

# Integrated Drought Management

## Programme in Central and Eastern Europe



**National Consultation Dialogues**  
*(activity 2.2)*

**Summary report from the second  
National consultation dialogues**

## 1. Summary report from the second National consultation dialogues

Two rounds of the National consultation dialogues (NCDs) were organised as a part of the Integrated Drought Management Programme for Central and Eastern Europe region (IDMP) coordinated by the Global Water Partnership for Central and Eastern Europe (GWP CEE).

The main objective of the NCDs (Activity 2.2 of IDMP CEE) was to support development of the Guidelines for preparation of the Drought Management Plans (hereinafter Guidelines) according to objectives of the Activity 2.1 of IDMP CEE. The intention was opening the national dialogues in the individual countries with the aim to involve all key actors dealing with drought issues (ministries, state agencies, professional institutions, stakeholders like farmers, households, energy companies, fisheries and others) into the process of development of the Guidelines.

**The first round of NCDs** was organised during the initial phase of IDMP CEE in 2013 – 2014 with the aim to analyse the current status of the drought management issues in the individual countries, to identify the main problems and to suggest further steps for development of the national drought risk management policy. The first round of the NCDs was organised in 10 CEE countries – Bulgaria, Czech Republic, Hungary, Lithuania, Moldova, Poland, Romania, Slovakia, Slovenia and Ukraine. Altogether there were 304 participants from ten countries. One of the main output from the 1<sup>st</sup> phase was 10 completed questionnaires (from 10 CEE countries) which provide clear picture on the current status of the drought management within CEE region. Information from questionnaires was used for completion of the report Review of the current status of the implementation of DMP and measures within RBMPs according to WFD”, available [here](#).

**The second round of the NCDs** was organised during the second phase of development of the Guidelines. The main objective of the 2<sup>nd</sup> round was to open the discussion about the first draft of the Guidelines (prepared in June 2014) with the aim to contribute to its completion. The specific goals were :

- elaboration of comments, corrections, suggestions, amendments to the draft of the Guidelines according to countries' specific conditions and experiences with drought planning;
- elaboration of a short summary of the existing national experiences for the chosen key elements of Drought Management Plan identified in the Guidelines.

The second round of NCDs was organised in 2014 in 9 CEE countries– Bulgaria, Czech Republic, Hungary, Lithuania, Moldova, Poland, Romania, Slovenia and Ukraine. Each country elaborated Country report (available [here](#)) from NCD providing detail information about the current situation in the individual countries and recommendations for continuation of the preparation of the Drought Management Plan on the national level. The main information from the second NCDs are summarised in Table 1.

Part of the Country report was the 2<sup>nd</sup> questionnaire where countries elaborated a short overview of the existing national methodologies for the following elements of DMP:

- examples of the national methodologies for assessment of historical drought;
- examples of drought national drought indicator systems and evaluation methodologies;
- examples of the national drought classification, thresholds and early warning systems;
- examples of national organizational structures to deal with drought;
- examples of national program of measures for preventing and mitigating drought;
- examples of the national research programme supporting drought management.

An overview of the provided information are summarised in the Table 2 – 5. (Examples from Slovakia were taken from Slovak case study).

**Table1: General information from the second National consultation dialogues**

Country	Date of NCD	Number of participants	Recommendations – next steps
Bulgaria	26/11/2014	49	The IDMP Guidelines can be useful for RBMPs but participants interest was much more oriented towards pilot drought investigation projects in the field of water saving and conservation, agriculture, forests etc. Bulgarian-Romanian team works on drought guidelines also. The main conclusion was that there are many official documents with measures against drought but their implementation is a problem. There is a need for establishment of a Drought Committee (DC) as a part of existing Consultative Council with Council of Ministers. DC will be charged with elaboration of comprehensive drought adaptation strategy, covering all vulnerable sectors.
Czech Republic	12/06/2014	41	<ul style="list-style-type: none"> <li>• Water Act Amendments</li> <li>• Start dialogues with end users (water managers, farmers)</li> <li>• Start dialogue between ministries of environment and agriculture</li> <li>• Define “Crisis point” of drought</li> <li>• Establish the Commission</li> </ul>
Hungary	16/10/2014	33	National water management strategy is under preparation in Hungary. It will incorporate findings of the IDMP CEE. The National Water Management Council (re-established recently) will also discuss the DMP in connection with the river basin management planning.
Lithuania	20/11/2014	29	Participants agreed to contact the Lithuanian Environmental Protection Agency (EPA), responsible institution for preparation and implementation of the river basin management plans, asking if they will agree to include chapter on drought management into the second river basin management plans for 2015-2021 which are under preparation at the moment. In case of positive response from EPA, drought expert team have already compiled a chapter on the importance of drought management for river basin planning.
Moldova	16/12/2014	51	Planning of drought management activities in local agendas and improvement of the preparedness of relevant stakeholders. In addition to it a forecast practices based on monitoring should be improved. Early warning system for droughts is poor developed in Moldova, this should be a

			priority for relevant authorities. Development of thematic maps and atlases should be continued on a permanent base.
Poland	8/12/2014	41	First draft of regional DMP is planned for 2015; public consultations and Environmental impact assessment (EIA) reports are intended for 2016. On the basis of preliminary arrangements, DMP for river basins will be started after 2017. Polish concepts / experience could be transferred into IDMP CEE.
Romania	20/11/2014	32	The need to improve national drought monitoring and management policies with the goal of improving preparedness and reducing drought impacts will be based on two main topics: - monitoring and prediction which should contribute to a broad early warning system; - mapping and assessing the impacts of droughts, promote adaptation of best practices, and develop infrastructure for irrigation based on scientific knowledge (climatic data, soil and crops data). Thematic drought maps will illustrate the most vulnerable areas to drought and water deficit at different spatial and temporal scales, including the impacts on agriculture, forest, water supply, energy and environment.
Slovenia	3/12/2014	45	Drought Management Plan (as part of the RBMP) for Slovenia will not be prepared, mainly because it should be due to the large diversity in climatic conditions of Slovenia prepared for more units of the country, and not only for the river basins (this fact was already recognized by agricultural sector) and for this is not enough time to catch the RBMP 2015 deadline. However, the drought issues will be considered in 2015 RBMP as a problem and the prevention measures for mitigating the consequences will be proposed. The sustainable use of water resources and adaptation to climate change will be taken into account as well.
Ukraine	12/12/2014	17	DMP is not a legal instrument in Ukraine. DMP development depends on the compliance of the requirements according to Association Agreement Ukraine-EU, especially on water legislation harmonisation, river basin approach, IWRM and RBMPs. For now as it was proposed by participants the drought adaptation and mitigation measures can be included in the National Action Plan to combat desertification, which is now in process and will be drafted till April 2015.

**Table 2: Examples of the national methodologies for assessment of historical drought**

Country	Description of methodology
Bulgaria	The methodology used is based on statistical analysis of long-term series of average annual precipitation and average annual air temperature compared to climate standards (1961-1990). This method enables identification of positive and negative (drought) anomalies.
Czech Republic	Methodology is focused on meteorological drought characterization based on assessment of extremity of monthly precipitation and monthly temperature and their combination. Drought intensity was assessed according to criteria set for six categories of drought (for temperature and precipitation).
Hungary	For assessment of long series of meteorological data Pálffay index (based on daily values) and Drought Pálffay index (based on monthly values) are used. Both indexes are calculated using statistical values of precipitation and air temperature taking into account seasonal climate conditions. According to criteria set for drought intensity there are six drought categories.
Lithuania	The main diagnostic tool for identification severity of drought is the hydrothermal coefficient (HTC) of Selyaninov. Supporting index is the length (persistency) of period without precipitation.
Moldova	Trend analysis for assessment of the tendencies based on the meteorological data.
Poland	National methodology based on classification of the meteorological drought using analysis providing the number of dry months in selected basins in the period 1966-2005. Another methodology is focusing on hydrological drought assessment which is characterised by maximum low-water periods occurring in between years 1966 and 2005, taking into consideration the water deficit as well as the duration of the maximum low-water period. Drought classification system includes five drought categories.
Romania	Methodology based on soil moisture indicator (calculated according to soil water balance model) and assessment of water resources using the hydrological, hydrogeological and meteorological data.
Slovakia	Methodology based on statistical analysis of long-term series of average annual precipitation and average annual air temperature compared to climate standards (1961-1990). This method enables identification of positive and negative (drought) anomalies.
Slovenia	Precipitation distribution is one of the basics identifiers of drought occurrences in a given region. For this purposes precipitation totals in different time scales, anomalies (decline from long-term average, share of precipitation and Standardized Precipitation Index (SPI)) are used. To assess drought impacts on plants hydrological water balance is used. Moreover Decadal index of drought stress (DISS) was developed specifically to monitor agricultural drought stress for major crops in Slovenia.
Ukraine	Very complex methodology is used. For drought analysis nine indicators (chosen from 35) are used based on precipitation, temperature, elasticity of water vapour in the air, content of productive moisture in the soil and others.

**Table 3: Examples of drought national drought indicator systems and evaluation methodologies**

Country	Drought indicator
Bulgaria	Aridity Index (De Martonne), Palfai Index (PAI), Palfai Drought Index (PaDI)
Czech Republic	Amount of usable water in loam soils, Basic water balance of grasslands, Potential evapotranspiration of grassland, weekly amount of precipitation, Danger of Fires Index (DFI)
Hungary	Aridity Index (De Martonne), Palfai Index (PAI), Palfai Drought Index (PaDI), Standardized Flow index (SFI), Standardised groundwater index (SGI), Canadian Fire Weather Index (FWI)
Lithuania	Percent of Normal, (PN) Deciles (PD), Effective Drought index (EDI), Streamflow Drought Index (SDI), Selianinov hydrothermal coefficient (HTC)
Moldova	Dry Periods Index (IZU) after M. Nedealcov, Climatic resources
Poland	Standardized Precipitation Index (SPI) Climatic Water Balance (CWB), Threshold Level Method (ThLM), Ground Drought Risk Index (KN)
Romania	Palmer Drought Severity Index (PDSI), Standardized Precipitation Evapotranspiration Index (SPEI), Standardized Precipitation Index (SPI), Soil moisture reserve, precipitation and air temperature (statistical methods based on monthly and yearly values), stream flows (statistical indicators), Groundwater levels)
Slovakia	Palmer Drought Severity Index, Tomlain climatic indicator of irrigation, Konček index of irrigation, forecast of forest fire risk index
Slovenia	ten-day totals and comparison to long-term average (temperature, precipitation and sunshine radiation, water balance, evapotranspiration), water availability of plants, phenological development and impact of weather (drought) on plants, outlook for five days, Soil Water Balance, Precipitation Percentiles, Standardized Precipitation Index (SPI)
Ukraine	

**Table 4: Examples of the national drought classification, thresholds and early warning systems**

Country	
Bulgaria	
Czech Republic	
Hungary	
Lithuania	Applied classification system based on two indices – Hydrothermal coefficient and (HTC) Persistency of dry spell (PDS). Threshold for HTC are set for 3 different drought conditions (dry condition, drought, severe drought)
Moldova	Thresholds for Dry Period Index (IZU) has been set defining 5 different drought categories – normal period, moderate dry period, significant dry period, dangerous dry period, exceptional dry period
Poland	Thresholds referring to the possible risk and warnings have been developed for ground drought risk index (KN index) divided drought stages into 3 categories (no risk, risk of a low-water period, low-water period – justifying warnings and taking measures)
Romania	Designed the thresholds for soil moisture reserve - agrometeorological indicator expressing the water supply degree of the soil function of the water demand of the agricultural plants at specific calendar dates and various depths (0-20 cm, 0-50 cm and 0-100 cm). Threshold values classify drought

	<p>into 6 drought humidity classes - extreme pedological drought, severe pedological drought, moderate pedological drought, satisfactory supply, optimal supply, above normal moisture values. Romania has a functioning system of delivering early warnings to broad public by:</p> <ol style="list-style-type: none"> <li>1. Standard agro-meteorological bulletin: the product is disseminated to Presidency, Government, Ministry of Environment and Forest, Ministry of Agriculture and Rural Development for informational and decisional purposes;</li> <li>2. Specialized agro meteorological bulletin and forecasts: the information is disseminated to farmers through mass-media. Periodical informative broadcasts (i.e. "Village Life") are made at the public radio and televisions having nationwide and regional coverage, targeting especially rural audience;</li> <li>3. Agro-meteorological forecasts for several specialized publications and magazines are disseminated weekly and monthly in electronically format (<a href="http://www.gazetafermierului.ro">www.gazetafermierului.ro</a>; <a href="http://www.profitulagricol.ro">www.profitulagricol.ro</a>; <a href="http://www.revista-ferma.ro">www.revista-ferma.ro</a>) and paper format (i.e. "Village World").</li> </ol>
Slovakia	Developed threshold values for 4 types of indicators – precipitation, river flow, groundwater level and soil moisture deficit. Thresholds represent limit values for 4 drought stages (normal, pre-alert, alert, emergency)
Slovenia	Introduced three-level concept of agricultural drought assessment (precipitation deficit, meteorological water balance, agricultural drought crop stress). For level 2 and 3 the thresholds for 3 different drought stages have been set
Ukraine	Introduced classification system comprising of 5 classes by drought intensity - very strong, strong, medium, weak, absence of drought. Threshold values were set for 8 indicators (HTI, Md, V, No, NT, W0–20, W0–50 and W0–100)

**Table 5: Summary of proposals of the national research programme**

**Key themes for IDMP CEE continuation:**

- improvement (harmonisation) of data collection and monitoring (Hungary, Romania, Czech Republic, Ukraine – forest monitoring);
- improvement of planning process – drought indicators, historical evaluation and drought forecast (Poland, Moldova, Hungary), methodology for risk assessment including development of hazard and risk maps (Romania, Lithuania, Slovakia);
- improvement of agricultural drought management (Slovenia);
- support for implementation of measures – limitation of water leakages from water supply systems, increasing of reservoirs volume, construction of small water storage ponds, use of treated waters for irrigation (Bulgaria, Slovakia, Hungary), increasing soil water holding capacity (Slovakia, Poland, Czech Republic, Hungary), determination of e-flows (Lithuania, Slovakia),
- climate change modelling (Czech Republic, Lithuania, Slovakia)

**The examples summarised in the Tables 2 – 5 were incorporated into the Guidelines.**

Countries provided also examples of the **national organizational structures** to deal with drought. The examples showed that in all countries involved in the NCDs have already established system of bodies needed for creation of Drought Committee. In some countries (e.g. Hungary) this system is currently working on development and implementation of the drought policy.

The provided **examples of the national program of measures** for preventing and mitigating drought are very diverse in dependence on specific situation in the individual countries. Majority of the proposals are connected with the insufficient water management suggesting measures for its improvement. No example of existing programme of measures specifically focused on preventing and mitigating drought impacts has been provided. But a lot of proposals were given in the form of future intentions which present valuable source for development of future programmes (e.g. Poland list of 23 measures).

The details of provided examples for the chosen elements of DMP can be found in the individual country Reports from NCDs available [here](#).

## 2. Outcomes from the second round of the NCD

- Altogether 338 participants from 9 countries of the CEE region attended the second NCD.
- NCDs opened communication and discussion on drought issues among different sectors, institutions and stakeholders focused on creation of effective organizational structure for drought management in the individual countries.
- Detailed information about draft of the Guidelines and further IDMP CEE activities were provided to all participants with the aim to involve them into process of development of the Guidelines.
- NCDs contributed to development of the final version of the Guidelines by providing the comments to the draft and examples of the national experiences for the key elements of DMP.
- NCDs revealed gaps and uncertainties in drought management in the individual countries and within CEE region. The main identified problems are:
  - diversity of the methodologies used for assessment of historical drought events;
  - different drought indicator systems;
  - different drought classification system;
  - absence of early warning system in the most CEE countries;
  - absence of DMP as an additional planning document to RBMPs, including programme of measures for preventing and mitigating of drought impacts.
- NCDs revealed preparedness of individual countries for creation of effective organizational structures for drought management (Drought Committee).
- During NCDs very valuable information for six chosen key elements of DMP were collected in the country Reports from NCDs. This source of information is available and should be used as a basis for possible continuation of IDMP CEE.
- Participants expressed a wish for more of such consultations and they expect to continue with this in the future. In this connection the involved countries provided ideas for future joint activities (e. g. harmonization of national approaches, risk assessment methodology, climate change aspects).