



***SEE Transnational cooperation programme
Jointly for our common future***

Action title:

Drought Management Centre for South East Europe

-DMCSEE-

2009-2012

FINAL NARRATIVE REPORT

***Republic Hydrometeorological Service of Serbia
RHMSS***

***University of Novi Sad, Faculty of Agriculture
UNSFA***

November 2012

FINAL NARRATIVE REPORT

1. Description

1.1. Name of beneficiary of grant contract:

Republic Hydrometeorological Service of Serbia (RHMSS)

1.2. Name and title of the Contact person:

Zoran Krajinović, Head of the International Programmes and Projects Department

1.3. Name of partners in the Action:

University of Novi Sad, Faculty of Agriculture (UNSFA) – Department of Water Management

1.4. Title of the Action:

Drought Management Centre for South East Europe (DMCSEE)

1.5. Contract number: 2009/223-251

1.6. Start date and end date of the Action: 11/26/2009 - 09/25/2012

1.7. Target country(ies) or region(s): Serbia, SEE Region

1.8. Final beneficiaries &/or or target groups (if different) (including numbers of women and men):

The overall DMCSEE project objective was reducing negative drought impacts by improving drought monitoring, preparedness and risk assessment. Since drought seriously affects economy in Serbia and, thereby, the entire society, there is a huge number of potential beneficiaries. Target groups and beneficiaries are different relevant users of various Project outputs: economic policy decision makers, through researchers within scientific institutes and universities, as well as users within the scope of various branches of economy: agriculture (agriculture production and trade organizations, farmers and their associations, etc.), water utilities, energy sector, etc. Furthermore, it can be said that the final beneficiaries of the DMCSEE project realization achievements are the majority of citizens of the country.

1.9. Country(ies) in which the activities take place (if different from 1.7):

DMCSEE was a Regional Project and its implementation was carried out by institutions from nine SEE countries: Slovenia, Hungary, Bulgaria, Greece, Croatia, Serbia, Montenegro, FYR Macedonia and Albania.

2. Assessment of implementation of Action activities

2.1. Executive summary of the Action

It may be concluded that the DMCSEE project in Serbia was in essence satisfactory, considering the planned and achieved results and the overall capacity building accomplished within the topic on the one hand, and certain problems that influenced the implementation flow - especially at the beginning, on the other. Serbian project partners achieved considerable results within almost all of the complex activities which have been planned. These activities were: establishing closer regional cooperation related to the problem of drought; connecting to the developed Project internet platform and creating appropriate pages within the institutions' internet presentations; improving climate data quality check and homogenization, as well as climatological parameters and drought indices mapping operative procedures; implementation of developed methodology for drought monitoring and improvement of products dissemination; development and implementation of drought early warning methodology; obtaining drought vulnerability assessment by applying various approaches; building capacity on drought issues through participation in special expert trainings; promoting public awareness about the importance of effective drought management and strengthening user capacity for utilization of information about drought for the mitigation purposes by organization of the National Drought Seminar and performing other project outputs dissemination activities.

On the other hand, it should be emphasized that most of the problems with which Serbian DMCSEE project partners were faced during the implementation were within the scope of project administration, particularly financial administration. These were: initial distressing discrepancy of local financial regulations, the lack of previous experience on this type of projects (reporting procedures, tender procedures according to EC external actions, financial administration), some practical problems with the RHSS civil servants project engagement, etc.

2.2. Activities and results

The activities performed by project partners from Serbia and the accomplished results which are presented in more detail within this chapter of the Report refer mainly to the **period December 2011 – September 2012**. This is the period which was not covered by two interim reports which were already prepared and approved by Contracting authority in the course of the project implementation. Recapitulation of the most important activities and results achieved by Serbian PPs from the beginning to the end of the implementation are presented within some of the other chapters of the Report.

The DMCSEE Project, which was implemented under the management of the Environmental Agency of the Republic of Slovenia (EARS, Lead Partner, LP) contained seven work packages – complex activities, including Project proposal preparation (WP-0). Project partners from Serbia actively participated in the implementation of the majority of those activities during the above stated period, as it was during the whole implementation period. These activities were:

Activity 1 - **WP1. Transnational Project Management and Coordination**

During the determined period, as well as in the course of the whole project implementation, RHMSS and UNSFA performed regular communication with each other and the coordination of actions at the national level, according to the ongoing project activities and institution's project role and responsibilities. The necessary administrative and financial project management was carried out, too. RHMSS, as IPA financial leading PP, had a specific role with regard to integrated financial administration, reporting and consultations with the EU Delegation to Serbia and National Contact Point (NCP) within the Department for Cross-border and Transnational Cooperation Programmes of the Serbian European Integration Office, as well as Department of Contracting and Financing of the EU Funded Projects within the Serbian Ministry of Finance, which were also actively involved in project implementation. It should be mentioned here that the official DMCSEE project closure date was 31st May 2012 for the majority of PPs, after the approval of the request for the two month prolongation of the implementation period. However, Serbian PPs continued their activities up to 25th September 2012 according to Grant contract No. 2009/223-251. These activities were, in the first instance, related to the preparation of a final project publication in Serbian and promotional materials, as well as to the application and dissemination of project achievements.

Representatives of the DMCSEE PPs from Serbia attended at the last DMCSEE Consortium meeting (as well as all previous consortium meetings) which was organized near the formal end of project implementation:

- 7th DMCSEE Consortium meeting, Ljubljana, Slovenia, 16th May 2012 (9 representatives);

Reporting about the results achieved during the previous period was conducted at the Consortium meeting. Representatives of DMCSEE PPs from Serbia actively participated in technical discussions and final project tasks planning. Consortium activities were documented by progress presentations/reports on Work packages, Consortium meeting minutes, Consortium to do list, attendance list, etc. In addition to that, consultations about the possibilities for further close cooperation of PPs on drought issues were also carried out.

Both Project partners continued to regularly carry out the internal written project reporting during the third year of project implementation. Internal DMCSEE Partner Activity Reports were prepared and sent timely to Project LP:

- Sixth DMCSEE PAR for the period September 2011 - February 2012;

and

- Seventh DMCSEE PAR for the period March - August 2012.

Preparation and approval of the Second Interim Project Progress Report for the period 12/01/2010-11/30/2011 were accomplished easily and quickly in comparison with the same procedures related to the First Interim PPR which were long-lasting and quite troublesome. Draft documents (Narrative and Financial Report, as well as the List of expenditures for both Serbian PPs) were sent to the NCP on 7th February 2012. Some improvements of the Report, which also included the time-table for the activities planned for the next period, were introduced on the basis of the suggestions received from NCP and the Sector for Contracting and Financing of EU Funded Projects within the Ministry of Finance. The signed Second Interim Project Progress Report, along with the Request for further pre-financing payment and plan of expenditures (Budget follow-up table) for the third year of the DMCSEE implementation was sent to the EU Delegation to Serbia on 29th February. The Interim Report was approved by the EU Delegation to Serbia on 16th April 2012 without any objection.

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The third installment of pre-financing from the IPA funds was paid in on 6th June. Bearing in mind that the second installment of pre-financing was finally realized on 4th January 2012, it should be stressed that the availability of project funds was a great deal better in the course of the third year of project implementation compared to the previous period. So, assets spending rate increased considerably.

Notification letters on the fourth and fifth minor budget changes with adequate annexes and explanations were prepared and sent to the EU Delegation to Serbia. Budget changes were mainly in connection with the attendance of Serbian PP representatives at the 7th DMCSEE Consortium meeting and Final Conference, printing of the Final publication (edition in Serbian) and DMCSEE Leaflet, production of promotional material and some redistribution of project team salary assets. Budget changes were acknowledged by the EU Delegation.

Contrary to the fact that certain difficulties existed during the previous reporting period concerning subcontracting according to the EC external action rules, a substantial advancement within this scope was achieved during the third year of the project implementation. Purchasing of computers was finally completed and besidesover even four service and supply contracting procedures and connected actions were successfully accomplished. These were: organization of a DMCSEE National drought seminar including the production of DMCSEE banner (announcement placard), poster and promotion material packages; printing of the Final DMCSEE publication and Leaflet, as well as the provision of the additional promotional material; purchasing of auxiliary computer equipment (toner cartridges); and final financial auditing of the project.

Finally, about the end of the discussed period, i.e. near the Project implementation ending, the preparation of Final DMCSEE Narrative and Financial report began.

Activity 2 - WP2. Communication and Dissemination

Both Serbian PPs paid considerable attention to the issues of communication and dissemination of DMCSEE project information during the entire period of implementation, which characterized the previous period, too. Near the end of the project, the list of project relevant stakeholders - decision makers, administration actors and various end users in Serbia was significantly expanded and updated for the purpose of closing the distribution of Final publication and project promotional materials.

Various dissemination activities were performed during the third year of project implementation. The following should be mentioned:

- A scientific paper related to the DMCSEE project and titled: "Characterization of droughts in Serbia using standardized precipitation index and Markov chains" was prepared by UNSFA experts. The paper was published in the Serbian journal of agricultural sciences "Contemporary Agriculture" Vol. 60, No. 3-4 (University of Novi Sad, Faculty of Agriculture, December 2011, 200 copies printed);
- Some of the most recent achievements of the Project were announced by UNSFA experts at the Conference "Melioracije 12" ("Land Reclamation 12") held under the organization of the Faculty of Agriculture in Novi Sad on 26th January 2012 (around a hundred participants). The scientific paper "Monitoring indicators of detrimental floods and droughts which can be used for the reclamation planning improvement" was published in the Conference book of the proceedings (200 copies printed);
- DMCSEE project was promoted by a relevant poster and through the distribution of DMCSEE Leaflet (in Serbian and English) and promotional

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packages in the framework of the National DMCSEE Drought Seminar which took place on 26th and 27th April 2012 in Belgrade (about 50 sets were distributed). Seminar press release was also sent to a number of relevant media prior to the beginning of the meeting. In addition to that, during the Seminar project team members and some other attending experts gave a couple of interviews to media representatives;

- Scientific paper "Estimation of agricultural drought vulnerability using GIS tools: A case study of Vojvodina (Serbia)" was presented at the international BALWOIS 2012 Conference on Water, Climate and Environment (Ohrid, FYR Macedonia, 28th May - 2nd June 2012) and was published within the book of proceedings;
- Article "Drought monitoring in Serbia" prepared by RHMSS experts was published within the book of proceedings of a Joint JRC/DMCSEE/University of Ljubljana workshop under the FP7 EuroGEOSS project: "Different approaches to drought monitoring – towards EuroGEOSS interoperability model" (University of Ljubljana, Biotechnical faculty, 2012, 50 copies printed);
- Dissemination of DMCSEE information was conducted via pages of the RHMSS Internet presentation <http://www.hidmet.gov.rs/ciril/meteorologija/dmcsee.php>, and <http://www.hidmet.gov.rs/ciril/projekti/index.php>, as well as through the UNSFA Web page <http://polj.uns.ac.rs/DMCSEE/DMCSEE.html>. A little less than six hundred individual views of the documents in these pages were registered during the discussed period. A related RHMSS page "Moisture conditions" http://www.hidmet.gov.rs/eng/meteorologija/uslovi_vlznosti.php with a number of regularly updated drought monitoring products for Serbia was visited about eight hundred times a month in the course of the period. Ten-day prediction of moisture conditions for the whole territory of the Republic is available on <http://www.hidmet.gov.rs/ciril/meteorologija/agrometeorologija.php> (Agricultural meteorology weekly bulletin in Serbian). Furthermore, within the Internet presentation of the South East European Virtual Climate Change Centre (SEEVCCC) hosted within RHMSS <http://www.seevccc.rs/dmcsee/dmcsee.html> (recently created page) various drought products for the SEE region are available. There can be found moisture condition analyses according to various indicators and different time-scales (1,2,3 and 6 months) starting from 1951, as well as predictions of various moisture indicators and estimations of extreme drought occurrence probability up to three months ahead.

Moreover, PPs from Serbia continued to participate in the improvement and promotion of the DMCSEE platform <http://www.dmcsee.eu/> and GISS server: <http://www.dmcsee.org/GISapp>.

- UNSFA experts visited a number of local water management companies throughout the main agricultural region in Serbia – the Vojvodina province (places: Bačka Palanka, Vrbas, Zrenjanin, Sombor, Pančevo, Vršac, Subotica and Sremska Mitrovica) and presented the DMCSEE project achievements to the companies' staff;
- Invited member of the UNSFA project team presented DMCSEE project activities and results in detail at the Faculty of agriculture in Banja Luka (Republika Srpska - Bosnia and Herzegovina, 20th-22nd September 2012)
- Near the closure of the project RHMSS published the Serbian edition of the DMCSEE Final publication – summary of project results (550 copies). Besides translating and reviewing almost all articles from the Final publication in English, Serbian PP experts also contributed by preparing five additional articles. Distribution of the Final publication, DMCSEE leaflet (brochure), which was also printed (500 copies), technical project papers and promotional materials to various users interested in drought issues was going on in the

course of the project implementation, is running now and will continue in the future.

The accompanying DMCSEE standard reports about dissemination actions were also prepared during the mentioned period and sent to the WP responsible partner (WP RP).

Representatives of both Serbian project partners (9 representatives) actively participated in the Final DMCSEE Conference which took place in Ljubljana, Slovenia (14th-15th May 2012). Overall Project achievements were presented in detail in front of around 70 participants at the Conference and were seriously discussed.

It should be noted here that the number of relevant articles/appearances in the press and other media, the number of administrative/scientific/utility actors and individuals introduced with the project outputs, the number of participants in international conferences, the upgraded web sites of PPs and the number of hits per month on them, as well as the number of publications produced are all stated within the DMCSEE Logical Framework as objectively verifiable indicators of project achievement. Final project achievements in terms of the DMCSEE Logical Framework (LF) verifiable indicators are presented in more detail within Chapter 2.4.

Activity 3 - **WP3. Climatological monitoring and mapping system**

Activity 3.1: **Preparation of climate data and maps**

RHMSS experts continued the application of MASH software (Multiple Analysis of Series for Homogenization, data processing, testing and analyses) on national climate data sets. Series (period 1961-2010) of daily maximum and minimum temperature, sunshine duration, average daily wind speed and daily precipitation data were processed for twenty nine principal meteorological stations. Precipitation data for more than a hundred climatological and precipitation stations were also processed. Analysis and evaluation of derived homogenized data series were carried out, too. Skills and results gained within this project activity will be continuously used henceforth in climate data processing practice.

Activity 3.2: **Implementation of drought monitoring system**

Along with carrying out operative spatial analyses of moisture conditions for the territory of Serbia and regular updating of the results on the corresponding RHMSS internet pages, the following related work performed during the discussed period should also be mentioned. The preparation of operative ten-day prediction of moisture conditions for Serbia started at the beginning of May 2012. Predictions have been prepared once a week and presented within the Agricultural meteorology weekly bulletin in Serbian. Prediction is based on the sixty-day Standardized Precipitation Index (SPI) using the ECMWF and RHMSS precipitation medium range forecast. The production of analogous monthly moisture conditions prediction started, too. It is planned that this product (based on the monthly ECMWF and RHMSS precipitation forecast) should be a part of Climate Watch bulletin. However, the preparation of this special bulletin (editions in Serbian and English) is still in its experimental phase.

RHMSS experts completed detailed comparative analyses of SPI values (1, 2, 3, 6, 9, 12 and 24 months, 30 locations for the period 1989-2010) calculated based on reference periods 1971-2000 and 1961-2005. This action was planned and realized taking into consideration some existing problems with the analysis of the obtained values of drought indices. These problems are caused by substantial differences in historical precipitation data availability at various locations.

Furthermore, RHMSS staff finished the work on operative calculation procedures and drought analyses based on the Palmer's Drought Severity Index (PDSI) and Palfai's Aridity Index (PAI). Analyses based on PAI were done for 30 locations in Serbia, for the 1961-2012 period. A part of the obtained results is presented in the Final project publication (edition in Serbian).

The degree of the realization of this WP could be assessed as good. Although the Serbian drought monitoring system on the basis on various indices, other drought indicators and products of weather/crop model had already been one of the most developed ones in the Region before the DMCSEE project start up, further improvements were made. Some calculation procedures were graded up and some other drought indices were introduced, as well as the medium range and monthly drought indices prediction at the national level.

Activity 4 - WP4. Drought risk assessment

Activity 4.1: Drought impact reporting

Under the activity 4.1.2 Calibration of drought indices, RHMSS was the leader of the preparation of methodology for regional drought early warning system. Subsequent to the extensive test model calculations and analyses, RHMSS experts prepared the technical paper titled:

- Common methodology for early warning system based on integrated approach and sent it to WP RP at the beginning of May. Procedures for the calculation and mapping of predicted monthly precipitation percentage and percentiles, as well as forecasted values of SPI for 1,2,3 and 6 months for the whole SEE region were also developed. Predictions are based on ECMWF-RHMSS regional long range forecast. Furthermore, the probabilities of extreme drought occurrence according to chosen thresholds for the above mentioned drought indices on the basis of ECMWF long range ensemble forecast are calculated and mapped for the whole region, too. All operative procedures are executed at the beginning of the month and forecasts are produced for each of three successive approaching months. The system is still in experimental operation, but products are available from the outset of 2012, as it was mentioned within this Chapter (Activity 2 - WP2. Communication and Dissemination).

In addition to that, a topic related addition to WP overall achievements presentation was prepared and sent to WP RP. It was showed at the Final DMCSEE conference.

Development and implementation of common methodology for regional drought early warning system is objectively verifiable indicator of achievement stated within the DMCSEE LF.

Activity 4.2: Drought vulnerability and risk assessment

Joint work of UNSFA and RHMSS experts on the estimation of drought vulnerability on the basis of climatological and geomorphological data was finalized. A set of vulnerability maps for the territory of Serbia was created and the appropriate technical report titled:

- Drought vulnerability estimate using climatological and geomorphological data was prepared and submitted to WP RP at the beginning of March 2012.

For the purpose of estimation of drought vulnerability, UNSFA experts accomplished numerous model simulations with the weather-crop model ISAREG. The model was run using necessary biological, soil and meteorological data for selected locations in various regions of Serbia, for each year of the

1971-2010 period. A quite detailed report which contains various model outputs and vulnerability estimations titled:

- Drought vulnerability estimates based on simulation using crop-yield models

was written and sent to WP RP near the end of January 2012. An article containing a selection of derived results was prepared for the Final project publication (edition in Serbian).

Provision of vulnerability estimates and preparation of vulnerability maps on the national and regional level based on GIS functionality is an objectively verifiable indicator of DMCSEE Project achievement.

Activity 5 - **WP5. Capacity building trainings**

A national DMCSEE drought Seminar took place on 26th and 27th April 2012 in Belgrade, under the organization of RHMSS. Title of the Seminar was: "Drought - monitoring, early warning and vulnerability assessment". Most of the DMCSEE Project topics were covered by Serbian project team presentations and were the subject of constructive discussion among the participants. There were thirteen presentations in total.

There were more than 40 Seminar participants who were chosen very carefully - among them there were representatives of relevant Ministries, scientists from Universities and agricultural research institutes, experts from irrigation companies, owners of large farms, as well as journalists. All of them were very interested and directly acquainted with the DMCSEE project and its results. Some representatives of drought information users presented their activities on drought mitigation practices, too. The overall impression is that all of them were very interested and directly acquainted with the DMCSEE project and its results and that the Seminar was successful.

A relevant DMCSEE poster and an announcement placard were also prepared and DMCSEE leaflets (in Serbian and English) and adequate promotion packages were distributed on this occasion, too. A seminar press release was sent to a number of relevant media prior to the beginning of the meeting. During the Seminar a couple of interviews were given to media representatives.

A selection of the Seminar materials, including all presentations, is accessible on the RHMSS web page: <http://www.hidmet.gov.rs/ciril/projekti/index.php>.

The organization of the National drought seminars for users and the number of participants are also objectively verifiable indicators of achievement stated within the DMCSEE LF.

2.3. Activities that have not taken place.

As a matter of fact, there are no complex activities (work packages) without achieved noticeable results during the DMCSEE project implementation in Serbia. However, there are some activities that have not taken place, at least in the way and extent that they were originally planned. Some of the above mentioned activities should be particularly stressed, since their deficiency caused a considerable decrease of the percentage of utilization of the planned project budget assets. These activities are:

- 4.1.1 A historical overview of drought impact records (DMCSEE budget item 5.2). Under this task, service subcontracting for the creation of an overall study at national level on the Drought impacts, management, preparedness, and mitigation practices based on historical records was planned. The project implementation start-up delay in Serbia, the lack of knowledge and experience of PP staff with conducting tender procedures and the complexity of planned

work caused problems. The above mentioned causes led to the work not being done in the planned extent until the commonly defined task deadline. However, the UNSFA staff completed the analysis of some collected historical drought impact data and other available relevant materials (mainly referring to the previous decade) about the mitigation practices and drought management in Serbia, and prepared an appropriate overview. The report was submitted to WP RP and was accepted as satisfactory. Unfortunately, the preparation of a previously planned, really comprehensive study which would comprise a period of a couple of decades had to be left for some other opportunity. Maybe that plan was too ambitious, considering (primarily) the complexity of work on the gathering of different historical records from various sources for the entire territory of Serbia and for a long period.

- 5.2. The organization of seminars for end users (DMCSEE budget item 5.7). During the DMCSEE project preparation it was agreed among PPs that at least one seminar for end users should be organized in each of the participating countries. Bearing in mind the severity of drought impacts, PPs from Serbia suggested the organization of two such events in this country. So, sufficient assets were consequently allocated within the project budget for this purpose. However, despite the impression that the first national drought seminar held in April 2012 was successful, the second one was not organized. It was planned for mid-September 2012, but was eventually cancelled. The reasons for this were primarily of organizational nature. It was estimated that the seminar could not be prepared at desired level since a part of the project team had to be engaged on high priority tasks during the stated term and the period immediately preceding it. Certain compensation to the seminar failure was achieved through the promotional action of UNSFA experts. They carried out a series of presentations across the Vojvodina province, as it was specified within the Chapter 2.2 (Activity 2 - WP2. Communication and Dissemination).

Furthermore, it should be said that there are still some shortcomings when it comes to the completion of the tasks of incorporation of DMCSEE project accomplishments into relevant national strategies and local policies and instruments. With reference to that, everyone should keep in mind that the fulfillment of such tasks surpasses the jurisdiction and capabilities of an unassisted Hydrometeorological service and the Universities. However, a few outcomes of recent activities on drought issues in Serbia (potential drought risks identification criteria) were included in the Manual of methodology for danger assessment and preparation of plans for protection and rescue in emergency situations, which was produced by the Ministry of interior in the middle of October 2012. Drought is listed among the natural hazards which cause extraordinary situations, i.e. severe consequences on the territory of Serbia. So, further noticeable progression with regard to this issue is expected.

2.4. Assessment of the results of the Action?

It is assessed that DMCSEE project implementation in Serbia was in general satisfactory, considering planned and achieved results and overall capacity building accomplished within the topic on the one hand, as well as initial distressing discrepancy of local financial regulations, the lack of previous experience with this type of projects (reporting procedures, tender procedures according to EC external actions, financial administration) and some practical problems with RHMSS civil servants project engagement, on the other.

All of the previously mentioned difficulties with the DMCSEE project implementation in Serbia were discussed in detail within both Interim Reports.

The results of the third year of Project implementation were presented within Chapter 2.2 of the Report. Here follows just a very short recapitulation of the

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activities and progress accomplished by Serbian PPs from the beginning to the end of the implementation in terms of LF verifiable indicators:

- An overview of national climate data availability, quality control procedures and processing, including information about interpolation and mapping procedures was prepared. Operative procedures for climate data series homogenization were introduced to climatological practice. Regarding mapping procedures, a significant capacity building within the topic also can be stressed. Practical guidelines (in Serbian) about the implementation of SAGA GIS software for climatological variables and drought indices mapping was prepared (Activity 3.1.)
- Three simple drought indices were operatively implemented and an appropriate technical report was prepared (target value was 3). In addition to that, ten-day and monthly moisture conditions prediction for the territory of Serbia based on the SPI drought index forecast in various time scales became operative (Act. 3.2);
- Technical report "Development of irrigation scheduling system" based on the executed simulations with irrigation scheduling model ISAREG was prepared. This report is the starting point of the implementation of a reporting irrigation system (Act. 3.2);
- Report "Drought impacts, mitigation practices and drought management" was created after the accomplishing the analyses of available relevant materials, as well as Report "Drought risk assessment based on impact archive". Both reports refer to the territory of Serbia (Activities 4.1 and 4.2);
- Within the task of establishing the SEE drought early warning system, operative regional moisture conditions analyses and prediction up to three months ahead was implemented. Estimation of probabilities of extreme drought occurrence in various time scales was included into the forecast products. A corresponding technical paper was prepared, too (Act. 4.1);
- Reports "Drought vulnerability estimate using climatological and geomorphological data" (which comprises set of drought vulnerability maps for Serbia) and "Drought vulnerability estimates based on simulation using crop-yield models" were created (Act. 4.2);
- Connection to the DMCSEE Internet platform was achieved and the websites of Serbian PPs were upgraded through the addition of special DMCSEE pages and additional pages containing various drought products. The RHMSS Internet page "Moisture conditions" which contains a number of regularly updated drought monitoring products is visited nearly a thousand times each month. Moreover, PP from Serbia actively participated in development and promotion of special DMCSEE Internet platform. (Activities 2.2 and 2.3);
- Around 3000 individuals, potential Project end users, including approximately 350 relevant decision makers, administrative actors and scientists, have so far been directly acquainted with the project outputs, results and SEE programme in general by various dissemination activities. However, dissemination of project results will surely continue (Act. 2.4);
- Fifteen articles based on DMCSEE achievements were published, and three press conferences were held (Act. 2.4);
- The Final DMCSEE publication - summary of project results was published, as well as a DMCSEE Leaflet, and two project posters and one announcement placard in Serbian were prepared and printed (Act. 2.4, target LF value was 3);

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- DMCSEE project achievements were presented in a more detailed manner at six international conferences/symposiums/workshops (Act. 2.4, target LF value was 3);
- Project partners' staff attended eight DMCSEE trainings: Training on climatological homogenization and interpolation methods, Budapest, February 2010; Training on irrigation scheduling systems, Ljubljana June 2010; Training on drought vulnerability and risk assessment, Nafplion, Greece, November 2010; Additional practical training on climatological data processing methods, February-March 2011, Skopje, FYR Macedonia; Workshop on finalization of risk assessment, Laško, Slovenia, June 2011; Training on GIS internet platform reporting, Second training on irrigation scheduling systems and Workshop on permanent Drought Management Centre for South East Europe, Laško, Slovenia, June-July 2011 (Act. 5.1, target LF value was 5);
- Ten Serbian project staff members significantly increased their capacity in the field of drought monitoring, analysis and management. One of the previously mentioned experts and two more people considerably increased their knowledge and skills within the scope of administration of this kind of project. Moreover, three specialists significantly increased their capacity within the field of project financial administration (Activities 5.1 and 1.2, target LF value was 12).
- National DMCSEE drought Seminar for end users titled "Drought - monitoring, early warning and vulnerability assessment" was organized (2). In addition, it may be pointed out here that one of the DMCSEE Consortium meetings which had not been initially planned was successfully hosted by Serbian project partners (Activities 5.2 and 1.3)

2.5. The outcome on both the final beneficiaries &/or target group.

Relevant DMCSEE drought related products (methodologies, studies, operative analyses and forecasts) are available to final beneficiaries. A recent fine example of the practical usage and benefits of improved drought products is the combat against severe summer drought in 2012. A long-lasting and very intensive drought encompassed almost the whole territory of Serbia and caused huge losses. In such situation, RHMS analyses of drought status, weather and drought forecasts were regularly and frequently updated and disseminated via web and special bulletins to the relevant state authorities.

Contribution to the struggle against numerous forest fires (break out risk estimation and meteorological support to blowing-out actions) was especially emphasized during this period by the Emergency Headquarters of the Ministry of Interior.

2.6. Materials produced during the Action.

In addition to the preparation of numerous technical reports and papers, scientific articles, a few posters and various promotional materials (notebooks, time schedules, etc.), during the Action, the following publications were printed:

- Project Final DMCSEE publication – the summary of project results (550 copies, in Serbian); and
- DMCSEE Leaflet - Brochure (500 copies, in Serbian and in English).

The distribution of these publications began during the project implementation and is still going on. The publications are being delivered to relevant users: economic policy decision makers, researchers within scientific institutes and universities, as well as end users within the scope of various branches of economy: agriculture (agricultural production and trade organizations, farmers

and their associations, etc.), water utilities, energy, etc. by various means: by post according to the regularly updated list of beneficiaries, and directly, at the meetings organized by Serbian PPs, during working visits, etc.

It should be added that some additional materials prepared by other project partners, e.g. DMCSEE Newsletter, were also disseminated to the users in Serbia.

2.7. Contracts (works, supplies, services) above 10.000€ awarded for the implementation.

Five subcontracting procedures were successfully executed and awarded in the course of the DMCSEE project realization. However, none of the contracts was above 10.000 EUR. Appropriate supply and service single tender procedures were conducted, except for the project final audit contract when such procedures were not necessary.

2.8. Action continuation after the ending of the support from the European Union.

A considerable part of the DMCSEE project activities will doubtlessly continue in Serbia. Public funding of the activities related to drought management has existed in some extent after the end of the project – at least through the activities of relevant public bodies and institutions, e.g. hydrometeorological services, universities and other scientific institutions. For example: products of the RHMSS drought monitoring and forecasting system (which was enriched and improved under the Project) are still available and regularly updated and disseminated via internet presentation of the institution. RHMSS has continued this operative practice after the end of the project and both PPs are still carrying out activities for raising awareness and utilisation capacity of end users. Moreover, a realistic expectation is that most of the end users will have an economic interest to finance their drought impact mitigation activities based on the Project results.

2.9. Cross-cutting issues.

Concerning human rights, gender equality, the rights of people belonging to national, ethnic and other minority groups, children's rights etc., it can be stated that activities within the DMCSEE projects did not endanger human rights, gender equality, and rights of any minority group in any way. On the contrary, the project effects are assessed as positive. The overall DMCSEE project objective is reducing drought negative impacts by improving drought monitoring, preparedness and risk assessment. Since drought seriously affects economy in Serbia and hereby entire society, project goals and results should benefit all citizens.

Furthermore, DMCSEE project can be taken as a positive example concerning the personnel selection as well. In selecting experts for the participation in the project implementation, as well as during the period of project implementation there has not been any gender, nationality, ethnic or any other discrimination. To the contrary, percentage ratios of females and national minority members in the expert project team were even greater compared to those proportions in general population.

When it comes to environmental sustainability, it is reasonable to anticipate that the positive effects of the DMCSEE project results on the environment might be considerably stronger than the possible negative effects. The improvement of analyses and drought research methods, as well as the establishment of a system that would enable efficient monitoring and forecasting of this detrimental event as well as mitigation of its consequences, are not only important for agriculture, water management and other branches of economy, but also for

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forests and other natural ecosystems. It is assessed that the improvement of the drought management system will contribute to the reduction of a range of detrimental effects of drought in natural ecosystems (e.g. damages caused by forest and other types of open fires on native vegetation).

After all, it seems that participation in the realization of projects co-financed by the EU contributes to democratization, particularly by increasing the transparency of the decision making process. Regional character and transparency (regular reporting, rules of tender procedures, etc.) which characterize all phases of such projects – from proposal preparation, through adoption and realization, to evaluation are significant tools of democratization.

2.10. Monitoring and evaluation of the Action.

During the Project implementation each of Project partners from Serbia prepared seven Internal DMCSEE Partner Activity Reports and sent it timely to Project LP. Furthermore, prior to Final Project Progress Report preparation, two Interim Project Reports (covering periods 11/26/2009 - 11/30/2010 and 12/01/2010 - 11/30/2011) were prepared and were approved by Delegation of the European Union to the Republic of Serbia.

Project activities in Serbia were the subject of monitoring mission carried out by the Results-oriented monitoring team of EC for the West Balkans region and Turkey. Relevant Project documentation was made available to the monitoring team, and after that, at the beginning of February 2010, the monitoring expert in charge visited RHSS and UNSFA. During the meetings with the involved RHSS and UNSFA experts, all Project realization issues were discussed in detail. Within the evaluation report which was prepared by monitoring team, some of the existing problems connected with the Project implementation in Serbia were mentioned. Nevertheless, the impression of PPs was that the report was generally positive. With reference to that, it should be stressed that the monitoring mission was executed just at the beginning of the action.

Overall DMCSEE project implementation flow and results was subjected to Interim and Final external evaluation (March and November 2011, executed by "Actum" agency). Serbian PPs contributed to the preparation of joint reports for the evaluation purposes by completing appropriate questionnaires, which were sent to LP. The Final Evaluation Report was generally assessed as positive. In some degree, exception was the topic concerning the dissemination activities. However, the Report referred to the period up to November 2011, when the national seminars for end-users still were not organized in the most of participating countries. Those seminars and other dissemination activities were conducted afterwards.

Feedback was received from DMCSEE project beneficiaries – various users of project results, which was at times was very constructive, often useful but almost always complimentary.

2.11. Organisation/partner benefits from the Action.

Skills and knowledge of Serbian project partners, as well as possibilities for their further utilization and dissemination, obtained through PPs' participation in the DMCSEE project are stated within a number of chapters of this Report. It should be recapitulated here that the most important PPs' benefits probably comprise: establishing of a closer cooperation among institutions/experts on drought issues at regional and national level; building capacity of PPs' staff for effective drought monitoring, analysis and forecast; promotion of two-way connections with various potential beneficiaries and gaining experience on proposal preparation and implementation of projects co-financed by the European Union.

3. Partners and other Co-operation

3.1. Relationship between the formal partners of this Action.

The relationship, i.e. the cooperation and coordination of actions on the DMCSEE project implementation, between formal partners RHMS and UNSFA might be assessed as very good, especially bearing in mind a well-known and long-lasting problem related to their financial relationship, caused by the circumstances beyond PPs' influence.

The closest and most advisable cooperation was also maintained with the Public Water Management Company "Vode Vojvodine" (PWMC-VV) which had the observer role in the Project.

Cooperation between Serbian and all other PPs (especially with following WP RPs: Hungarian Meteorological Service – OMSZ and Agricultural University of Athens - AUA), the organization of communication and project administration, may also be highly assessed. The activities were quite complex and the number of involved institutions and countries were not small. The Lead Partner (Environmental agency of Slovenia) and the consultant agency ("Alianta") in charge of the overall project coordination are primarily responsible for such positive assessment.

3.2. Partnership continuation.

A number of times there were serious discussions within the DMCSEE partnership on the possibilities of continuation of cooperation. General standpoint is that the continuation of a some kind of new joint action will be favorable to all DMCSEE involved institutions and countries. There is an interest in continuing the cooperation within the subject (not exclusively within this subject, of course) regardless of the form of cooperation: consolidation of the institutional permanent regional drought centre, implementation of another project or/and through bilateral cooperation. In addition to that, the opinion is that it is crucial that future cooperation should encompass relevant institutions from the SEE countries which did not participate in the DMCSEE project.

At the same time, some of the DMCSEE partners have been involved in the implementation of a regional project which is quite closely connected to the DMCSEE project scope. The partnership is mainly constituted of meteorological and hydrological services from the SEE region. The project title is: "Building Resilience to Disaster in Western Balkans and Turkey". Planned activities of the project cover some drought issues, too. The implementation (August 2012 - May 2014) is supported by the European Union, World Meteorological Organization and United Nations Office for Disaster Risk Reduction. So, certain regional cooperation related to the problems caused by drought has already been continued.

3.3. Relationship with State authorities.

The European integration process and regional cooperation improvement remained among national political priorities during the whole period of DMCSEE implementation, and it seems that so far those priorities have not significantly changed. Moreover, the notion is that there is a required level of awareness within the State authorities on the emergency of creating an effective regional and national management system for drought.

The relationships related to the project implementation between DMCSEE PPs and involved authorities were in general satisfactory. Certain problems caused by the ambiguity related to the financial issues and discrepancy of some relevant

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local regulations that formerly existed were surpassed in time by joint efforts of PPs and relevant state authorities.

Valuable support of the NCP within the Serbian European Integration Office and financial staff of the Department of Contracting and Financing of the EU Funded Projects within MoF to DMCSEE project should also be stressed. The cooperation between the project team and NCP experts started with the project proposal preparation and was very good all the time. The support of NCP was not provided exclusively in the form of advice, consultations and organization of periodical trainings. Actually, the implementation went hand in hand with permanent communication and interactive, joint work. However, at times, the prolongation of planned DMCSEE activities in Serbia was induced by waiting for the comments, opinions, and instructions of NCP experts - more precisely: by NCP experts' preoccupation.

3.4. Relationship with other organisations involved in implementing the Action.

The relationship with various potential final Project beneficiaries is developing in terms of contacting; providing information on the project outputs, possibilities for products usage and possible benefits; receiving feedback; and planning and execution of joint activities. That is a process. What was also encouraging was the already mentioned willingness of beneficiaries which attended the DMCSEE National drought seminar to present their activities, actively participate in discussions and give constructive suggestions.

Concerning the relationship with subcontractors it can be said that it was quite fair. It seems that difficulties arose because of the subcontractor's lack of experience in performing tender procedures according to the EC external actions. On the other hand, it can be mentioned that impression is that the agency engaged in the final project auditing did their job very professionally.

3.5. Links and synergies other actions

In addition to the links and synergies which were established during the first and the second year of the DMCSEE implementation, and mentioned within Interim reports, the following related actions which started up in 2012 should also be mentioned:

- „A structured network for integration of climate knowledge into policy and territorial planning“ (ORIENTGATE); and
- „Joint Disaster Management risk assessment and preparedness in the Danube macro-region“(SEERISK).

The projects were approved within the SEE Transnational Cooperation Programme (the third strategic call). The defined period of implementation for both of them is 1st July 2012 – 31st December 2014. General objectives of the mentioned projects are within the scope of regional climate variability and climate change analyses, as well as the assessment and management of climate risks. RHMSS participates in their implementation and within the ORIENTGATE project has the leading role in one of the work packages. A part of attainments gained through the DMCSEE project will surely be incorporated in the ORIENTGATE and SEERISK project activities, and the importance of experience and skills which RHMSS staff gained is obvious. Some members of the former DMCSEE project team are already very actively working on these projects.

3.6. Previous EU grants.

Despite the fact that the Republic Hydrometeorological Service of Serbia carries out numerous tasks within the area of international cooperation in the field of

meteorology, hydrology and climate (as a National Meteorological and Hydrological Centre), participates in programmes of technical cooperation with a number of relevant international organizations, and works on the development of bilateral cooperation, this institution has not enough experience with EU grants. Considering manner of implementation (financial execution, sub-contracting, etc.), the most similar to DMCSEE was the preceding Project "Upgrading of monitoring system for the assistance of the environment protection and flood prevention in Vojvodina" (CARDS Grant) which RHMSS realized within the Neighbourhood Programme Hungary–Serbia, 2004–2006. Previously gained experience in relation to some issues of project implementation technique in some degree supported DMCSEE project realization.

3.7. How do you evaluate co-operation with the services of the Contracting Authority?

Cooperation between the Serbian PPs and the services of the Contracting Authority may be assessed as good. Their support to the DMCSEE project was professional and valuable.

4. Visibility

During the implementation of DMCSEE a great attention was paid to the dissemination of project information and its outputs. Naturally, this refers to the fact that the EU contribution is determinant of the Action. Moreover, the entire DMCSEE Work package is devoted to the issues of communication, dissemination and visibility (Activity 2 - WP2). Dissemination activities which were performed during the third year of Project realization were described in detail within the Chapter 2 of this Report. Analogously, previous such activities were quite exhaustively presented within both Interim Reports. Here is only a very short chronological recapitulation of the most important DMCSEE visibility actions performed during the whole project implementation in Serbia:

- Publishing of an article about the DMCSEE Project start-up in the Yearbook "Vojvodina Waters 2009";
- Presentation in the form of a poster and leaflets to over 100 participants at the Conference "MELIORACIJE 10" ("Land Reclamation 10"), 2010;
- Demonstration to about 30 participants of the FAO&RHMSS SEE Subregional Seminar: "Mapping of and Policy Orientation for Adaptation to Climate Change", 2010;
- Press DMCSEE conference at Novi Sad Fair, 2010;
- Distribution of the Newsletter No. 1 to 40 relevant stakeholders, 2010;
- Presentation at the 7th INTERNATIONAL FAIR OF ENVIRONMENTAL PROTECTION – ECOFair – around 300 DMCSEE leaflets were distributed, 2010;
- Promotion among over 50 participants of the WMO&RHMSS Fourth South Eastern European Climate Outlook Forum (SECOF-IV), 2010;
- Presentation of some DMCSEE achievements and Leaflet distribution to 120 participant at the Conference "Melioracije 11" ("Land Reclamation 11"), 2011;
- Hard copies of the DMCSEE Leaflet were sent by post to selected eminent stakeholders in Serbia (about 20), 2011;
- DMCSEE project acquirements were emphasized at the International Conference on the Status and Future of the World's Large Rivers, 2011;

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- Electronic DMCSEE Newsletter No. 2 and DMCSEE Leaflet were sent by mail to the relevant stakeholders and end users (about 60), 2011;
- Presentation at the International symposium "Food safety production", 2011;
- Press release and interviews (TV, Radio) on DMCSEE were performed during the 6th DMCSEE Consortium meeting in Novi Sad;
- Inclusion of basic information about DMCSEE in the RHMSS Annual Report 2011. The publication was distributed at several expert meetings (110 copies);
- Special DMCSEE pages were activated within the RHMSS and UNSFA Internet presentations. Nearly 1500 unique views of the relevant DMCSEE documents on these presentations have been registered up to now. Related RHMSS Internet pages with various regularly updated drought products are visited near a thousand times per month;
- Further Project advancement was announced to around 100 participants at the Conference "Melioracije 12" ("Land Reclamation 12"), 2012;
- DMCSEE project was promoted through various means in the framework of the National Drought Seminar (more than 40 participants), 2012;
- Project promotion was accomplished through the presentations which were given at a number of water management companies in the Vojvodina province, 2012;
- DMCSEE project activities and results are presented in detail at the Faculty of agriculture in Banja Luka (Republika Srpska - Bosnia and Herzegovina), 2012;
- Dissemination of several hundreds of copies of the Final publication and DMCSEE Leaflet, as well as of the promotional material which was produced near the project closure is still going on.

The European Union may wish to publicise the results of Actions. Do you have any objection to this report being published on EuropeAid Co-operation Office website? If so, please state your objections here.

We do not have any objection to this report being published on the EuropeAid Co-operation Office website, nor to the results of the Action being published by the EU.

Name of the contact person for the Action: **Zoran Krajinović**

Signature:

Location: **Belgrade**

Date report due: **29th November 2012**

Date report sent: **13th December 2012**