Global Water Partnership
Central and Eastern Europe

**Integrated Drought Management Programme in Central and Eastern Europe**

Activity 1.2 Final Report

# Review of the current status of the implementation of Drought Management plans and measures within RBMP according to WFD

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| **WP:** | WP1: Regional and Transboundary Cooperation |
| **Activity:** | Act. 1.2: Review of the current status of the implementation of DM plans and measures within RBMP according to EU WFD |
| **Activity leader:** | Elena Fatulova; GWP Slovakia |
| **Participating partners:** | *Involved experts are presented in Annex I of this report* |
| **Name of the output** | **Report on review of the current status of implementation of the drought management plans and measures** |
| **Purpose of the output:** | *Screening exercise focused on the assessment of the drought relevance within the region and Identification of the gaps in the national drought management strategies in comparison with EU strategy. Output will be used as a basis for activity 2.1. Guidelines for Drought Management Plans.* |

# Contents

# Abbreviations

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| CEE | Central and Eastern Europe |
| CIS | Common Implementation Strategy for the WFD |
| EC | European Commission |
| EU | European Union |
| GWP | Global Water Partnership |
| DMP | Drought Management Plan |
| IDMP | Integrated Drought Management Programme |
| NAP | National Action Programme |
| RBMP | River Basin Management Plan |
| UNCCD | United Nations Convention to Combat Desertification |
| WS&D | Water scarcity and drought |
| WFD | Water Framework Directive |
| WRMP | Water Resources Management Programme |
| BG | Bulgaria |
| CZ | Czech Republic |
| HU | Hungary |
| LT | Lithuania |
| MO | Moldova |
| PL | Poland |
| RO | Romania |
| SK | Slovakia |
| SLO | Slovenia |
| UA | Ukraine |
| COM | Commission |

# 1. Introduction

## 1.1. Background

The aim of this report is to summarize and evaluate the survey results carried out as a part of the Integrated Drought Management Programme in Central and Eastern Europe (IDMP CEE) under the Activity 1.2 ***"Review of the current status of the implementation of Drought Management Plans and measures within River Basin Management Plans (RBMP) according to Water Framework Directive (WFD)".***

The activity is a follow up of the findings of mapping of drought situation executed in the eight countries of CEE region during the previous IDMP CEE activity. The results are presented in the ***"Inception report for the GWP CEE part of the WMO/GWP Integrated Drought Management Programme"*** (J. Kindler, D. Thalmeinerova, 2012). On the basis of information obtained from the group of experts in the CEE countries, it was concluded that the droughts and/or water scarcity issues were widely recognized as a relevant phenomenon in the region.

The participated countries also jointly stated that "at present all countries of the CEE region need to improve their both short-term and long-term responses across sectors to meteorological, agricultural and hydrological droughts. Improvements in national and regional frameworks for drought monitoring, early warning and response are needed".

Based on the recommendations, new drought oriented initiatives including Activity 1.2 have been launched within continuation of IDMP CEE. Because the drought situation in individual CEE countries is assessed in details and clearly described in the Inception report, further activities were focused primarily on review and analysis of drought management systems currently introduced in the CEE countries.

## 1.2. Aim of the survey

The aim of the survey was to collect information from each participating country associated with the drought management issues and to analyze the current situation in production of the Drought management plans (DMP) and implementation of mitigation measures.

Altogether ten countries of GWP CEE region participated in the survey carried out under this activity – Bulgaria (BG), Czech Republic (CZ), Hungary (HU), Lithuania (LI), Moldova (MO), Poland (PO), Romania (RO), Slovakia (SK), Slovenia (SLO) and Ukraine (UA). Only Latvia and Estonia from CEE region did not join this activity (see Fig. 1). Eight of the involved countries (except of Moldova and Ukraine) are EU member states. Therefore the survey had to respect particularities of the EU water policy based on the principles of integrated water management implemented in accordance with EU Water Framework Directive (WFD).

Fig.1. GWP CEE Region

The survey was based on the European Union (EU) drought management policy developed during the last decade. The overriding principle of EU drought policy is an emphasis on drought risk management through the application of preparedness and mitigation measures. The main instrument for enforcement of drought risk management strategy is DMP. The main objective of DMP is to minimize the adverse impacts on the economy, social life and environment when drought appears.

The EU drought policy was developed as a part of activities within the "Common Implementation Strategy for the WFD" (CIS) which was established in 2001 with the aim to coordinate implementation of the WFD from the European Commission (EC) level.

One of the main products of the CIS drought initiatives was document: ***"Drought Management Plan Report Including Agricultural, Drought Indicators and Climate Change"*** (Report 2007). This report presents the general guidelines for the production of DMP.

The second document used for the survey performance was a policy paper of EC Communication from the Commission to the European Parliament and the Council*:* ***Addressing the challenge of water scarcity and droughts in the European Union*** (COM (2007)414 final, 18 July 2007)".

This document was up-dated and replaced by the new Commission document issued in November 2012 "***A Blueprint to Safeguard Europe's Water Resources"*** COM (2012) 673 final.

These documents have established the links between WFD and DMP and provided the basis for integration of the drought planning process into the production of the River Basin Management Plans (RBMPs). The EU countries were encouraged to prepare the DMP as a part of the first RBMP adopted in December 2009. Currently the second cycle of production of RBMPs is being in progress. The first version of the second cycle of RBMPs should be made available for the public by 22nd December 2014 and the final plans have to be completed by 22nd December 2015.

The presented review of the current status of development of the DMPs is based on the assessment of RBMPs adopted in 2009 (relevant for EU members) or national Water Resources Management Plans (WRMP relevant for non-EU members) and information about on-going activities. WRMP is understood as an equivalent of RBMP/DMP developed according to WFD in the non-EU states.

The results of the survey will be used for:

- identification of gaps, shortcomings and obstacles that might limit progress in introduction of effective drought risk based management chapters on the regional and/or national level,
- identification of the key elements recommended for discussions during the regional IDMP CEE workshops (activity 6.1) and National Consultation dialogues (activity 2.2),
- development of the Guidelines for DMP (activity 2.1) using experiences provided in the survey,
- proposals for further activities and actions for filling the identified gaps (e.g. studies, projects, interventions, trainings, public participation and more).

# 2. Survey methodology

## 2.1. Data collection

The survey was based primarily on a questionnaire reviewing an actual status of the development of the DMP in the involved countries. Supplementary information was taken from the Inception report (J. Kindler, D. Thalmeinerova, 2012) and additional explanations were obtained through the e-mail communication with the experts.

The questionnaire was prepared in line with the fundamental documents of EU drought strategy formulating the main principles, procedures, steps and policy options for the solution of drought impacts:

- guideline document "Drought Management Plan Report Including Agricultural, Drought Indicators and Climate Change" (Report 2007),
- Communication from the Commission to the European Parliament and the Council "Addressing the challenge of water scarcity and droughts in the European Union (COM (July 2007)",
- Blueprint to Safeguard Europe's Water Resources (November 2012),
- and in line with chosen quantitative elements of the Water Framework Directive associated with the drought issues.

The questionnaire was divided into six sections. Each section was focused on different scope of the survey and is composed from a set of questions related to the key reviewing element (see full questionnaire in Annex III).

The content of the individual questionnaire sections is as follows:
Part 1 – Basic information about the interviewer/person filling in the questionnaire (see Annex I).
Part 2 – Information on the development of DMP and other associated plans.

The questions in the part 2 were focused on collection of information on:

- assessment of the DMPs developed within the production of the RBMPs in 2009 – relevance of the droughts, distinction between water scarcity and drought, content of the DMPs, level of DMP development, measures adopted according to or under other national plans (such as agriculture development, rural/spatial development plans),
- existence of additional drought planning documents not included in the RBMP (WRMP),
- characterization of the drought relevance based on observed (or measured effects on the nature, society and economic sectors,
- on-going activities focused on development of the DMP or WRMP as a part of the second RBMPs in 2015,
- current status in implementing the obligations as stipulated in the United Nations convention to Combat Desertification (UNCCD).

This part of the questionnaire is very extensive and diverse. The assessment of the reviewed DMP elements has been summarized into following sub-sections:

- relevance of the water scarcity and drought issues,
- review of DMP and other associated plans,
- monitoring systems,
- indicator system and early warning system,
- drought risk maps,
- guidelines,
- UNCCD Convention.

Part 3 – Institutional analysis – focused on identification of the regional and national entities that are/or should be involved in drought management. Those key stakeholders will be also the main target groups for capacity building activities (trainings and workshops).

Part 4 – Analysis of management measures/good practices – reviews of the implemented measures for preventing and mitigating drought effects.

Part 5 – Transparency and public participation in the development of the DMP – identifying the main constraints connected with the public participation, data availability and the main weaknesses in preparation of the DMP or WRMP.

Part 6 – Remarks – additional information, notes, etc. not included in the questionnaire.

## 2.2. Progress of work

The questionnaire was developed and completed in cooperation with the national CWPs and experts from each country. The first version was presented and discussed during 1st IDMP CEE workshop held on 15 – 16 October, 2013 in Slovakia (Hodrusa – Hamre). The final version of the questionnaire was distributed for completion in November 2013. The questionnaire became the main topic of the National consultation dialogues organized in some countries in the year 2013. By the end of December 2013 all the participated countries completed the questionnaires and provided needed information for the survey assessment and production of the report.

# 3. Legal framework in the context of Water Framework Directive

The EU countries adopted a joint water policy, which is based on the principles of Integrated Water Management. Legal framework for implementation of such integrated policy is constituted in the Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy (hereinafter Water Framework Directive – WFD).
The main purpose of this Directive is to adopt and introduce appropriate measures for long-term protection of water quality and quantity with the aim to provide a sufficient supply of good quality of water as needed for sustainable, balanced and equitable water use and also considering the ecosystems needs.

WFD contains several provisions dealing with quantitative aspects, which are connected to the water scarcity problems. However legally binding requirements specifically focused on solution of drought issues are not included in the WFD. Despite of this fact, the WFD is rather flexible instrument, enabling integration of drought issues into the context of integrated water management. The preventive and mitigating measures needed for reduction of drought effects can be/or should be included into the RBMP and become a part of programme of measures for achievement of environmental objectives in accordance with Article 4 of WFD. Legal basis for such procedure provides provision of Article 13 (5) of WFD worded as follows: „***River basin management plans may be supplemented by the production of more detailed programmes and management plans for sub-basin, sector, issue, or water type, to deal with particular aspects for water management".***

According to this article, if a member state considers drought as a relevant issue, an additional management plan to deal with drought aspects (Drought Management Plan) should be produced. The decision whether drought is relevant issue or not is left on the particular countries. DMP, which while not an obligation to Member States, can be a powerful tool to alleviate drought impacts. If production of DMP is inevitable (with regards to drought relevance) it is recommended to become a part of RBMP (COM (2007)414 final and COM (2012) 673 final). The suggested measures included in DMP should be interconnected and complementary with programme of measures to comply with environmental objectives. It means that the production of the both planning documents (RBMP and DMP) should be coordinated in 6 year planning cycles with the deadlines in 2009, 2015, 2021.

Even if WFD does not cover specifically drought issues, many quantitative elements being connected with the drought are incorporated in the Directive. Besides mentioned Article 13 (5) there are following articles associated with drought issues:

Article 4 (1b) (ii) RSV – requires to ensure a balance between abstraction and recharge of groundwater with the aim of achieving good groundwater status by 2015. In case when bad quantitative status is assessed the necessary measures (e.g. regulation of water abstraction) have to be adopted in the programme of measures and subsequently implemented. The data on current abstractions from groundwater (register of abstractions) and available groundwater resources are needed for groundwater status assessment. This database shall be used as a basis for drought and water scarcity assessment and development of DMP.

Article 4 (6) WFD – set up an exemption from environmental objective "to prevent deterioration of the status of all bodies of surface water". The exemption can be applied if exceptional circumstances resulted in prolonged droughts. Such temporary deterioration of water status is not considered to be in breach of the WFD requirements. The common effect of prolonged drought is for example

increasing rate of fish mortality. Application of this exemption clause is connected with the necessary measures to be adopted:

- all practicable steps are taken to prevent further deterioration in water body status,
- to adopt appropriate indicators (in RBMP) determining conditions under which exceptional circumstances are foreseen,
- to adopt measures (programme of measures in RBMP) to be taken under such exceptional circumstances,
- to review annually the effects of exceptional circumstances and take all practicable measures with the aim of restoring the water body to its status prior to drought event.

Article 5 WFD – requires ensuring inter alia:

- impact assessment of water abstraction on water status,
- economic analysis of water use.

According to technical specifications set out in Annex II and III WFD, member states are obliged inter alia to ensure the following data:

- estimation and identification of significant water abstraction from surface water for urban, agriculture, industry and other uses including seasonal variation and total annul demand and of loss of water in distribution systems (Annex II, point 1.4 WFD),
- the data on abstractions from groundwater (Annex II, point 2.1 WFD),
- sufficient data to calculate the long term annul average rate of overall recharge (Annex II, point 2.2 WFD).

Economic analysis inter alia requires:

- to assess trends in water supply, water demand and investments,
- to carry out an economic analysis of water uses in each River Basin District.

Economic analysis is a basic document needed for implementation of incentive pricing policies according to Article 9 of WFD.

Article 9 of WFD – requires establishment of pricing policy stimulating effective water use. It is strong economic instrument enabling reverse of trends of water scarcity and decrease of vulnerability to droughts.

In the presented review only basic articles associated with water scarcity and drought issues have been explained. It is necessary to emphasize that mentioned requirements of WFD are legally binding (in contrary to DMP). Fulfillment of these obligations can promote better integration of water scarcity and drought issues into water management system.

WFD introduces the concept of joint framework for the implementation of measures needed by both WFD and nature protection and conservation directives (Birds and Habitats directives). The main objectives of the WFD are to reach good ecological status of all surface waters. This refers to all water bodies including those that form part of a Special Protection Area under the Birds Directive and a Site of Community Importance under the Habitats Directive (Natura 2000 sites). WFD stipulates obligation to achieve compliance with standards and objectives established for individual protected areas specified in Community legislation. As for groundwater the main objectives are to achieve good quantitative status in all groundwater bodies. The definition of good quantitative status includes also protection of directly dependent surface water and terrestrial ecosystems (e. g wetlands). RBMP must therefore include into the programme of measures any measures needed to reach environmental objectives and measures necessary to achieve compliance with objectives for Natura 2000 sites.

It is concluded that WFD provide a legal basis for addressing droughts considering also ecosystems needs.

# 4. Results of the survey

## 4.1. Review of the current status of DMP (part 2 of the questionnaire)

This chapter presents the main results of the survey which was focused on review of the current status of production of DMP and its key elements defined in the general guidelines (Report 2007) as follows:

- indicators and thresholds establishing onset, ending, and severity levels of the exceptional circumstances (prolonged drought),
- measures taken in each drought phase in order to prevent deterioration of water status and to mitigate negative drought effects,
- organizational framework to deal with drought and subsequent revision and updating of the existing drought management plan,

Moreover some additional items from RBMPs closely associated with drought issues have been included into the questionnaire:

- water scarcity issues,
- water demand and water availability,
- public participation.

Detailed results of the survey are provided in Annex II, in which data and information from the filled-in questionnaires are summarized. Many countries provided in addition to basic answers also detailed information and short notes supplementing the simple answers (yes/no). All information provided was completely included into Annex II as they present valuable source for further activities. Supplemented notes, data, maps, tables were marked with one or more asterisks (*). One asterisk (*) means the first comment relating to the particular question, two or more asterisks present the second and further comments supplementing an answers. Because of a large extension of the supplemented information, the Report contains only links to the respective number of questions in Annex II under which the explanations can be found.

### 4.1.1 Relevance of the water scarcity and drought occurrence

According to Article 13 (5) of WFD the member states should produce a DMP in case when drought issues are recognized as a relevant water management problem. The WFD does not contain any specific criteria for drought relevance assessment, so the decision is left on the member states.

In connection with drought issues it is necessary to note, that the terms “drought” and “water scarcity” are not often clearly distinguished.

The both terms are usually understood (mainly by stakeholders) as a “shortage of water”. It is necessary to stress that the mentioned terms indicate different phenomena which should be clearly differentiated according to their causes. The legal definitions are absent. For distinction of water scarcity issues from drought issues the following working definitions can be used:

1. Drought definition

Drought is a natural phenomenon. It is a temporary, negative and severe deviation along a significant time period and over a large region from average precipitation values (a rainfall deficit),

which might lead to meteorological, agricultural, hydrological and socioeconomic drought, depending on its severity and duration.

2. Water scarcity definition

Water scarcity is a man-made phenomenon. It is a recurrent imbalance that arises from an overuse of water resources, caused by consumption being significantly higher than the natural renewable availability. Water scarcity can be aggravated by water pollution (reducing the suitability for different water uses), and during drought episodes.

Drought situation in the region

The overall drought situation in the eight countries of the CEE region has already been assessed during the previous IDMP initiative. The results of the assessment are summarized in the Inception report (Kindler, Thalmeinerova, 2012). The drought assessments (meteorological, hydrological, and agricultural) provided mainly by experts from hydro met services and soil management institutions have proved that drought issues are considered to be a serious problem in the region. The results are supported by the assessment of the main nature factors (temperature, precipitation) which showed increasing trend in temperature and decreasing trend in precipitation in the most countries. The details presented in the Inception report are available on the web page:
http://www.gwp.org/Global/GWP-CEE_Files/Regional/IDMP-inception-report.pdf

Following the results of the previous initiative only supplemented questions have been included into the questionnaire. The questions have been connected with two reviewed aspects associated mainly with water scarcity and droughts relevance:

- Are water scarcity and drought considered to be a relevant phenomenon and what are their visible effects?
- If either droughts and/or water scarcity were identified as relevant issues have been adequately distinguished according to their causes?

The results of the survey (questions 2.4, 2.5.1 – 2.5.5, 2.6) show the following findings:

Drought is considered to be a relevant phenomenon by all involved countries. Four countries reported, that drought issues have been identified as a relevant water management issue in the official planning documents (RBMP/WRPM - BG*, HU*, LT, SLO*) and two countries in other planning documents (CZ**, MO). Details are in Annex II question 2.5. In case of countries where drought has not been recognized as a relevant issue, the national experts from five countries (MO, PL, RO, SK, UA) have assessed the drought severity on the basis of observed drought effects on public, environment, and economy (Annex II, question 2,5.3).

The figures below summarizes the identified drought effects based on the information taken from officially published planning documents (Table1) and drought effects assessed during the survey on the base of observed impacts (Table 1.a).

**Table 1: Review of the drought effects (identified in the planning documents)**

| Drought effect identified in planning documents | Country |
|---|---|
| Groundwater over-abstraction | BG,HU,MO,RO,SLO |
| Urban water supply shortages | BG |
| Degradation of surface water quality | BG,HU,MO,SLO |

| Drought effect identified in planning documents | Country |
|---|---|
| Wetland degradation | BG,HU,LT,MO,RO |
| Disruption of environmental in-stream flow regime | BG,HU,LT,SLO |
| Disruption of landscape water regime (agricultural drought) | RO,SLO |
| **Economic losses:** | RO |
| Industrial sector | |
| Agricultural sector | HU,LT,MO,RO |
| Tourism | HU, RO |

**Table 1a: Review of the drought effects (based on expert judgment)**

| Drought effect assessed during survey | Country |
|---|---|
| More frequent occurrence of drought episodes during the last 20 years | CZ,MO, RO SK,SLO,UA, |
| Urban water supply shortages during drought periods | CZ,PL*[1],RO,SK,UA |
| **Environmental impacts:** | CZ,MO,PL*,SK,UA |
| Mortality of fish species due to drought episodes | CZ,MO,PL*[2],SK,SLO,UA |
| Impacts on river banks (vegetation, drying up of river streams) | CZ,MO,PL*[3],SK |
| Impact of wetlands | CZ,MO,PL*[4] |
| Fires risk | CZ,MO,PL,RO,SK,UA |
| Deterioration of water body status | CZ,MO,PL*[5],SK,UA |
| Groundwater dynamics (near to extreme values) | MO,PL,RO |
| **Impacts on socio-economic uses:** | CZ,PL,SK |
| Industrial uses | CZ,PL*[6] |
| Power production | CZ,SK,RO,UA |
| Agriculture | CZ,MO,RO,PL,SK,SLO,UA |
| Tourism | CZ,PL,SK |
| Transport | CZ |

The survey included also the assessment of drought frequency aimed to analyze the overall trend over the last two decades (question 2.5.4). Due to the different methodologies used for assessment of drought episodes in the individual countries this indicator is very informative. Despite of the fact that the results are negatively influenced by inconsistency of assessment and its low reliability, presented numbers of “dry years” occurred during the last 20 years (1992 – 2012) are alarming:

Bulgaria (3), Czech Republic (5), Hungary (6), Lithuania (7), Moldova (11- precipitation, 15 – temperature), Poland (6 meteorological, 5 hydrological), Romania (8), Slovakia (8), Slovenia (10), Ukraine (16 from 23).

Concerning the extent of areas effected by droughts (question 2.5.5), majority of countries indicated occurrence of the drought events on all levels : regional (BG,CZ,HU,MO,PL,RO,SK), river basin (LT,MO,PL,SLO) and local (BG,LT,MO,PL,SK).

Water scarcity situation (Annex II, questions 2.4 and 2.6 )

According to definition, water scarcity is caused by over exploitation of available water resources. This phenomenon can occur even during the "normal" climatic situation and during the drought events the effects are aggravated. The results of survey show that five countries identified (besides drought) also water scarcity as a relevant issue (BG, HU, PL*, SK*, UA). The effects of this phenomenon are very similar to identified drought effects figured in the Table 1.

Most countries influenced by both water scarcity and drought stated that these phenomena are not distinguished (CZ*, SK, UA), or their distinction is unclear (BG, LT, MO, PL*, SLO). Only two countries (HU, RO) reported that causes of water scarcity and drought occurrence are clearly distinguished (Annex II, question 2.6)

**Summary of the survey findings:**

- Available data (meteorological, hydrological, agricultural) and observations of evident drought effects proved that drought (together with water scarcity) is relevant issue in the CEE region.
- With regard to drought relevance all countries were encouraged to develop DMP as a part of the first RBMP adopted in December 2009.
- Little political will of the competent authorities to recognize drought as a relevant issue can be one of the key obstacle in the implementation of EU drought policy.
- More attention should be paid to water scarcity issue, mainly examination of the causes of this phenomenon and its distinction from drought causes.

### 4.1.2 Review of DMP and other associated plans

Current status of DMP development

Drought management is an essential element of water resources policy and strategies in EU. Therefore the member states are encouraged to develop DMP as a main instrument for enforcement of drought risk management.

According to Report 2007 the main objective of DMP is to minimize the adverse impacts on the economy, social life and environment when drought appears. This general objective can be developed through a series of specific objectives including:

- Guarantee water availability in sufficient quantities to meet essential human needs to ensure population's health and life.
- Avoid or minimize negative drought impacts on the status of water bodies, especially on ecological flows and quantitative status for groundwater and in particular, in case of prolonged drought, as stated in Article 4 (6) of the WFD.

- Minimize negative effects on economic activities, according to the priority given to established uses in the River Basin Management Plans, in the linked plans and strategies (e.g. land use planning).

The survey was focused on the examination of the main elements of DMP and their compliance with recommendations presented in the Report 2007.

In order to achieve the specific DMP objectives, three basic elements of DMP have been selected:

- drought indicators, thresholds for different stages of drought severity, drought early warning system,
- measures to achieve specific objectives in each drought phase,
- organizational framework for the production of DMP/WRMP and its updating.

Four drought stages are defined in the Report 2007:

**Normal** status: this phase should be seen as the hydrological planning one, in which strategic and long term measures are applied. These measures concern water demand management (water efficiency measures) and might include hydraulic infrastructures for improving the storage and regulation capacity of the river basin, infrastructures that promote the use of non-conventional resources (e.g. treatment and reuse facilities) and any other measures that might need extended time frames to be implemented.

**Pre-alert** status: the objective is to prevent the deterioration of water bodies while ensuring the activation of specific drought management measures, and continuing to meet water demands. These are mainly informative and control measures, as well as voluntary water saving measures.

**Alert** status: it is an intensification of the pre-alert status, since drought progresses as well as measures to apply. It is a priority to continue preventing the deterioration of water body status. These types of measures should be focused on saving water. Demand restrictions might be applied, depending on the socio-economic impacts, and by consensus of the affected stakeholders. Areas with high ecological value should be monitored more intensively to prevent their deterioration,

**Emergency** or **extreme** status: when all previous prevention measures have been applied, but the drought situation prevails to a critical status, when no water resources are sufficient for the essential demands (even affecting and restricting public supply), additional measures might be used to minimize impacts on water bodies and ecological impacts.

In connection with the defined drought stages adequate measures should be taken. The Report 2007 contains recommendation to group the measures as follows:

**Preventive or strategic measures** are developed and used under the normal status. They belong to the hydrological planning domain and their main objective is reinforcing the structural system to increase its response capacity (to meet supply guarantees and environmental requirements) towards droughts. These are measures to be taken in RBMP.

**Operational (tactical) measures** are those that are typically applied when droughts occur (during pre-alert and alert statuses). These are mainly control and information measures in pre-alert and conservation resources measures. If the drought is prolonged excessively, the status of water resources can deteriorate to a point in which emergency operational measures might be needed, consisting essentially of applying water restrictions. Severe Water conservation measures and

restrictions, to be adopted if drought worsens to extreme status, should be ranked according to parameters such as: priorities among different uses, environmental requirements, status of drought etc.

**Organizational measures** establish competent agents and an appropriate organization to develop and follow-up the DMP; create coordination protocols among administrations and public and private entities directly linked to the problem, in particular to those entities in charge of public supply
**Follow-up measures** serve in the process of watching out for the compliance and application of the DMP and its effects.

**Restoration or exit drought measures** include the deactivation of adopted measures and the activation of restoration ones over the water resources effects and the aquatic ecosystem.

The questionnaire included questions (2.1, 2.2, 2.3, 2.12) related to current status of DMP and its main elements (indicator system, early warning system, drought stages, preventive and mitigating measures).

The results from survey are summarized in the Table 2 and detailed information is provided in Annex II.

**Table 2: Review of the current status of DMP development**

| DMP items | BG | CZ | HU | LT | MO | PL | RO | SK | SLO | UA |
|---|---|---|---|---|---|---|---|---|---|---|
| **DMP developed** | X* | | X* | | | | X | | | |
| **DMP included in RBMP** | X* | | X | | | | | | | |
| **DMP content:** | | | | | | | | | | |
| **Indicators and thresholds establishing severity levels of the drought stages** | | | X | | | | X | | X | |
| Drought situation assessment (frequency, intensity | | X | X | X | X | | X | | | X |
| **Program of measures for preventing and mitigating drought in each drought stage:** | | | | | | | | | | |
| Preventive or strategic measures (normal status) | X | X | X* | | X | | X | | | X |
| Operational measures applied during pre-alert and alert stages | | X | X | | | | X | | | |
| Organizational measures | | | | | | | X | | | |
| Restoration measures | | | | | | | | | | |
| **Early warning system developed:** | X | X | X | X | X | X* | X | | X | |
| Air temperature | X | X | | X | X | X | X | | | |
| Precipitation | X | X | | X | X | X | X | | | |

| DMP items | BG | CZ | HU | LT | MO | PL | RO | SK | SLO | UA |
|---|---|---|---|---|---|---|---|---|---|---|
| Snow reserve | | X | | | | | | | | |
| River flow | X | X | | X | | X | X | | | |
| Stored surface reservoir volume | X | X | | | X | | | | | |
| Aquifer water level | | X | | X | | | X | | | |
| Soil moisture content | | X | | | | | X | | | |
| **Drought stages classified:** | | | | | | | | | | |
| Normal status | X | | | X | | X* | | | | |
| Pre-alert status | X | | | X | | | | | | |
| Alert status | X | | | | | | | | | |
| Emergency or extreme status | X | | | | X | | | | | |
| Other classification system | | | X | | | | | | | |
| **Organizational framework for the production of DMP/WRMP and its updating** | | | | X | X | | X | | | |

**X** - positive answer
**X*** - positive answer with expert comments in Annex II
**X** - questionable element (compared with Report 2007) marked as a point for further discussions

Only three countries (BG, HU, RO) reported production of DMPs. Two of them (BG, HU) declare that DMP is a part of the RBMP (2009). More detailed examination revealed that RBMP of Bulgaria contains only some preventive or mitigating measures having positive effect on drought impacts as a part of programme of measures. It means, that complete DMP, as additional plan containing all key DMP elements has not been fully produced. Concerning the Hungary, DMP was developed in 2012 and discussion paper made available for national consultation. The results of the survey showed, that no CEE country produced DMP as a separate document integrated into the first RBMP (2009).

Many countries indicated elaboration of some key elements of DMP. The results show the following findings:

- Two countries (HU, RO) reported an existence of indicators (national) and thresholds establishing severity levels of the drought stages.
- Nine countries (BG, CZ*, LT, MO, PL, RO, SK, SLO, UA) reported calculation of Standardized Precipitation Index (SPI), six countries (BG, CZ*, MO, RO, SLO, UA) calculation of Fraction of Absorbed Photosynthetically Active Solar Radiation (fAPAR) and two countries (BG, CZ*) Water Exploitation Index Plus (WEI+) (Annex II, question 2.11).
- Early warning system development has been confirmed in seven countries (BG,HU,LT,MO,PL*,SLO*,RO); (Annex II, question 2.12)
- Five countries (BG, HU, MO, RO, UA) reported to have a program of measures for preventing and mitigating drought in each drought. The results show that mostly preventive measures (e.g. natural water retention measures taken during normal drought status) have been introduced. Operational measures (e.g. limitation of abstraction) applied during pre-alert and alert stages are employed in two countries (HU, RO) and one country (RO) indicated to

implement some organizational measures (establishment of functioning drought management system). In connection with the review of drought stages classification (next point) some of the programs of measures are questionable (marked in the Table 2 in grey).

- Drought stages classified as normal status were reported (BG, LT, PL), pre-alert status (BG, LT), alert status (BG), emergency or extreme status (BG, MO). Hungary presented a different classification system comprising five categories of drought stages. It is not clear how these categories are interconnected with above mentioned programme of measures.
- All presented elements of DMP developed within drought risk based management strategy are important elements needed for DMP production. But their mutual interaction and integration into one functioning drought management system is not clear enough. In many cases effectiveness of DMP introduction seem to be formal, lacking consistency and feasible application.

The results of the survey showed that there are considerable differences among CEE countries regarding the status of the DMP development. It was documented that Bulgaria, Hungary and Romania has achieved the highest progress in drought risk management development. Other countries as Poland, Lithuania, and Czech Republic have launched on-going activities with the aim to produce DMP within updating of RBMP by 2015. Moldova, Ukraine, Slovenia and Slovakia did not provide information about the planned activities with the aim to make a progress in the development of drought risk management policy and produce a Drought Management Plan during the second planning cycle of RBMPs preparation.

Other plans and quantitative issues associated with DMP

The water scarcity and drought policy put stress on quantity issues covered by WFD. The main aim when dealing with water scarcity and drought issues is to restore or sustain the water balance in all river basins taking into account water requirements for aquatic ecosystems (ecological flows). WFD requires including quantitative data on water demand and water availability into RBMPs and also providing trend scenarios of water availability and water consumption. Proper implementation of WFD also requires integration of water quantity issues into sectorial policies (mainly agriculture). This can be achieved by better integration between RBMP and other planning processes.

It is expected that climate change worsen the impacts of already existing stress on water and will cause significant changes in availability of water resources.

In relation to above mentioned quantitative aspects the basic elements of quantitative water management have been included into survey (questions 2.7, 2.8, 2.13).

The results of the survey show that all countries have data on current water demand specified according to water use types (BG, CZ, HU, LT, MO, PL*, RO, SK, SLO, UA). Most countries (BG*, CZ, HU*, LT, PL**, RO, UA) reported also availability of water demand trend scenarios (Annex II, question 2.7).

Regarding the assessment of water availability all ten countries (BG*, CZ, HU, LT, MO, PL*, RO, SK*, SLO, UA) presented existing data on **c**urrent water availability. But only two countries (LT, RO) reported that data on water availability trend scenarios are provided (Annex II, question 2.8).

Concerning the other plans associated with RBMP and DMP the following findings have been obtained:

- Public water supply plan reported by two countries (LT,SK, SLO),
- Rural Development Programme reported (HU*,LT, MO, RO, SK, SLO, UA),
- Climate Adaptation Plan (BG*, HU**, MO, PL*, RO, SK*).

Other plans were presented by Bulgaria (Master Plans of 51 Water Supply&Sewerage companies, National Strategy for Development of Forests Sector in the Republic of Bulgaria for the period of 2013-2020); Czech Republic (Concept of Environmental Security 2012 - 2015 until the year 2020; Ukraine (State Program "Forest of Ukraine" for 2002 — 2015 period). The details are provided in Annex II, question 2.13.

### 4.1.3 Monitoring

Critical component within drought management is permanent monitoring consisting of various elements of the hydrological cycle.

Proper water resources management needs permanent collection, storing and processing of appropriate meteorological and hydrological indicators enabling assessment of hydrological drought. The key indicators are listed below in the Table 3 together with review of the countries with established monitoring of the given indicator (question 2.9).

**Table 3: Review of monitored indicators**

| Parameter/indicator | Country |
|---|---|
| Air temperature | BG,CZ,HU,LT,MO,PL,RO,SK,SLO,UA |
| Precipitation | BG,CZ,HU*,LT,MO,PL,RO,SK,SLO,UA |
| Snow reserve | BG,CZ,HU,MO,PL,SK,SLO,UA |
| River flow | BG,CZ,HU,LT,MO,PL,RO,SK,SLO,UA |
| Stored surface reservoir volume | BG,CZ,HU,MO,PL,RO,SK,SLO,UA |
| Aquifer groundwater level | BG,CZ,HU,LT,PL,RO,SK,SLO,UA |
| Soil moisture content | BG,CZ,HU,LT,MO,PL,RO,SK,SLO,UA |
| Solar Activity cycling | CZ,PL,SK,SLO |
| Air humidity deficit | BG,CZ,HU,MO,PL,RO,SLO |
| Vapour Pressure Deficit (VPD) | CZ,PL,SLO |
| Other | CZ – Moisture balance<br>CZ - Water reserve in soil |

Meteorological data are important but represent only one part of a comprehensive monitoring system. The additional (supplementary) indicators should be monitored to reflect impacts of drought on water supply, wetlands, agriculture, industry, energy, tourism and other water use sectors. The impact information gathered from the key sectors affected by drought enable to identify correlations between thresholds of various indicators and specific impacts.

The results of the survey focused on monitoring of impact indicators (question 2.10) are listed in the Table 4 including countries responses.

**Table 4: Review of drought impact indicators monitored (Annex II, question 2.10)**

| Impact | Country |
|---|---|

| | | |
|---|---|---|
| **Impact on society** (water supply) | | BG, CZ,LT,MO,PL*,SK,SLO |
| **Environmental impacts:** | | CZ,LT,MO,SK |
| | Mortality of fish species | CZ,LT,MO,SK,RO,SLO |
| | Impact on wetlands | LT,RO,SK |
| | Deterioration of water body status | MO,RO,SK,SLO |
| **Impacts on socio-economic uses:** | | BG,CZ,HU,LT,PL**,RO,SLO,UA |
| | Agricultural - loss of yield / quality of crops | BG,CZ,HU,LT,MO,PL***,RO, SK*,SLO,UA |
| | Industrial uses | CZ, |
| | Power production | BG,CZ,HU,RO,SK*,SLO,UA |
| | Tourism | |
| | Transport | CZ,RO |
| | Drinking water supply of inhabitants | BG,HU,LT,MO*,RO,SLO |

The results of the survey showed that all countries have established proper monitoring programmes providing basic data for drought assessment. Better situation has been reported in monitoring of meteorological and hydrological parameters. Drought impact indicators are monitored in smaller extent. This kind of drought monitoring system should be a subject to more detailed assessment (drought impact assessment) with the aim to evaluate the efficiency of monitoring mechanism and techniques. One of the main problems of drought management system is a lack of the drought impact indicators enabling identification and evaluation of socioeconomic drought.

### 4.1.4 Drought risk maps

The main goal of drought risk maps is to provide a visual picture on probability of drought occurrence and adverse consequences of drought. The maps can be used by water managers, agriculture farmers, stakeholders from water-dependent industry and the public to discuss and identify measures for sustainable water management.

On the base of the survey (Annex II, question 2.14) the current situation on drought risk maps development has been evaluated as follows:

- Only four countries (BG*, CZ*,HU*,SLO*) have produced the maps on the national level, SLO developed an agricultural drought risk maps,
- four countries (BG, , MO, RO, UA) presented partially development of the maps,
- in two countries (MO, UA) the maps are being prepared.
- The remaining three countries (LT, PL*, SK,) have presented absence of drought risk maps and also on going activities.

### 4.1.5 Guidelines

A review of existing Guidelines for DMP and drought risk maps was included in the survey in connection with the Activity 2.1 Guidelines for Drought Management Plans (Annex II, question 2.15). Seven countries (BG, HU, LT, RO, SK, SLO, UA) reported absence of any guidelines, three countries (CZ*, MO, PL*) indicated on-going activities focused on guidelines development.

**Summary of survey findings (part 2 of questionnaire):**

- Current status of development of DMP is not satisfactory. No CEE country produced a comprehensive DMP as an additional planning document included into RBMP adopted in 2009. Most countries has developed some key elements of DMP (early warning system, establishment of drought stages, measures for defined stages), but their mutual interconnection is questionable. The most experienced countries in drought issues are Bulgaria, Hungary and Romania. Development of DMP in the region remains a main challenge of the regional drought oriented activities.
- Monitoring is the strongest element of the drought management policy. More attention should be paid on impact monitoring indicators.
- Unsatisfactory situation in development of the drought risk maps revealed another weakness in the drought policy system necessitating a special attention.
- There are no practical guidelines for DMP development in the region.
- Little attention is paid for UNCCD Convention implementation.

### 4.1.6 UNCCD Convention

All countries of the CEE regions are signatories of the United Nations Convention to Combat Desertification (UNCCD). The Convention requires the signatory countries to adopt and implement the National Action Programs (NAP).

One of the aims of the survey was to find out what is the current status of development of NAP (Annex II, question 2.17). The results of survey shown that only one country (BG) has elaborated NAP, two countries reported partially elaboration of this document. In three countries NAP has not been developed (CZ, LT, SLO); four countries have not provided any information.

## 4.2. Drought Management Organizational Structure

In the development of DMP it is recommended to establish a competent authority, committee or working group to identify drought impacts affecting the river basin and to propose management measures. In addition, the coordination among competent authorities related to water management and the participation of appropriate stakeholders should be ensured to achieve a participatory approach and a responsible reaction from society. DMP should identify the organizational arrangements and allocation of roles and responsibilities that need to be in place when a drought is being managed (organizational structure). In particular it needs to identify who has responsibilities in relation to:

- monitoring the development of the drought,
- imposing measures required by the plan as the drought develops and recedes,
- monitoring the effects of drought measures,
- reporting to the appropriate authorities.

Institutional analysis on the identification of the institutions and sectors which are/or should be involved into drought management has been done in part 3 of the questionnaire. The detailed information (list of entities) is summarized in Annex II, part 3.

The survey showed that only two countries (HU, UA) have established an organization structure for establishment of drought management (competent authority, working groups, sectors and institutions) containing clear linkages among key sectors professional institutions dealing with drought issues and effected stakeholders. Hungary indicated involvement only one sector (agriculture) and Ukraine two sectors (agriculture, forestry. This limited involvement of other sectors does not guarantee the efficiency and participatory approach.

Another key step within the drought management process is designation of the competent authority. Only five countries (HU*, PL*, RO*, SK*, SLO*) reported that the competent authority responsible for drought issues has been established (Annex II, question 3.3). In this connection it is necessary to take a note that each member state is obliged to designate competent authority for implementation of WFD (article 3 of WFD). This means that this body should be responsible also for DMP development including organizational arrangements.

**Survey findings showed that organizational arrangements, as a fundamental prerequisite of effective drought management, are one of the main weaknesses of the region.**

Only two countries (CZ*, HU *) have indicated establishment of working groups entrusted by the task to identify drought impacts and develop the DMP (Annex II, question 3.4).

## 4.3. Measures to deal with water scarcity and droughts

A set of 21 specific measures to deal with water scarcity and droughts were selected and included into the survey (Annex II, question 4.1). The aim was to analyze the current situation in implementation of measures to deal with water scarcity and droughts within the region.

The results of the survey are processed in the detailed table in Annex II, question 4.1). According to number of countries in which the measures are implemented the results can be summarized into four groups:

The "top list" of measures applied in majority of the involved countries (at least in 6 countries) include:

- modification of the water pricing system to foster a more efficient use of water (CZ, HU, LT, MO, PL, RO, SK, UA),
- development or upgrade of reservoirs or other water regulation works (BG, CZ, HU*, PL, RO, UA),
- measures to enhance water abstraction and water use metering (BG, CZ, LT, MO, PL, RO, SK, UA),
- reduction of losses in urban distribution networks (BG, LT, MO, PL, RO, SK, SLO, UA),
- training, education and capacity-building in water saving (BG, LT, MO, PL, RO, SLO, UA),
- studies, research and pilot projects to solve water scarcity problems and improve response to drought (CZ, HU, MO, PL, RO, SK, SLO),
- measures to enhance water governance (CZ, LT, MO, PL, RO, SK, UA).

Measures that have a "medium presence" (3 – 4 countries) - include:

- development or upgrade of water transfer schemes (HU, PL, RO, UA),
- promotion of rainwater harvesting (CZ, HU, MO, PL),
- measures to increase treated water re-use (HU, PL, UA),
- reduction / management of groundwater abstraction (e.g. by controls, registers) (BG, HU, PL*, RO)

- measures to enhance the resilience of the ecosystems to water scarcity and droughts (MO, RO, UA).

Measures that have a "low presence" (2 countries) include:

- Measures to foster aquifer recharge (CZ,RO),
- Adoption of binding performance criteria for new buildings, public and private networks (LT,UA),
- Development of fiscal or economic incentives for promotion of water-efficient devices and practices (MO,PL),
- Reduction of groundwater abstraction (CZ,SK),
- Restrictions to new urban developments (MO,PL*),
- Restrictions to new irrigation schemes (MO,PL*),
- Other (PL,RO*).

Measures with "zero presence" include:

- Subsidies for shifting to less water-demanding land uses,
- Establishment of water rights markets or schemes to facilitate water reallocation.

The survey technics does not allow execution of more detailed assessment related to scope and affectivity of measures that have been implemented and what are being planned. Nevertheless, the obtained results reflect quite favorable situation indicating positive step toward increasing awareness of water problems. The positive impact of the presented measures remains unclear. There is an obvious positive impact of introduction of water pricing system to foster an effective use of water resources; however, it is only a complementary measure regarding drought management. Therefore some of these measures should be analyzed deeper and examples of good practices should be better disseminated within the future activities.

### 4.4. Public participation

In the development of the DMP it is necessary to ensure transparency and public participation.
WFD (Article 14) insists on active involvement of all interested parties in the production of the RBMP. Three planning documents (timetable and work programme for RBMP, interim overview of the significant water management issues (SWMI), draft of the RBMP)elaborated during each planning cycle should be made available for comments to the public for the period of six month in order to allow active involvement and consultation. For the elaboration and implementation of DMP as a supplementing plan to the RBMP, specific public participation strategy should be developed. The following main points should be considered – making information accessible, insurance of consultation during the DMP development process, communication and active participation of the involved stakeholders during all drought stages.

Interconnection of public participation in both processes (RBMP and DMP) is desirable.

The part 5 of the survey (Annex II, question 5.1 – 5.4) focused on assessment of the public participation process in the individual countries based on the experiences from the first planning cycle of the RBMP development.

The result of survey showed that planning documents (RBMP/WRMP/DMP) have been made available for the public in all involved countries. In nine countries (except SLO) the focal points for making information accessible have been determined. Six countries (BG, CZ, HU, LT, MO, RO) characterized public participation as an active process. Active public participation was/is being organized mainly through workshops and conferences (BG, CZ, HU, LT, MO, PL*, RO, SK). Regular consultations of the competent authority with the stakeholders have been used to a limited extent

(HU, LT, PL, RO). Similar results have been found regarding a direct involvement of the public in the

Generally can be concluded that **actual implementation of the WFD resulted in improvement of public information and their participation in the planning process and water management.** Nevertheless, some weaknesses have been identified referring to consultation, active participation and data accessing. **Public participation process for DMP development should be organized separately but in close interconnection with the processes for preparation of RBMP.**

planning process (CZ, HU, MO, RO). Three countries (SK, SLO, UA) indicated the public participation as a passive process which was not opened sufficiently for public involvement (mainly professional institutions) into the planning process. Public participation process in these cases was limited to commenting of RBMP and related planning documents. Two countries (PL**, SK*) pointed out that there was a problem of data availability associated with some administrative barriers influencing access of public to information (Annex II, question 5.4).

### 4.5. Identification of weaknesses in drought management process

The countries were invited to identify the main weaknesses in preparation of the DMP/WRMP (Annex II, question 5.5). The results show that the nine countries (except HU) marked as a main problem insufficient coordination and communication among sectors and institutions is not sufficient. Similar importance was attributed to limited financial resources (eight countries (except HU, RO). Insufficient legislation was marked as a major problem in six countries (CZ, LT, MO, SK, SLO, UA). Similar figure was obtained from countries where the competent authorities do not consider drought management as priority issue (BG, LT, PL, SK, SLO, UA). Other problems of less importance are associated with insufficient monitoring (LT, PL, SK), insufficient data availability (BG, LT, PL, SK), limited human resources (LT, MO, PL, RO, SK) and lack of methodologies (PL, RO*, SK, UA).

Some countries have identified country specific problems not included into the questionnaire. Hungary pointed out that “only consultation material was made available”. Poland identified several organizational weaknesses (lack of continuity of the planning process, lack of the maintenance and updating of the data bases; low “water awareness” – water management is interesting only during flood events; also weakness of the water management sector – among other economic sectors). The main problem of Moldova is associated with signing of the association agreement to EU (not candidate status) entailing the obligation to produce RMBP including DMP according to EU directives. Slovenia pointed out on insufficient awareness of the severity of the problems associated with climate change in the political and decision making level. Bulgaria in the additional remarks stressed necessity of information about good practices for mitigation of the drought impact and

**The results of the survey indicated that the main obstacles in introduction of drought management are connected with the competent authority. Many cases pointed out a lack of will of the state administration to solve this problem (legislation, coordination, availability of financial resources). The weaknesses relating to technical or professional aspects (e.g. monitoring, methodology) are of less importance.**

limitation the water scarcity. Some countries pointed out on insufficient legislation: Poland (lacking of methodology for restriction of water intakes for the users in spite of the rights they have in the

water permits), Czech Republic (there is no will to make DMP obligatory in the Czech Republic, as long as it will be obligatory for the whole EU) and Ukraine (RBMP development is not a subject of legislation yet, all available examples are pilot projects.

# Conclusions and recommendations

The survey results present current status on DMP development in the individual countries and characterize an actual situation on the regional scale. Also the main weaknesses of drought management have been disclosed.

The following conclusion can be drawn:

- The actual situation in DMP development within the region is not satisfactory. Majority of the countries have not produced DMP in accordance with EU general guidelines (Report 2007) in the context of WFD.
- Wide difference has been identified regarding the production of DMP among involved countries. Also differences in effort to improve drought management reflecting in on-going activities are significant.
- The main shortcomings have been found in implementation of all key elements of DMP – 1. Indicators and thresholds establishing different drought stages; 2. Measures to be taken in each drought phase; 3. Organizational framework to deal with drought.
- Causes of water scarcity and drought are not clearly distinguished and remain an unsolved problem.
- Established meteorological and hydrological monitoring programmes present a good basis for DMP development. Impact drought monitoring programmes should be reviewed, completed and interlinked with the meteorological monitoring on the basis of drought impact assessment.

This report identifies the causes of unsatisfactory status of DMP development. Based on the findings, the following recommendations are suggested to be followed in on-going and future regional activities within IDMP CEE programme:

- Increase awareness on relevance of drought issues directed to the state administration is needed with the aim to intensify effort of competent authority to enforce drought management into the integrated water management system. GWP CEE has an ambition to support the governments in this effort, in particular:
  - The GWP CEE has an observer status in both international Basin Commissions of Transboundary Conventions: International Commission for Protection of Danube River (ICPDR) and Helsinki Commission (HELCOM). This status enables GWP CEE to spread IDMP CEE results on the level of river basin authorities with the aim to achieve a general consideration of drought as a relevant issue on the river basin scale.
  - To encourage CWPs to increase pressure on the national competent authorities. Public participation process enabling an active involvement of stakeholders into the planning process is good way how to make a progress. Currently the national GWPs have opportunity to comment an actual planning document “The interim overview of the significant water management issues” with the aim to enforce production of DMP within second planning cycle as a part of RBMP. Also a joint procedure in commenting the same planning document elaborated on the river basin scale could be launched by GWP CEE. Improvement of methodologies for DMP development is urgently needed.
- The planned guidelines development should react on the main survey findings and concentrate preferably on the key elements of DMP (indicators and thresholds, early warning system, mitigation measures, organisational structure, drought risk maps). The experiences from leading countries (Hungary, Romania, Bulgaria and further) should/or will be summarised as an examples of good practices and presented in the guidelines. For this

purpose only experiences harmonised with EU drought policy (Blueprint, Report 2007) will be used. The main effort will be devoted to harmonisation of different approaches. Other important quantitative elements associated with the drought issues (e.g. water scarcity and drought causes, water demand and water availability, ecological flows, monitoring) will be also included in the guidelines.

- Identification and design of the regional drought programmes (projects, studies) for the Danube Strategy with the aim to utilise financial support from EU funds and other resources.
- The forthcoming drought national dialogues should be focused mainly on organizational arrangements. Development of organizational chart of entities dealing with drought and determination of their responsibility should/will be one of the priorities of the national dialogues. Another priority is connected with establishment of effective indicator system based on assessment of monitoring data identifying meteorological, hydrological, agricultural and socioeconomic drought and making operational an early warning system.
- Integration of nature protection issues (stipulated in nature EU directives – Bird and Habitat directives) into drought management system in accordance with WFD is needed.
- The identified weaknesses of drought management should/or will be discussed in detail during the IDMP CEE workshops.

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