Here we will present plans from three different levels: national, institutional, and municipal.

1 Bulgarian national plan for disaster protection 2010

The National Plan for Disaster Protection¹⁵ has been produced on the basis of Art.62, para.2, item 2 of the Law on disaster protection. The document was adopted by Resolution № 973 of the Council of Ministers on 29.12.2010.

The implementation of the national plan for disaster protection is mandatory for all government bodies, legal, individuals and sole proprietors in the event of disasters.

It is updated at least every three years or when new regulations of the country or the European Union appear relating to climate regulation and organization of disaster protection activities.

1.1 Purpose of the plan

The main objective of the National Plan for disaster protection is to carry out analysis and assessment of the risk of disaster in the Republic of Bulgaria, to identify preventive measures for reducing the adverse consequences of disasters, and to organize and coordinate them.

1.2 Main objectives

The main tasks of the plan are:

¹⁴ Nickolay Pavlov. Theory and Practice of crisis management in Bulgaria
http://nikipavlov.files.wordpress.com/2011/05/38-analiz_uk-bg.pdf

¹⁵ <http://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=664>

-
- analysing possible disasters and forecasting their consequences;
 - planning measures to prevent or reduce the consequences of disasters;
 - distributing duties and responsibilities between the executive authorities to implement the planned measures;
 - providing tools and resources for the liquidation of consequences of disasters;
 - designing the interaction between the executive authorities;
 - designing the procedure for timely notification of the executive authorities and the population under threat or upon occurrence of a disaster.

1.3 Implementation in action

The national plan for disaster protection is put into effect by the Prime Minister upon declaration of an emergency on the territory of more than one region or municipality where the forces and means provided in the regional plan disaster protection are unable to cope with the situation.

With an emergency declared, the provisions of Art. 5, item 7 of the Law on responsibility for preventing and remedying environmental damage (SG N.43/2008, amend. SG N.77/2010) are in force.

1.4 Structure

The National plan for disaster protection contains the following chapters:

1. BASIS FOR DEVELOPMENT
2. GOAL
3. MAIN OBJECTIVES
4. ANALYSIS OF POSSIBLE DISASTERS IN BULGARIA AND FORECAST OF THEIR CONSEQUENCES
 - Earthquakes
 - Floods
 - Radioactive contamination (Analyses of: possible accidents in the Kozloduy NPP; possible radiation effects caused by transboundary transfer of radioactive substances in case of accident in the Cherna voda NPP; accidents with vehicles transporting radioactive material; industrial accidents associated with the release of dangerous substances)
 - Biological contamination

- Landslides
- Drought
- Threat of conflagration
- Strong winds and tornado
- Heavy snow, blizzards and ice
- Disasters resulting from accidents involving vessels
- Road, rail and aviation accidents
- Terrorist acts
- Unexploded munitions

5. MEASURES TO PREVENT OR REDUCE THE EFFECTS OF DISASTERS

- Measures to prevent or reduce the effects of earthquakes
- Measures to prevent or reduce the effects of floods
- Measures to prevent or reduce the consequences of radiation accidents
- Measures to prevent or mitigate an accident involving hazardous substances
- Measures to prevent or reduce the effects of biological contamination
- Measures to prevent or reduce landslide risk and protection against landslides
- Measures to prevent and reduce major fires (for objects of industry and critical infrastructure; for forests; for agriculture)
- Measures to reduce the consequences of heavy snowfalls, blizzards and ice
- Measures to prevent or mitigate disasters due to accidents with vessels
- Measures to prevent acts of terrorism

6. MEASURES FOR PROTECTION

- Organizational measures
- Order for request or provision of international assistance (notification papers; procedure for requesting and providing international assistance; situational papers; other sources for the request or offer of international assistance)

7. ALLOCATION OF DUTIES AND RESPONSIBLE AUTHORITIES FOR EXECUTION OF MEASURES FOR PROTECTION OF POPULATION

- Minister of Internal Affairs
- Minister of Foreign Affairs
- Minister of Regional Development

-
- Minister of Health
 - Minister of Defence
 - Minister of Transport, Information Technologies and Communications
 - Minister of Economy, Energy and Tourism
 - Minister of Environment and Water
 - Minister of Labour and Social Policy
 - Minister of Agriculture and Food
 - Minister of Culture
 - Minister of Education and Science
 - President of the State Agency “State Reserve and War-time Stocks”
 - President of the Bulgarian Red Cross
 - President of the Nuclear Regulatory Agency
 - Institute of Geophysics, BAS
 - National Institute of Meteorology and Hydrology, BAS
 - Chair of the National Statistical Institute
 - Regional Manager
 - Mayor
 - Enterprises and sole traders who operate with hazardous substances and materials or work in hazardous conditions or perform activities that are potentially hazardous to workers and employees, the population and the environment
 - Physical persons

8. TOOLS AND RESOURCES PROVIDED FOR LIQUIDATING THE CONSEQUENCES OF DISASTERS

9. METHOD OF INTERACTION BETWEEN THE EXECUTIVE AUTHORITIES AND PROCEDURE OF TIMELY NOTIFICATION OF DISASTERS

1.5 Interaction between executive authorities in case of disaster

For implementing the activities of this plan, the minister or head of department (depending on the nature of the disaster) establishes, upon order of the Prime Minister, headquarters for coordination and control (HCC). The head of the HCC, the staff and the place where the HCC is situated are appointed in an order.

The HCC performs the following functions:

-
- analyse information on the disaster;
 - take measures to curb the disaster;
 - perform interaction between the executive authorities at a national level;
 - inform the population and the media of the development of the disaster, the measures for its mitigation and control and the necessary precautions and actions by the population.

The work of the HCC is assisted by the expert group from a relevant ministry or department. In order to achieve coordination and interaction between the central executive, representatives of relevant ministries or agencies involved in the containment and eradication of the disaster are included in the expert group.

The procedure for timely notification of the executive authorities and the population threatened or affected by disasters is determined by the Ordinance on early warning and emergency notification.

Announcement groups at the national level are:

- President, Prime Minister, Chair of the National Assembly;
- Ministries, government and executive agencies and commissions.

Announcement groups at the district and municipal level are:

- regional administration;
- regional headquarters for coordination;
- municipal administration;
- municipal headquarters for coordination;
- mayor's office;
- populated places;
- components of the Integrated Rescue System of regional and municipal level.

Coordination of the constituent parts of an integrated rescue system is implemented through operational communication and information centres of the Ministry of Interior in accordance with the requirements of Art.29 of the Law on Disaster Protection.

The interaction between parts of an integrated rescue system involved in rescue and emergency recovery activities in the disaster area is made by the head of the place (the head of the territorial unit of General Directorate "Fire Safety and Rescue" or an officer authorized by him), except in cases of epidemics and epizooties, when the head of the place is the leader of the Regional Inspectorate for Protection and Control of Public Health and the Regional Veterinary Service.

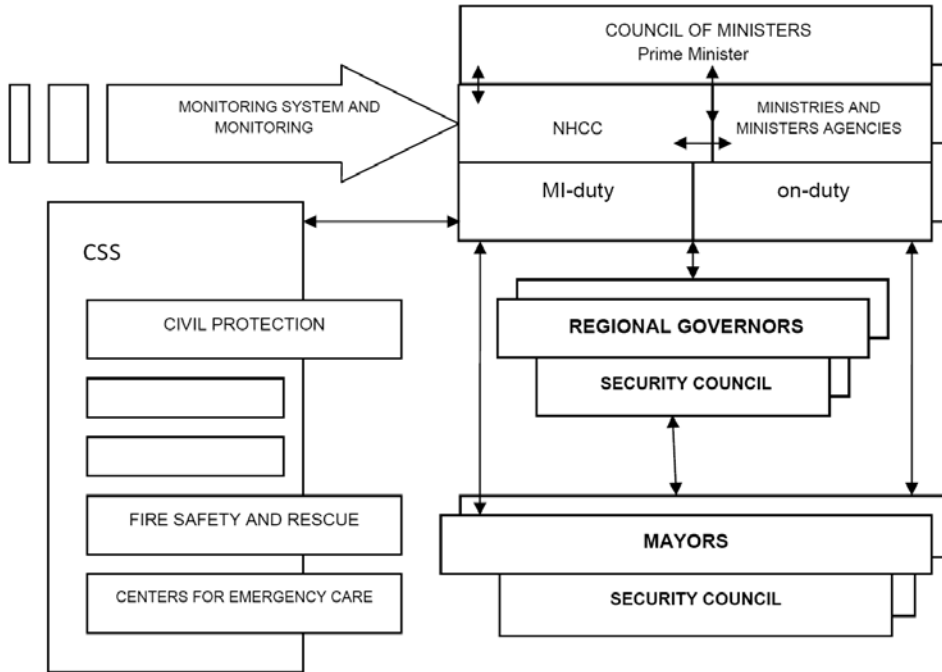


Figure 1. Permanent interconnections between executive authorities before disasters

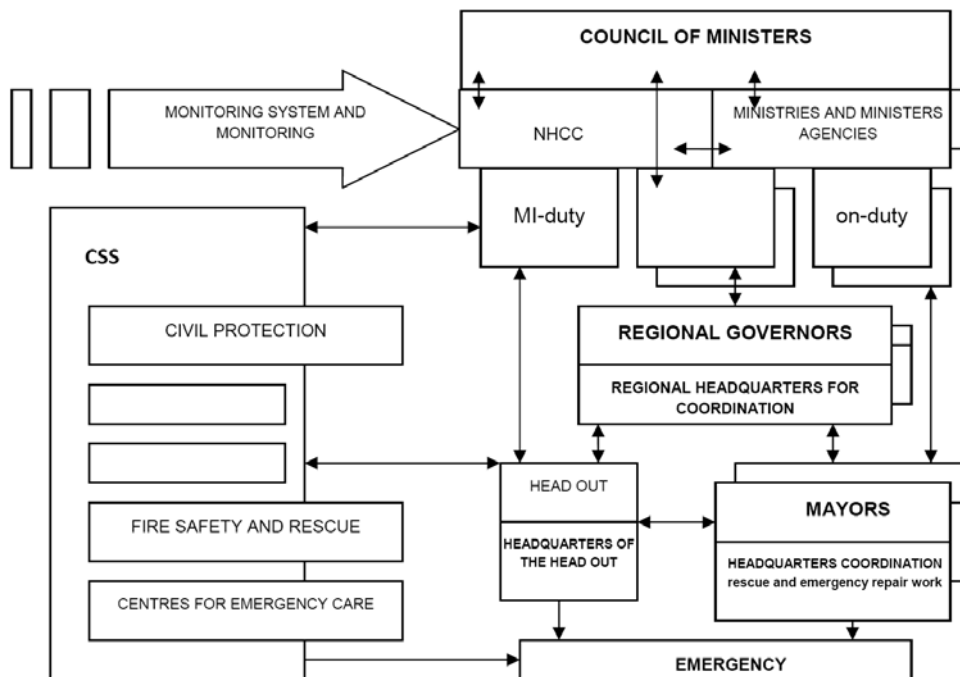


Figure 2. Operative interconnections between executive authorities in case of disaster

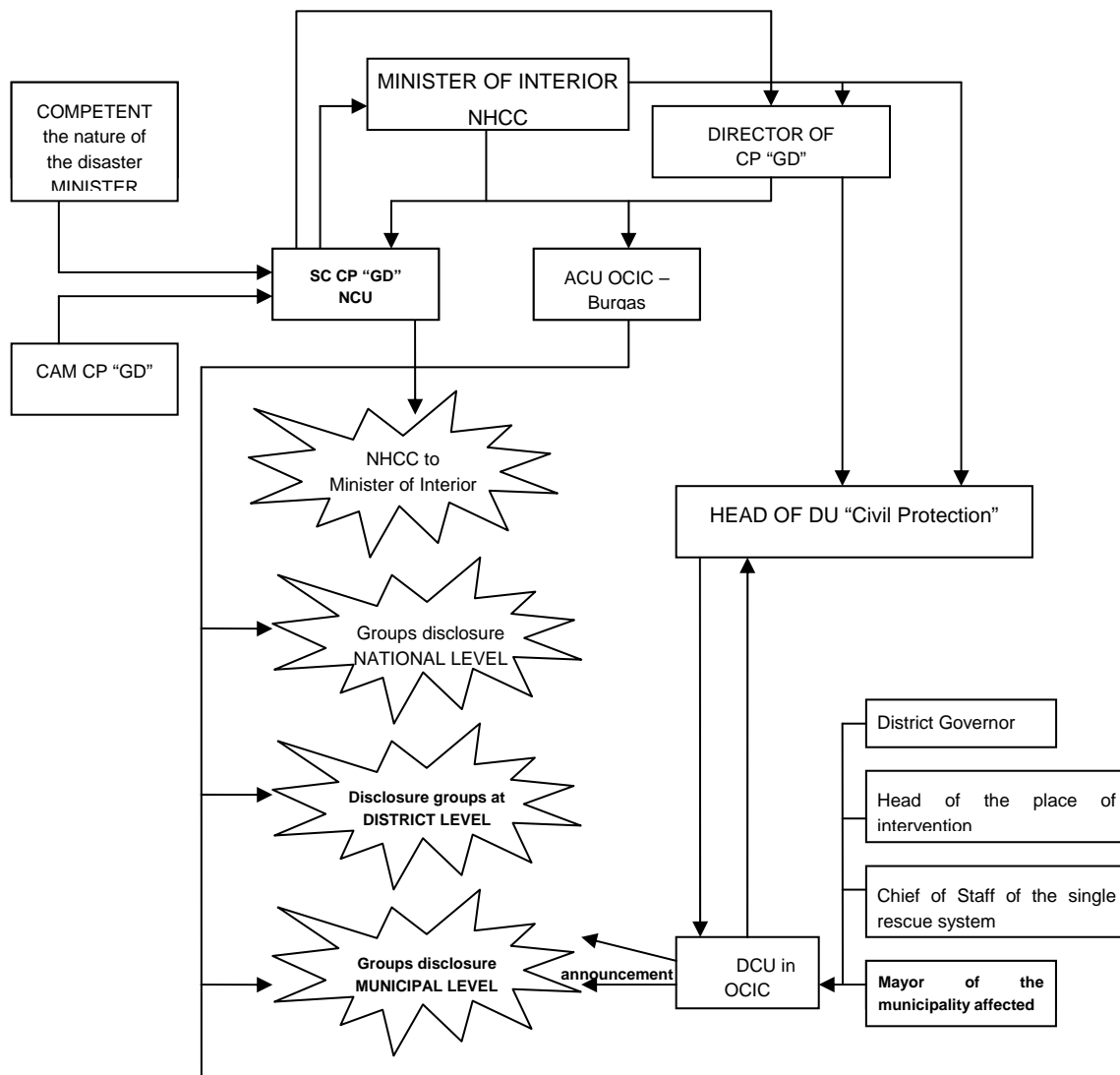


Figure 3. Scheme 3: Early warning and announcement of executive authorities and of components of unified rescue system

1.6 Measures to prevent or reduce the effects of flood

A special appendix (Appendix 21) in the national plan for disaster protection contains the prescriptions of preliminary assessments, preventions and protection from floods.

Measures include:

1. Preliminary assessment of flood risk.

Preliminary assessment of flood risk includes:

1.1. Maps of basin water showing topography and land use, including limits on:

- river basins and sub-basins;
- coastal areas – where they exist.

1.2. A description of the floods which have occurred in the past with significant adverse effects on human health, environment, heritage, technical infrastructure and business, and may be expected to recur in the future.

1.3. Magnitude of floods, their distribution and evaluation of the adverse consequences.

1.4. Assessment of potential adverse consequences of future floods for human health, environment, heritage, technical infrastructure and business, looking as far ahead as possible:

- topography, location of water courses and their general hydrological and geomorphological characteristics, including retention lowlands, such as natural retention areas;
- the effectiveness of existing infrastructure (systems and facilities) for flood protection, the location of settlements, areas of business and long-term planning;
- the impact of climate change on the occurrence of floods.

On the basis of the preliminary assessment of flood risk, the areas where it is considered that there is significant potential flood risk or a probability of significant potential flood risk are identified.

2. Flood maps

The following are set up for areas designated on the basis of preliminary assessment of flood risk:

- maps of areas under threat of flooding;
- maps of areas in risk of flooding.

2.1. *Maps of the areas under threat of flooding* include areas that can be flooded in:

- floods with a low probability of occurrence, where the probable recurrence period is greater than or equal to 1000 years, and unpredictable events;
- flood with average probability of occurrence, where the probable recurrence period is greater than or equal to 100 years;
- floods with a high probability of occurrence, where the probable recurrence period is greater than or equal to 20 years, where appropriate.

The maps for each of the probability periods have to show:

- distribution of flood;
- depth or water level;
- where appropriate, flow velocity and water quantity, respectively.

2.2. *Maps of areas in risk of flooding* show adverse effects of flooding for each probability period expressed by the following indicators:

- approximate number of inhabitants potentially affected;
- business activity in the area potentially affected;
- installations named in Annex 4 to Art.117 of the Law on Protection of the environment which might cause accidental pollution in case of flooding and protected areas included in Art.6 of the Biodiversity Act, for which there is a possibility that they will be affected;
- other significant sources of pollution, not mentioned in 2.2.2.3.

3. Management plans for flood risk

3.1. Conclusions from the preliminary assessment of flood risk according to the requirements in the form of a generalised map of the basin management region, delineating the areas where it is considered that there is significant potential flood risk or probability of significant potential flood risk, which are the subject of this plan for managing flood risk.

3.2. Maps of areas under threat of flooding and areas in risk of flooding and conclusions that can be made from these maps.

3.3. A description of the purpose of managing flood risk.

3.4. A short presentation of measures and their priority aimed at achieving the objectives of the management of flood risk, including measures taken under other legislation in the field of the environment.

3.5. Targets:

- reduction of potential adverse impacts of floods on human health, environment, heritage, technical infrastructure and business;

- reducing the likelihood of flooding.

3.6. Measures to achieve the objectives of item 3.5.

3.7. Description of the plan.

Management plans for flood risk address all aspects of managing the risk of flooding of the river basin level with a focus on:

- flood prevention;
- flood protection;
- increasing preparedness for floods, including flood forecasts;
- establishment of an early warning system.

The measures to achieve the goals in management plans of flood risk prevention will be allocated to administrative units and will include time and resources needed to implement the measures.

2 Example of a plan for protection and management on institutional level

2.1 Regional institutions dealing with monitoring water management

Especially in the field of flood monitoring such plans become a part of the plans for monitoring river basins on a regional level.

They play a major role during the phase of preventing and mitigating the flood risk.

Based on the new Water Act of 2000 the government of Bulgaria has divided the whole country into four river basin management districts and set up the following four river basin directorates:

- Danube River Basin Directorate (DRBD)
- Black Sea River Basin Directorate (BSRD)
- East Aegean Sea River Basin Directorate (EABD)
- West Aegean Sea River Basin Directorate (WABD)

In WABD, projects financed by the programme PHARE-CBC were implemented for integrated water management of River Mesta (EUROPEAID /119665/D/SV/BG) and River Struma (2005/017-454.03.02). The projects are in compliance with the Joint Programming Document, namely with Axis 3 – Improvement of the quality of life (in combination with upgrading health services), environment and protection and promotion of cultural resources; Measure 3.2 – Protection, promotion and management of the natural environment.

2.2 Management plan for river basins in the West Aegean region

The management plan for river basins in the West Aegean region¹⁶ (MPRB-WAR) was prepared in WABD to meet the requirements of the Water Framework Directive 2000/60 of the European Union and the Water Act. This plan is an essential tool for water management in catchment areas of the major rivers Struma, Mesta and Dospat for six years – from 2010 to 2015.

¹⁶ http://www.wabd.bg/bg/index.php?option=com_content&task=view&id=16&Itemid=32

The publication of MPRB-WAR was based on §138(1) of the Transitional and Final Provisions of the Water Act. The management plan for river basins in the West Aegean region was approved by Order № RD-291/22.03.2010 of the Minister of Environment and Water.

MPRB-WAR includes:

➤ ***General description:***

- Section I. General description of the characteristics of the West basin water management.
- Section II. Brief overview of significant pressures and impacts resulting from human activity on the state of the surface and groundwater.
- Section III. List and map of areas for water protection – Register of protected areas (under Section VI, art.157,3 of the Water Act).
- Section IV. Water monitoring.
- Section V. List of the objectives of environmental protection, including cases where exceptions are necessary.
- Section VI. Brief overview of the economic analysis of water use in the West region.
- Section VII. Programmes of measures to protect and restore water.
- Section VIII. Register of all similar programmes and plans within the West White Sea basin management region relating to individual sub-basins, sectors, problems or types of water relevant to RBMP.
- Section IX. List of measures for public discussion, results achieved by their implementation and related amendments to the plan.
- Section X. List of competent authorities for water management – names and addresses.
- Section XI. Individuals, relationships and procedures for obtaining records under Section VII, and programmes of measures and monitoring data in accordance with the provisions of Section VIII.
- Section XII. Ecological Assessment of the MPRB (non-technical summary) and measures under Art.26,2 and 3 of the Regulation on Environmental Assessment.

-
- ***Management plan for Struma/Mesta/Dospat river basin (the structures are identical):***
 - Section I. Characteristics of the river basin.
 - Section II. Summary of significant pressures and impacts resulting from human activity on the status of surface and groundwater of the river.
 - Section III. List and map of areas for the protection of the river (register of protected areas, in accordance with Section IV, Art.157,3 of the Water Act).
 - Section IV. Monitoring of the water basin.
 - Section V. List of objectives of environmental protection, including cases that require exceptions.
 - Section VI. Summary of the economic analysis of water use.
 - Section VII. Programmes of measures to protect and restore water.
 - Section VIII. Register of all other programmes and detailed plans in the valley of the corresponding river within the West basin management relating to individual sub-basins, sectors or types of problems related to MPRB.
 - Section IX. List of measures for public discussion, results achieved by their implementation and related amendments to the plan.

3 Example of a plan on municipality level – Gotse Delchev municipal plan for disaster protection

The Gotse Delchev municipal plan for disaster protection was approved in 2008 by Vladimir Moskov, the mayor of the municipality.

3.1 Introduction

The municipal plan for disaster protection was developed on the basis of Art.65, para.1, item 2 of the Law on Disaster Protection.

3.2 Purpose

Making arrangements for conducting rescue and emergency recovery activities (ERA) in case of disasters in the municipality.

3.3 Key tasks

- Ensuring protection of the population in case of disaster.
- Establishing optimal organization and management to conduct ERA in case of disaster.
- Organizing the preventive action to prevent and reduce the harmful consequences of any disaster.
- Forming a group of forces and means for ERA in case of disaster.
- Maintaining public order, security and protection of property in the disaster area.
- Building and maintaining standby systems management, monitoring the situation and notifying the public about potential hazards in case of disaster.

This plan is associated with the plan for crisis management and the annual plan for prevention provided by the municipal council on security and crisis management.

The plan is put into action by decision of the mayor, depending on the nature of the disaster.

3.4 Geographical characteristics of the municipality

1. Physiographic characteristics of the municipality

The municipality is situated in South-western Bulgaria along River Mesta and borders the municipalities Hadjidimovo, Garmen, Bansko and Sandanski. It covers an area of 315.8 sq.km. The terrain is hilly, including alpine and southern parts of Pirin.

The municipality is crossed by River Mesta. The length of the river within the municipality is 17 km, its flow velocity is 0.80 m/sec, average width 40 m, average depth 0.80 m. The hydrographic network includes the municipality and the smaller rivers Tufcha, Kamenica, Kostena, Mareva, Delchovska, Dobrotinska, and City River. There is a city channel with catchment of River Mesta. The length of the channel is 14,899 m, its width at the bottom 2 m, depth 1.40 m; it has a trapezoidal shape with flow 5 cbm/sec.

2. Climatic characteristics of the municipality

The municipality falls within the transitional Mediterranean climate zone with average annual temperatures 11.3–11.5°C; average in January –2°C, in July 19°C. Rainfall is highest in winter and autumn. The rainiest month is November and the driest month is August.

3. Demographic characteristics of the municipality

No	places	population			age structure		
		all	men	women	under 18	18–62	over 62
1	t. Gotse Delchev	20 533	10 046	10 487	4 866	13 172	2 495
2	v. Breznitsa	3 354	1 705	1 649	996	1 970	388
5	v. Mosomishte	2 344	1 172	1 172	541	1 489	314
4	v. Kornitsa	1 671	843	828	462	974	245
5	v. Lajnitsa	1 443	760	713	425	892	126
6	v. Borovo	1 226	614	612	275	754	197
7.	v. Banichan	765	378	387	102	530	133
8.	v. Bukovo	889	425	464	270	551	68
9	v. Gospodintsi	434	223	211	112	274	48
10	v. Delchevo	93	42	51	2	26	65
11	v. Dobrotino	53	20	33	6	24	23
	TOTAL	32 784	16 227	16 557	8 047	20 636	4 101

4. Economic characteristics of the municipality

Industry is the leading sector that determines the economy of the municipality. Manufacturing enterprises determine the level of economic activity in the municipality. Strongly present in the municipal industrial structure are the production of men's clothing, shoes, textiles, plastic products, zippers, etc. Among the leading companies with over 100 employees are "Pirin-Tex," "Pierrick", "Natalia-MM", "Kozmoteks", "Orbel", "Pirinplast", etc.

Environmental conditions in the community favour the development of horticulture. The arable land is one third of the territory. The main livelihood of the rural population is associated with tobacco, which however is reduced every year. Corn, wheat, vegetables and perennials are also grown, mainly for self-consumption and much less for industrial purposes.

Livestock farming is practiced primarily in personal holdings.

The total area of the forest fund of the municipality is 197 sq.km, managed by the Gotse Delchev State Forestry.

5. Hydro-economic characteristics of the municipality

The town of Gotse Delchev and the villages of Breznitsa, Kornitsa, Lujnitsa, Banichan, Borovo, Musomishte and Gospodintsi get water from the main water catchment.

Catchment:

- River Tufcha over v. Breznitsa– 400 l/sec,
- spring Barack over v. Breznitsa – 100 l/sec,
- terrain Popovi livadi – 15 l/sec.

Sewerage systems serve 95% in Gotse Delchev and 30% to 70% of almost all villages of the municipality. Only v. Delchevo and v. Dobrotino are without sanitation.

The irrigation systems for irrigation of agricultural land have been destroyed.

The municipality has one hydropower project – Toplika HPP in v. Mosomishte – 1000 KVA.

Adjustments to the rivers: River Mesta – the bulk dikes near v. Gospodintsi, River Tufcha – the bulk dikes near v. Banichan; River Delchovska and River Dobrotinska have been merged and form the City River within the bounds of Gotse Delchev, having been corrected with concrete and stone walls.

Small dams and reservoirs

№	Technical Data	Micro-dam "Sushitsa"	Ponds			
			"Sushitsa 1"	"Sushitsa 2"	"Dobrotino 1"	"Dobrotino 2"
1	Volume – cubic metres	400 000	55 000	30 000	30 000	55 000
2	Elevation of the crown	565	575	577	623(7)	609(10)
3	Medium height on the wall – metres	16	8	8	10	10
4	Length of wall – metres	161	80	30	80	85
5	Crown width of the wall – metres	4	6	6	9	8
6	Elevation of the spillway	563	574	575	743	739
7	Width of spillway – metres	1	2	1	1	1
8	High weir – metres	2	2	2	2	2
9	Type of intake	stopcock	stopcock	stopcock	stopcock	stopcock
10	Diameter of intake	Φ300	Φ-150	Φ-125	Φ-200	Φ-200
11	Type of wall	bulk dikes	bulk dikes	bulk dikes	bulk dikes	bulk dikes
12	Area in dca		10	8		
13	Depth – metres	20	5	5	10	15

No	Village / Ponds	Volume (cub. m)	Crown Elevation	Length (m)	Width (m)	Depth (m)	Area (dca)	Circumference (m)	Type of wall
I.	v. Lajnitsa								
1	"Barata"	64000		150	85	5	10	470	bulk dikes
2	"Burdoto"	12000	786 (±7)	70	42	4	4	224	bulk dikes
3	"Lozyata"	41000	739 (/±7)	150	55	5	8	410	bulk dikes
4	"Dubeto"-1	16000	741 (±7)	80	50	4	5	260	bulk dikes
5	"Dubeto"-2	4000		50	25	3	3	150	bulk dikes
II	v. Breznitsa								
1	"Piklivtsi"	2000				12	1.5		bulk dikes
2	"Mokra polyana"	6000				1.5	4		bulk dikes
3	"Bilizmata"	9000				3	3		bulk dikes
III	v. Kornitsa			Dike length	Dike width	Dike height			
1	"Yavor"	50000		213	5	9			bulk dikes
2	"Dubravata"	30000		385	5	8			bulk dikes
3	"Mamal dol"	40000	682 (±5)	200	6	10			bulk dikes
4	"Ratkovitsa"	55000		400	5	10			bulk dikes

6. Transport characteristics of the municipality

On the national level, the Gotse Delchev municipality is served by a national road network through the secondary road II-19 Simitli – Gotse Delchev – Drama, which is 20.4 km from v. Bukovo to “Toplika”, and the third class road III-197 Mesta – Gotse Delchev – terrain “Popovi livadi” – Vlashki andak, with a length of 20.3 km. The fourth municipal road network is 36 km long and is in satisfactory condition.

3.5 Analysis of possible disasters and forecasts of consequences

3.5.1 Analysis of possible disasters and a forecast of their effects on the population, national economy, infrastructure and environment

In the area of the municipality the following disasters are possible:

- disasters, earthquakes, floods, landslides, rock falls, snowdrifts and frost, forest and field fires, drought and hail, high winds, outbreaks of contagious diseases and epidemics in humans, animals and plants;
- accidents: in risky projects, working with inflammable materials and industrial toxic substances;
- accidents: traffic and intentional action.

➤ A. Earthquakes

The municipality falls under the Mesta seismic zone. It covers the upper course of River Mesta. The seismic focus has a depth of 20–50 km and a magnitude of 7–8 degrees on the Medvedev–Karnik–Sponheuer scale.

An earthquake of 7–9 degrees in the municipality can create a complex and difficult situation. It will demolish part of the residential and industrial buildings and likely lead to great human and material losses, destruction of communal energy facilities, and mass fires.

The available forces and resources of the municipality will be insufficient to conduct ERA.

Rescue and emergency activities will be organized in a complex environment using all forces and means for survival in cooperation with the forces of the Ministry of State Policy for Disasters and Accidents, neighbouring municipalities and modules of Civil Protection.

➤ B. Floods

Flooding may occur during heavy rainfall, snowmelt, partial or complete destruction of the walls of the reservoirs. Possible flooding in the municipality can be expected in Gotse Delchev in Ilarion Street and Polk. Boris Drangov Street, located along River Delchovska.

Possible blockages of the clearance of bridges can be expected in River Dobrotinska, City River (Gotse Delchev), in River Marevo (v. Kornitsa), River Tufcha (v. Breznitsa) and potentially dangerous traffic areas of the riverbeds. Upon tearing the walls of the reservoirs in the region of the “Sushitsa” a small part of v. Borovo will be flooded – residential buildings near River Sushitsa and industrial buildings along the river valley. Water takes 10–20 min to get from the reservoirs to v. Borovo.

➤ ***C. Landslides and landslips***

One landslide has been registered on the municipality’s territory near the reservoir “Dobrotino-2”, below the road Gotse Delchev – terrain Popovi livadi. The landslide slope and sides are 0.5–0.6 m high; the landslide tongue reaches the reservoir, the shaped section is of size 60/25 m, and its area is about 1.5 dca. The main reason is the water saturation of the terrain by infiltration of atmospheric precipitation and water from the ditch along the road. If the process continues, the road may be interrupted.

Slides may occur after heavy rainfall and intensified snowmelt on the roads Gotse Delchev – Sofia, Gotse Delchev – v. Delchevo and Gotse Delchev – v. Breznitsa.

➤ ***D. Ice and snowdrifts***

In heavy snow, strong winds and sudden temperature changes, snowdrifts, frost, and ice occur, which severely hamper the movement of vehicles. There is a threat of blackouts and disturbances of the normal rhythm of economic life. Frosts are possible throughout the municipality. Large snow drifts may cause interruption of road sections in the terrain Popovi livadi – Petrich or Gotse Delchev – v. Delchevo.

➤ ***D. Large forest and field fires***

Fire as a natural disaster – an uncontrolled combustion in space and time associated with a threat to property, life and health – is particularly characteristic of the municipality’s large forest and field tracts and arises from thunderstorms, through negligence or deliberate ignition.

The fire-hazardous areas in the municipality are the forest tracts of Mount Pirin and the Western Rhodopes, composed of both coniferous and deciduous forests. Fires in out-of-the-way forest tracts will make fire-fighting with the use of specialized equipment extremely difficult, which will lead to huge material and environmental damage.

➤ ***E. Drought, hail, lightning and wind storms***

The climatic characteristics of the municipality create a possibility of prolonged droughts, hail, lightning and wind storms that can cause significant damage.

Drought emerged as one of the main problems in the municipality in recent years.

Hail inflicts major damage to agriculture annually. Tornado phenomena are not typical but are no exception either.

➤ ***G. Industrial Accidents***

Industrial accidents associated with the release of toxic substances can occur in the companies “Kalina”, “Pirinplast” and “Orbel”. All three sites are fire-hazardous. In “Kalina” around 20 tonnes of cyanide waste are stored. Possible danger to the population can occur only from a major fire in “Orbel” because it is located within the city boundaries and next to the Dimitar Talev secondary school. The school and nearby residential buildings would be gassed, which would require the removal of children and adults.

➤ ***H. In the event of an accident in the nuclear power station and cross-border transfer of radioactive substances***

In the event of an accident in the nuclear power station, if the municipality falls in the path of the radioactive cloud, a difficult situation will arise. Contamination with radionuclides requires the introduction of a mode of behaviour and action of the population in the area of increased radiation and the provision of dosimetric control.

➤ ***I. Biological contamination of humans, animals and plants***

The existing industrial and economic conditions and structure of the agriculture, the geographic location of the municipality and the deteriorating international epiphytotic and epizootic situation, as well as insufficient control of trade and import-export regime in live animals and products of animal and plant origin, create conditions for outbreaks of biological contamination.

3.5.2 Determining potentially dangerous sites and critical infrastructure in the municipality

➤ ***Identifying critical areas of significant and potentially dangerous sites in the municipality***

Significant critical areas in the municipality are bridges on River Dobrotinska, River Delchovska and City River, within the bounds of Gotse Delchev; two electrical sub-stations in the city; two water-conduits Breznitsa – Gotse Delchev; the bridge of River Sushitsa on the main road Sofia – Gotse Delchev.

Potentially dangerous sites in the municipality are listed in Appendix № 1.

➤ ***Designation of critical infrastructure in the municipality***

Items are listed in Appendix № 2.

➤ ***Categorization of potentially dangerous objects***

✓ ***Industrial sites – low risk***

- company “Orbel” – a large fire will gas the Dimitar Talev secondary school and the surrounding buildings, which will require temporary removal of children living nearby to a safe place. Traffic in Gotse Delchev Boulevard will be blocked;
- company “Kalina” – an outbreak of industrial contamination within the company will occur in the event of cyanide waste spill. Degassing events will be necessary;
- company “Pirinplast” – a large fire is likely to gas the adjacent company “Pirin-Tex”, which has a large staff. The workers will probably have to be decommissioned to a safe place;
- methane station of “Enemona” – outside the boundaries of the city.

✓ ***Watercourses, dams, reservoirs – low risk***

- riverbeds of River Dobrotinska, River Delchovska and City River have been adjusted within the bounds of the city with stone and concrete walls, but bridges are very low and upon congestion in high water, the water can get out of its bed and flood the adjacent residential buildings;
- dam “Sushitsa” and reservoirs “Dobrotino” 1 and 2 and “Sushitsa” 1 and 2: breaking the walls of water would flood the western neighbourhood of v. Borovo, the road Gotse Delchev – Sofia at the juncture with River Sushitsa and farm buildings along the river;
- dikes of the river Mesta, Tufcha, Sushitsa and City River – no danger to populated areas.

✓ ***Warehouses with pesticides – low risk***

The pesticide storehouse in v. Banichan is outside the village and poses no threat to the population.

Schemes of the municipality and the town of Gotse Delchev with vulnerable sites, critical infrastructure and potentially dangerous objects are given in Appendix №3.

✓ ***Conclusions from the analysis of potential disasters***

The most difficult situation in the area of the municipality will arise from a devastating earthquake. The municipality's surviving powers and means will be insufficient for performing rescue and emergency recovery works.

The risk of major floods in the municipality is low. The largest river, Mesta, does not threaten populated areas. Loss of life can be prevented by providing continuous monitoring, timely notification and removal of people and livestock from flooded areas.

In the event of landslides and landslips in potentially dangerous places, the municipality has the necessary powers and means for clearing them.

In the event of severe winter conditions, the municipality is able to arrange timely removal of the snow and sanding of the fourth-class road network, the main streets in the city and the villages, so as to ensure the normal rhythm of life in winter conditions.

The risk of large forest and field fires in the municipality is high. The mountainous terrain and limited use of specialized fire equipment requires mobilizing large numbers of people for successful firefighting. This requires maintaining standby voluntary units in villages and businesses, providing material incentives to participants in the firefighting.

Tornado phenomena are not typical of the locality, but they do occur periodically and cause damage to roofs of buildings and trees in streets and parks. The municipality has the power and resources for the timely elimination of the consequences.

In the event of a major fire in "Orbel" the area will have to be isolated and arrangements made for the removal of students from the Dimitar Talev secondary school to a safe place.

Applications:

1. Potentially dangerous sites in the municipality.
2. Sites of critical infrastructure in the municipality.
3. Schemes of the municipality and town of Gotse Delchev in critical areas and potentially dangerous objects.
4. Municipal Council's security and crisis management list.
5. Group of forces and resources that can be used in disasters.
6. List of staff of the Unit "Ekopolitsiya".
7. List of staff of the Municipal Enterprise "Agriculture and Utilities".
8. List of employees in the municipalities of Gotse Delchev Municipality.
9. List of companies that can provide heavy equipment in the event of disaster.

10. List of companies of that can help in the event of road transport disasters.
11. Estimated deployment and capabilities of the health network in the municipality of Gotse Delchev.
12. Phonebook of the regional structures, municipal institutions and neighbouring municipalities.
13. Coordination sheet signed by all officials who have duties under the plan.
14. Sheet to reflect the update of the plan.