Integrated Drought Management in Central and Eastern Europe
ACTIVITY LIST

1. BASIC INFORMATION

Number of Activity:	**5.6**
Title of the activity:	Upgrading agricultural drought monitoring and forecasting: the case of Ukraine and Moldova
Duration of the activity:	**June 2013 – June 2015**
Activity leader:	*Tatiana Adamenko- Ukraine* *Dr. Ecaterina Kuharuk – Moldova*
Chairman of the CWPs:	*Anna Tsvietkova – CWP-UA* *Dumitru Drumea (CWP MD)*

Description of the activity:

A review (upgrading) of the climate zones of Ukraine territory and joint Moldova-Ukraine Dniester river basin will be done based on analysis of Climate Change trends with focus on agricultural droughts and water holding capacities of typical types of soils. In case of Ukraine it will be done based on analysis of long-term uninterrupted monitoring data of 190 hydromet stations. In case of Dniester river basin the Ukrainian part will be made as a part of the Ukraine climate zoning upgrading and the Moldavian part will be made based on the selection of the case-study areas in the Moldavian part of the Dniester river basin (2 case-studies according to the zonation in the EU WFD) with detailed description of the soil moisture content in agricultural lands and reference areas (Output 1).

Authorities and stakeholders' awareness on upgraded climate zones, main climate change trends and links to agricultural sector, map on risky zone for agrosector will be raised at 2 national workshops as a basis for drought management planning and for Dniester river basin management plan. New climate zoning infomaterials will be published in Moldavian, Ukrainian and English and disseminate at the thematic events in the countries (Output 5).

Trends in moisture holding capacities of soils and in soil conservation in function of erosion, agricultural crops, slope inclination etc will be defined/research and used for mapping the results (Output 2) and development of a number of measures for water holding soil capacity conservation as well as for soil conservation, including passive soil conservation by optimization of actual practices for soil conservation.

Moldavian institution will conduct research on the lands of the Institute of Soil Conservation and use statistical data accumulated in the country. On the base of that a map on soil moisture in function of erosion will be developed (Output 3b).

Ukrainian partner will contribute by analysis of long-term data on water holding capacities for main types of soils in Ukraine and development of the monitoring system on agricultural droughts by introduction of EU indexes and approaches to droughts assessment.

Ukrainian partner will update and develop forecast models of assessment of the possible crop yield losses due to droughts for 2 main crops (winter wheat and spring barley)(Output 3a).

The workshops for authorities and farmer community (in Ukraine and Dniester river basin) on adaptation measures for droughts management in agrosector, including moisture conservation will be organized based on recommendations and guidance which will be prepared on this issue by Ukrainian and Moldavian experts.(Output 4 and 5)

The Ukrainian and Moldavian good practices on agricultural drought management will be developed. The best agricultural drought management practices will be used to increase awareness of main stakeholders' at national and local levels. (Output 5)

2. CONTRIBUTING ORGANIZATIONS / EXPERTS

Country	Organization	Contact
Moldova	Soil Research Institute GWP-Moldova	Ecaterina Kuharuk ecstrategii@yahoo.com Dumitru Drumea ddrumea559@gmail.com
Ukraine	HydroMetCentr of UkraineCWP –Ukraine State Agency of Water Resources	Tatiana Adamenko adamenko@meteo.gov.ua Anna Tsvietkova atsvet@mama-86.org.ua Mikhail Khorev ohorona_vod@ukr.net

3. PLAN for IMPLEMENTATION of the activity

Name of the output 1	**Upgraded climate-zoning of Ukraine territory and Dniester River Basin territory (joint Moldova –Ukraine river basin) in the context of increased drought risk caused by climate change**
Type of the output (analysis, report, guideline, workshop, brochure, etc.):	*Report, long term monitoring and research data analysis, 4 pages brochures Moldavian and Ukrainian*
Form (website, CD, printed, database, audio-visual, computer software, etc.):	*Printed report with CD, database*
Purpose of the output:	*Upgrading of climate zoning of Ukraine territory and joint Moldova-Ukraine Dniester river basin*
Structure and description (contents, requirements for use, chapters, etc.)	*Revision of existed approach to climate zoning taking into account climate change and EU approaches towards drought risk management* *The Report on review of the agro-climatic zoning (ACZ)will content:* *- Background information about agro sector and droughts: Ukraine and Dniester river basin* *- Existing zoning of Ukraine and/or Moldova territories: basic approach, description of zones and actual agro-zoning maps* *-Trends in air temperatures and precipitations' distribution in space and time and others agro-drought characteristics in Ukraine and/or Dniester river basin* *-Upgrading climate zoning of project areas taking into account climate change and EU approach* *Annex: New maps of agro-climatic zones for the project areas* *New zoning for droughts adaptation for agro-sector and decision makers*

Name of the output 2	**Drought risk maps for agro sector of Ukraine and Dniester river basin – identification of drought prone areas**
Type of the output (analysis, report, guideline, workshop, brochure, etc.):	*Data analysis, maps*
Form (website, CD, printed, database, audio-visual, computer software, etc.):	*Computer software, printed*
Purpose of the output:	*Agricultural drought risk mapping as a basis for droughts management at country level and for the Dniester river basin management plan as a pilot area common for Moldova and Ukraine using the IDMP approach*
Structure and description (contents, requirements for use, chapters, etc.)	*Development of the basis for drought management In Ukraine will be done based on collection and analysis of long-term uninterrupted data on water holding capacities of different type of soils of 136 hydromet stations (from 190) located in agro-active territories.* *In Moldova this map will be done based on the research of 2 case areas in Dniester river basin and data, collected by 7 hydromet stations.* *Analysis will include:* *Introduction: background information and aim of mapping exercise.* *methodology* *Map of the drought prone areas for agro sector of Ukraine and Dniester river basin (communication will be established with activity leaders for activities 1.3, 5.4 and 5.5)*

Name of the output 3a	**Upgrading of forecasting models for identification of crop yield losses caused by droughts (2 crops) Ukraine**
Type of the output (analysis, report, guideline, workshop, brochure, etc.):	*Report on forecasting models*
Form (website, CD, printed, database, audio-visual, computer software, etc.):	*Printed report with CD and computer software*
Purpose of the output:	*Development of forecasting agricultural drought models and risk reduction for local agricultural producers*
Structure and description (contents, requirements for use, chapters, etc.)	*Development of forecast models and practices for better evaluation of droughts effects and development of drought adaptation measures* *To estimate yield losses of major crops (winter wheat and spring barley) caused by droughts a model of "automatic assessment of drought and dry winds in Ukraine and Moldova" is using in Ukraine. The model is based on calculations of different indices (Bova, Ped', Hydro-Thermic Index Selyaninov). This model allows to evaluate in % a possible yeild decreasing for 2 crops and to do it every 10 days. There is a need to upgrade existed model by taking into*

	account climatic trends and introduction of EU indexes, which used in EU countries and to expand the list of crops (such as maize or sunflower, which are now broadly cultivated in Ukraine and Moldova)

Name of the output 3b	**Development of proposals for the precipitation harvesting and practices for moisture conservation in agricultural lands - Moldova**
Type of the output (analysis, report, guideline, workshop, brochure, etc.):	*Output report, Analysis of best practices on moisture conservation and precipitation harvesting practices, guidance on moisture conservation*
Form (website, CD, printed, database, audio-visual, computer software, etc.):	*Printed report with CD, Data base, web-site with the best practices and case-studies,*
Purpose of the output:	*Raising awareness of local agricultural producers about best practices on moisture conservation*
Structure and description (contents, requirements for use, chapters, etc.)	*Development of practices for better drought adaptation measures development.*

Name of the output 4	**Remedial measures for the agro sector to mitigate negative effects of the drought (dissemination activities)**
Type of the output (analysis, report, guideline, workshop, brochure, etc.):	*Recommendations, workshop*
Form (website, CD, printed, database, audio-visual, computer software, etc.):	*CD, printed*
Purpose of the output:	*Farmers' awareness rising on crops-droughts management*
Structure and description (contents, requirements for use, chapters, etc.)	*Basis for improvement the droughts management at local level in agro sector*

Name of the output 5	**Policy makers and stakeholders awareness raising** on droughts management/planning **(dissemination activities)**
Type of the output (analysis, report, guideline, workshop, brochure, etc.):	Report in English and Ukrainian/Moldavian or Russian, Romanian *Workshop*
Form (website, CD, printed, database, audio-visual, computer software, etc.):	*CD, printed materials, website*
Purpose of the output:	*Decision makers awareness rising on agro-droughts management* *Good agro&drought management practices development and experience exchange at GWP CEE region and contribution to activity 7.1 IDMP*
Structure and description (contents, requirements for use, chapters, etc.)	*Basis for droughts management development at national level and drought management/ adaptation measures planning in Ukraine and Moldova* The report of Ukraine and Moldova agro case studies would contribute in IDMP good practices in the region (Dniester river basin as a model with extension of obtained experience in other regions)

Steps for implementation of the activity implementation of the activity	**Output**	**Till when?**	**Who is responsible?**	**Core budget, euro**		**In kind, euro**
				UA	**MD**	
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)	1 & 2	July-November 2013	Soil Research Institute, MD Ukrainian Hydro MetCentre	1500	1500	2000
2. Analysis of long term uninterrupted monitoring data on water holding in different soil layers of typical fields (UA), research of 2 case areas in Dniester river basin and data, collected by 7 hydromet stations	1&2	September - December 2013	Soil Research Institute,MD Ukrainian HydroMet Centre	1500	1500	2000

(MD). and development the recommendations for farmers						
3. Review climate-zoning and mapping of drought risk areas in Ukraine and Dniester river basin Publishing booklets	1, 2	April 2014	Soil Research Institute,MD Ukrainian HydroMet Centre CWP MD and UA	2000	2000	2000
4. Workshop for farmers	4	April 2014 (MD), September, October 2014 (UA)	GWP MD, Soil Research Institute, Institute of Ecology and Geography GWP-UA/ UkrHydroMet Centre	1000	1000	1000
5. Workshop for decision makers to present the new climate-zoning concept	5	January 2015	GWP MD in cooperation with partners State Agency WR UA/ GWP-UA/ Ukr HydroMetCentre	1000	1000	1000
6. Collection/Analyses /Comparing the soviet and EU drought indexes (indices)	1,2 +3a & 3b	Jan-May 2014	Soil Research Institute,MD Ukrainian Hydro Meteorological Centre	500	500	500
7.Research of the precipitation harvesting and practices for moisture conservation in 2 areas in Dniester river basin, Good practices development (MD)	3b	Till December 2014	Soil Research Institute of Moldova CWP MD		2500	500
8. Upgrading of the existing models, testing the updated models, analysis of the testing results, final models working out for forecast of harvest (winter wheat and spring barley) losses caused by droughts at level of administrative regions UA Agro-droughts; 1 Case study / good practice	3a	1st model till December 2014 2nd model till 15 March 2015	Ukrainian Hydro Meteorological Centre CWP UA	4500		1000

development						
9. Workshop for stakeholders , decision makers on droughts management/ planning	4 & 5	February/March 2015	GWP MD with partners involved in the project UA St Agency WR/ GWP-UA/ UkrHydroMetCentre	1000	1000	1000
Subtotal Total				**13000**	**11000**	**11000**
TOTAL				**24000**		**11000**