Global Water Partnership
Central and Eastern Europe

Integrated Drought Management

Programme in Central and Eastern Europe

Peer Review Group

Progress Report No. 2

April – September 2014

FINAL
Report No. 2
April-September 2014 (EXTENDED)

Peer Review Group

Janusz Kindler
Warsaw University of Technology, Poland

Sándor Szalai [1)]
Szent István University, Hungary

Henny A.J. van Lanen
European Drought Centre, Wageningen University, the Netherlands

Robert Stefanski
World Meteorological Organization, Geneva, Switzerland

[1)] not available to approve

19 January 2015

Foreword

The Peer Review Group (PRG) has presented the final draft of the 2nd PRG report (version: September 2014) on the 3rd IDMP CEE workshop in Budapest (Hungary), 2-4 October 2014. Activities were presented by the different activity teams and discussed. Early October, the assessment of Act. 5.2, Act. 5.4, Act. 5.5 and Act. 5.6 were not completed. In Budapest there were also a separate meeting with representatives from Act. 5.6 to discuss the PRG' assessment and how to move forward.

The current, final version of the 2nd PRG report is an extended version that includes the outcome of the assessment of the Act. 5.2, Act. 5.4, Act. 5.5 and Act. 5.6 after the Budapest workshop. All relevant outputs ./ milestone reports of these activities have been accepted, except the report of Act. 5.2. The finalization of the assessment of Act. 5.2 will be included in the next PRG report.

Henny van Lanen,
on behalf of the Project Review Group
19 December 2014

Content

General observations

The Peer Review Group noticed a steady progress of the work programme. Many Activities produced a Milestone Report or Reports during the reporting (April – September 2014). The role and way of working of the Project Review Group (PRG) changed a bit after the 2nd IDMP CEE workshop in Ljubljana (Slovenia, 8-9 April 2014). It was decided that the PRG will scientifically assess the Milestone Report(s) and give a final conclusion in terms as: accepted, accepted with modifications or rejected. The PRG intended to do this at short notice (see minutes 1st PRG meeting, Ljubljana, 9 April 2014).Templates for progress reporting, i.e. Milestone Progress Report and Final Output Progress Report, were discussed on the 1st PRG meeting and finalized and distributed by the Programme Manager. The Milestone Progress Report[1] is supposed to provide:

1. Basic information
   (Name of the Milestone report, Activity leader, Participating partners, Duration, Chairman of the CWP)
2. Activity Report
   - 2.1 Short summary of the milestone report (max 2500 characters) –
     What have been done after the previous milestone report
   - 2.2 Describe the progress to the objectives of your activity
   - 2.3 The expected final output(s).
     At what stage you are now in the process of producing the final output(s)
   - 2.4 Have you introduced any change in the original plan as outlined in the Activity List?
   - 2.5 Identify links with other IDMP CEE activities
   - 2.6 List of National Reports that have been used, and if so,
     provide details on the National Reports (title, authors, publication data and location)

The other way of working of PRG also led to another nature of the PRG Report relative to the 1st PRG Report (March 2014). The current report mainly includes the assessments done by the PRG (see comprehensive list of Annexes). It starts with some general observations made during the period April-September 2014, and the following months (October-December) when not completed assessment were finalized. It also provides some brief statements about the Activities that have reported over the last 6 months with reference to the Annexes.

The Peer Review Group (PRG) observed the following:

1. The draft Guidelines for Drought Management Plans (Act. 2.1) provide a good reference for the whole IDMP CEE project. The full width of the many different aspects connected to the compilation of a drought management plan(DMP) are described in a context-specific environment (CEE). It is clearly linked to recent thoughts on DMPs from the international community (i.e. represented by WMO[2]) that are integrated in the concepts of integrated water management and pro-active risk management. The report adds to this the integration of drought management into the European dimension (Water Framework Directive, WFD, and its River Basin Management Plans, RBMPs) and the CEE regional-specific context, which already is a major achievement.
2. In the 1st PRG Report it was mentioned that the different Activities seemed to have been developed more or less independently. We advised a more concerted action of all partners, i.e. more work needs to be done jointly or at least discussed by all partners, especially in Work Package 5 Demonstration Projects. It is important to develop a conceptual approach in which all activities fit. In principle, the CEE-IDMP activities aim at characterizing and monitoring drought as a natural hazard, predict the future hazard, assess the vulnerability and manifold impacts, develop drought management strategies that reduce impacts of future drought, built resilience and to reduce future risk at drought.

[1] The Final Output Progress has another format, e.g. it describes briefly the output, added value, lessons learnt, proposals for follow up.
[2] WMO/GWP guidelines (Wilhite's document), 2014, WMO/GWP "National Drought Management Policy Guideline, A Template for Action".

It appeared that several Milestone Progress Report were still rather weak on identifying links with other IDMP CEE activities, i.e. putting the work in the wider context of IDMP. The PRG believes that more coherence among Activities is required, which should be reflected in the Final Output of the all Activities. Demonstration projects (e.g. increasing of soil-water holding capacity, natural small water retention measures, drought impact on forest ecosystems, remote sensing agricultural drought monitoring, agricultural drought monitoring and forecasting, risk management scheme: a decision support system) **should fit into one of the seven steps identified in the IDMP CEE** (see Act. 2.1 Ch.3 Drought Planning Process). The Drought Data Exchange Platform, National Consultation Dialogues and Compendium of Good Practices should support IDMP.

3. The concept of the Milestone Progress Report is not well understood as illustrated by several Activities. The Activity should compile Milestone Report(s) as described in the Activity List. On top of that the Activity (likely the Activity Lead) should write a Milestone Progress Report that includes the above-mentioned components (see template that has been distributed after the Ljubljana workshop) when a Milestone(s) is/are submitted for assessment by the PRG. The actual Milestone Report(s) are Annexes to the Milestone Progress Report. A similar approach also applies to In the next phase
4. The IDMP CEE timetable mentions that in the period April-September both Output (final) Reports and Milestone Reports had to be compiled. It is hard for the PRG to understand whether a report is Output (final) Report or a Milestone Report. PRG did not receive any Final Output Progress Report, which we interpret that no Output (final) Reports were submitted.
5. In the period October-December the assessment of reports from different activities included a number of rounds. Every round, the PRG expects an updated Milestone Progress Report, a revised Output / Milestone report. In some cases a separate reply to the comments made by PRG is helpful. Activity teams were asked by the Programme Manager and the PRG to mark the changes in the document. Almost all teams were very persistent by not doing this. This increased the work load for the PRG, which is not appreciated. Furthermore, we asked in the 2nd phase to put a date on the updated Milestone Progress Report or revised Output / Milestone report. The reporting / archival process benefits from putting a date on these reports. The majority of the Act. teams have put a date on the covers after it was requested, however, some did not.
6. Table 1 provides an overview of the PRG assessments in the period from April to September. It gives per Activity the date of submission of the report, the PRG assessment. Some of the Activities replied to the PRG assessment by sending a reply or by submitting a revised report. In that case the PRG replied. Dates of submission, assessment and replies are also presented. It appears that in number of cases the PRG was unable to react in due time. In particular, Act. 1.4, 5.4 and 5.5 had to wait too long on the assessment of their activity. It prevented to reply these Activities to respond on time before the Budapest workshop. The PRG will discuss how to react more quickly.
7. The PRG would like to acknowledge the good cooperation with the Programme Manager, i.e. Sabina Bokal. She is an excellent intermediate between the consortium and the PRG. She provides very clear information which tasks need to be completed, priority and places (Dropbox) where the PRG can find the relevant. Moreover her responses are well on time.

Table 1 Overview of the assessment of Activities, April-September 2014

Activity	Milestone report(s) submitted	1st Assess-ment PRG	Reply Activity Lead	2nd Assessment PRG	Reply Activity Lead	Assessment PRG
1.3 Drought data exchange platform	15 May 2014	25 May 2014 **(2)** [1)] Annex 1C	4 June 2014 Annex 1B	11 June 2014 **(1)** Annex 1A		
1.4 Development of GIS Based Communication Technology Platform for the Sustainable Management of Transboundary Water Resources in Lithuania, Poland and Kaliningrad Region	30 June 2014	14 September 2014 **(2)** Annex 2	Will be further discussed in Budapest	Discussed in Budapest, 4 Oct; Act. actually does not belong to IDMP CEE		
2.1 Guidelines for Drought Management Plans	15 August 2014	27 August 2014 **(2)** Annex 3C	4 September 2014 Annex 3B	10 September 2014 **(1)** Annex 3A		
5.2. Assessment of drought impact on forest ecosystems	19 September 2014	27 September 2014 **(4)** Annex 4B	Will be further discussed in Budapest	No targeted meeting has taken place in Budapest.	28 November 2014	9 December 2014 **(2)** Annex 4A
5.3 Natural landscape retention – combining drought mitigation, flood protection and biodiversity conservation Please note: Original activity title changed.	20 May 2014	25 May 2014 **(1)** Annex 5	Comments will be integrated later			

5.4. Drought Risk Management Scheme: a decision support system	30 June 2014	26 September 2014 **(2)** Annex 6C	Will be further discussed in Budapest	Briefly discussed with Act. Lead in Budapest, 4 Oct 2014	14 October 2014 Annex 6B	16 Decem-ber 2014 **(1)** Annex 6A
Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods	30 June 2014	26 September 2014 **(2)** Annex 7D	3 October 2014	26 November 2014 (**2**) Annex 7C	12 December 2014 Annex 7B	14 December 2014[3)] (**1**) Annex 7A
Act. 5.6 Upgrading agricultural drought monitoring and forecasting: the case of Ukraine and Moldova	31 July 2014	19 September 2014 **(3)** Annex 8C	30 September 2014 [2)] Annex 8B	PRG had meeting with Act. team in Budapest, on 4 October; revised Act. List: 14 October 2014	16 December 2014 (**1**) Annex 8A	
Act. 7.1 Development of the Compendium of Good Practices	31 July 2014	4 September 2014 **(2)** Annex 9B	27 September 2014 Annex 9A	Will be further discussed in Budapest		

(1) Accepted, without modifications
(2) Accepted, minor modifications
(3) Accepted, major modifications
(4) Rejected/not approved

[2)] The PRG received a reply, including an update Milestone Report, an updated report from the workshop in Moldova and a report with the agroclimatic zonation of Moldova. The PRG had no opportunity to assess these documents before the Budapest workshop.
[3)] After the approval the activity team has sent a version where the revisions have been marked (22 December 2014), which was appreciated.

Work package 1 Regional and Transboundary Cooperation

Act. 1.1 Cooperation with international basin commissions and regional organizations

The 2nd IDMP CEE Quarterly Report (April-June) describes participation in: (i) 16th session of the WMO Commission of Agricultural Meteorology in Antalya, Turkey (10-15 April 2014), (ii) International Conference on Sustainability in the Water-Energy-Food Nexus in Bonn, Germany (19-20 May 2014), (iii) Interreg IVC thematic capitalisation event "Policy sharing, policy learning" in Brussels (22 May 2014), (iv) 39th River Basin Management Expert Group Meeting, ICPDR in Zagreb, Croatia (5-6 May 2014), and (v) GWP Regional Days and Consulting Partners Meeting in Port of Spain, Trinidad (23-28 June 2014). The Activity 1.1 continuous to develop satisfactorily and its further expansion is encouraged through seeking wider co-operation through EDC, FRIEND-Water 2014 Conference, Montpellier, 7-10 October 2014, 3rd pan-European Drought Dialogue Forum, Brussels, 4 November 2014, HYPER Drought Conference (EGU Leonardo Conference Series on the Hydrological Cycle), Prague, , 13-14 November 2014, and the 2nd European Drought Conference, Valencia, 10-13 March 2015.
It is important to note that Dr. Gregor Gregorič (Slovenian Environmental Agency /DMCSEE) has been invited to present and discuss the regional needs/capabilities of the CEE Drought Information Platform and possible role as one of the GDIS pilots (Global Drought Information System). The GDIS workshop will take place in Pasadena, California, USA, 11-13 December 2014.

Act. 1.2 Review of the current status of the implementation of DM plans and measures within RBMP according to EU WFD

The aim of Activity 1.2 is to gather information from all participating CEE IDMP countries on the current status/development and implementation of the drought management plans and/or drought control measures as provided by the River Basin Management Plans (RBMPs see EU WFD) and by other national drought-related planning documents. The work is contributing also to one of important IDMP CEE activities, namely development of the GIS communication technology platform and database. The GIS maps will also be used for the second round of work on RBDMPs) and programmes of measures prepared by Lithuania and Poland under the EU Water Framework Directive. During the first river basin planning round (2009-2014) cooperation between Lithuania, Poland and their non-UE neighbours was totally missing. In case of Ukraine and Moldova (non-EU member states), the review deals with the National Water Resources Management Programs (NWRMPs) and other national drought-related plans and measures. As planned the review was finalized by the end of March. The Act. 1.2 report has been published on the website.

Act. 1.3 Drought Data Exchange Platform

The Act. 1.3 report has been assessed (Annex 1A-C). The PRG has some concerns about the selection of EDO for the information platform without: (i) providing cons for this choice, and (ii) assessing pros and cons of other platforms as mentioned in the Activity List. Furthermore the nature of the milestone is rather technical. We hope that this will not be a limitation for CEE countries to provide data. The PRG believes that an informal institutional commitment between CEE and JRC on the EDO is insufficient. We strongly recommend to prepare a draft MoU that can be discussed at the next IDMP CEE workshop in Budapest, October 2014. It is fine that a representative from JRC will attend the workshop, as planned, to be involved in the discussions. We look forward to the outcome of the next phase, i.e. providing actual data by each activity partner, feeding these data in the Information System. The Activity Lead (Gregor Gregorič) has been invited to present and discuss the regional needs/capabilities of the CEE Drought Information Platform in the USA (see Act. 1.1).

Act. 1.4 Development of GIS Based Communication Technology Platform for the Sustainable Management of Transboundary Water Resources in Lithuania, Poland and Kaliningrad Region

In 2012 the SIWI project on "Building a Framework for Collective Action in the Management of the Transboundary Waters in Kaliningrad (Russia), Lithuania, and Poland (Baltic Sea Region)" was initiated to build a partnership to implement green and smart growth on the shared river basins, which also considers adaptation to climate change, incl. drought risk management. Belarus joined the partnership later. In 2013, the IDMP CEE programme was integrated in this joint initiative. Drought risk management has started with collation and processing of existing information on natural and human aspects. A web based GIS communication technology platform (GIS-CTP) will be used, which allows spatial data analysis. PRG assessed Act. 1.4 (Annex 2). Actually, this Activity is not a pure IDMP CEE Activity but the budget goes through the GWP programme. Hence, it does not fully belong to IDMP CEE.

PRG apologizes for the delayed response to the Activity outcome. The Activity Lead will explain main tasks to PRG, which do not fully comply with the IDMP CEE. In Budapest has been decided (4 October 2014) that this activity actually does not belong to IDMP CEE.

Work package 2 National planning processes

Act. 2.1 Guidelines for Drought Management Plan

The PRG assessed the draft guidelines (Annex 3A-C). We appreciate the description of the full width of the many different aspects connected to the compilation of a drought management plan(DMP) in a context-specific environment. It is clearly linked to recent thoughts on DMPs from the international community (i.e. represented by WMO\GWP) that are integrated in the concepts of integrated water management and pro-active risk management. The report adds to this the integration of drought management into the European dimension (Water Framework Directive, WFD, and its River Basin Management Plans, RBMPs) and the CEE regional-specific context, which already is a major achievement.

PRG agreed to have a brief discussion about the definitions during the IDMP CEE workshop in Budapest (we can then address, for example, the temperature/snow issue).

Act.2.2 National Consultation Dialogues

The 2nd IDMP CEE Quarterly Report (April-June) describes that the last National Consultation Dialogue (NCD) in the 1st NCD round was held in Bulgaria (3rd April 2014). The Czech Republic already organized their 2nd NCD (12 June 2014). The main topic of the seminar was a discussion on the draft Guidelines for the Drought Management Plan (Act. 2.1) to provide national experiences and to contribute to completion of the Guidelines. The draft guidelines will be the main point of the discussion on the 2nd cycle of the National Consultation Dialogues (October - November 2014) in the other countries. As said in the 1st PRG Report a challenge will remain to synthesize the experiences from the 10 countries to derive more generic information for guidelines on DMPs.

Work packages 3 and 4 - do not apply to the IDMP CEE

Work package 5 Demonstration Projects

Act. 5.1 Drought management by agricultural practices and measures – increasing soil water holding capacity

The main objective of Act. 5.1 is to demonstrate concrete practices and measures allowing to increase soil water holding capacity. No output or milestone were foreseen in the period April-September 2014. Results are planned to be presented in November 2014, after the end of the growing season.

Act. 5.2 Assessment of drought impact on forest ecosystems

The main objective of Act. 5.2 is identification of measures for the forest ecosystems to adapt to negative effects of drought, based on the expert investigations in four GWP CEE countries. The PRG assessed the submitted outcome (Annex 4B). The Activity members do not understand the concept the Milestone Progress Report. The meaning is to report on progress, but not on the scientific outcome. The scientific outcome should be in a separate report, which should be an annex to the Milestone Progress Report. PRG tried to download the file(s) from a ftp server. It appeared that first download software had to be downloaded and installed. Probably, then factual information (e.g. maps) could have been downloaded from a website. The consortium cannot expect that PRG members will do this. The factual information should be delivered in a more appropriate format.

On 28 November PRG received a revised Milestone (progress) report and attached as an annex the revised Output 2 / Milestone 3 report, which was modified according to the agreements made at the Ljubljana workshop. This is clear improvement relative to the version of 19 September that did not make a difference. Moreover, the Milestone 3 report was not ready by then. The PRG accepted the Milestone 3 report, but with lots of minor comments (Annex 4A). The Act. 5.2 team has produced a lot of interesting information on impacts of climate change (not drought) on forests in four CEE countries. Not all section are fully elaborated. English should be improved, at least for the final output that goes on the public website. The milestone 3 report should have benefited from a better coordination from the beginning (e.g. template, what sections per country, which tables, which figures). Layout, format of figures and tables and sequence of components deviated per country.

The PRG also received a revised Activity List (14 October 2014).The activity title was changed from „Assessment of drought impact on forest ecosystems" to „Assessment of drought impact on forests". Some justification and evaluation of the consequences of that change (if any) are needed.

The PRG expects a reply to the change of the Activity List as part of the reaction to Milestone 3.

Act. 5.3 Natural small water retention measures

Small retention belongs to adaptation measures to mitigate negative impacts of extreme water situations, specifically retaining water in the catchment from wet periods for its use during subsequent dry periods and slowing down water outflow during floods. The principle is to save water during wet periods to be used in the following possible dry period. The PRG assessed the Act. 5.3 outcome (Annex 5). PRG decided accept the outcome, but our comments should be interpreted as a clear warning that the text needs substantial improvements before it can be accepted as Final Output. Activity partners should carefully read the PRG' comments.

Act. 5.4 Drought risk management scheme: a decision support system

Act. 5.4 aims at developing a framework for integrated drought risk mapping that can be adjusted to a given drought context. The proposed framework will be generic in nature. Activity partners should remind that risk is the product of exposure to drought (probability of occurrence of the natural hazard) and societal vulnerability, represented by a combination of economic, environmental and social factors. PRG has assessed Act. 5.4 outcome (Annex 6). PRG apologizes for the delayed response to the Activity outcome.

Act. 5.4. could benefit from a more clear concept. A clear example that could have been followed is in Milestone 2.2 (Fig. 10, 3. Conclusions). A number of interesting achievements are described in the two milestone reports, but these are very hard to put in a context. Approaches in the three countries are to a large degree different, except the use of the SPI, which makes challenging to eventually develop a framework for integrated drought risk mapping that can be adjusted to a given drought context and provide application for particular scope.

More interaction with other Activities is required. For example, in Milestone report 2.1 a list of possible drought indices is given, whereas a similar listing is also given in Act. 5.5. Another example is in Milestone report 2.2 (Section 2.2). The method applied to assess vulnerability for the agricultural sector in Romania is very much alike what is being done in Act. 5.5 (see below). The upcoming meeting in Budapest should be used for more fine-tuning.

As said in the 1st PRG report Act. 5.4 really is an ambitious activity. Participants are very active (5 Milestone reports since start of the programme), however, we miss a more thorough treatment of approaches for of drought risk management strategies, where DSS plays a crucial role Actually, it should go along the lines of an iterative risk management strategy approach (e.g. IPCC SREX, 2012).

On 14 October the PRG received a set of documents: (i) IDMP CEE_Act. 5.4_Reply to PRG comments on Output 2 (Annex 6B), (ii) revised Progress Report on the Milestones 2.1 and 2.2, (iii) revised Milestone 2.1 report, and revised Milestone 2.2. The Act. 5.4 team gave a very structured reply, which addressed the PRG' questions and comments. We particularly appreciated that the team provided two separate versions of some documents with one version included Track/Change.

The PRG accepts Output 2, Milestone 1.2 and 2.2 (Annex 6A). We have included some last remarks in the files sent to the Act. Team via the Programme Manager. We trust that these remarks will be helpful when preparing following documents.

Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods

Act. 5.5 made good progress. PRG assessed the Activity's outcome (Annex 7D). PRG apologizes for the delayed response to the Activity outcome. PRG appreciates Activity members clearly understand the difference between the Milestone Progress Report (following the template introduced at the Ljubljana meeting) and the actual milestone report that describes scientific outcome.

The PRG understands that the well-known NDVI is used for the drought monitoring. However, it needs to be explained why the fAPAR (Fraction of Absorbed Photosynthetic Solar Radiation is not used. fAPAR, which is known to be strongly related to water stress, has been selected by the JRC EDO (close links with Act. 1.3).

In the Milestone progress report and in the Milestone report at several places it is said that the methodology will also be developed for drought forecasting (e.g. „area-specific yield forecasts"). PRG does not understand how with remote sensing data only, drought or yield forecasts can be made. With RS you can well map current conditions, but to take it into future you need forecasting methods (kind of modeling approach).

PRG noticed likely overlap of Act. 5.5 and Act. 5.4. in Romania (see above), the state of crop vegetation is assessed with the satellite-derived indicators during the critical periods of agricultural water needs. For the Romanian example a strong interaction is required with Act. 5.4 (cooperation between the National Meteorological Administration (NMA) and the University of Oradea).

On 3 October we received a none-revised Milestone (progress) report and attached as an annex the revised Output 2 / Milestone 2 report, which is according the agreements made in Ljubljana (like last time, 30 July 2014). However, we do not appreciate that the (minor) revisions were not marked, although this was asked by the Programme Manager. It is a good report, but Act. Team did not reply to the three PRG's questions (for the full questions, see PRG assessment 26 September 2014). On 26 November we asked the Act. team to revise the documents (PRG assessment, Annex 7C). On 12 December we received a reply from the team (Annex 7B). We received: (i) a reply (file: Act. 5.5_ Response to PRG FINAL Assessment 12 Dec2014) to the PRG comments of 26 November, and (ii) an Output 2 / Mileston2 progress report with the revised Output 2 / Mileston2 report as annex (Act 5 5_Output 2_updated_11122014). Few days later (14 December), the PRG accepted reports (Annex 7A). After the approval the activity team has sent a version where the revisions have been marked (22 December 2014), which was appreciated.

Act. 5.6 Upgrading agricultural drought monitoring and forecasting: the case of Ukraine and Moldova

PRG has assessed Act. 5.6 outcome (Annex 8C). The Activity should make more clear how a revised agro-climatic zonation and EU accepted drought indicators in the Dniester river basin (UA and MD) fit in the framework of a Drought Management Plan, which is relevant for the IDMP CEE project. In general the link with the agricultural drought monitoring and forecasting (this activity, Act.5.6) and the ongoing work in WP2 (e.g. Act 2.1 Guidelines for DMP) should be made stronger. PRG hope that this will happen when finalizing towards the end of the IDMP CEE project (e.g. Output 4).

The PRG mentioned in their 1st Report that it is hard to understand the structure of Act. 5.6 (i.e. Outputs and Steps in the Activity List are not linked to Milestones). In the reporting Milestones are introduced, which are not equal to Outputs. Activity members should implement a more clear structure and communicate this through the reports that will be submitted.

On September we received: (i) a reply to the PRG assessment (IDMP CEE_Act. 5.6_Reply to PRG comments 30Sep2014) (Annex 8B), (ii) revised Milestone 3 Report (Annex 1_Act. 5.6_Milestone 3_updated 30Sep2014), (iii) Annex 2_Consultation meeting with stakeholders in MD 30Sep2014, and (iv) Annex 3_Agroclimatic zonation Dniester_MD 30Sep2014a. The PRG has accepted Milestone 3 report, despite numerous remarks the PRG proposed not to revise the Milestone 3 report, incl. its annexes, but to use efforts for the other steps in the finalization of the whole Act. 5.6). report, incl. its annexes.

Work Package 6 – Capacity Development

Act. 6.1 Workshops

The 2nd IDMP CEE workshop was held in Ljubljana (Slovenia, 8-9 April 2014). Important agenda item was to find links between activities and to discuss the conceptual approach. Moreover, joint tasks were identified or updated. Preparations for the 3rd Workshop in Budapest were done. The meeting was productive and well organized.

Act. 6.2 Capacity building trainings

DMCSEE and IDMP CEE with experts and organizations outside the region will set up a capacity building training on drought monitoring to end users. This is organized during the 3rd IDMP CEE workshop (2 October). It is good initiative to be taught how to make the connection to the end-use of drought information.

Act. 6.3 Peer Review Group (PRG)

The reviewing process has been formalized (see minutes of PRG meeting, 9 April. The Programme Manager (Sabina Bokal) takes care of a very quick efficient information flow between the PRG and the consortium, which is highly appreciated.

Work Package 7 – Knowledge and awareness

Act. 7.1 Good practice compendium

The PRG assessed the Activity' outcome (Annex 9). After the Ljubljana workshop, the Activity Lead investigated the possible outcome of IDMP CEE Activities and whom are assumed to be the users of the Compendium. Next the current status of the existing Drought Management Plans across Europe and other existing policy and management documents were analysed and included into the draft Compendium.

The Act. 7.1 Lead anticipates some problems (item 2.6) of late delivery of outcome of other IDMP CEE Activities, which then cannot be incorporated in the final Act. 7.1 publication. Progress of IDMP CEE Activities should carefully be monitored to enable output from other Activities to be used in Act. 7.1.

Act. 7.2 Rising awareness

A drought photo contest was launched on 17 June (World Day to Combat Desertification) and a video is under preparation with shooting on location in Poland, Hungary, Slovakia and Slovenia.

Work Package 8 – Governance and Fundraising

Act. 8.1 Improving fundraising capacity of CWP and RWP

Nothing to report.

Annexes – PRG Assessment reports & replays

Annex 1A Act. 1.3 Drought data exchange platform

Assessment Peer Review Group (PRG)	11 June 2014
Status	**FINAL**
Activity	**1.3 Drought data exchange platform**
	Implementation Guide
Activity lead	Gregor Gregorič (SLO)
Nature	Milestone 2 connected to Output 1; meant for publication on the internal protected part of the IDMP CEE website (not public website)
Received	4 June 2014 (Revised version)
General observations	**Accepted** An important task of the CEE IDMP is development of the drought information platform, understood as an information architecture and an intelligent infrastructure that enables exchange of data relevant for drought analysis as well as for continuous automated sensing, monitoring, and decision support for drought risk management operations. Primary goal is to enable all CEE IDMP countries (activity partners) to participate in the exchange of data relevant to detect drought onset and analyzing the development of the drought severity and eventually the recovery. The Activity partners substantially improved the Implemetation Guide and replied to our comments in a separate document (file="IDMP CEE_Act. 1.3_Reply to PRG comments.doc"). **Comment:** The PRG believes that an informal institutional commitment between CEE and JRC on the EDO is insufficient. We strongly recommend to prepare a draft MoU that can be discussed at the next IDMP CEE workshop in Budapest, October 2014. It is fine that a representative from JRC will attend the workshop, as planned, to be involved in the discussions.
Detailed comments	Minor comment (p.1, para 1) to be considered in follow-up documents: the deviation from the average precipitation values is not equal to the rainfall deficit, as it is indicated in the text. Especially in the CEE region, the winter snow cover could play a very important role in the spring/summer drought situation. Its importance seems to increase.

Annex 1B Act. 1.3 Drought data exchange platform

Reply to comments (by Activity Lead)

General observations

- *Integration in the JRC European Drought Observatory (EDO) seems to be a good choice (see pages 2-3 of report), but the report should comment on why the possibility to establish a new platform under WMO (see Activity List) has not been explored or not addressed in the report. Not addressing the cons of EDO and pros and cons of a new platform under WMO implies a deviation from the Activity List.*

Yes, we agree, thus we have added description of arguments for selection of platform to Chapter 2.

- *It is recommended to sign a Memorandum of Understanding between CEE and JRC.*

Currently we only have an informal institutional commitment to host and support IDMP project partners during and after the project, which can be on of possible drawbacks of choosing EDO. However we will invite JRC representative, responsible for EDO, to next workshop in Budapest and this topic can be discussed with him/her.

- *The target audience for the report is unclear. The nature of the report suggests that it is supposed to be meant for rather technical IT people (see also previous remark by PRG, 26 March 2014).*

We have tried to improve this guide with more general explanations (added section with GIS etc.), however due to its nature (implementation of data exchange system is mostly technical task) we agree that the text is still very technical. Main target audience for this report are people who will prepare data/metadata. On the other hand, at least we hope so, guide can be also used by non-technical people who would like to have a brief overview.

- *Since this is supposed to be a drought information implementation guide for the partner IDMP CEE organizations (data suppliers), probably some comments could be made (later) on how it will be associated with the Guidelines for Drought Management Planning (Act. 2.1)*

Currently, Guidelines for the DMP are unavailable (only time schedule has been presented). We will include main recommendations from the guidelines to the implementation of the platform (mainly recommendations for monitoring).

- *Looking at the current EDO maps and other data (see EDO webpages), all products (information) are given for the entire Europe, including IDMP CEE countries (in fact all CEE countries). It would be good to explain in Section 1 (Introduction) what is the advantage of new data to be provided to EDO/IDMP platform by the IDMP CEE partners.*

Actually not all products are given for entire Europe. Under “National / International” on EDO MapViewer there are also data from BRGM and DMCSEE and under “Regional / Local” data for Ebro river basin. Explanations why new (local) data in EDO are important have been added to Chapter 2.

Detailed comments

- *Chapter 1 is rather an overview of drought indices (and/or monitoring centers) than overview of existing platforms (see also Section above with general observations).*

We have changed the title to “Introduction and overview” which better reflects the content of this chapter.

- *The title of Chapter 2 suggest that this is our own IDMP platform, while in the text of Chapter 2 it is explained that you have chosen “integration to EDO instead of developing our own platform”.*

Chapter 2 has been extended, arguments for selection of platform have been added and its title has been changed.

- *Chapter 3 is rather basic with a description of what is meant with raster, vector, mapping and web mapping (reference to Wikipedia). Section 3.3 has only one subsection (i.e. 3.3.1), which is uncommon.*

Subsection 3.3.1 has been deleted and text has been added to section 3.3

- *The title of Ch. 5 "Integration" does not cover the content. It is more about Requested Data and Tools to be used.*

The title has been changed to "Integration of new data into EDO".

- *The readability of the report can be improved when chapters would start on a new page.*

Chapters now start on a new page.

- *The appendix ("Appendix 6") is numbered as a chapter. This is uncommon. It makes the distinction between a chapter and appendix a bit vague. We suggest to let is start on a new page and to call it, for example, Appendix I.*

We have organized appendixes to Appendix A and Appendix B.

- *The current Section 6.3 could be provided with a short note about the context of these keywords.*

Few words about The Drought Vocabulary have been added and title has been changed.

- *pg. 1, 1. para: '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,' Please rephrase, because, if we have a substantial lack of precipitation (duration, quantity, etc.), then we already have a meteorological drought. It does not lead to, but it is.*

Yes, we agree and have rephrased the text stating that rainfall deficit already is meteorological drought.
Please note that we have used definition of European Commission (according to this document: https://www.google.si/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0CEEQFjAD&url=https%3A%2F%2Fcircabc.europa.eu%2Fsd%2Fd%2F02a234f7-ac60-4f81-bd8d-a3a0973e77d1%2F55171-Drought-WS_Definitions_V4-27Abril2012.doc&ei=jBiKU6GlK8XiPN_fgeAP&usg=AFQjCNGMDDyjyZz8vQEAC5Vj40VU7iEdFg&bvm=bv.67720277,d.ZWU&cad=rja). This definitions are also widely used by GWP (please check this link: https://www.google.si/search?q=%E2%80%99It+is+a+temporary,+negative+and+severe+deviation+along+a+significant+time+period+and+over+a+large+region+from+average+precipitation+values+%28a+rainfall+deficit%29,+which+might+lead+to+meteorological,+agricultural&ie=utf-8&oe=utf-8&rls=org.mozilla:sl:official&client=firefox-a&channel=fflb&gws_rd=cr&ei=jBiKU765HMm8OZyKgegD).

- *pg. 1, 2. para: 'One of drought mitigation strategies is drought management platform.' Is it not one part of the drought mitigation?*

Yes, we forgot "one".

- *pg. 1, list of internet addresses: but if ICPAC is Africa, SPEI is South America, then DMCSEE is not Slovenia, but Southeast-Eastern Europe.*

Yes, we agree. We have changed Slovenia to South-East Europe and European Commission to Europe.

- *pg. 1, second from the bottom para: 'It is an index based on the probability of recording a given amount of precipitation, and the probabilities are standardized so that an index of zero indicates the median precipitation amount'. Why is SPI is a probability of recording? The probabilities are normalized, on the way, that it also will be standard (mean 0, st. dev. 1).*

We have used definition of NCDC (available also on http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html). We have replaced term "recording" with "occurrence" in order to be clearer for the reader.

- *pg. 1, second from the bottom para: 'The index is negative for drought, and positive for wet conditions'. Sure, but in the meantime, it is normal between -0,99 and +0,99, which can be negative and positive as well. The simpified statement is right, but could mislead people because its simplicity.*

Yes, we agree. We have changed text to: "The index is negative for deficit of precipitation and positive for suficit. Value of -1 is often used as indicator for drought onset."

- *pg. 2, tab 1.: What does it mean 'basic parameters'? Which are they?*

These parameters are meteorological variables, such as temperature, precipitation and evapotranspiration. For better understanding we have changed "basic indicators" to "meteorological parameters".

- *pg. 2, last lines: 'long term commitment to European countries and users (also not limited to European Union members), I assume, that we work for the users (decision makers included) and they are not mentioned among the benefits.*

We have added users to the benefits.

- *pg. 4, second from the bottom para: Please extend the kriging. Kriging methods are a family (ordinary, detrended, etc.). It is not a simple method, but a group of different methods (theoretically from the same root), but usable for solving of different tasks. Therefore, it is suggested to call it as a kriging group or kriging family.*

Yes, we agree. We have extended the kriging, however we didn't go to too much into details, since we think it is not so important in the context of this guide.

Annex 1C Act. 1.3 Drought data exchange platform

Assessment Peer Review Group (PRG)	23 May 2014
Status	**FINAL**
Activity	**1.3 Drought data exchange platform**
	Implementation Guide
Activity lead	Gregor Gregorič (SLO)
Nature	Milestone 2 connected to Output 1; meant for publication on the internal protected part of the IDMP CEE website (not public website)
Received	15 May 2014
General observations	**Accepted with minor modifications** An important task of the CEE IDMP is development of the drought information platform, understood as an information architecture and an intelligent infrastructure that enables exchange of data relevant for drought analysis as well as for continuous automated sensing, monitoring, and decision support for drought risk management operations. Primary goal is to enable all CEE IDMP countries (activity partners) to participate in the exchange of data relevant to detect drought onset and analyzing the development of the drought severity and eventually the recovery. - Integration in the JRC European Drought Observatory (EDO) seems to be a good choice (see pages 2-3 of report), but the report should comment on why the possibility to establish a new platform under WMO (see Activity List) has not been explored or not addressed in the report. Not addressing the cons of EDO and pros and cons of a new platform under WMO implies a deviation from the Activity List. - It is recommended to sign a Memorandum of Understanding between CEE and JRC. - The target audience for the report is unclear. The nature of the report suggests that it is supposed to be meant for rather technical IT people (see also previous remark by PRG, 26 March 2014). Since this is supposed to be a drought information implementation guide for the partner IDMP CEE organizations (data suppliers), probably some comments could be made (later) on how it will be associated with the Guidelines for Drought Management Planning (Act. 2.1). Looking at the current EDO maps and other data (see EDO webpages), all products (information) are given for the entire Europe, including IDMP CEE countries (in fact all CEE countries). It would be good to explain in Section 1 (Introduction) what is the advantage of new data to be provided to EDO/IDMP platform by the IDMP CEE partners. - We trust that the CEE participants that took the training course in Ljubljana can respond to the data request in Chapter 5: (i) national data in raster or vector format on drought indicators, and (ii) drought metadata, incl. how to prepare these (e.g. using the WMS protocol, EDO Map Viewer, the INSPIRE Metadata Editor, compile XML files, keywords from the Drought Vocabulary). - The next phase is critical for IDMP CEE, i.e. providing actual data by each activity partner (10 countries) and feeding these data in the Information System. Data need to be submitted before 1 July 2014 and progress will be discussed at the 3rd Regional Workshop in Budapest. - Eventually the implementation will be reported in Output 2 (draft report: September 2014 and final report: December 2014).

Detailed comments	- The final report is an updated and extended version of the draft (14 January 2014) that was reviewed by the PRG in the Quaterly Report No.1 (26 March 2014). The draft was presented at the 2nd IDMP CEE Workshop in Ljubljana (8-9 Aprl 2014) - A training was organized in Ljubljana during the workshop. There is link to presentation, which is informative. - Chapter 1 is rather an overview of drought indices (and/or monitoring centers) than overview of existing platforms (see also Section above with general observations). - The title of Chapter 2 suggest that this is our own IDMP platform, while in the text of Chapter 2 it is explained that you have chosen "integration to EDO instead of developing our own platform". - Chapter 3 is rather basic with a description of what is meant with raster, vector, mapping and web mapping (reference to Wikipedia). Section 3.3 has only one subsection (i.e. 3.3.1), which is uncommon. - The title of Ch. 5 "Integration" does not cover the content. It is more about Requested Data and Tools to be used. - The readability of the report can be improved when chapters would start on a new page. - The appendix ("Appendix 6") is numbered as a chapter. This is uncommon. It makes the distinction between a chapter and appendix a bit vague. We suggest to let is start on a new page and to call it, for example, Appendix I. - The current Section 6.3 could be provided with a short note about the context of these keywords. - pg. 1, 1. para: '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,' Please rephrase, because, if we have a substantial lack of precipitation (duration, quantity, etc.), then we already have a meteorological drought. It does not lead to, but it is. - pg. 1, 2. para: 'One of drought mitigation strategies is drought management platform.' Is it not one part of the drought mitigation? - pg. 1, list of internet addresses: but if ICPAC is Africa, SPEI is South America, then DMCSEE is not Slovenia, but Southeast-Eastern Europe. - pg. 1, second from the bottom para: 'It is an index based on the probability of recording a given amount of precipitation, and the probabilities are standardized so that an index of zero indicates the median precipitation amount'. Why is SPI is a probability of recording? The probabilities are normalized, on the way, that it also will be standard (mean 0, st. dev. 1). - pg. 1, second from the bottom para: 'The index is negative for drought, and positive for wet conditions'. Sure, but in the meantime, it is normal between -0,99 and +0,99, which can be negative and positive as well. The simpified statement is right, but could mislead people because its simplicity. - pg. 2, tab 1.: What does it mean 'basic parameters'? Which are they? - pg. 2, last lines: 'long term commitment to European countries and users (also not limited to European Union members), I assume, that we work for the users (decision makers included) and they are not mentioned among the benefits. - pg. 4, second from the bottom para: Please extend the kriging. Kriging methods are a family (ordinary, detrended, etc.). It is not a simple method, but a group of different methods (theoretically from the same root), but usable for solving of different tasks. Therefore, it is suggested to call it as a kriging group or kriging family.

Annex 2 Act. 1.4 Development of GIS Based Communication Technology Platform for the Sustainable Management of Transboundary Water Resources in Lithuania, Poland and Kaliningrad Region

Assessment Peer Review Group (PRG)	12 September 2014
Status	**FINAL**
Activity	**1.4 Development of GIS Based Communication Technology Platform for the Sustainable Management of Transboundary Water Resources in Lithuania, Poland and Kaliningrad Region**
	New activity that has joined IDMP CEE in 2014.
Activity lead	Bernardas Paukstys, GWP-Lithuania
Nature	- **Output 1**: Kick-off GIS workshop in Warsaw 3rd July 2014, including a milestone report with as Annex 1 the Report from the GIS meeting - **Output 3**: Procurement of GIS software for the transboundary GIS mapping, including a milestone report with as Annex 1 the Attribute_Fields. Outputs are meant for internal use; publication on the internal protected part of the IDMP CEE website (not public website)
Received	31 July 2014
General observations	**Accepted, with minor revision** **Background:** Drought management really is a challenge if water bodies (groundwater, surface water) cross boundaries. An example, is the Russian enclave Kaliningrad between Poland and Lithuania on the Baltic Sea. Two major rivers (the Pregolya and the Neman) pass the enclave and are heavily affected by human activities. Headwaters of the rivers are also in Belarus. The poor water quality hampers development in Kaliningrad , but it also impacts neighbouring countries Poland and Lithuania, and it impedes sustainable development of the Baltic Sea. In 2012 the SIWI project on "Building a Framework for Collective Action in the Management of the Transboundary Waters in Kaliningrad (Russia), Lithuania, and Poland (Baltic Sea Region)" was initiated to build a partnership to implement green and smart growth on the shared river basins, which also considers adaptation to climate change, incl. drought risk management. Belarus joined the partnership later. In 2013, the IDMP CEE programme was integrated in this joint initiative. Drought risk management has started with collation and processing of existing information on natural and human aspects. A web based GIS communication technology platform (GIS-CTP) will be used, which allows spatial data analysis. **Comment:** Good initiative. The PRG believes that it is necessity that countries cooperate on land and water management in river basins and aquifers that cross national boundaries. This is a challenge, in particular if this involves EU and non-EU countries having different governance regulations. Act. 1.4 plans to make on a structured way existing information visible and to offer opportunities to share, as part of the partnership between the enclave Kaliningrad (Russia), Lithuania, Poland and Belarus. An important spinoff of Act. 4.1 are the strengthened professional links between water management and GIS experts of the four neighbouring countries. This cooperation was still missing when Poland and Lithuania had to compile the first generation of WFD River Basin Management Plans in 2009. The GIS Based Communication Technology Platform provides meta-data (i.e. data on data) or thematic data (e.g. river network). In addition, for drought management transient data are

	essential (e.g. time series of fluxes and states at different locations). The PRG wonders if these data are also collated, stored and shared in joint databases. PRG appreciates that for both outputs the template has been used that were introduced at the Ljubljana meeting. The identification of the links with other IDMP CEE activities (item 2.5) is still weak. It should be made clear why the information on surface water, groundwater, pressures and impacts is required in the context of IDMP. We also wonder how other required information for IDMP (e.g. climate, soils, land cover, time series of meteorological data) is linked to Act. 1.4. Climate is mentioned in Output 4. **Output 1:** The objective of Output 1 was to organize a workshop and to discuss details of the project Development of GIS Based Communication Technology Platform. More concretely to talk about: (i) technical content and aspects of preparation of joint GIS maps for the Neman and Pregolya river basins, (ii) development of common databases, and (iii) visualization of information on hydrology and human pressures. The GIS workshop was held in Warsaw, 3 July 2014, where 14 experts met (4 from Lithuania, 2 from Belarus, 2 from Kaliningrad and 6 from Poland). Timetable, deadlines and responsible persons for compilation of joint GIS maps and common databases were identified and agreed. Attribute tables for joint GIS maps were prepared and shared among the participants. **Comments:** 1. The workshop had a good representation among countries. Obviously the host country had most participants (5 participants from Univ. of Life Sciences, Warsaw). The minutes do not say how the distribution of experts was over water management and GIS. This cannot be derived from Annex 2. 2. A clear overview has been made of the joint GIS maps that are planned to be made (i.e. surface water, groundwater, pressures and impacts). It is unclear for which (historic) year the maps of the chemical status and ecological status (surface water), quantitative status, chemical status and impact on surface ecosystems (groundwater) will be made. These are joint maps and hence a certain reference year (or short period of a couple of years) has to be selected. 3. Common indicators will be discussed for some maps (no. 4, 5, 13). Good coordination is required to come up with set of agreed indicators. 4. Some terms need clarification: (i) do the groundwater bodies / aquifer maps (no. 5) provide information on type of aquifer system (e.g. unconfined, semi-confined, multiple aquifer system), hydraulic properties (e.g. transmissivity, saturated conductivity, aquifer thickness, storativity)) or do these only delineate areas with (substantial) groundwater resources, (ii) quantitative status (no. 7) is rather vague. Is this depletion rate, e.g. ratio groundwater recharge / abstractions, and (iii) surface ecology does this means surface water (aquatic) ecology or terrestrial ecology (e.g. wetlands). 5. Maps no. 14 and 15 under Database and Visualization are unclear. Is this really a map (no. 14) or an interactive tool that enables users to make their own maps. Why is there only visualization of the river network and human pressures (map no. 15)? What is new relative to map no. 1, and maps no. 10-13? 6. Attribute tables for Groundwater and Pressures & Impacts are missing (Annex 3). However, these are included in Output 3 (Annex 1), which does not seem to be logical. Comments are given under Output 3. 7. Working procedure seems to be clear (who will submit national information layers, who will make the joint maps, responsibilities, outputs, timetable). Strong coordination is required and it is good to clarify certain items before submission (see items 2, 3 and 4 above).

	Output 3: Output 3 deals with purchase of the most recent version of the ArcGIS software with the option to update (GIS software procurement). Licences of the ESRI ArcGIS for Desktop Basic v. 10.2.2. software with 1 year upgrade have been bought. **Comments:** 1. PRG definitively supports the purchase of common GIS software. This will make compilation and use of joint maps more easy. 2. The difference between the different Attribute Tables is unclear. For example, the added value of the Attribute Tables "River Basins", River sub-basins" is vague relative to the previous tables, or what is the difference between Attribute Tables "Groundwater monitoring network (station)" and "Groundwater monitoring network (wells)". The next steps are: (i) development of the GIS communication technology platform (Database and GIS visualization, which includes compilation of joint GIS maps (Output 4, November 2014), and (ii) presentation at a workshop (preliminary planned for November 2014 in Mozury, Poland (Output 2) back-to-back with SIWI meeting on transboundary measures.
Detailed comments	1. In the Attribute Tables "Hydrological network line (rivers, canals etc.)" (Output 3, Annex 1) and "Hydrological network polygon (lakes, ponds etc.)" you would expect to get the basin field names (BASIN, BAS_CODE) before the sub-basin fields (SUB_BASIN, SBS_CODE).

Annex 3A Act. 2.1 Guidelines for Drought Management Plans

Assessment Peer Review Group (PRG)	10 September 2014
Status	**FINAL**
Activity	**2.1 Guidelines for Drought Management Plans**
	Feedback/replay from Activity Lead on PRG Final comments, 27 August 2014
Activity lead	Elena Fatulova (SK)
Received	4 September 2014
PRG reply	

Accepted

General observations[3]:

- *We advise to keep the titles as they are indicated on page 25 of the draft Guidelines. The titles can also be used as a basis for the template for the Second National Dialogues (we propose no changes concerning Annex 2 to the Milestone 3 Report of Act. 2.1). The examples given in Annex I for Bulgaria (2 figures), Hungary (2 figures) and Slovakia (1 figure) have no proper description, no legend to colours used, and more importantly they do not correspond to the annex title "Examples of the national methodologies ..." - these are not good examples of any "methodology".*

Reply Act. Lead: I agree with the comment.
PRG: Thanks.

- *To summarize, we propose to keep the titles of the annexes (pg. 25), use the current template (Annex 2) for producing the contents of these annexes in the second NCD process, but delete the current annexes in their current format.*

Reply Act. Lead: The proposal is accepted. As I understood properly the annexes I – VI should not be distributed together with the draft of Guidelines. The titles indicated on the page 25 will remain and will be recommended as a basis for the template for the National Dialogues.
PRG: That is a correct. The titles are already in the template for the NCDs (nothing to change).

- *We support the 8 guiding principles (Section 2.4). We wonder why stakeholders/impacted sectors are not mentioned here in Principle 8 (although their importance is stressed in Chapter 3, among others in the composition of the Drought Committee).*

Reply Act. Lead: Accepted and will be added.
PRG: Thanks.

- *Definitions (Section 2.5). We are still surprised that in the drought definition only the precipitation deficit is mentioned (we realize that it is very common in most documents). Temperature anomalies are also important, particularly for the CEE countries. Snow pack monitoring is mentioned in the draft guidelines. We also think that it is better to use "soil moisture drought" instead of "agricultural drought" when the physical drought indicator is mentioned. The term "agricultural drought" should describe the impact (e.g. crop losses).*

Reply Act. Lead: Definitions are still open problem and should be discussed during the IDMP workshop as one of the main point. We should continue in the discussion process which has been already started with the preparation of the first list of definitions. Concerning the main definition of drought in this phase I recommend keeping the definition given in the draft of the Guidelines. This is the only definition which was accepted by member states within CIS process coordinated by the Commission. I attach the working document giving reasons for the accepting

[3] *In italic the PRG comment (27 August assessment)*

of working definition of the drought. This document should be distributed to the national experts as a basis for discussion about definitions. We should not create new definitions in cases if the definition was accepted by the member states and Commission.
PRG: We realize that we cannot continue the discussion about the definitions. The draft guidelines have to be sent off asap. Having a short discussion about the definitions during the next IDMP workshop (October) is fine (we can then address, for example, the temperature/snow issue), but we propose to make also a proper footnote to the definition (use the above text of this reply) with reference to the "Document: Working definitions of Water Scarcity and Drought by EU, TYPSA and Intecsa". Moreover, attach this "Document …" to the Draft Guidelines that will be sent in September to the national GWP CEE partnerships.

- *The longest chapter, i.e. Chapter 3 (pages 9 to 21) deals explicitly with the drought planning process. The WMO/GWP suggested 10 steps are nicely merged into 7 steps using terms common in the CEE region (although they should begin rather with the proposed step 2 concerning development of drought policy).*

Reply Act. Lead: Accepted partially. I recommend starting with step 1 as it is suggested in the draft of the Guidelines, but I will extend the duties of the drought Committee described in the step 1.
PRG: We accept your proposal.

- *PRG supports the focus on the pro-active approach that adopts risk management in the drought planning process (p 6). The draft guidelines suggest a kind of a static risk management approach. The guidelines should reflect that drought management, incl. the update of the DMP, is an iterative process that regularly needs to be repeated. Hence, it is better to introduce the term "iterative risk management". For instance, steps 2-7 (p. 9) should be regularly repeated (link to RBMP' 6-yr cycle).*

Reply Act. Lead: Accepted and will be amended.
PRG: Thanks.

- *It is important to assign specific tasks to the Drought Committee (Section 3.1, p. 10) for all drought stages. In the emergency stage often a minister has to decide, whereas the pre-alert and alert stage often can be handled by civil servants together with others (e.g. stakeholders). It is also relevant to make a priority-ranking for each of the drought stages (who will get the water, how much, in what order). The ranking needs to be made during the normal stage. Severe drought events are often large-scale and cover more than one country. The Drought Committee (Section 3.1) should also establish how to deal with transnational issues.*

Reply Act. Lead: Accepted. Section 3.1 will be reviewed and amended according the recommendations.
PRG: Thanks.

- *Concerning Section 3.3, some information on the design and role of the information platform being built by the IDMP CEE in cooperation with the EU Joint Research Centre should be added.*

Reply Act. Lead: Accepted and will be amended.
PRG: Thanks.

- *We wonder what the difference is between the last bullet point "water supply specific plans"and the "program of measures for preventing and mitigating droughts linked to indicators systems" (Section 3.4.1). Is the specific plan not part of the program of measures?*

Reply Act. Lead: The specific water supply plans are basis for development of the program of measures for preventing and mitigating droughts linked to indicators system. These specific plans should provide information on existing water supply infrastructures and available groundwater resources usable for mitigating drought impacts.
PRG: It is just a matter of explaining what is the "specific plan". You might add.

- *In Section 3.4.2 Characterisation of historical drought events, non-stationarity is not considered, although in Section 4.3 climate change is mentioned.*

Reply Act. Lead: Accepted. The requirement to assess impact of climate change on the drought indicators will be amended. Also link to Section 4.3.
PRG: Thanks.

- *We believe that in the assessment of historical meteorological and hydrological monitoring data 4 (p. 13) too much focus is on the annual time scale. CEE countries have a seasonal climate, which requires an analysis on the seasonal or monthly scale. Annual data can hide shorter extremely dry periods.*

Reply Act. Lead: This section will be changed after receiving comments and national examples from national experts. In this phase concrete experience are missing.
PRG: We suggest that the last two sentences are somehow added to the text of the draft Guidelines.

- *We fully agree with the remark (p. 15) that the indicators should be type-specific established for each significant drought impact. The document, however, should mention that identification and quantification of impact indicators is hard and that substantial efforts are required to find relationships between impact indicators and physical indicators. Drought Impact assessment is a basis for characterization of agricultural drought and socioeconomic drought (p. 15, line above the first set of bullet points). Why are environmental impacts here not mentioned?*

Reply Act. Lead: Will be reviewed and amended.
PRG: Thanks.

- *p. 15 (Section 3.4.3): Establishment of thresholds for different drought stages. The draft guidelines suppose a rather static approach. Thresholds need revision after a while, because impacted sectors could get a higher or lower priority (is it going to be done by the Drought Committee?).*

Reply Act. Lead: Will be reviewed and amended.
PRG: Thanks.

- *PRG believes that the recommendation (p. 16) could be stronger to include EU drought indicators into own national drought indicator system as a basis for harmonised approach on river basin level. For transnational issues this should be a prerequisite. Clearly, these EU indicators should supplement country-specific indicators.*

Reply Act. Lead: Accepted and will be amended.
PRG: Thanks.

- *Section 3.4.43 Drought early warning system: The PRG misses the medium-term (10-15d) and seasonal forecasting (e.g. 6 months) in the early warning. After being informed about the current drought state, stakeholders and others would like to hear what the future will bring, what the effect of the measures is that will be taken or possibly can be taken. This requires input from weather/climate models, hydrological models, and impact models.*

Reply Act. Lead: Accepted and amended.
PRG: Thanks.

- *The next Section 3.4.6. on the organizational framework for production , implementation and updating of DMPs is relatively short and it could be extended by some of the related information given in the Slovak Case Study.*

Reply Act. Lead: Accepted and amended.
PRG: Thanks.

- *The Guidelines close with Section 4.3 on climate change aspects. It is known that the current CEE 5RBMPs are all short in these aspects and it is good that EC guidance document no. 24 of 2009 is mentioned.*

However, the 5th IPCC Assessment Report of 2014 referring explicitly to the CEE region could also be briefly discussed in this section of the Guidelines.

Reply Act. Lead: I accept the comment.
PRG: Thanks.

- *Annex III (in Annex I), provides thresholds for the different drought stages for each drought type. We suggest being reluctant with given thresholds. Thresholds should be controlled by impacts and not by the statistical properties of time series of hydrometeorological data.*

Reply Act. Lead: Annex III will not be attached to the Guidelines. Discussion about threshold should start after receiving the national thresholds in the second phase of activity (output from NCDs).
PRG: Good!

Detailed comments:

- *p.3 (para 3, line 1): a bit confusing „has been developed (will be developed)". It should be the latter.*
- *p.3 (2nd para Section 2.1, line 3). Replace „Commission" with Strategic Coordination Group (SCG).*
- *p4 The full reference to Don Wilhite's document is: World Meteorological Organization (WMO) and Global Water Partnership (GWP) (2014) National Drought Management Policy Guidelines: A Template for Action (D.A. Wilhite). Integrated Drought Management Programme (IDMP) Tools and Guidelines Series 1. WMO, Geneva, Switzerland and GWP, Stockholm, Sweden. Is it a key document, hence a correct, full reference is required.*
- *p.13 (4 lines above "the first step"): complement "water outflow" with "streamflow, reservoir volume, reservoir outflows, spring yield", or just use "river flow" or "streamflow".*

Reply Act. Lead: All detailed comments are accepted and will be changed.
PRG: Thanks!

Annex 3B Act. 2.1 Guidelines for Drought Management Plans

Reply to comments by Activity Lead

Milestone 3
4.9.2014

General observations:

- *We advise to keep the titles as they are indicated on page 25 of the draft Guidelines. The titles can also be used as a basis for the template for the Second National Dialogues (we propose no changes concerning Annex 2 to the Milestone 3 Report of Act. 2.1). The examples given in Annex I for Bulgaria (2 figures), Hungary (2 figures) and Slovakia (1 figure) have no proper description, no legend to colours used, and more importantly they do not correspond to the annex title "Examples of the national methodologies ..." - these are not good examples of any "methodology".*

I agree with the comment.

- *To summarize, we propose to keep the titles of the annexes (pg. 25), use the current template (Annex 2) for producing the contents of these annexes in the second NCD process, but delete the current annexes in their current format.*

The proposal is accepted. As I understood properly the annexes I – VI should not be distributed together with the draft of Guidelines. The titles indicated on the page 25 will remain and will be recommended as a basis for the template for the National Dialogues.

- *We support the 8 guiding principles (Section 2.4). We wonder why stakeholders/impacted sectors are not mentioned here in Principle 8 (although their importance is stressed in Chapter 3, among others in the composition of the Drought Committee).*

Accepted and will be added.

- *Definitions (Section 2.5). We are still surprised that in the drought definition only the precipitation deficit is mentioned (we realize that it is very common in most documents). Temperature anomalies are also important, particularly for the CEE countries. Snow pack monitoring is mentioned in the draft guidelines. We also think that it is better to use "soil moisture drought" instead of "agricultural drought" when the physical drought indicator is mentioned. The term "agricultural drought" should describe the impact (e.g. crop losses).*

Definitions are still open problem and should be discussed during the IDMP workshop as one of the main point. We should continue in the discussion process which has been already started with the preparation of the first list of definitions. Concerning the main definition of drought in this phase I recommend keeping the definition given in the draft of the Guidelines. This is the only definition which was accepted by member states within CIS process coordinated by the Commission. I attach the working document giving reasons for the accepting of working definition of the drought. This document should be distributed to the national experts as a basis for discussion about definitions. We should not create new definitions in cases if the definition was accepted by the member states and Commission.

- *The longest chapter, i.e. Chapter 3 (pages 9 to 21) deals explicitly with the drought planning process. The WMO/GWP suggested 10 steps are nicely merged into 7 steps using terms common in the CEE region (although they should begin rather with the proposed step 2 concerning development of drought policy).*

Accepted partially. I recommend starting with step 1 as it is suggested in the draft of the Guidelines, but I will extend the duties of the drought Committee described in the step 1.

- *PRG supports the focus on the pro-active approach that adopts risk management in the drought planning process (p 6). The draft guidelines suggest a kind of a static risk management approach. The guidelines should reflect that drought management, incl. the update of the DMP, is an iterative process that regularly needs to be repeated. Hence, it is better to introduce the term "iterative risk management". For instance, steps 2-7 (p. 9) should be regularly repeated (link to RBMP' 6-yr cycle).*

Accepted and will be amended.

- *It is important to assign specific tasks to the Drought Committee (Section 3.1, p. 10) for all drought stages. In the emergency stage often a minister has to decide, whereas the pre-alert and alert stage often can be handled by civil servants together with others (e.g. stakeholders). It is also relevant to make a priority-ranking for each of the drought stages (who will get the water, how much, in what order). The ranking needs to be made during the normal stage. Severe drought events are often large-scale and cover more than one country. The Drought Committee (Section 3.1) should also establish how to deal with transnational issues.*

Accepted. Section 3.1 will be reviewed and amended according the recommendations.

- *Concerning Section 3.3, some information on the design and role of the information platform being built by the IDMP CEE in cooperation with the EU Joint Research Centre should be added.*

Accepted and will be amended.

- *We wonder what the difference is between the last bullet point "water supply specific plans"and the "program of measures for preventing and mitigating droughts linked to indicators systems" (Section 3.4.1). Is the specific plan not part of the program of measures?*

The specific water supply plans are basis for development of the program of measures for preventing and mitigating droughts linked to indicators system. These specific plans should provide information on existing water supply infrastructures and available groundwater resources usable for mitigating drought impacts.

- *In Section 3.4.2 Characterisation of historical drought events, non-stationarity is not considered, although in Section 4.3 climate change is mentioned.*

Accepted. The requirement to assess impact of climate change on the drought indicators will be amended. Also link to Section 4.3.

- *We believe that in the assessment of historical meteorological and hydrological monitoring data 4 (p. 13) too much focus is on the annual time scale. CEE countries have a seasonal climate, which requires an analysis on the seasonal or monthly scale. Annual data can hide shorter extremely dry periods.*

This section will be changed after receiving comments and national examples from national experts. In this phase concrete experience are missing.

- *We fully agree with the remark (p. 15) that the indicators should be type-specific established for each significant drought impact. The document, however, should mention that identification and quantification of impact indicators is hard and that substantial efforts are required to find relationships between impact indicators and physical indicators. Drought Impact assessment is a basis for characterization of agricultural drought and socioeconomic drought (p. 15, line above the first set of bullet points). Why are environmental impacts here not mentioned?*

Will be reviewed and amended.

- *p. 15 (Section 3.4.3): Establishment of thresholds for different drought stages. The draft guidelines suppose a rather static approach. Thresholds need revision after a while, because impacted sectors could get a higher or lower priority (is it going to be done by the Drought Committee?).*

Will be reviewed and amended.

- *PRG believes that the recommendation (p. 16) could be stronger to include EU drought indicators into own national drought indicator system as a basis for harmonised approach on river basin level. For transnational issues this should be a prerequisite. Clearly, these EU indicators should supplement country-specific indicators.*

Accepted and will be amended.

- *Section 3.4.43 Drought early warning system: The PRG misses the medium-term (10-15d) and seasonal forecasting (e.g 6 months) in the early warning. After being informed about the current drought state, stakeholders and others would like to hear what the future will bring, what the effect of the measures is that will be taken or possibly can be taken. This requires input from weather/climate models, hydrological models, and impact models.*

Accepted and amended.

- *The next Section 3.4.6. on the organizational framework for production , implementation and updating of DMPs is relatively short and it could be extended by some of the related information given in the Slovak Case Study.*

Accepted and amended.

- *The Guidelines close with Section 4.3 on climate change aspects. It is known that the current CEE 5RBMPs are all short in these aspects and it is good that EC guidance document no. 24 of 2009 is mentioned. However, the 5th IPCC Assessment Report of 2014 referring explicitly to the CEE region could also be briefly discussed in this section of the Guidelines.*

I accept the comment.

- *Annex III (in Annex I), provides thresholds for the different drought stages for each drought type. We suggest being reluctant with given thresholds. Thresholds should be controlled by impacts and not by the statistical properties of time series of hydrometeorological data.*

Annex III will not be attached to the Guidelines. Discussion about threshold should start after receiving the national thresholds in the second phase of activity (output from NCDs).

Detail comments

- *p.3 (para 3, line 1): a bit confusing „has been developed (will be developed)". It should be the latter.*
- *p.3 (2nd para Section 2.1, line 3). Replace „Commission" with Strategic Coordination Group (SCG).*
- *p4 The full reference to Don Wilhite's document is: World Meteorological Organization (WMO) and Global Water Partnership (GWP) (2014) National Drought Management Policy Guidelines: A Template for Action (D.A. Wilhite). Integrated Drought Management Programme (IDMP) Tools and Guidelines Series 1. WMO, Geneva, Switzerland and GWP, Stockholm, Sweden. Is it a key document, hence a correct, full reference is required.*
- *p.13 (4 lines above "the first step"): complement "water outflow" with "streamflow, reservoir volume, reservoir outflows, spring yield", or just use "river flow" or "streamflow".*

All detailed comments are accepted and will be changed.

Annex 3C Act. 2.1 Guidelines for Drought Management Plans

Assessment Peer Review Group (PRG)	27 August 2014
Status	**FINAL**
Activity	**2.1 Guidelines for Drought Management Plans**
	Milestone 3
Activity lead	Elena Fatulova (SK)
Nature	Milestone3 is the second output from Act. 2.1. The first output received from Act. 2.1 (the PRG was not yet established at that time) was the First draft of the Guidelines for Drought Management Plan (Discussion document presented at the 1st IDMP workshop, held on 15-16 October 2013 in Slovakia (Hodrusa-Hamre)). The three main questions discussed in Hodrusa-Hamre were: (i) which measures can help the introduction of effective drought management?, (ii) how the public participation should be organised to improve management of drought risks?, and (iii) which elements (components) of the drought management system require a special attention in the Guidelines?. That discussion was an important step that influenced development of the Slovak Case Study Report, which the PRG received by the end of April 2014[4]. The case study provided a practical example how to develop the key components of a Drought Management Plan (DMP), which were summarized by the EU "Report 2007" as: (i) indicators and thresholds establishing onset, ending, and severity levels of the exceptional circumstances (prolonged drought), (ii) measures to be taken in each drought phase in order to prevent deterioration of water status and to mitigate negative drought effects, and (iii) organizational framework to deal with drought and subsequent revision and updating of the existing drought management plan. The second output received by PRG on August 15, 2014 provides the draft of the Guidelines for the preparation of Drought Management Plans with 6 annexes. The draft is prepared to start the next phase that through National Consultation Dialogues (NCDs) collates national practical experiences, comments, suggestions to amend the draft Guidelines, which will contribute to the development of tailor-made DMP Guidelines for the CEE countries. These NCDs will be concluded in the participating CEE countries by the end of 2014 (Act. 2.2). Milestone 3 was sent to the PRG together with a template that aims to frame the NCD reporting (called Annex 2), and the Summary Report from the first NCD round (called Annex 3). We also received Summary Report of Act. 2.1. The package that was sent to the PRG contained the Milestone 3 Report with three annexes: Annex 1- Draft Guidelines with 6 Annexes (numbered with Roman numbers), Annex 2 – Second National Dialogues_template, and Annex 3 – Summary Report of the 1st NCDs.
Received	15 August 2014[5]
General observations	

Accepted with minor revision[6]

[4] There was some confusion if the PRG should comment on the Slovak Study. The discussion was about if the report is a national study, on which the PRG will not comment. National's studies will only be considered by the PRG in the way these are used in following report. The discussion was not finalized and hence there is no PRG report on the Slovak Study. However, the Slovak Study is a major building block for Milestone 3, which is being addressed in this review report.

[5] The PRG received the the Draft Guidelines for national consultation on 15 August instead of June 2014 as mentioned in the Summary Report of Act. 2.1, item 2.4. The Program Manager explained by email (21 August 2014) the reasons for the discranpancy.

An important task of the CEE IDMP is to develop Guidelines for a Drought Management Plan. Draft guidelines, which are based upon recent literature and a National Case Study (Slovakia) and that will support the upcoming second national consultation round in 10 CEE countries.

Comments:
The PRG appreciates the description of the full width of the many different aspects connected to the compilation of a drought management plan(DMP) in a context-specific environment. It is clearly linked to recent thoughts on DMPs from the international community (i.e. represented by WMO/GWP) that are integrated in the concepts of integrated water management and pro-active risk management. The report adds to this the integration of drought management into the European dimension (Water Framework Directive, WFD, and its River Basin Management Plans, RBMPs) and the CEE regional-specific context, which already is a major achievement.

We like the main body of the Guidelines for Drought Management Plans, but we have serious doubts about the 6 annexes (named I to VI) in their current format. We advise to keep the titles as they are indicated on page 25 of the draft Guidelines. The titles can also be used as a basis for the template for the Second National Dialogues (we propose no changes concerning Annex 2 to the Milestone 3 Report of Act. 2.1). The examples given in Annex I for Bulgaria (2 figures), Hungary (2 figures) and Slovakia (1 figure) have no proper description, no legend to colours used, and more importantly they do not correspond to the annex title "Examples of the national methodologies ..." - these are not good examples of any "methodology". The similar problem with Annex II. Concerning Slovakia this is already presented in the Slovak Case Study and the Palfai Index alone does not correspond with the Annex title. Comments to Annex III are described below. The remaining three annexes are all taken from the Slovak Case Study, which is already used as one of the source materials for the Guidelines, and in the comments in red say that they will be substantially shortened to 1 or 1.5 page.
To summarize, we propose to keep the titles of the annexes (pg. 25), use the current template (Annex 2) for producing the contents of these annexes in the second NCD process, but delete the current annexes in their current format. We do not believe it is a good idea to have very promising and good 25 pages of the Guideline annexed by something what is not finished yet or even misleading to some extent.

Clear reference to what EU input was used as basis: (i) Drought Management Plan Report Including Agricultural, Drought Indicators and Climate Change Aspects (COM July2007) (ii) Addressing the challenge of water scarcity and droughts in the European Union (COM (July 2007), and (iii) Blueprint to Safeguard Europe's Water Resources (2012). These are the relevant documents for this purpose. Furthermore you embraced, which is relevant, the WMO/GWP guidelines (Wilhite's document) that is the key DMP reference (in 2014 published as WMO/GWP "National Drought Management Policy Guideline, A Template for Action"), supplemented with practical information from Medroplan.

The general and three specific objectives of the Guidelines (Section 1.2) are clear and well defined. Especially important for the whole work is the first specific objective to see the drought management policy and planning activities in the broad context of WFD and its RBMPs. **It is essential that countries prepare drought management plans to be an integral part of the overall water resources, land-use and other governmental plans.**

The structure of the Guidelines (3 chapters) is logical and well thought.

EU WFD should be indeed leading legislative framework (Section 2.3) and the appropriate articles are addressed in the draft Guidelines. It is also important to link it to national legislation. Fortunately you refer to this when you state one of the first steps of the drought planning process is creating a national drought management policy, incl. a government resolution or another policy act guaranteeing adoption of binding rules (Section 3.1).

[6] Addition of of the suggestions could improve the draft guidelines and the comment on the 6 Annexes needs a follow-up (see second paragraph in comments below).

We support the 8 guiding principles (Section 2.4). We wonder why stakeholders/impacted sectors are not mentioned here in Principle 8 (although their importance is stressed in Chapter 3, among others in the composition of the Drought Committee)

Definitions (Section 2.5). We are still surprised that in the drought definition only the precipitation deficit is mentioned (we realize that it is very common in most documents). Temperature anomalies are also important, particularly for the CEE countries. Snow pack monitoring is mentioned in the draft guidelines. We also think that it is better to use "soil moisture drought" instead of "agricultural drought" when the physical drought indicator is mentioned. The term "agricultural drought" should describe the impact (e.g. crop losses).

The longest chapter, i.e. Chapter 3 (pages 9 to 21) deals explicitly with the drought planning process. The WMO/GWP suggested 10 steps are nicely merged into 7 steps using terms common in the CEE region (although they should begin rather with the proposed step 2 concerning development of drought policy).

PRG supports the focus on the pro-active approach that adopts risk management in the drought planning process (p 6).

The draft guidelines suggest a kind of a static risk management approach. The guidelines should reflect that drought management, incl. the update of the DMP, is an iterative process that regularly needs to be repeated. Hence, it is better to introduce the term "iterative risk management". For instance, steps 2-7 (p. 9) should be regularly repeated (link to RBMP' 6-yr cycle).

It is important to assign specific tasks to the Drought Committee (Section 3.1, p. 10) for all drought stages. In the emergency stage often a minister has to decide, whereas the pre-alert and alert stage often can be handled by civil servants together with others (e.g. stakeholders). It is also relevant to make a priority-ranking for each of the drought stages (who will get the water, how much, in what order). The ranking needs to be made during the normal stage.

Severe drought events are often large-scale and cover more than one country. The Drought Committee (Section 3.1) should also establish how to deal with transnational issues.

Objectives of a risk-based drought management policy (Section 3.2) are well defined and the note that "the objectives and application of DMP must comply with WFD environmental objectives" is fully in line with the general objectives discussed earlier.

Concerning Section 3.3, some information on the design and role of the information platform being built by the IDMP CEE in cooperation with the EU Joint Research Centre should be added.

We wonder what the difference is between the last bullet point "water supply specific plans" and the "program of measures for preventing and mitigating droughts linked to indicators systems" (Section 3.4.1). Is the specific plan not part of the program of measures?

In Section 3.4.2 Characterisation of historical drought events, non-stationarity is not considered , although in Section 4.3 climate change is mentioned.
We believe that in the assessment of historical meteorological and hydrological monitoring data (p. 13) too much focus is on the annual time scale. CEE countries have a seasonal climate, which requires an analysis on the seasonal or monthly scale. Annual data can hide shorter extremely dry periods.

We fully support the statement (p. 14) that the appropriate set of indicators and methodology should be selected according to the type of drought (meteorological, hydrological) and purpose of the analysis (e.g. certain impact).

This really needs to be stressed. Too many people still believe that drought management can be done with the SPI with different accumulation periods only.

We fully agree with the remark (p. 15) that the indicators should be type-specific established for each significant drought impact. The document, however, should mention that identification and quantification of impact indicators is hard and that substantial efforts are required to find relationships between impact indicators and physical indicators.

Drought Impact assessment is a basis for characterization of agricultural drought and socio-economic drought (p. 15, line above the first set of bullet points). Why are environmental impacts here not mentioned?

p. 15 (Section 3.4.3): Establishment of thresholds for different drought stages. The draft guidelines suppose a rather static approach. Thresholds need revision after a while, because impacted sectors could get a higher or lower priority (is it going to be done by the Drought Committee?)

PRG believes that the recommendation (p. 16) could be stronger to include EU drought indicators into own national drought indicator system as a basis for harmonised approach on river basin level. For transnational issues this should be a prerequisite. Clearly, these EU indicators should supplement country-specific indicators.

Section 3.4.4 Drought early warning system: The PRG misses the medium-term (10-15d) and seasonal forecasting (e.g 6 months) in the early warning. After being informed about the current drought state, stakeholders and others would like to hear what the future will bring, what the effect of the measures is that will be taken or possibly can be taken. This requires input from weather/climate models, hydrological models, impact models.

Three phases can be distinguished in DMP, i.e. (i) the design of DMP, (ii) the implementation of the DMP, and (iii) review/update of DMP.

Discussion concerning the programme of measures (Section 3.4.5) and the proposed classification is fine with PRG. The next Section 3.4.6. on the organizational framework for production , implementation and updating of DMPs is relatively short and it could be extended by some of the related information given in the Slovak Case Study. Section 3.4.7 includes an important reminder that collection of data and information on the socio-economic drought impacts should begin as early as possible in the work on the DMP. The remaining Sections 3.5, 3.6 and 3.7 are fine and they do not call for any special comments by the PRG.

The first two sections of Chapter 4 on the Related Issues are directly related to WFD and this is fully justified by the proposed and well thought integration of drought management with the broader water related objectives of the EU water policy.

The Guidelines close with Section 4.3 on climate change aspects. It is known that the current CEE RBMPs are all short in these aspects and it is good that EC guidance document no. 24 of 2009 is mentioned. However, the 5th IPCC Assessment Report of 2014 referring explicitly to the CEE region could also be briefly discussed in this section of the Guidelines.

Annex III (in Annex I), provides thresholds for the different drought stages for each drought type. We suggest being reluctant with given thresholds. Thresholds should be controlled by impacts and not by the statistical properties of time series of hydrometeorological data.

The template that aims to frame the Second NCD reporting (called Annex 2) is very systematic. It follows the steps that are mentioned in Chapter 3 of the Guidelines for preparation of the Drought Management Plans.

Detailed comments
p.3 (para 3, line 1): a bit confusing „has been developed (will be developed)". It should be the latter.
p.3 (2nd para Section 2.1, line 3). Replace „Commission" with Strategic Coordination Group (SCG).
p4 The full reference to Don Wilhite's document is: World Meteorological Organization (WMO) and Global Water Partnership (GWP) (2014) National Drought Management Policy Guidelines: A Template for Action (D.A. Wilhite). Integrated Drought Management Programme (IDMP) Tools and Guidelines Series 1. WMO, Geneva, Switzerland and GWP, Stockholm, Sweden.
Is it a key document, hence a correct, full reference is required.
p.13 (4 lines above "the first step"): complement "water outflow" with "streamflow, reservoir volume, reservoir outflows, spring yield", or just use "river flow" or "streamflow".

Annex 4A Act. 5.2. Assessment of drought impact on forest ecosystems

Assessment Peer Review Group (PRG)	9 December 2014
Status	**FINAL**
Activity	**5.2. Assessment of drought impact on forests** (please note that the title has been changed; ecosystems has been left out)
	Output 2: Milestone Report 3 Elaboration of maps for current climate, 2050 and 2070 in Bulgaria, Lithuania, Slovenia and Ukraine (pilot area) and determination of forest vulnerability zones
Activity lead	Galia Bardarska
Nature	The main objective of this demonstration project is identification of measures for the forest ecosystems to adapt to negative effects of drought[7], based on the expert investigations in four GWP CEE countries: Bulgaria, Lithuania, Slovenia and Ukraine. The total forested area in those countries is about 35% of forest areas in the GWP CEE region. The vulnerability zones of the forest vegetation are to be defined for the present climate (1961-1990), as well as for the year 2050 (realistic climate scenario) and the year 2100 (optimistic, realistic and pessimistic climate scenarios). The project is to define good drought management practices for application to the forested areas of the GWP CEE region. In the previous reporting period the following work has been accomplished: (i) Milestone 1 – Joint report on Topic a Kick-off-meeting and topic b Forest policy at UN, EU and national level, and (ii) Milestone 2 – Topic c, Establishment of methodology for assessment of drought impact on forest ecosystems in 2050 and 2070.
Received	19 September 2014 PRG assessment: 26 September 2014 (status: not accepted); Replay project team: 28 November 2014; Final assessment PRG: 9 December 2014
General observations	**Accepted with lots of minor comments** We received a revised Milestone (progress) report and attached as an annex the revised Output 2 / Milestone 3 report, which is modified according to the agreements made at the Ljubljana workshop. This is clear improvement relative to the version of 19 September that did not make a difference. Moreover, the Milestone 3 report was not ready by then. Revisions were not marked in the text of the 28 November version, which is acceptable because the revisions were so substantial that actually new documents have been submitted. Please note that next revised version will only be assessed by the PRG when the changes are clearly marked in the text or a separate document should be provided that clearly describes which line numbers are revised / added. The whole reporting / archival process also would benefit from putting a date on both the Milestone (progress) report and the Milestone report 3. **Comments on Milestone (progress) report:** Item 2.1 in the current version of the Milestone (progress report) gives now a short summary of the Milestone Report (this is in accordance with the format agreed upon in Ljubljana). The main outcomes are: (i) maps for current climate (1950-2000) and future climate conditions (2050 and 2070) in Bulgaria, Lithuania, Slovenia and three pilot areas in Ukraine, and (ii) forest vulnerability zones for current and future climate conditions on the base of the De Martonne Index (IDM).

[7] During implementation of this phase of Activity 5.2, the activity title was changed from „Assessment of drought impact on forest ecosystems" to „Assessment of drought impact on forests". Some justification and evaluation of the consequences of that change (if any) are needed.

	Item 2.2 gives more or less progress to the objectives, and item 2.3 provides the contribution to the expected final output. Item 2.4: PRG already approved the change of the year 2100 for the future period into 2070 (see PRG assessment of 26 September). In item 2.5 the link with Act. 2.1 was already there, but connection with other activities is still not well presented. PRG advices the Act. 5.2 team to read the Activity List carefully what is being expected and to indicate under item 2.4 if some goals cannot be reached. The PRG realizes that a lot of work had to be done (e.g. using and processing high resolution gridded climate, using the WorldClim dataset, and forestry data, with the limited computer power) (item 2.6). **Report on Milestone 3 (Output 2)** - The Table of Contents is a bit uncommon. Usually the "Sections", as described in the Milestone 3 report are called "Chapters". Overall the structure is clear: Section 1: kind of Introduction, Section 2: Country findings, and Section 3: Overview main results and follow-up. Section 1 is not a proper Introduction; it goes immediately deeply into the topic. Section 2 contains the reports per country, which have a different structure. The reason for this is given under item 2.2 in the Milestone (progress) report, i.e. "the high variability of relief, climate and vegetation is the main reason that each country presented the results according to the local conditions". This makes hard to get a good overview across the four CEE countries. Prior coordination of the general setup per country (i.e. providing a format) might have led to a better presentation of the information. For example, in the current version the tree species in Bulgaria under the current climate are at the end of Section 2.1, whereas Section 2.2 Slovenia starts with a description of the forest vegetation. Lithuania (Section 2.3) has a similar structure than Bulgaria, whereas for the three pilot areas (Sumy, Kharkiv and Lugansk) in the Ukraine the format of Slovenia is applied. Prior coordination also applies to the presentation of the maps with climate information (compare Figures 2.1.3 and 2.1.5 (Bulgaria) and Figures 2.2.3 to 2.2.11 (Slovenia)). Identical layout would have improved readability. Another example is Table 2.2.3 "Values of the De Martonne index for forest vegetation types for the period 1950-2000" (Slovenia), which is not provided for Bulgaria, which in principle could have been computed and presented. - Results for Bulgaria (Section 2.1) are comprehensive, e.g. areas with different forest vulnerability (derived from IDM) under current and future climates for different RCPs are defined.. Relevant outcome in term of area (ha) and stock (m^3) (Section 2.1A, e.g. Tables 2.1.1, 2.1.2; Figures 2.1.8, 2.1.9). Description of properties of species under current and future climate (ha, %, age) is interesting, but reader would like this more to be elaborated in figures and tables what it would mean for the future (now only descriptive, page 14). This also holds for Slovenia, e.g. mean IDM for selected forest vegetation types for different future time windows (2050 and 2070 relative to 1950-2000) and RCPs (Figures 2.2.12 and 2.2.13) and relative differences (Table 2.2.21). The information for Lithuania (Tables 2.3.1 to 2.3.4) and for the three regions in Ukraine is also thorough, but not fully elaborated yet. - The setup of the IDM and the vulnerability (Table 1.1) is bit hard to understand. Vulnerability decreases from zone A (dry) to zone E and F (humid to very humid), which is logical and understandable. However, if it becomes excessively humid (zone G) then vulnerability increases again to medium to very high. Why are these not classified C and A? If you would like to make a difference between vulnerability either because of dryness or wetness you could call these (C1 and C2, A1 and A2, or Cd and Cw, Ad and Aw). - The Section 2.3.3 Conclusions for Lithuania is definitely too short (only 3 lines!). It should be more elaborated. Prior to that computation should have been done of changes in 2050 and 2070 for different RCPs relative to year 2000. One cannot expect that the reader will do this with the information in the Tables. - The current climate of the three Ukrainian pilot regions (Sumy, Kharkiv and Lugansk) is given

	(Section 2.4.1), but the future temperature and precipitation for 2050 and 2070 and for the RCPs are missing. This should be added to make the section consistent with the other countries. Changes in 2050 and 2070 for different RCPs relative to year 2000 should be calculated as well to easier interpret and better understand the outcome. - Section 3 with main results of Milestone 3 (full report) is more a brief summary and the follow-up is even more brief (e.g. 5.2 Activity List could be referred to and elaborated, put into context). Summary and joint interpretation of three national reports given in Section 2 is required, taking into account all differences and similarities between the three countries For example, conclusions made by the Lithuanian team at the end of their report (page 39), concerning the vulnerability zone thresholds as used in their analysis (Table 1.1), should be discussed. Readers expect a bit more. - PRG also would like to see a remark at the end of the Milestone report that clearly states that the projections of the impact of climate change on forest were obtained with one RCM (i.e. HadGEM2-AO (HD)) and one drought index (IDM). Such conclusions need to be interpreted with care, because projections preferably have to be made with multi climate models and a multi indicators. - Language needs to be checked throughout the whole document, in particular Sections 2.1, 2.3 and 2.4. The phrasing of several sentences is not correct. Hence, the content is hard to understand in some places. Some examples are given under the Detailed Comments (see below), but these are not inclusive. - In conclusion, the Act. 5.2 team has produced a lot of interesting information on impacts of climate change (not drought) on forests in four CEE countries. Not all section are fully elaborated. English should be improved, at least for the final output that goes on the public website. The milestone 3 report clearly has missed a good coordination from the beginning (template, what sections per country, which tables, which figures etc.). Hence, layout, format of figures and tables and sequence of components per country are not identical now.
Detailed Comments	- Page 1, first paragraph. Usually references are given in the Introduction. For example, to the HadGEM2-AO (HD) climate model, RCPs, IPCC AR5, IDM, although these are described in Milestone 2. - Page 1, first paragraph. Figure 1.1 does compare with the current forest type distribution. It gives the possible evolution of the CO_2 concentration in the 21st century for different emission scenarios (RCPs). - Page 1, caption Figure 1.1.1. The caption of a figure always ends with a full stop (“.”), like Figure 2.1.5. THIS APPLIES TO THE CAPTIONS OF ALL GRAPHS. - Page 2, Figure 2.1.1. I cannot find region C on the map. If it exists then the logical sequence in the caption needs to be A, A1, A2, B, B1, B2 and C. - Page 2, caption of Figure 2.1.1. Why is part not in bold? - Page 3, 4th line in Air Temperature. “.... and others”. Leave out, it is meaningless. - Page 5, line below Figure 2.1.3. Check language: “Similar mean annual air temperatures are about RCP4.5 and RCP6.0, as in 2070 can be expected higher temperatures.” - Page 5, line above Precipitations. You likely mean “Probably, the elevation zone where the optimum temperature of the forests occurs will rise by 150-200 m relative to current conditions.” - Page 5, heading. “Precipitation” is single instead of plural. - Page 5, 2nd line below Precipitations. “small rainfall” should be “low rainfall” - Page 6, 1st line below Figure 2.1.4. “The significant changes..” should be “Significant changes..”. - Page 7, 4th line below Figure 2.1.5. “... annual course ..” better “... annual regime ..”. - Page 7, 1st sentence Vulnerability zones of forest vegetation. Check phrasing: “The

	vulnerability zones of the forest vegetation are an indication of the suitability of the environmental conditions for survival in climate change.". - Page 9. In Section 2.1 A: Bulgaria Results and Discussion, Methodology appears, i.e. GIS operations and projections. This interrupts the presentations of the results. Should be described earlier. - Page 10, 3rd line bottom. Check phrasing: "Such participation of the forest areas in zone B is for RCP4.5 and RCP6.0.". - Page 12, table caption. Better: "Table 2.1.3. Distribution of area of forest tree species (ha) over vulnerability zones in 2000". - Page 13, Table 2.1.4. Duplication of Table 2.1.3 (only % of area for some major species added). This could have been combined (table in landscape format). - Page 16, 3rd paragraph. "Figure 2" needs to be "Figure 2.2.2)". - Page 19, caption of Figure 2.2.2. Why is part not in bold? - In Section 2A Figures have a full stop (".") after the number (e.g. Figure 2.1.1. Text), whereas in Section 2B some Figures have a colon (":") after the number (e.g. Figure 2.2.1: Text). Make consistent. - Page 20, last line. "....on Figures" should be " in Figures". - Page 26, Table 2.2.5. Strange that vulnerability zones A, B and C are missing under the current climate for the selected forest vegetation types in Slovenia. - Page 36, caption Table 2.2.21. "........RCPs scenarios within 13 vegetation types: ...." should be "........RCPs for 13 vegetation types: ....". - Pages 37 and 38, Figure 2.2.14. Portions are interesting, but reader is also interested in (%) change. This is hard to derive; needs comparison with upper graph (1950-2000). - Page 40, first line. "Current climate in Lithuanian territory depends to the hemiboreal climate type which is" should be "Current climate in Lithuanian territory belongs to the hemiboreal climate type, which is". - Page 40, third line. "Highest mean annual temperature found within the Baltic Sea coastline" should be "Highest mean annual temperature is found within the Baltic Sea coastline". - Page 40, caption of Figure 2.3.1. Why is part not in bold? - Page 42, Figure 2.3.2 (temperature). The letters a, b, c and d are missing. Moreover there are five horizontal panels? Legend at the bottom of each panel is not readable. - Page 43, Figure 2.3.3 (precipitation). The letters a, b, c and d are missing. Moreover there are five horizontal panels? Legend at the bottom of each panel is not readable. - Page 44, Figure 2.3.4 (IDM). The letters a, b, c and d are missing. Moreover there are five horizontal panels? Legend at the bottom of each panel is not readable. - Pages 46 and 47, Table 2.3.2. Strange that vulnerability zones A, F and G are missing under the current climate for the main tree species in Lithuania. - Page 49, 1st line. "The pilot territory (3 regions: Sumy, Kharkiv and Lugansk) is located on the north-east..." should be "The pilot territory (3 regions: Sumy, Kharkiv and Lugansk) is located in the north-east...". - Page 53, Table 2.4.2. "2050 8.5" is twice in the table for each vulnerability zone. The first one is correct "2050 8.5"), but the second one should be ("2070 8.5"). - Page 57, 1st line. "The proposed world climate models forecasts sufficient warming in the second half of XXI century on the north-east part of Ukraine with decreasing of precipitations..." should be "The proposed world climate models forecast ample warming in the second half of 21st century in the north-east part of Ukraine with decreasing of precipitation...".

Annex 4B Act. 5.2. Assessment of drought impact on forest ecosystems

Assessment Peer Review Group (PRG)	26 September 2014
Status	**FINAL**
Activity	**5.2. Assessment of drought impact on forest ecosystems**
	Output 2: Milestone Report 3 Milestone Report for Output 2, incl. reference to a ftp server with ftp software https://filezilla-project.org/ (in addition a website is given with a username and password).
Activity lead	Galia Bardarska
Nature	The main objective of this demonstration project is identification of measures for the forest ecosystems to adapt to negative effects of drought, based on the expert investigations in four GWP CEE countries: Bulgaria, Lithuania, Slovenia and Ukraine. The total forested area in those countries is about 35% of forest areas in the GWP CEE region. The vulnerability zones of the forest vegetation are to be defined for the present climate (1961-1990), as well as for the year 2050 (realistic climate scenario) and the year 2100 (optimistic, realistic and pessimistic climate scenarios). The project is to define good drought management practices for application to the forested areas of the GWP CEE region. In the previous reporting period the following work has been accomplished: (i) Milestone 1 – Joint report on Topic a Kick-off-meeting and topic b Forest policy at UN, EU and national level, and (ii) Milestone 2 – Topic c Establishment of methodology for assessment of drought impact on forest ecosystems in 2050 and 2070.
Received	19 September 2014
General observations	**Not Accepted** **Comments:** The activity members do not understand the concept the Milestone Progress Report. The meaning is to report on progress, but not on the scientific outcome. The outcome should be in a separate report, which might be an annex to the Milestone Progress Report. PRG tried to download the file(s) on the PRG server. It appeared that first download software had to be downloaded and installed. Probably, then factual information (e.g. maps) could have been downloaded from a website. The consortium cannot expect that PRG members will do this. The factual information should be delivered in a more appropriate format. **Report on Milestone 3 (Output 2)** Item 2.1 in the Milestone Progress report was supposed to give a short summary of the Milestone Report 3. This is not done. Instead the dataset for the current and future climate is described, incl. the future time windows, selected GCM, RCPs, relevant weather variables. Climate change was assessed by using De Martonne aridity index (IDM). The IDM considers precipitation and temperature. Item 2.2 in the Milestone Progress report was supposed to give the progress to the objectives. This is not done. However, it is mentioned that maps have been compiled of temperature, precipitation and IDM for current and future climate conditions (2050 and 2070) in Lithuania, Slovenia, Bulgaria, Ukraine and CEE region for four RCPs (probably these maps are on the ftp server). In addition a table is given that describes how the IDM can be used to assess vulnerable. Item 2.3 in the Milestone Progress report was supposed to give the expected final output. There Milestone 3 (Output 2) is mentioned. This is confusing, because we thought that PRG is assessing

	Milestone 3 (Output 2) (see above). Output 3 was mentioned as a next step: i.e. Remedial measures for the forest ecosystems to mitigate negative effects of the drought, development of action plans for different period: 2050 and 2100, and Guideline for GWP CEE countries for elaboration of actions plans to mitigate negative effects of the drought. In addition there is Output 4 "Raising policy makers and public awareness in 4 GWP CEE countries". PRG advices the Act. 5.2 to read the Activity List carefully what is being expected. Item 2.4: PRG approves the change of the year 2100 for the future period into 2070. Item 2.5: there is indeed a link with Act. 2.1, but also with other activities. Should be elaborated. Item 2.6: "Difficult contact between activity leader and some experts of the team for professional discussions" – such a statement cannot be left without any explanation. The Activity 5.2 list describes that Output 2 will deliver: "Determination of vulnerability forest zones in contemporary climate (1960-1991), 2050 (realistic scenario) and 2100 (optimistic, realistic and pessimistic scenarios)". It will include national reports with maps, national round table discussions with decision makers and stakeholders. The reports are still missing (at the ftp server?) and the national round table discussions with decision makers and stakeholders are not mentioned (not held?).
Detailed comments	None.

Annex 5 Act. 5.3 Natural landscape retention – combining drought mitigation, flood protection and biodiversity conservation

Assessment Peer Review Group (PRG)	25 May 2014
Status	FINAL
Activity	**5.3 Natural landscape retention – combining drought mitigation, flood protection and biodiversity conservation**
	Draft of the Guidelines and template for the case studies
Activity lead	Tomasz Okruzsko (PL)
Nature	Milestone 3 report with three annexes
Received	20 May 2014
General observations	**Accepted** (PRG expects that the comments, see below, are considered in the Final Output). Small-scale landscape retention is an adaptive measure as it mitigates impacts of extreme climate variability. On one hand, it conserves water in the landscape and it slows down flood waves during wet periods. On the other hand it increases the buffering capacity of the landscape, which is beneficial during drought periods due to increased water retention. It preserves ecosystems that are sensitive to water losses. Nature and landscape values are addressed in co-operation with stakeholders (especially farmers) to regard flooding not only as a threat but also as an opportunity for broad rural development, nature restoration, recreation, "enrichment" of the habitat and (last but not least) for a new approach to water. The measures include both small scale hydraulic structures as well as non-technical activities as reforestation, restoration of wetlands, re-meandring of rivers, and soil structure improvement. Case studies are foreseen and will summarize experiences from already implemented projects in Poland, Slovakia Hungary, and Slovenia. Tools for systematic application of non-traditional measures will be developed. Based on experiences of the four countries usefulness of the approach for different geoclimatic settings will be demonstrated. Previously the following milestones were submited (see report PRG, 26 March 2014): - Milestone 1: Reports on countries – practical and legal experiences - Milestone 2 – Workshop in Warsaw. The Activity List describes that in April 2014, the following will be delivered (contribution to the one and only output of Act. 5.3): - Drafts of Chapters 2, 3, 4 and 5 - Template for example. The PRG received the following: - Milestone report, but the document that was called "Milestone" (file:"Act. 5.3_Milestone 3 Report.doc"), actually is the template that the PRG would like to be completed for each milestone. - Annex I (file: "Annex 1_Natural small landscape retention Guideline_draft 1.docx"), actually is the milestone report containing drafts of Chapters 1, 2, 3 and 4 - Annex 2 (file: "Annex 2_Examples of SMALL WATER RETENTION_ template.docx") is example template for the case studies. - Annex 3 (file: "Annex 3_All_Form_SmallWaterRetentionMeasures_V3.xlsx") are National

	Tables. After the receipt of these documents, the PRG learnt that these have not been commented on by all partners involved in the Act. 5.3. The PRG expects that a Milestone Report is a proper report, which is easy to understand as part of the process to eventually deliver the Output (reference to the Activity List) and rather easy to read (structure, language) . Furthermore, a completed template should be added, as has been decided at the PRG meeting in Ljubljana (e.g. short summary of the milestone report, progress, expected final output etc.). PRG comments: - What has been called Milestone report ("Act. 5.3_Milestone 3 Report.doc") should be called template that provides general information on the Milestone. Sections 2.2 – 2.3 are fine. However, the template does not address "Identify links with other IDMP CEE activities" (Section 2.5). Will be done later. However, it is important that partners discuss this as soon as possible. We believe that it is really required to show that the Activity partners understand what the role of Act. 5.3 is in the whole IDMP CEE (and not only the demonstration projects, as said in the template). - Annex I Natural small landscape retention Guideline_draft 1.docx should actually be called the Milestone report. - In the Milestone Report reference need to be made to Annexes, if relevant (e.g. to the National Tables, template case studies). - Draft of Chapter 5 is missing (was promised in the Activity List). Chapter 5 addresses "How can we incorporate the natural landscape retention in the RBMP, FPMP and DMP?" This is a very relevant chapter, because it puts the small water retention measures in a broader context. We read in the template (Section 2.4) that Chapter 5 has not been submitted, but instead Chapter 1 is submitted. The latter is fine, but we are concerned that Chapter 5 is not ready, because it is important that the Activity partners show that they understand the role of Act. 5.3 in the whole IDMP CEE. We realize that case study material is missing in this phase, but a start of a theoretical consideration could have been made. - A quick scan of the draft Chapters 1-4 learnt that the final report must be more concrete; a general description of small retention is not enough. - Annex 2 (file: "Annex 2_Examples of SMALL WATER RETENTION_ template.docx") is called "Small Water Retention - example template". Why is it called "example" and not "final"? The template has been distributed among partners for input. - Annex 3 National tables are improved: fine. There are still a few spelling mistakes, e.g. POLNAD (must be POLAND). In the Milestone clear reference to these detailed data neesd to be made to show the role in the small water retention. - Our first impression is that the language is rather poor - to an extent that some parts are difficult to understand what the authors want to convey. For example, the definitions in the template are really difficult to understand what the authors mean. We realize that this is only a draft, but authors have to understand that the final version (Output report that will become available to the general public) will have to be in improved English. Language check by native speaker might need to be considered.
Detailed comments	None in this phase.

Annex 6A 5.4. Drought Risk Management Scheme: a decision support system

Assessment Peer Review Group (PRG)	16 December 2014
Status	**FINAL**
Activity	**5.4. Drought Risk Management Scheme: a decision support system**
	Output 2: Methods for the drought hazard and risk management Milestone Report for Output 2, incl. 2 attachments: - Milestone 2.1. - Developing methodology for drought hazard mapping with the use of measures for drought susceptibility assessment (Tamara Tokarczyk, Wiwiana Szalioska, Leszek Łabędzki, Bogdan Bąk, Edvinas Stonevicius, Gintautas Stankunavicius, Elena Mateescu, Daniel Aleksandru, Gheorghe Stancalie) - Milestone 2.2. - Framing methodology for vulnerability to drought assessment based on available GIS information including population map, type of economic map and protected area to showing the potential adverse consequences) (Tamara Tokarczyk, Wiwiana Szalioska, Leszek Łabędzki, Bogdan Bąk, Edvinas Stonevicius, Gintautas Stankunavicius, Elena Mateescu, Daniel Aleksandru, Gheorghe Stancalie)
Activity lead	Tamara Tokarczyk, GWP Poland
Nature	Act. 5.4 aims at developing a framework for integrated drought risk mapping that can be adjusted to a given drought context and provide application for particular scope. The proposed framework is generic in nature. The framework is oriented to look for methods and measures that constitute a comprehensive, multipurpose and flexible approach that can be detailed and addressed for specific regional purposes. Drought contexts are provided by three project partners from Lithuania, Poland and Romania. They deal with drought risk mapping for the needs of early warning systems (Polish partner), agricultural drought risk mapping in order to evaluate economic profitability under different management practices (Romanian partner), and mapping risk of water scarcity in the context of integrated water resources management (Lithuanian partner). In the previous reporting the following work was completed: (i) Milestone 1.1 (Task 1.1) – Identification of the national measures for drought susceptibility (drought hazard) assessment, (ii) Milestone 1.2 (Task 1.2) - Identification of the national measures for drought vulnerability assessment (these two milestones together correspond to Output 1 of the project), and (iii) Milestone 3.1 (Task 3.1) summary report is concerned with the "Drought risk management scheme for the Odra River" (Output 3.1).
Received	30 June 2014; PRG assessment: 26 September 2014 (status: accepted with minor modifications); Replay project team: 14 October 2014; Final assessment PRG: 16 December 2014
General observations	**Accepted** We received a set of documents: (i) IDMP CEE_Act. 5.4_Reply to PRG comments on Output 2, (ii) revised Progress Report on the Milestones 2.1 and 2.2, (iii) revised Milestone 2.1 report, and revised Milestone 2.2. The Act. 5.4 team gave a very structured reply, which addressed the PRG' questions and comments. We particularly appreciated that the team provided two separate versions of some documents with one version included Track/Change. The whole reporting / archival process would benefit from putting a date on both the Milestone (progress) report and the Milestone reports. **<u>Output 2 Milestone progress report</u>** The PRG understands that the overall aim is to provide an inventory of the methods concerning

	drought risk management that were developed and used in the partnership countries. The PRG is looking forward to see how that inventory/repository of national drought risk management methodologies will be considered for the potential application in the operational DSS for the Odra River. This is also connected to the expected result of Output 3. The PRG recognizes that overall definitions of components should be included in the drought risk management scheme and what information is required for each component. We accept that the focus is more on providing examples of applications that make the generic goals more concrete. The PRG looks forward to how the identified components for the efficient drought risk management, the interaction among components and required outputs will work at the end of the activity. We would have appreciated that the example shown in Milestone 2.2 (Fig. 10.3. Conclusions) would have got a more prominent place in the adopted pragmatic concept that operationally can be applied. The PRG noticed that approaches in the three countries are to a large degree different, except the use of the SPI, which makes challenging to eventually develop a framework for integrated drought risk mapping. We support the search of the Act. 5.4 team to focus on functional requirements and that it tries to find and implement different solutions for each of the regions and sectors. PRG noticed that some of the interaction with other Activities has been discussed in Budapest. **Milestone 2.1** The PRG confirms that forestry is extensively described in Act. 5.2. No need to repeat that in this activity. We understand that in Sections 2.1 and 2.2 are meant to present the variety of possible methods of aspects of the drought risk management scheme rather than to make a comparison or evaluation of these. However, comparison and/or evaluation of the possible methods would have enriched the Milestone 2.1 report, but we realize that there are time and budget limits. The PRG realizes that the Act. 5.4 team would like to show the drought hazard mapping methodology in terms of drought frequency, severity and duration. We accept your argument that you presented the maps for the whole country (Figs. 15, 16 and 17) instead for the Odra Basin only, because you would like to show the observations outside the basin, which are relevant for the employed interpolation techniques. This, however, should have been said in the text (we could not find it). **Milestone 2.2** The approaches for Poland, Romania and Lithuania are all fine, but the PRG waits with great interest to the justification of specific methodology for vulnerability assessment chosen in the final step of Act. 2.4 (Output 3). The PRG was curious if some preliminary concept could have been presented on how all the national examples presented so far will be used in the next and final step of Act. 5.4 that is concerned with the Framework for Drought Risk Management. We realize that the national examples are to serve as the state-of-the-art in each country and that it is up to each country to benefit from the gained knowledge and experience. The countries are assumed to develop their own drought risk management system according to the proposed scheme.

Detailed comments	The detailed comments were processed by the Act. 5.4 team. Thanks for pointing at the correlation of SPI and SRI were investigated by the Lithuanian partner and also for the explanation of the difference the “recurrence time” and the “residence time”. The PRG understands that the applied interpolation techniques affect the mapping results and interpretation. It was meant to emphasis the need for each partnership country to find their ways.

Annex 6B 5.4. Drought Risk Management Scheme: a decision support system (reply of Act. Team), 14 October 2014

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Reply to comments

General observations

Output 2 Milestone progress report

When it comes to vulnerability assessment, the regional context is somewhat different than in case of the hazard assessment (agricultural drought – Poland and Romania; water resources – Lithuania). Item 2.2 of this Output Report is not fully satisfactory. (...) There is only one and last Output in Act. 5.4 foreseen, and the current progress to reach the objectives of the activity should be described more precisely. Could be that this is what is written as the last sentence in Section 2.3 of the report, but it should be better explained.

The overall aim of the completed milestones was to provide an inventory of the methods concerning drought risk management that were developed and used in the partnership countries. The inventory will serve as the repository for the potential applications in the operational decision support system for the Odra River. Each method is put into the context of its functionality (meteorological drought, hydrological drought) and its applicability (agriculture, water resources) as well as its relevance for the drought risk management (hazard assessment, impact assessment, vulnerability assessment).

PRG wonders if Milestone 2.1 really achieved the goal "Impact assessment - social, economic and environmental conditions, sectors and elements vulnerable to drought", as listed in the milestone progress report (item 2.3). The same applies to Milestone 2.2 (see above) that is assumed to provide: "Risk assessment - potential loss in connection with drought intensity, which could occur to a particular location".

These are overall definitions of components that should be included in the drought risk management scheme and what information refers to each component. The goals for the developed milestones are more focus on providing examples of the particular applications of these generic goals.

Act. 5.4. could benefit from a more clear concept. A clear example that could have been followed is in Milestone 2.2 (Fig. 10, 3. Conclusions).

The concept is to elaborate a generic and holistic approach for drought risk management that identifies the most necessarily components for the efficient drought risk management, interaction among components and required outputs. Some particular solutions will be presented for the study basin Odra River that were either elaborated or gained from the cooperation with the other partner. The solutions that are sought for the Odra river are the ones that could be applied operationally. Operationally will be developed it terms of scenarios based approach for drought hazard occurrence, evolution or persistent together with their effects for the selected sector (i.e. agriculture or water resources).

Approaches in the three countries are to a large degree different, except the use of the SPI, which makes challenging to eventually develop a framework for integrated drought risk mapping that can be adjusted to a given drought context and provide application for particular scope (see above).

The aim of the framework is provide integrated approach in terms of functional requirements. The framework streamlines the approach to drought risk management while allows for finding and implementing different solutions for each of the component pending on the region and on the sector.

PRG also wonders what the concrete outcome of Output 3 will be and to what extent national information presented in earlier Outputs (especially, Output 2) will be used.

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The national information presented in the completed milestones will be revised in relation to the identified requirements for the operational DSS for the Odra River (Milestone 3.1.).

Milestone 2.1

In Section 2 Table 1, three instead of two drought-prone sectors are mentioned (forestry is not covered in the following parts of the report).

Forestry was recognized as the sector vulnerable to drought in Poland and Romania however it is covered by other activity.

Section 2.1 "Relevance of indices for agricultural sector" covers separately Lithuania and Romania only – why agriculture of Poland (or at least Odra River Basin) is missing? It would be advisable to cover all three partner countries, plus a page or two comparing and summarizing the national experiences. It is difficult here to make comparison, especially when, for example the Lithuanian and Romanian figures refer to different indices.
There are similar questions concerning relevance of drought indices for water resources sector (Section 2.2). They cover Lithuania and Poland only (Romania missing). Once again it would be interesting to learn about the Romanian experience and to compare all three national approaches.

The presented approach is to present the variety of possible methods concerning given aspect of drought risk management scheme not to make a comparison or evaluation of them.

Discussion of the drought hazard mapping presented in Section 4 is also adequate, but as mentioned before Figs. 15, 16 and 17 refer to the whole country and not specifically to the Odra River Basin. There are again a number of interesting findings, but these are hard to put in a context.

The emphasize here was put to the show the methodology for the drought hazard mapping in terms of drought frequency, severity and duration. It is of course possible to cut the obtained maps for the analyzed region. However while implying interpolation techniques it is better to include also the observations outside the river basin boundary.

Milestone 2.2

The approaches for Poland, Romania and Lithuania are all fine, but still it is not clear what methodology for vulnerability assessment will be used in the last phase of Activity 5.4 concerned with risk management. We anticipate that this is left to be the first step of the next phase of the 5.4 investigations.

The final report is to indicate possible methodologies for operational DSS not to provide the actual values or assessments.

Other examples (national case studies) are concerned EITHER with HAZARD or VULNERABILITY alone. This is not so much missing in this report but in the Output Milestone 2 progress report, it would have been very valuable if some preliminary concept would have been presented on how all the national examples presented so far will be used in the next and final step of Act. 5.4 concerned with the Framework for Drought Risk Management.

National examples are to serve as the state-of-the-art in each country. It is up to each country to profit from the gained knowledge experience and developed their
own drought risk management system according to the proposed scheme.

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Detailed comments

Page 1, last paragraph: "exempt" replace with "except".
ok
Page 2, first paragraph Section 2.1.1: "crop resistance" replace with "crop sensitivity".
ok
Page 4, caption Fig. 2: "An Effective..." replace with "The Effective...".
ok
Page 6, Fig. 4: legend is too small; impossible to read.
ok
Page 6, paragraph below Table 2: "water accumulation capacity" replace with "water storage capacity".
ok

Page 11, Fig 11: Nice figure. You could have added a figure with the SPI-SRI correlation on a timeline.
SPI- SRI Correlations are investigated by the Lithuanian partner in the milestone 2.2.1 (p. 7).

Page 15, last paragraph: "recurrence time" replace with "residence time". You introduced the latter term, then you should not use another term for the same.

Residence time is the expected time in each class of severity, while the recurrence time is the return period of each of the drought severity class.

Page 16, second paragraph: "This is a very simple and numerically efficient method, however other interpolation techniques should be considered in order to elaborate optimal interpolation method."It is a bit strange. For whom is the message meant?

Applied interpolation techniques affect the mapping results and interpretation. It was meant to emphasis the need for each partnership country to find their ways.

Annex 6C Act. 5.4. Drought Risk Management Scheme: a decision support system

Assessment Peer Review Group (PRG)	26 September 2014
Status	**FINAL**
Activity	**5.4. Drought Risk Management Scheme: a decision support system**
	Output 2: Methods for the drought hazard and risk management Milestone Report for Output 2, incl. 2 attachments: - Milestone 2.1. - Developing methodology for drought hazard mapping with the use of measures for drought susceptibility assessment (Tamara Tokarczyk, Wiwiana Szalioska, Leszek Łabędzki, Bogdan Bąk, Edvinas Stonevicius, Gintautas Stankunavicius, Elena Mateescu, Daniel Aleksandru, Gheorghe Stancalie) - Milestone 2.2. - Framing methodology for vulnerability to drought assessment based on available GIS information including population map, type of economic map and protected area to showing the potential adverse consequences) (Tamara Tokarczyk, Wiwiana Szalioska, Leszek Łabędzki, Bogdan Bąk, Edvinas Stonevicius, Gintautas Stankunavicius, Elena Mateescu, Daniel Aleksandru, Gheorghe Stancalie)
Activity lead	Tamara Tokarczyk, GWP Poland
Nature	Act. 5.4 aims at developing a framework for integrated drought risk mapping that can be adjusted to a given drought context and provide application for particular scope. The proposed framework is generic in nature. The framework is oriented to look for methods and measures that constitute a comprehensive, multipurpose and flexible approach that can be detailed and addressed for specific regional purposes. Drought contexts are provided by three project partners from Lithuania, Poland and Romania. They deal with drought risk mapping for the needs of early warning systems (Polish partner), agricultural drought risk mapping in order to evaluate economic profitability under different management practices (Romanian partner), and mapping risk of water scarcity in the context of integrated water resources management (Lithuanian partner). In the previous reporting the following work was completed: (i) Milestone 1.1 (Task 1.1) – Identification of the national measures for drought susceptibility (drought hazard) assessment, (ii) Milestone 1.2 (Task 1.2) - Identification of the national measures for drought vulnerability assessment (these two milestones together correspond to Output 1 of the project), and (iii) Milestone 3.1 (Task 3.1) summary report is concerned with the "Drought risk management scheme for the Odra River" (Output 3.1).
Received	30 June 2014
General observations	**Accepted with minor revision** **Comments:** **<u>Output 2 Milestone progress report</u>** PRG appreciates that for the Act. 5.4 the milestone report template has been used that was introduced at the Ljubljana meeting. The authors clearly understand the difference between the milestone progress report (following the template introduced at the Ljubljana meeting) and the actual report that describes scientific outcome. The actual output of Act. 5.4 are two milestone reports (see above). The first sentence of the milestone report says that the overall goal of Output 2 is to develop a **concept of drought hazard** (covered by Attachment 2.1) **and vulnerability mapping** (covered by Attachment 2.2) as tools for drought risk management for selected regional contexts. It is good to remind that risk is the product of exposure to drought (probability of occurrence of the natural hazard) and societal vulnerability, represented by a combination of economic,

	environmental and social factors. Looking at the Activity List, the drought risk management issues are to be covered by Output 3 "Framework for Drought Risk Management Scheme" (this rises some doubts about "risk" in the title of Output 2). The short summary (item 2.1) is sufficiently explained what has been done.Next selected indices for detection of agricultural drought (in Lithuania and Romania) and hydrological drought (in Lithuania and Poland) are mentioned. The methodology for drought hazard assessment and mapping is to be developed using as an example Poland. When it comes to vulnerability assessment, the regional context is somewhat different than in case of the hazard assessment (agricultural drought – Poland and Romania; water resources – Lithuania). Item 2.2 of this Output Report is not fully satisfactory. There is only one and last Output in Act. 5.4 foreseen, and the current progress to reach the objectives of the activity should be described more precisely. Could be that this is what is written as the last sentence in Section 2.3 of the report, but it should be better explained. The box with the identification of links with other IDMP CEE activities (item 2.5) is not filled out (the phrasing "The list of definition ..." does not make sense. PRG wonders if Milestone 2.1 really achieved the goal "Impact assessment - social, economic and environmental conditions, sectors and elements vulnerable to drought", as listed in the milestone progress report (item 2.3). The same applies to Milestone 2.2 (see above) that is assumed to provide: "Risk assessment - potential loss in connection with drought intensity, which could occur to a particular location". Act. 5.4. could benefit from a more clear concept. A clear example that could have been followed is in Milestone 2.2 (Fig. 10, 3. Conclusions). A number of interesting achievements are described in the two milestone reports, but these are very hard to put in a context. Approaches in the three countries are to a large degree different, except the use of the SPI, which makes challenging to eventually develop a framework for integrated drought risk mapping that can be adjusted to a given drought context and provide application for particular scope (see above). More interaction with other Activities is required. For example, in Milestone report 2.1 a list of possible drought indices is given, whereas a similar listing is also given in Act. 5.5. Another example is in Milestone report 2.2 (Section 2.2). The method applied to assess vulnerability for the agricultural sector in Romania is very much alike what is being done in Act. 5.5. The upcoming meeting in Budapest should be used for more fine-tuning. PRG also wonders what the concrete outcome of Output 3 will be and to what extent national information presented in earlier Outputs (especially, Output 2) will be used. We suggest to discuss this in Budapest. **<u>Milestone 2.1</u>** The objective of this report is to present **drought hazard assessment** methodology based upon indices used in the participating countries for drought hazard map generation (SPI as common drought index, which is really supported by PRG). The three major sections of the report introduced in page 1 do not need any special comment. In Section 2 Table 1, three instead of two drought-prone sectors are mentioned (forestry is not covered in the following parts of the report). Section 2.1 "Relevance of indices for agricultural sector" covers separately Lithuania and Romania only – why agriculture of Poland (or at least Odra River Basin) is missing? It would be advisable to cover all three partner countries, plus a page or two comparing and summarizing the national experiences. It is difficult here to make comparison, especially when, for example the Lithuanian and Romanian figures refer to different indices. There are similar questions concerning relevance of drought indices for water resources sector (Section 2.2). They cover Lithuania and Poland only (Romania missing). Once again it would be interesting to learn about

	the Romanian experience and to compare all three national approaches. There are a number of interesting findings, but these are very hard to put in a context. Please note that correlations EDI and discharge are rather low (Fig. 7). Next section 3of the report is concerned with an example of drought hazard assessment, carried out for three sub-basins of the Odra River in Poland. The probabilistic assessment of the severity, duration and return time of drought (frequency) was carried out with the use of selected drought indices (they should be listed here), with application of the first-order Markov chain models. Discussion of the most recent literature on application of these models (e.g. Sharma and Panu, 2012)) and description of their use are adequate. Discussion of the drought hazard mapping presented in Section 4 is also adequate, but as mentioned before Figs. 15, 16 and 17 refer to the whole country and not specifically to the Odra River Basin. There are again a number of interesting findings, but these are hard to put in a context. The report closes with short conclusions (Section 5), summarizing the methodology proposed for drought hazard assessment in terms of the scope of application, temporal scale, spatial scale and drought frequency analysis. It is more generic, rather than factual. **Milestone 2.2** Quoting the Milestone report, its main task is "to provide insights for the development of the methodology for vulnerability assessment for the particular sector of the economy, including drought impact analysis" (Section 1). Agriculture and water resources were chosen as the most drought-prone sectors in the region. The PRG supports focus on the agricultural in Poland and Romania and on water resources sector in Lithuania. Looking at the agricultural sector, the vulnerability assessment is done in each of these countries in a different way. In Poland, the vulnerability function is describing the relation between drought intensity expressed in terms of SPI indicator via the CDI and the relative crop yield reduction, with the distinction of two classes of total available soil water. In Romania, the state of crop vegetation is assessed with the satellite-derived indicators during the critical periods of agricultural water needs. For the Romanian example a strong interaction is required with Act. 5.5 (cooperation between the National Meteorological Administration (NMA) and the University of Oradea). For the water sector of Lithuania, the ratio of surface water resources to surface water consumption is taken as a base of vulnerability analysis. Actually, the text should be a bit more elaborated to understand what has been done (Sections 2.1, 2.2 and 2.3). The approaches for Poland, Romania and Lithuania are all fine, but still it is not clear what methodology for vulnerability assessment will be used in the last phase of Activity 5.4 concerned with risk management. We anticipate that this is left to be the first step of the next phase of the 5.4 investigations. In this context, Fig. 10 is of a special value (see also above). Before a RISK management system is developed, the HAZARD and VULNERABILITY has to be assessed. In Output 2 you have considered jointly agricultural drought hazard and vulnerability only in case of Romania. Similar situation in terms of water resources is only done for the case of Lithuania. Other examples (national case studies) are concerned EITHER with HAZARD or VULNERABILITY alone. This is not so much missing in this report but in the Output Milestone 2 progress report, it would have been very valuable if some preliminary concept would have been presented on how all the national examples presented so far will be used in the next and final step of Act. 5.4 concerned with the Framework for Drought Risk Management.
Detailed comments	Page 1, last paragraph: "exempt" replace with "except". Page 2, first paragraph Section 2.1.1: "crop resistance" replace with "crop sensitivity". Page 4, caption Fig. 2: "An Effective..." replace with "The Effective...". Page 6, Fig. 4: legend is too small; impossible to read. Page 6, paragraph below Table 2: "water accumulation capacity" replace with "water storage

	capacity". Page 8: it should be made more clear that SPI for short aggregation periods is weak in snow-dominated climate. Page 11, Fig 11: Nice figure. You could have added a figure with the SPI-SRI correlation on a timeline. Page 15, last paragraph: "recurrence time" replace with "residence time". You introduced the latter term, then you should not use another term for the same. Page 16, second paragraph: "This is a very simple and numerically efficient method, however other interpolation techniques should be considered in order to elaborate optimal interpolation method.". It is a bit strange. For whom is the message meant?

Annex 7A Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods

14 December 2014 **Assessment Peer Review Group (PRG)**	
Status	**FINAL**
Activity	**Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods**
	Milestone 2/Output 2: Signalling and intervention levels of drought based on remote sensing datasets
Activity lead	**János Tamás, Hungary**
Nature	The Activity 5.5 is a case study undertaken by three partners from Hungary, Slovakia and Romania, focusing on identification of agricultural drought characteristics and development of a monitoring method allowing for early warning of drought (with application of remote sensing data), before irreversible yield loss and/or crop quality degradation occur. The spatial decision support system to be developed will help farmers to reduce drought risk by plant specific calibrated drought indexes. It will produce drought maps and allows risk evaluation. This methodology will be ready to be applied in other CEE countries when country specific data are available and entered into the system. The study has three important outputs (milestones), which correspond and relate each other in hierarchical way. Output 2 focuses on determination of drought effects based on remote sensed spectral data. It is a report that describes a toolbox with its outcome. These investigations were carried out in the lowland part of the Tisza River Basin with the use of Normalized Difference Vegetation Index (NDVI).
Received	**30 July 2014;** PRG assessment: 26 September 2014 (status: accepted with minor modifications); Replay project team: 3 October 2014; FINAL assessment PRG: 26 November 2014 Replay project team: 12 December 2014; FINAL assessment PRG: 14 December 2014
General observations	**Accepted** We received: (i) a reply (file: Act. 5.5_ Response to PRG FINAL Assessment 12 Dec2014) to the PRG comments of 26 November, and (ii) an Output 2 / Mileston2 progress report with the revised Output 2 / Mileston2 report as annex (Act 5 5_Output 2_updated_11122014). The authors followed partly the instructions. They have put the date on both the cover Output 2 / Mileston2 progress report and the revised Output 2 / Mileston2 report. However, they were persistent in not marking the changes in these two documents, although this was asked by the Porgramme Manager and the PRG. <u>The PRG does not appreciate this attitude!</u> After the approval the activity team has sent a version where the revisions have been marked (22 December 2014), which was appreciated. Next time, the PRG only comments on a revised document in which the revisions are clearly marked or a separate document should be compiled that clearly describes which line numbers are revised / added. We trust that the Act. 5.5 team will continue in putting a date on both the Milestone (progress) report and the Milestone report 2. This makes it easier to distinguish between the different versions of the report in the assessment process. **<u>Comments on the reply to the PRG's assessment:</u>** The Act. 5.2 team wrote a comprehensive reply to all our comments. The PRG accepts the reply.

	We trust that the team will remind the comments, if relevant, when finalizing Act. 5.2. **Comments on the Revised Output 2 report:** It was hard to check the revisions in detail, because these were not marked in the document. A quick scan learnt that it seems that they included most the proposed revisions in the revised Output 2 / Mileston2 report.
Detailed comments	The one, single comment has not been processed, i.e. the base horizontal line in Table 4 (page 17) still is missing (new relative to previous version).

Annex 7B Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods; reply Act. Team, 12 December 2014

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	11. December 2014. **Response to the Assessment Peer Review Group (PRG) (5. December 2014)**
Activity	**Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods**
	Milestone 2/Output 2: Signaling and intervention levels of drought based on remote sensing datasets
Activity leader	János Tamás, Hungary
PRG group	**List the CDI under the Comprehensive Indices**
Activity leader	Agreed and corrected, CDI was moved to the 5th paragraph of Comprehensive Indices (from page 3 to page 4)
PRG group	**What is the role of the listing of all the indices, if it is meant to be complete? There are more extensive lists (see own references);**
Activity leader	There are more indices, with which drought and vegetation can be monitored. In this list the most relevant and widespread indices were collected, which are used and referenced in the literature, and can be useful in CEE region. The role of this list was to provide basic knowledge for the Readers of the report on drought indices, and to emphasize the heterogeneity and variability of indices, which aim to monitor different kind of droughts, based on different algorithms with, very often, different sets of input parameters.
PRG group	**The PRG understands that the well-known NDVI is used for the drought monitoring. However, it needs to be explained why the fAPAR (Fraction of Absorbed Photosynthetic Solar Radiation) is not used;**
Activity leader	NDVI is the most studied index on the field of vegetation analysis, and fAPAR is also known to be strongly related to water stress. NDVI has been selected by the JRC EDO. as well. Both NDVI and FAPAR are available worldwide for free at http://earthexplorer.usgs.gov/ and at http://land.copernicus.vgt.vito.be/PDF/portal/Application.html#Browse;Root=512260;Time=NORMAL,NORMAL,-1,,-1,,. The reason for choosing NDVI is complex. 1. MODIS NDVI datasets have 250 m spatial resolution, which means 1 pixel represents 6.25 ha, while fAPAR has 1 km spatial resolution, which corresponds to 100 ha pixel size. In Europe an average farm size is about 19-20 ha, while in CEE it is less. Therefore the monitoring of drought *through the possible yield loss of a specified crop* is not appropriate with datasets, such as fAPAR, having low spatial resolution, because one pixel of fAPAR exceeds the possible farm, and even crop field sizes. 2. In correlation with the pixel size, local pixel error has also significant role in the case of satellites. Satellites survey the same areas from time to time, but at pixel scale, 10-30% error can occur when covering the same pixel. The smaller a pixel, the larger the opportunity to have neighboring sites with similar characteristics. Therefore both temporally and spatially better spatial resolution provides smaller data oscillation and more homogenous changes of NDVI in pixel scale, than in the case of larger resolution. MODIS NDVI also has oscillation, therefore we used smoothed, 16-day NDVI images for our study. 3. It is also important, that the CORINE dataset (used as arable land input data in data processing) maps objects with at least 25 ha size. Therefore it is much reliable to use dataset with spatial resolution less than (or equal to) 25 ha. 4. Certainly, other satellite data (e.g. LANDSAT) can also be used as input NDVI images. LANDSAT has 30 m resolution, but the data acquisition is more complicated. LANDSAT channels are possible to download, but after downloading NDVI datasets the usable datasets should be generated from channel 3 and 4, while in the case of MODIS, NDVI images can directly be

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	downloaded making the monitoring easier and faster and more user friendly.. Another problem is, that LANDSAT has 16 days revisit time, thus the frequency of the datasets is lower in one year than MODIS. Furthermore, many images cannot be used because of abundant cloud cover.
PRG group	**The methodology will also be developed for drought forecasting (e.g. „area-specific yield forecasts"). It is unclear how you can use RS for drought forecasting;**
Activity leader	In our study drought forecasting doesn't mean the forecast of the extent of future drought circumstances, but the forecast of possible yield loss based on the actual drought situation derived from MODIS NDVI datasets. Therefore, in every case in the report the phrase of "forecast", referring to drought forecast, were changed to "yield loss forecast". Area-specific yield forecast refers to forecasting of yield(loss) of a concerned area (which is often called ROI (region of interest) in RS) with local calibration data. Risk maps shows pixel by pixel, how much the yield loss (t/ha) could be in the harvest period, if current conditions remains.
PRG group	**The magnitude of the potential yield losses is connected to the five drought risk levels, e.g. Early Warning: 10%, Catastrophe: up to 40%. Is it also applicable to other IDMP CEE countries?**
Activity leader	Yes, since NDVI is a normalized data and the calibration of it is also based on normalized yield data sources. Thus NDVI data and yield loss data from the whole CEE countries can be easily compared. Since NDVI is strongly correlates to biomass, and biomass with yield; thus low NDVI means low biomass and low yield in CEE countries. In the case of average weather circumstance the optimal amount of corn and wheat yields (t/ ha) have little difference in the CEE region. Therefore 40 % yield loss is catastrophic in every CEE country. Certainly, there could be small differences in the intensity of crop production, wheat species and especially in corn hybrids between countries, which differences could influence the amount of yield to some extent. (In the case of maize, the larger FAO number means larger energy demand of corn, longer vegetation period and higher possible yield.)
PRG group	**The base horizontal line in Table 4 (page 17) is missing (new relative to previous version).**
Activity leader	Corrected.

Annex 7C Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods

Assessment Peer Review Group (PRG)	5 December 2014
Status	**FINAL**
Activity	**Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods**
	Milestone 2/Output 2: Signalling and intervention levels of drought based on remote sensing datasets
Activity lead	János Tamás, Hungary
Nature	The Activity 5.5 is a case study undertaken by three partners from Hungary, Slovakia and Romania, focusing on identification of agricultural drought characteristics and development of a monitoring method allowing for early warning of drought (with application of remote sensing data), before irreversible yield loss and/or crop quality degradation occur. The spatial decision support system to be developed will help farmers to reduce drought risk by plant specific calibrated drought indexes. It will produce drought maps and allows risk evaluation. This methodology will be ready to be applied in other CEE countries when country specific data are available and entered into the system. The study has three important outputs (milestones), which correspond and relate each other in hierarchical way. Output 2 focuses on determination of drought effects based on remote sensed spectral data. It is a report that describes a toolbox with its outcome. These investigations were carried out in the lowland part of the Tisza River Basin with the use of Normalized Difference Vegetation Index (NDVI).
Received	30 July 2014; PRG assessment: 26 September 2014 (status: accepted with minor modifications); Replay project team: 3 October 2014; Final assessment PRG: 26 November 2014
General observations	**Accepted with (still) minor modification** We received a none-revised Milestone (progress) report and attached as an annex the revised Output 2 / Milestone 2 report, which is according the agreements made in Ljubljana (like last time, 30 July 2014). However, we <u>do not appreciate</u> that the (minor) revisions were not marked, although this was asked by the Programme Manager. Next time, the PRG only comments on a revised document in which the revisions are clearly marked or a separate document should be compiled that clearly describes which line numbers are revised / added. The whole reporting / archival process also would benefit from putting a date on both the Milestone (progress) report and the Milestone report 2. Now the cover and the title page of both versions of the Milestone report are the same. **<u>Comments on none-revised Milestone Report:</u>** We already mentioned in our previous assessment report (26 September 2014) that we received a good progress report (i.e. format and content). **<u>Comments on the Revised Output 2 report:</u>** The project team has swapped the order of description of the indicators, i.e. Comprehensive indices last, as was advised (Chapter 2). The threshold methods has been added to the list of Hydrological Indices. The Composite Drought Index (CDI) that is used by JRC for the European Drought Observatory also has been added. The project team has listed the CDI under the Agricultural Drought Indices (pg. 3). The PRG believes that it is better to list the CDI under the Comprehensive Indices, because it combines three indices. We do not think that fAPAR is only

	monitoring agricultural crops. Furthermore the term "composite" in the CDI also points at an comprehensive indicator. The project team did not reply to the following PRG's questions (for the full question, see PRG assessment 26 September 2014): - What the role of the listing of all the indices is, if it is meant to be complete. There are more extensive lists (see own references); - The PRG understands that the well-known NDVI is used for the drought monitoring. However, it needs to be explained why the fAPAR (Fraction of Absorbed Photosynthetic Solar Radiation) is not used; - The methodology will also be developed for drought forecasting (e.g. „area-specific yield forecasts"). It is unclear how you can use RS for drought forecasting; - The magnitude of the potential yield losses is connected to the five drought risk levels, e.g. Early Waring: 10%, Catastrophe: up to 40%. Is it also applicable to other IDMP CEE countries? The PRG would like to repeat that they agree with the final conclusion of the Output 2 report, that the calculations carried out by the Authors of the report should be seen as significant development in the assessment of drought risk from a soil hydrological point of view.
Detailed comments	Two detailed comments have been processed. The base horizontal line in Table 4 (page 17) is missing (new relative to previous version).

Annex 7D Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods

Assessment Peer Review Group (PRG)	26 September 2014
Status	**FINAL**
Activity	**Act. 5.5 Policy oriented study on remote sensing agricultural drought monitoring methods**
	Milestone 2/Output 2: Signalling and intervention levels of drought based on remote sensing datasets
Activity lead	János Tamás, Hungary
Nature	The Activity 5.5 is a case study undertaken by three partners from Hungary, Slovakia and Romania, focusing on identification of agricultural drought characteristics and development of a monitoring method allowing for early warning of drought (with application of remote sensing data), before irreversible yield loss and/or crop quality degradation occur. The spatial decision support system to be developed will help farmers to reduce drought risk by plant specific calibrated drought indexes. It will produce drought maps and allows risk evaluation. This methodology will be ready to be applied in other CEE countries when country specific data are available and entered into the system. The study has three important outputs (milestones), which correspond and relate each other in hierarchical way. Output 2 focuses on determination of drought effects based on remote sensed spectral data. It is a report that describes a toolbox with its outcome. These investigations were carried out in the lowland part of the Tisza River Basin with the use of Normalized Difference Vegetation Index (NDVI).
Received	30 June 2014
General observations	**Accepted, with minor modifications** **<u>Comments on Milestone Report:</u>** Good progress report. PRG appreciates that for the Act. 5.5 the milestone report template has been used that was introduced at the Ljubljana meeting. The authors clearly understand the difference between the milestone progress report (following the template introduced at the Ljubljana meeting) and the actual report that describes scientifci outcome. The actual Output 2 report is attached the to the milestone report.The short summary (item 2.1) is clear and fine. The identification of links with other IDMP CEE activities (item 2.5) is adequate, but the listed activities could have been more linked. Although National Reports were not used (item 2.7), statistical data of several parameters were received from Statistical Offices of Hungary and Romania, which is fine. The PRG understands that the well-known NDVI is used for the drought monitoring. However, it needs to be explained why the fAPAR (Fraction of Absorbed Photosynthetic Solar Radiation is not used (it is mentioned under „Broadband Greenness" and in Ch. 4). fAPAR, which is known to be strongly related to water stress, has been selected by the JRC EDO (close links with Act. 1.3). In the Milestone progress report and in the Milestone report at several places it is said that the methodology will also be developed for drought forecasting (e.g. „area-specific yield forecasts"). PRG does not understand how with remote sensing data only, drought or yield forecasts can be made. With RS you can well map current conditions, but to take it into future you need forecasting methods (kind of model). The PRG appreciates the distinction and definition of five drought risk levels, e.g. Watch, Catastrophe. These levels are very important for taking actions by farmers. These levels are determined by calibration (Ch. 5). Is the magnitude of the potential yield losses applicable to

	other IDMP CEE countries? **<u>Comments on the Output 2 report:</u>** 1. Section 1 provides a good introduction to Output 2 and its role in the context of the whole activity 5.5.. It also justifies the use of remote sensed chlorophyll and biomass quantity data for identification of some agricultural characteristics. The study area is a lowland part of the Tisza River Basin which is located within the Carpathian Basin belonging to the CEE region. However, it is anticipated that the methodology will be applicable to other Central CEE countries when country specific data are available and entered into the system. 2. Sections 2, 3 and 4: Section 2 gives an overview of different drought indices (meteorological, comprehensive, agricultural and hydrological). We suggest to describe the "comprehensive" indicators as last. The PRG wonders, however, what the role of the listing of all the indices is. If is meant to be complete, then some of the EU WG Water Scarcity and Drought should be added, as well as the CDI (JRC EDO) and also drought characteristics derived with the threshold method. Seven of the presently available remote sensing indexing methods of vegetation and agricultural drought are discussed in Section 3. However, over the past decade, extensive research and development has been carried out in the field of multi- and hyper-spectral remote sensing methods (Section 4). The last part is of special importance because it's an introduction to Section 5 – here several terms used in Section 5, which is the essence of the report, are defined and explained. 3. In Section 5 the report goes back to the basic goal of Output 2, which first requires identification of the most appropriate remote sensing data, their GIS transformation and calibration needed for agricultural drought monitoring and forecast. These tools are „synthetized into one huge toolbox including landuse, soil, physical, meteorological and satellite data integrating them into a model, which can be a feasible tool for plant specific drought risk evaluation". The process of Plant Specific Drought Risk Evaluation is presented in Fig. 1 (page 10) and probably the three steps (I, II and III) could be superimposed on this figure. Organization of Section 5 follows the above mentioned steps: I. Data processing and transformation, II. Identification and calibration of drought risk levels, and III. Drought risk evaluation and mapping. Discussion of these steps is highly technical, but the process followed is fully understandable and the new drought risk monitoring and forecasting method is evaluated by PRG to be an original achievement of the IDMP CEE.4. The last Section 6 is concerned with an important problem directly related to the first five sections. This is a study of a drought related soil moisture regime, calculated for the whole Tisza River Basin by digital transformation of the national soil maps for Romania, Hungary, Slovakia and Ukraine with the use of the World Reference Base for Soil Resource. The calculations were done according to the Guidelines of JRC. Eventually the volume of water resources that can be stored in the 2 m. deep soil layer of the entire Tisza watershed were estimated for: (i) the minimum water holding capacity, (ii) field capacity water content, (iii) saturated water content, and (iv) total available water content. Next total water resources were calculated for soil plots, sub-watersheds and regions with their cartographic identifications. The PRG agrees with the final conclusion of this part of the Output 2 report, that the calculations carried out by the Authors of the report sheould be seen as significant development in the assessment of drought risk from soil hydrological point of view.
Detailed comments	1. Ch. 2, meteorological indices: in the paragraph on the SPI there is a reference to Fig. 2. Figure is missing.

	2. Ch. 5, under II: again reference to Fig. 2 (but other figure is meant).

Annex 8A Act. 5.6 Upgrading agricultural drought monitoring and forecasting: the case of Ukraine and Moldova

Assessment Peer Review Group (PRG)	16 December 2014
Status	**FINAL**
Activity	**Act. 5.6 Upgrading agricultural drought monitoring and forecasting: the case of Ukraine and Moldova**
	- Milestone 3 report on "Review climate-zoning and mapping of drought risk areas in Ukraine and Dniester river basin (Step 3 in the Activity List), included as Chapter 3 under title "Comparison of indices (HTC and SPI)"; the text for Step 6 of the Activity List "Collection/Analyses/Comparing the Soviet and EU drought indices" (see page 2 of this report). - Report from the workshop, village Ciulucani, district Telenesti, Republic of Molodva, 3 June 2014 (in the Activity List shown as Step 4 "Workshop for the farmers" . These documents are annexes to the Self Study Overview of Act. 5.6, which follows the template that has been introduced after the Ljubljane meeting. Some documents (e.g. new Annex 3) have been added when the revised documents were submitted (30 September, see below). Other documents have been extended, e.g. Report of Consultations in Moldova; added are central (Loganesti community, Hincesti region), southern (Cahul town, Cahul region) and Dubasari (Transnistria region) parts of Moldova.
Activity lead	Ms. Tatiana Adamenko (UA) Dr. Ecaterina Kuharuk (MD)
Nature	Ukraine is one of the main producers of grain on the world market. Annual crop losses due to bad weather conditions in Ukraine, mostly droughts, are in the range of hundreds of million Euros. Upgrading agricultural drought monitoring and forecasting in the Ukraine and adjacent Moldova is a necessity, which should consider climate zonation and drought risk areas in Ukraine and the shared Moldova-Ukraine Dniester River Basin. The existing agro-climatic zonation is based on the meteorological observations from the period 1956-1985, which cannot be assumed to be representative for current conditions. Additionally, trends in changes of soil water holding capacities as a function of erosion, that is driven by agricultural crop patterns and slope inclinations are studied. The Activity List also foresees in development of forecasting models for identification of crop yield losses caused by droughts. Possible mitigation measures for the agricultural sector to adapt to negative drought effects are studied. Another important project purpose is raising drought-related awareness of stakeholders and policy makers in water management and agriculture areas.
Received	31 July 2014 PRG assessment: 19 September 2014 (status: accepted with major modifications); Replay project team: 30 September 2014, revised Act. List: 14 October 2014; Final assessment PRG: 16 December 2014
General observations	**Accepted** *(although numerous remarks (see below) the PRG proposes not revise the Milestone 3 report, incl. its annexes, but efforts to use for the other steps in the finalization of the whole Act. 5.6).*

	We received: (i) a reply to the PRG assessment (IDMP CEE_Act. 5.6_Reply to PRG comments 30Sep2014), (ii) revised Milestone 3 Report (Annex 1_Act. 5.6_Milestone 3_updated 30Sep2014), (iii) Annex 2_Consultation meeting with stakeholders in MD 30Sep2014, and (iv) Annex 3_Agroclimatic zonation Dniester_MD 30Sep2014a. No revised Milestone (progress) report (i.e. Self-Study Overview) has been added., which makes it hard for the PRG to monitor and assess revisions. The structure of reporting still is far from ideal. It is still unclear at a first glance where an annex belongs to. For example, Annex 3 has as title "Agroclimatic zoning", without "Annex 3" in the heading or somewhere on the first page; it is called „Annex 3_Agroclimatic zonation Moldova" in the reply to the PRG comments and the name of the file is "Annex 3_Agroclimatic zonation Dniester_MD". The Act. 5.6 should strive to more consistency. However, the reply to the PRG assessment in separate document clarifies many things and it is highly appreciated. In addition Sabina Bokal and Henny van Lanen (Lead 2nd PRG reporting) and had a meeting with Anna Tsvietkova (UA) and Dumitru Drumea (MD) in Budapest, 4 October 2014 to discuss the planning. We agreed that there will be an update of the Activity List. Revisions were not marked in the text of the 30 September version (i.e. file Annex 1_Act. 5.6_Milestone 3_updated 30Sep2014 and file Annex 2_Consultation meeting with stakeholders in MD 30Sep2014). Please note that next revised version will only be assessed by the PRG when the changes are clearly marked in the text or a separate document should be provided that clearly describes which line numbers are revised / added. The whole reporting / archival process also would benefit from putting a date on both the Milestone (progress) report and the Milestone report 3. **Comment on revised Activity List** (14 October 2014): Already the PRG accepted earlier changes in the Activity List 5.2 relative to the list at the start of the project, i.e. to restrict the study to two main crops (i.e. winter wheat and spring barley) and not to work on a new, not identified crop (email to Project Manager, 29 April 2014). We agree with the list that was sent by the Project Manager (14 October). This includes: MILESTONE 3 - this was already submitted to you *Output 1 & Output 2 & O4 (Moldova***)** stayed the same (we changed this step after the 2nd workshop, because UA said that they will not have workshop during the summer - Step 4; this change was accepted by all already in April). MILESTONE 4 - till the end of this year *Output 3a (1st model) & Output 4 (Ukraine) & Output 3b* Under Milestone 4 two things were changed: - Ukraine will prepare only one model this year and the next one next year - Step 5 - workshop for decision maker - it was decided that this will be joint MD/UA workshop in Dniester river basin in the beginning of 2015. They will get pre-payment (for the 2nd model and for the workshop). Budget needs to be transferred this year, otherwise it will be lost and we cannot pay them next year. The Act. 5.6 team accepted and agreed with this. MILESTONE 5 - Till 15. 3. 2015 *Output 3a (2nd model) & Output 5 (joint workshop)*

Comment on Self-Study Overview:
Generally all PRG comments on the Self-Study Overview have been positively addressed by the Act. 5.6 team. We realize that the situation in both countries is very difficult because of the war in the Eastern Ukraine, which started in May 2014, and hence coordination is challenging. If possible, it would be beneficial if other partners could help both countries with the GIS software and adequate hardware.

Thanks for clarifying why a new agro-climatic zonation (ACZ) was developed (e.g. for planning in agricutural and water sectors, basis for Drought management plan), which considers ongoing climate change trends and EU drought indicators. The PRG trust that this will be reported in the NCDs (Act. 2.2).

The PRG appreciates that the postponed workshops in the Ukraine (due to the war) to introduce the new ACZ will be held in October (stakeholders, famers) and December (policy makers). The latter is connected to Act. 2.2.

We are happy to see GIS maps for the whole Dniester river basin in Annex 3_ Agroclimatic zonation Moldova.

Comments on structure of Activity 5.6
The Act. 5.6 team understands the PRG comment that it is difficult to understand the mixture of outputs, steps and milestones provided in the Activity List and they conclude that this provides "a lesson how to improve planning". The PRG supports this and recommends that Activity Lists should be made with more care!

Comments on the content:
1) The PRG appreciates the clarification about the role of the different partners in the compilation of the new ACZ, incl. the mapping. We really support joint actions.
2) The PRG understands that periods of different lengths were used, which were long enough. We welcome the remark that when the 30 years period data will be available the assessment could be repeated.
3) We support the concept that the numbers are given first for the "oblasts" (administrative regions), because local people are known to these and then afterwards to introduce ACZ step by step river basin approach and link this zonation with surface water bodies and agro zones.
4) The Act. 5.6 team actually did not address the issue that the Selyaninov's hydrothermal coefficient (HTC) is not a soil moisture indicator. They realize that soil characteristics and water table depth are important for water and soil resources management. However, another drought indicator than the HTC should be used to address these management issues.
5) The Act. 5.6 team said in their reply that it seems that Table 1.4 needs more elaboration according to the PRG(19 September). The team mentioned that the formulation needs to be discussed. This has not be done (nor in Budapest, nor by email). In the revised version of the Milestone 3 report the table has the correct number now (1.4 instead of the incorrect 1.2 in the previous version). However, Table 1.4 has no caption. The text seems not be revised.
6) The welcome the support of the PRG to use multiple drought indices.
7) The PRG cannot find in the text of the revised Milestone 3 report that the reader is reminded that SPI does not account for thermal stress, which is also relevant for agriculture crops. The Act. 5.6 team replies that the SPEI cannot be calculated for the Ukraine because of lacking data. Moldova will try, but probably also data will be lacking.
8) It is repeated in the reply that " the SPI is an efficient tool for early warning on droughts in

	cold seasons, ...". They say that it is real issue, but no explanation is given. 9) The Act. 5.6 team admits that it still is a challenge with the good list of options to set a framework for Drought Management Planning. 10. As a reply to the PRG encouragement to directly link up with local stakeholders and the concern if the environment receives sufficient attention, the team responded that In Ukraine a workshop will be organized for stakeholders, including farmers. In Moldova, rural authorities showed great environmental concern during the. consultation meetings. Environmental management could be an option for drought management. They hope that the GWP could contribute to further development of adaptation measures (wetlands, moisture conservation etc.) for the stakeholders 11. It seems that in the context of Act. 5.6 four workshops / consultation meetings have been held in Moldova (northern, Ciulucani communiity, Telenasti region; central, Loganesti community, Hincesti region; southern, Cahul town, Cahul region, and Dubasari, Transnistria region, http://www.gwp.org/en/GWP-CEE/IDMPCEE/Demonstration-projects/Upgrading-agricultural-drought-monitoring/ (right side). In Ukraine a seminar on "Drought Management — Practical Aspects for Farm Enterprisers" was held in Poltava on 18 October 2014. Furthermore a publication for farmers on agroclimatic zoning in Ukraine was compiled (Агрокліматичне зонування території України з врахованням зміни, клімату. Т. І. Адаменко). The Act. 5.6 promises that relevant studies will be performed in the next stage of the project and missing workshops are also planned for the later phase of the project.
Detailed comments	The Act. 5.1 team has promised to include most of the changes suggested by the PRG. However, it hard to monitor / assess how these are implemented. It seems that not all promised changes have been implemented. Additionally, few things are left: - The term "relative soil aridity" is incorrect and has to be replaced in most places into "climate aridity" - "effective precipitation" has been defined as is >5.1 mm/d. You should mention that somewhere in the text. - "soil humidity" is incorrect, as the Act. 5.6 team confirms. It should "climate humidity". However, on several places locations in the assessment the term "soil humidity" still appears. - The team agrees that the SPI can be -2 rather than -1.5 (serious drought), but it is according to Standardised Precipitation Index: User Manual (WMO - # 1090, 2012) (Rus.). - It is a pity that colours in maps (Fig. 6 and 7) and legend do not correspond. Act. 5.6 team lacks the technological knowledge to make the colours consistent.

Annex 8B Act. 5.6 Upgrading agricultural drought monitoring and forecasting: the case of Ukraine and Moldova; reply Act. Team, 30 September

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Reply to comments; Act. 5.6, Milestone 3 Report

General observations

Comment on Self-Study Overview:

- *The identification of the links with other IDMP CEE activities (item 2.5) is still rather weak. It should be made clear how a revised agro-climatic zonation and EU accepted drought indicators' in the Dniester river basin (UA and MD) fit in the framework of a Drought Management Plan, which is relevant for the IDMP CEE project. In general the link with the agricultural drought monitoring and forecasting (this activity, Act.5.6) and the ongoing work in WP2 (e.g. Act 2.1 Guidelines for DMP) should be made stronger. PRG hope that this will happen when finalizing towards the end of the IDMP CEE project (e.g. Output 4).*

The new agro-climatic zonation (ACZ) is developed with taking into the account actual climate change trends and EU drought indicators. New ACZs provide the basis for planning in agro and water sectors and provides a basis for Drought management plan as a part of the RBMP, particularly for the Dniester river Basin. New ACZ for Ukraine territory can be used for the main rivers basins management plans development. Implementation of RBMP is actual after the ratification by Ukraine and EU the EU-UA Association Agreement on 16 September 2014. Taking into account that agro sector is a key economy in the Dniester RB and in Ukraine economy.

- *Act. 5.6 has postponed the joint workshop on agro-climatic zoning from spring to autumn 2014 (originally Step 5 in the Activity List „Workshop for decision makers to present the new climate zoning concept").*

Yes, the workshop in Ukraine was postponed due to the critical political situation at the beginning of the year and due to war started in May 2014 in the eastern part of Ukraine. For now this workshop for the stakeholders, famers are planned on October 10, 2014 in Poltava to present the new ACZ and the recommendations for adaptation measures to drought management. Presentation of new ACZ for policy-makers is planned in December together with NCD-consultations (act. 2.2) on IDM.

- *UA lacks the appropriate GIS software (they still made the maps in the conventional way , e.g. Figs. 1, 2, 3) of the Milestone 3 report and resources to do all SPI calculations (item 2.6). We wonder, if this could not have foreseen before project started, or is this due to recent unforeseen circumstances.*

Unfortunately lack of GIS software and adequate hardware was problem at the beginning but, since October 2012 this situation did not improved. Furthermore, the situation is even worse due to the reorientation of the economy and the budget for military purposes in Ukraine.

- *MD made the GIS maps for the whole Dniester river basin (not shown yet).*

You can find maps in Annex 3_ Agroclimatic zonation Moldova

- *Activity Leads identify need of improvement of coordination between MD and UA. We advice the Programme Manager to help improve the coordination (item 2.6).*

Yes, we agree that UA MD have to improve coordination and we have planned to organize the joint workshop/training and coordination meeting during summer-autumn time, but still have not set the data of joint event due to recent unforeseen circumstances in Ukraine.

- *Earlier, the PRG has accepted to restrict the study to two main crops (i.e. winter wheat and spring barley) and not to work on a new, not identified crop (email to Project Manager, 29 April 2014).*

Yes, we confirm that the next step will be on upgrading the harvest looses forecast models for 2 crops.

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Comment on structure of Activity 5.6:

- *The Self Study Overview describes that Milestone Report 3 contains Steps 3 and 6. It seems that these belong to Output 1 and Output 2 In summary; it is still hard to understand the structure.*

Yes. Steps 3 and 6 are contribution to Output 1 and Output 2. Some problems with structure are related to the planning stage, what can be a lesson how to improve planning.

Comments on the content:

- *Title of the Milestone report (Annex to Self Study Overview) suggests that outcome for the Dniester Basis in explicitly is included. The Milestone report deals with the whole Ukraine territory and not specifically with outcome for the basin. For Moldova it is only mentioned that data have been processed (last paragraph in Conclusions).*

Ukraine provided the report about step done for the new ACZ for Ukraine. Ukraine provided the input data for GIS mapping for the new ACZ for Dniester RB. Results of GIS mapping of the new ACZ for Dniester RB were made by Moldavian colleagues as a joint product.

- *2) Fine that more recent meteorological data (1991-2013) have been used that consider possible changes in climate (intercomparison current climate, 1991-2013 vs. standard period, 1961-1990), although it would have been better to use periods of the same length (to address climate variability).*

We agree, for now we accumulated the data only for this observation period, which is long enough, when the 30 years period data will be available the assessment could be repeated.

- *3) Fine, and important to subdivide the year in seasons, i.e. cold season (November-March), in spring-summer season (April-August) and autumn (September-October). It shows that Ukraine has become slightly wetter (average precipitation increased from 590 to 601 mm/yr), but that the cold seasons and the spring-summer received less precipitation, which is very relevant for agriculture. There is also variability among agro-climatic zones (Tables 1.1 and 1.2). In fact in Tables 1.1 and 1.2 the data are given for "oblasts" only (administrative regions) and not for the three agro-climatic zones (Steppe, Forest-steppe, Marshy).*

Detailed results/information for administrative regions (oblasts) provides the possibility for future aggregation of the data for agro-climatic zones and for main river basins. From the other hand, previous ACZ was based on the oblast units and now in the transition time it is rational to use oblasts as administrative units and introduce step by step river basin approach and link this zonation with surface water bodies and agro zones.

- *4) It is not correct to call the Selyaninov's hydrothermal coefficient (HTC) an indicator of soil moisture sufficiency. It is a meteorological indicator, because it only addresses precipitation and temperature on days with temperature > 10oC. Of course, it is important for agriculture crops, but soil characteristics and water table depths need to be considered as well for a soil moisture indicator.*

Yes, we agree that we need to consider the soil characteristics and water table depth, when we will focus more on water and soil resources management. Ukraine collects these data and such analysis can be continued.

- *5) Severe crop yield reductions have occurred in 2003 and 2007. However, data are not mentioned in the report. Instead data are provided in Table 1.2 (incorrect number, see below under detailed comments). It is impossible to link these data of 1993, 2008, 2013 and 2011 to what happened in 2003 and 2007. This needs more elaboration.*

It seems that the table needs more clear explanation. Need to discuss the formulation.

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- *6) PRG really supports use of several drought indicators and common ones, like the SPI, as now done by the Ukraine Hydromet Office. It is also in the draft Guidance for Drought Management Plans (Act. 2.1).*

Support

- *7) Good to remind the reader that SPI does not account for thermal stress, which is also relevant for agriculture crops. It would have been good if IDMP-CEE should also have adopted the Standardised Precipitation and Evaporation Index (SPEI) (Vicente-Serrano et al., 2010).*

Unfortunately Ukraine has no sufficient data for calculation of the Standardised Precipitation and Evaporation Index (SPEI). MD will try to calculate it, but data also seem to be insufficient.

- *8) You conclude that "SPI is an efficient tool for early warning on droughts in cold seasons,…", but it should be made clear that this is not a drought prediction tool. Relevance for cold season could be an important finding, but needs elaboration. You cannot derive that from Fig. 7 only. It is also mentioned in the Self Study Overview (2nd page) where you say in the "Moldavian part of the basin was performed and showed better applicability of the SPI for drought assessment in Moldova. Performed comparison also included last data obtained by GWP Moldova experts in regard to use extreme temperatures in order to estimate wintering conditions for certain crops, especially multiannual plantations."*

What is written in the report seems to be the real issue at least for now.

- *9) Good list of options that could be used by the Ministry of Agricultural Policy and the Agency of Water Resources (in Conclusions). How does this link to Drought Management Planning (structural measures?).*

In Ukraine and Moldova we are at the very beginning of introduction/implementation of RBM planning and it is still a challenge to set the framework for the drought management planning too.

- *10) PRG encourages the direct contact with local stakeholders (Annex 2, Self Study Overview) to make them familiar with drought management, to learn about their expectations, and to share experiences on soil moisture conservation (e.g. reducing soil erosion). We wonder if reframing agriculture sufficiently will consider environmental needs (e.g. wetland restoration). Clearly, the agricultural sector is represented, but is the environmental sector adequately represented in the consultations?*

In Ukraine the workshop for stakeholders, including farmers is planning for October. Consultation meetings in Moldova showed great concerns of rural authorities in regard to environmental management as an option for the drought management. I believe that on this stage environment is rather adequate represented in conclusions and further with implementation of the provisions of the. EU-Moldova Association agreement environmental issues will become even more important and GWP could contribute to further development of adaptation measures (wetlands, moisture conservation etc.)

- *11) PRG read the Report from the workshop, village Ciulucani, district Telenesti, Republic of Mlodva, 3 June 2014 (Annex 2, Self Study Overview). The Self Study Overview mentions 4 events (2nd page). Does it mean that three other events have been organized (Step 4). If so, is the outcome similar to the one that is reported in Annex 2?*

Moldova sent complete report from four workshops with farmers to PM latter on. You can find report with photos here: http://www.gwp.org/en/GWP-CEE/IDMPCEE/Demonstration-projects/Upgrading-agricultural-drought-monitoring/ (right side) or in Annex 3 (updated).

- *We look forward to the next activities; (i) Workshop for decision makers to present the new climate-zoning concept (Step 5), (ii)) Research of the precipitation harvesting and practices for moisture*

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conservation in 2 areas in Dniester river basin, Good practices development (MD) (Step 7), (iii) Upgrading of the existing models for forecasting of harvest (winter wheat and spring barley) (Step 8), and (iv) Workshop for stakeholders , decision makers on droughts management/ planning (Step 9). These will be Outputs 3, 4 and 5...

Relevant studies will be performed on the next stage of the project development and missing workshops are also presumed for the later phase of the project.

Detailed comments

1. Section 1.2 (1st page): "relative soil aridity" is incorrect. It is "relative climate aridity".
Changed

2. Section 1.2 (1st page): add caption / title above Table (it is Table 1.3).
Changed

3. Section 1.2 (3rd page): how do you define "effective precipitation"?
More 5 mm /day

4. Section 1.2 (4th page): add caption / title above Table (it is Table 1.4).
Changed

5. Section 1.3 (1st page): "soil humidity" is incorrect. It is "climate humidity".
Changed

6. Section 1.3 (2nd page): Reference to "expert assessments" is missing.
There is in the reference list №7.

7. Chapter 2 is missing. Renumber Chapter 3.
Chapter 2 exists, there was a mistake in sub-numeration in the chapter 2, what was changed (now there are sub-devisions:2.1,2.2,2.3, 2.4.)

8. Chapter 3 (1st page): Reference to classification of SPI is missing (who calls SPI < -1.5 a serious drought?).
We agree, this can be -2 , but it is according to Standardised Precipitation Index: User Manual (WMO - # 1090, 2012) (Rus.)

9. Colours in maps (Fig. 6 and 7) and legend do not correspond.
It is made by computer; we are not able to check the colours.

10. Chapter 3 (2nd page): "SPI, HTC, other indicators" is vague. Please specify which ones.
2 more indexes added with the reference #8

11. Chapter 3 (2nd page): we are not sure how you would like to link SPI-3 (Fig. 10) to the remark that for Ukraine accumulation periods from 1 to 24 months are relevant. This might be correct, but you cannot conclude this from the figure.
Agree

12. In report different periods are used (e.g. Dec-May, Fig. 7). It would be good to stick to the 3 seasons that have been introduced in the beginning (cold, spring-summer, autumn).
It is specified for Ukraine.

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13. It is strange to have the following paragraph at the end of the Conclusions "In the course of mapping the agroclimate zoning of the Dniester basin, jointly with Moldavian project participants, we processed and provided hydrometeorological information for the period from 1980 to 2013, including ...". This is an activity, which is important, but there is no outcome presented in the report and hence you do not expect this in the Conclusions.
Outcome presented in maps.

14. Self Study Overview (1st page): what does "aggregate active temperatures" mean?
The average multiannual temperatures higher dedicated limit, in our case >10°.

15. Self Study Overview (2nd page): Moldova; period May-August, why not April-August, like the seasons in Ukraine (Milestone 3)?
It is hard to compare. Correct is April-August

16. Self Study Overview (2nd page): Seleaninov index is this identical to the Selyaninov's hydrothermal coefficient (HTC) (Milestone report 3). If so, then use the same term.
It is by mistake, correct is Selyaninov's Index.

17. Is Dnester basin and Dniester basin are the same (watch spelling).
They are the same.

Attachments:

Annex 1_Act. 5.6_Milestone 3_updated
Annex 2_Consultation meeting with stakeholders in MD (updated)
Annex 3_Agroclimatic zonation Dnester_MD (new)

Annex 8C Act. 5.6 Upgrading agricultural drought monitoring and forecasting: the case of Ukraine and Moldova

Assessment Peer Review Group (PRG)	19 September 2014
Status	**FINAL**
Activity	**Act. 5.6 Upgrading agricultural drought monitoring and forecasting: the case of Ukraine and Moldova**
	- Milestone 3 report on "Review climate-zoning and mapping of drought risk areas in Ukraine and Dniester river basin (Step 3 in the Activity List), included as Chapter 3 under title "Comparison of indices (HTC and SPI)"; the text for Step 6 of the Activity List "Collection/Analyses/Comparing the Soviet and EU drought indices" (see page 2 of this report). - Report from the workshop, village Ciulucani, district Telenesti, Republic of Molodva, 3 June 2014 (in the Activity List shown as Step 4 "Workshop for the farmers" . These documents are annexes t o the Self Study Overview of Act. 5.6, which follows the template that has been introduced after the Ljubljane meeting.
Activity lead	Ms. Tatiana Adamenko (UA) Dr. Ecaterina Kuharuk (MD)
Nature	Ukraine is one of the main producers of grain on the world market. Annual crop losses due to bad weather conditions in Ukraine, mostly droughts, are in the range of hundreds of million Euros. Upgrading agricultural drought monitoring and forecasting in the Ukraine and adjacent Moldova is a necessity, which should consider climate zonation and drought risk areas in Ukraine and the shared Moldova-Ukraine Dniester River Basin. The existing agro-climatic zonation is based on the meteorological observations from the period 1956-1985, which cannot be assumed to be representative for current conditions. Additionally, trends in changes of soil water holding capacities as a function of erosion, that is driven by agricultural crop patterns and slope inclinations are studied. The Activity List also foresees in development of forecasting models for identification of crop yield losses caused by droughts. Possible mitigation measures for the agricultural sector to adapt to negative drought effects are studied. Another important project purpose is raising drought-related awareness of stakeholders and policy makers in water management and agriculture areas.
Received	31 July 2014
General observations	**Accepted, with major revision** **Comment on Self-Study Overview:** PRG appreciates that for the Act. 5.6 thetemplate (i.e. Self-Study Overview) has been used that was introduced at the Ljubljana meeting.The actual milestone report (and workshop report) are attachments to the Self-Study Overview, which is clear and fine. The identification of the links with other IDMP CEE activities (item 2.5) is still rather weak. It should be made clear how a revised agro-climatic zonation and EU accepted drought indicatores in the Dniester river basin (UA and MD) fit in the framework of a Drought Management Plan, which is relevant for the IDMP CEE project. In general the link with the agricultural drought monitoring and forecasting (this activity, Act.5.6) and the ongoing work in WP2 (e.g. Act 2.1 Guidelines for DMP) should be made stronger. PRG hope that this will happen when finalizing towards the end of the IDMP CEE project (e.g. Output 4). PRG also is surprised that Self Study Overview is treated as a research report that provides information that is supposed to be in a Milestone report. The work that the Moldova partner has

	been done is in the Self Study Overview (e.g. the agro-climatic zonation in the Moldova part of the Dniester Basin, consultation meetings). Act. 5.6 has postponed the joint workshop on agro-climatic zoning from spring to autumn 2014 (originally Step 5 in the Activity List „Workshop for decision makers to present the new climate-zoning concept"). UA lacks the appropriate GIS software (they still made the maps in the conventional way , e.g. Figs. 1, 2, 3) of the Milestone 3 report and resources to do all SPI calculations (item 2.6). We wonder, if this could not have foreseen before project started, or is this due to recent unforeseen circumstances. MD made the GIS maps for the whole Dniester river basin (not shown yet). Activity Leads identify need of improvement of coordination between MD and UA. We advice the Programme Manager to help improve the coordination (item 2.6). Earlier, the PRG has accepted to restrict the study to two main crops (i.e. winter wheat and spring barley) and not to work on a new, not identified crop (email to Project Manager, 29 April 2014). **Comments on structure of Activity 5.6** In the previous reporting period (see PRG report 26 March 2014) the following work was concluded: - Milestone 1 (Step 1) "Data Collection and Analysis. Identification of the Climate Change trends (evidences) based on observation data (136 stations of UKR HydroMet and 7 stations in Moldova HydroMet network) - Milestone 2 (Step 2) "Analyses of the trends on water holding capacities of soils under climate change based on long term (1961-2010 period) observations at meteorological stations of Ukraine and Moldova". The PRG mentioned in their report that it is hard to understand the structure of Act. 5.6 (i.e. Outputs and Steps in the Activity List are not linked to Milestones). In the reporting Milestones are introduced, which are not equal to Outputs. For instance, the Milstone Report 3 (current one) is not equal to Output 3 „Upgrading of forecasting models for identification of crop yield losses caused by droughts (2 crops) – Ukraine (see Activity List). The Self Study Overview describes that Milestone Report 3 contains Steps 3 and 6. It seems that these belong to Output 1 and Output 2 In summary, it is still hard to understand the structure. **Comments on the content:** 10) Title of the Milestone report (Annex to Self Study Overview) suggests that outcome for the Dniester Basis in explicitly is included. The Milestone report deals with the whole Ukraine territory and not specifically with outcome for the basin. For Molodova it is only mentioned that data have been processed (last paragraph in Conclusions). 11) Fine that more recent meteorological data (1991-2013) have been used that consider possible changes in climate (intercomparison current climate, 1991-2013 vs. standard period, 1961-1990), although it would have been better to use periods of the same length (to address climate variability). 12) Fine, and important to subdivide the year in seasons, i.e. cold season (November-March), in spring-summer season (April-August) and autumn (September-October). It shows that Ukraine has become slightly wetter (average precipitation increased from 590 to 601 mm/yr), but that the cold seasons and the spring-summer received less precipitation, which is very relevant for agriculture. There is also variability among agro-climatic zones (Tables 1.1 and 1.2). In fact in Tables 1.1 and 1.2 the data are given for "oblasts" only (administrative regions) and not for the three agro-climatic

	zones (Steppe, Forest-steppe, Marshy). 13) It is not correct to call the Selyaninov's hydrothermal coefficient (HTC) an indicator of soil moisture sufficiency. It is a meteorological indicator, because it only addresses precipitation and temperature on days with temperature > 10°C. Of course, it is important for agriculture crops, but soil characteristics and water table depths need to be considered as well for a soil moisture indicator. 14) Severe crop yield reductions have occurred in 2003 and 2007. However, data are not mentioned in the report. Instead data are provided in Table 1.2 (incorrect number, see below under detailed comments). It is impossible to link these data of 1993, 2008, 2013 and 2011 to what happened in 2003 and 2007. This needs more elaboration. 15) PRG really supports use of several drought indicators and common ones, like the SPI, as now done by the Ukraine Hydromet Office. It is also in the draft Guidance for Drought Management Plans (Act. 2.1). 16) Good to remind the reader that SPI does not account for thermal stress, which is also relevant for agriculture crops. It would have been good if IDMP-CEE should also have adopted the Standardised Precipitation and Evaporation Index (SPEI) (Vicente-Serrano et al., 2010). 17) You conclude that "SPI is an efficient tool for early warning on droughts in cold seasons, ...", but it should be made clear that this is not a drought prediction tool. Relevance for cold season could be an important finding, but needs elaboration. You cannot derived that from Fig. 7 only. It is also mentioned in the Self Study Overview (2nd page) where you say in the "Moldavian part of the basin was performed and showed better applicability of the SPI for drought assessment in Moldova. Performed comparison also included last data obtained by GWP Moldova experts in regard to use extreme temperatures in order to estimate wintering conditions for certain crops, especially multiannual plantations.". 18) Good list of options that could be used by the Ministry of Agricultural Policy and the Agency of Water Resources (in Conclusions). How does this link to Drought Management Planning (structural measures?). 12. PRG encourages the direct contact with local stakeholders (Annex 2, Self Study Overview) to make them familiar with drought management, to learn about their expectations, and to share experiences on soil moisture conservation (e.g. reducing soil erosion). We wonder if reframing agriculture sufficiently will consider environmental needs (e.g. wetland restoration). Clearly, the agricultural sector is represented, but is the environmental sector adequately represented in the consultations? 13. PRG read the Report from the workshop, village Ciulucani, district Telenesti, Republic of Molodva, 3 June 2014 (Annex 2, Self Study Overview). The Self Study Overview mentions 4 events (2nd page). Does it mean that three other events have been organized (Step 4). If so, is the outcome similar to the one that is reported in Annex 2? We look forward to the next activities; (i) Workshop for decision makers to present the new climate-zoning concept (Step 5), (ii)) Research of the precipitation harvesting and practices for moisture conservation in 2 areas in Dniester river basin, Good practices development (MD) (Step 7), (iii) Upgrading of the existing models for forecasting of harvest (winter wheat and spring barley) (Step 8), and (iv) Workshop for stakeholders , decision makers on droughts management/ planning (Step 9). These will be Outputs 3, 4 and 5.
Detailed	2. Section 1.2 (1st page): "relative soil aridity" is incorrect. It is "relative climate aridity".

comments	3. Section 1.2 (1st page): add caption / title above Table (it is Table 1.3). 4. Section 1.2 (3rd page): how do you define "effective precipitation"? 5. Section 1.2 (4th page): add caption / title above Table (it is Table 1.4). 6. Section 1.3 (1st page): "soil humidity" is incorrect. It is "climate humidity". 7. Section 1.3 (2nd page): Reference to "expert assessments" is missing. 8. Chapter 2 is missing. Renumber Chapter 3. 9. Chapter 3 (1st page): Reference to classification of SPI is missing (who calls SPI < -1.5 a serious drought?). 10. Colours in maps (Fig. 6 and 7) and legend do not correspond. 11. Chapter 3 (2nd page): "SPI, HTC, other indicators" is vague. Please specify which ones. 12. Chapter 3 (2nd page): we are not sure how you would like to link SPI-3 (Fig. 10) to the remark that for Ukraine accumulation periods from 1 to 24 months are relevant. This might be correct, but you cannot conclude this from the figure. 13. In report different periods are used (e.g. Dec-May, Fig. 7). It would be good to stick to the 3 seasons that have been introduced in the beginning (cold, spring-summer, autumn). 14. It is strange to have the following paragraph at the end of the Conclusions "In the course of mapping the agroclimate zoning of the Dniester basin, jointly with Moldavian project participants, we processed and provided hydrometeorological information for the period from 1980 to 2013, including ...". This is an activity, which is important, but there is no outcome presented in the report and hence you do not expect this in the Conclusions. 15. Self Study Overview (1st page): what does "aggregate active temperatures" mean? 16. Self Study Overview (2nd page): Moldova; period May-August, why not April-August, like the seasons in Ukraine (Milestone 3)? Hard to compare. 17. Self Study Overview (2nd page): Seleaninov index is this identical to the Selyaninov's hydrothermal coefficient (HTC) (Milestone report 3). If so, then use the same term. 18. Is Dnester basin and Dniester basin are the same (watch spelling).

Annex 9A Act. 7.1 Development of the Compendium of Good Practices

Reply to PRG comments (Activity 7.1)

General observations

- PRG appreciates that for the milestone report the template has been used that was introduced at the Ljubljana meeting. The identification of the links with other IDMP CEE activities (item 2.5) is still weak. It should be made clear why a compendium on good practices of Drought Management Plans is relevant for the IDMP CEE project.

We are realizing that we haven't showed a clear connection between Compendium and other IDMP CEE activities. This we will be done in the next report because we are still waiting a feed-back from other activities (in progress) and also we are looking forward to Third Integrated Drought Management (IDMP CEE) workshop which will be in October 2014. There we will represent the importance about that issue and connection.
 The Act.7.1 Lead anticipates some problems (item 2.6) of late delivery of outcome of other IDMP CEE activities, which then cannot be incorporated in the final Act. 7.1 publication. We believe that the Programme Managers should carefully monitor progress to enable output from other activities to be used in Act. 7.1.

Also that problem/issue we will represent at October workshop and we will explain an importance about getting results from activity leaders and coworkers in time for include them in the Compendium.

- In general the link with the Compendium of Good Practice for DMPs (Act. 7.1) and the ongoing work in WP2 (e.g. Act 2.1 Guidelines for DMP) should be made stronger. PRG suggest that this will happen towards the end of the IDMP CEE project (e.g. Chapter 2).

We are looking forward to talk with Elena Fatulova at Budapest Workshop to find a stronger connection and then we will include ideas/results to our Compendium.

- Desertification can be caused by drought, but should be clearly distinguished (Preface; Greek National Action Plan for Combating Desertification; Italy - National Action Programme to combat drought and desertification; Portugal - National Action Programme to combat desertification; Turkey's National Action Program on Combating Desertification; Spain – Programa de Accion Nacional Contra la Desertification; National Action Programme to combat Desertification in Armenia; Georgia - National Action Programme to Combat Desertification; Moldova - National Action Plan to Combat Desertification; Romania – National Strategy and Action Programme Concerning Desertification, Land Degradation and Drought prevent and Control). In some of these sections the term drought does not occur. Desertification has man-made roots and has a long-term (decadal) time scale, whereas drought has natural causes and is on a mid-term time scale (months, seasons, years). It should be made clear how documents primarily or completely dealing with desertification can be used for DMP development.

We will discuss about that at Budapest workshop and then we will represent more clearly drought/desertification concept in our Compendium.

- 2) The draft National Plan for Slovenia and in particular for the United Kingdom (actually only East Anglia)- Drought Plan only focus on drought. These might be good examples.

- 3) The Drought Management Center for South-Eastern Europe (DMCSEE) DMCSEE puts emphasis on improving drought monitoring and tries to coordinate development of monitoring with risk management for improving drought preparedness and reducing impacts. DMCSEE efforts are being internationally recognized, although it is still a major step from the monitoring to drought management. **Please add interest of the Global Drought Information System (GDIS)!!!**

Our Activity leader will be present at the conference about GDIS (**An International Global Drought Information System Workshop: Next Steps; December 2014, CA**) and after that meeting we will have a good information about interest of GDIS which will be included in the Compendium.
 4) PRG has not checked the URLs for the CEE countries Review of Central and Eastern countries – desertification and drought documents (large Table, Chapter 2). In most countries the term drought is explicitly mentioned in the heading (Bosnia and Herzegovina; Bulgaria; Croatia; Macedonia; Hungary; Moldova; Romania; Slovenia; Montenegro; Serbia). This is encouraging to obtain information on DMP.

- 5) The Jucar Basin (Spain) has a well-developed DMP. This is part of a wider integrated water management plan. The river basin has been often used in EU projects as a test basin / case study.

Detailed comments

1. The section on the draft National Drought Plan for Slovenia has figures (flow charts) in the Slovenian language (Figures A, B and C). The PRG trust that these will be translated if included in the final publication.

We will of course translate these figures.

2. The East Anglian Drought Plan (Section 1.3) is final now (2014 Plan).

Thank You for your observation. We will analyze 2014 Drought Plan and we will include newest information to the Compendium.

Thank you for your useful comments and observations/ideas. We think that your cooperation will improve our final output – Compendium a lot.

Sincerely,
Tanja Tajnik, PhD

Annex 9B Act. 7.1 Development of the Compendium of Good Practices

Assessment Peer Review Group (PRG)	4 September 2014
Status	**FINAL**
Activity	**Act. 7.1 Development of the Compendium of Good Practices**
	Milestone 2 Report Analyse the current status of the existing Drought Management plans across the Europe and other existing drought policy and management documents by Gregor Gregorič & Tanja Tajnik
Activity lead	Gregor Gregorič (SLO)
Nature	The Compendium of Good Practices includes a review of drought management projects implemented in European countries (not limited to participating countries). Existing documents on drought management across Europe are explored. These countries are Greece, Italy, Portugal, Spain and others. Other existing drought policy and management documents besides DMPs of SE countries (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Hungary, Montenegro, Moldova, Romania, Greece, Turkey and Slovenia) are analysed. Focal points of DMCSSE and IDMP Activity Leads are interviewed about drought policy and management in their countries/regions/organisation. Cooperation with European Drought Centre, European Drought Observatory, DMCSSE, UNECE and other relevant institutions is searched. Final publication is envisaged as mix of existing information and accomplishments of IDMP CEE. Mainly success stories from WP2 and WP5 are described in the publication.
Received	31 July 2014
General observations	**Accepted, with minor revision** **Comment:** PRG appreciates that for the milestone report the template has been used that was introduced at the Ljubljana meeting. The identification of the links with other IDMP CEE activities (item 2.5) is still weak. It should be made clear why a compendium on good practices of Drought Management Plans is relevant for the IDMP CEE project. The Act. 7.1 Lead anticipates someproblems (item 2.6) of late delivery of outcome of other IDMP CEE activities, which then cannot be incorporated in the final Act. 7.1 publication. We believe that the Programme Managers should carefully monitor progress to enable output from other activities to be used in Act. 7.1. In general the link with the Compendium of Good Practice for DMPs Act. 7.1) and the ongoing work in WP2 (e.g. Act 2.1 Guidelines for DMP) should be made stronger. PRG suggest that this will happen towards the end of the IDMP CEE project (e.g. Chapter 2). 1. Desertification can be caused by drought, but should be clearly distinguished (Preface; Greek National Action Plan for Combating Desertification; Italy - National Action Programme to combat drought and desertification; Portugal - National Action Programme to combat desertification; Turkey's National Action Program on Combating Desertification; Spain – Programa de Accion Nacional Contra la Desertification; National Action Programme to combat Desertification in Armenia; Georgia - National Action Programme to Combat Desertification; Moldova - National Action Plan to Combat Desertification; Romania – National Strategy and Action Programme Concerning Desertification, Land Degradation and Drought prevent and Control). In some of these sections the term drought does not occur.

	Desertification has man-made roots and has a long-term (decadal) time scale, whereas drought has natural causes and is on a mid-term time scale (months, seasons, years). It should be made clear how documents primarily or completely dealing with desertification can be used for DMP development. 2. The draft National Plan for Slovenia and in particular for the United Kingdom (actually only East Anglia)- Drought Plan only focus on drought. These might be good examples. 3. The Drought Management Center for South-Eastern Europe (DMCSEE) DMCSEE puts emphasis on improving drought monitoring and tries to coordinate development of monitoring with risk management for improving drought preparedness and reducing impacts. DMCSEE efforts are being internationally recognized, although it is still a major step from the monitoring to drought management. Please add interest of the Global Drought Information System (GDIS). 4. PRG has not checked the URLs for the CEE countries Review of Central and Eastern countries – desertification and drought documents (large Table, Chapter 2). In most countries the term drought is explicitly mentioned in the heading (Bosnia and Herzegovina; Bulgaria; Croatia; Macedonia; Hungary; Moldova; Romania; Slovenia; Montenegro; Serbia). This is encouraging to obtain information on DMP. 5. The Jucar Basin (Spain) has a well-developed DMP. This is part of a wider integrated water management plan. The river basin has been often used in EU projects as a test basin / case study.
Detailed comments	1. The section on the draft National Drought Plan for Slovenia has figures (flow charts) in the Slovenian language (Figures A, B and C). The PRG trust that these will be translated if included in the final publication. 2. The East Anglian Drought Plan (Section 1.3) is final now (2014 Plan).