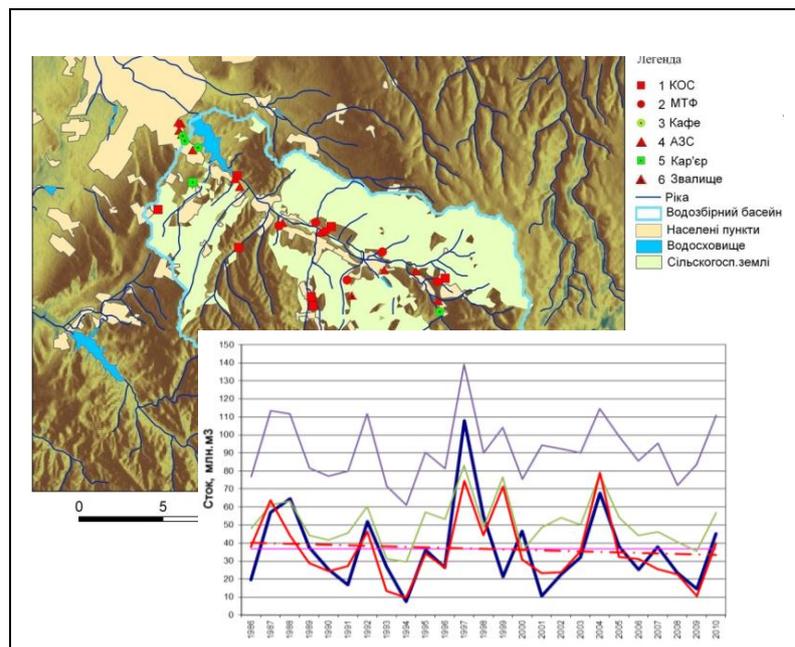




Water Cycle Safety Plan Framework

Demonstration in Simferopol



COLOPHON

Title

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This report is:

PU = Public

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1 Introduction and summary

1.1 Introduction to the report

The city of Simferopol and CSRC were originally partners within PREPARED involved in work area 2 on risk assessment and risk management. As such, CSRC started the WCSP demonstration activities in Simferopol. However, due to organisational changes, CSRC was no longer supported by the PREPARED project and could not continue these demonstration activities.

In Chapter 1 the activities on the WCSP are summarised. The report further comprises of the minutes of the WCSP meetings that were held in Simferopol and additional information to illustrate the activities that were carried out. Other demonstration documents are in Russian and, therefore, are not included in this report.

1.2 Summary of the activities

Simferopol, the capital of Crimea, southern part of Ukraine, lies in an area with limited water resources. In the last two centuries, Crimea suffered three times severe droughts, after which significant parts of steppe zone was practically deserted.

According to the agro-climatologic zoning, Crimea belongs to the territories with limited water resources. The total balance of surface water of the peninsula territory consists of local flows (average local flow - 0,91 km³ per year) and additional water resources from the Dnieper river (the North Crimean Canal can supply circa 3,0 km³ per year). The Falkenmark Water Stress Indicator for Crimea is below the boundary level and shows a strong scarcity of water resources. This makes it obvious that Crimea and Simferopol are dependent on external water sources, especially during drought periods.

In terms of climate change, due to the increase in average daily temperature especially in the summer period, water quality will change significantly in all reservoirs and especially in the Mezghornoe reservoir where the incoming water is transported through approximately 300 km of open canals. The longer periods of drought and the increase in evaporation will adversely affect catchment areas and decrease the flows in Crimean rivers. This will lead to higher water demands for non-potable purposes and will significantly change the balance between local and external water resources and the priority setting in water allocation policies.

The expected increase in extreme rainfall events (EEA, 2004) requires special attention for any risks associated with more pressure on drinking water treatment facilities as a result of flooding in the areas without centralised sewerage systems. The presence of vulnerable local sanitation installations can lead to contamination of water sources with dangerous substances.

Within PREPARED, demonstration of the WCSP framework was initiated with a workshop. The assembled team involved representatives from almost twenty organisations including: the Crimean basin department of water

management of State committee of water resources of Ukraine; CSRC (research partner participant in the PREPARED project); Crimean Hydrogeological and Land Reclamation Expedition; National Academy of Environmental and Resort Design; Crimean republican association “Ecology and peace” (NGO); SDWSC (participant of the PREPARED project); Crimean Republican Committee of Water Management; Crimean Republican Committee of Environment Protection; Saki Water Management Department; Salgir Water Management Department; Simferopol city Council; Simferopol State District Administration; Center of Hydrometeorology in Autonomous Republic of Crimea; and, Sevastopol National technical University.

During the demonstration workshop on WCSP, the water cycle hazard database and the database for risk reduction options were tested and evaluated to address water quantity and quality problems in Simferopol. As a result of the demonstration activities, stakeholders now support the Water Cycle Safety Plan development for Simferopol.

Research needs include the development of a strategy for mitigation droughts and floods impacts (Figure 1).



Figure 1 - Flood problems in Ukraine

2 Workshop WCSP

Meeting: Simferopol Demo core team workshop WP 1.4 for activities
Meeting number: 1
Secretary: Valentyna Popovych
Date and place: 17.11.2011 CSRC, Simferopol, Ukraine

AGENDA:

1. Familiarize the participants of the workshop with the goals, objectives and project participants
2. Creation of stakeholders working group
3. Discussion and agreement on procedures for review / testing of intermediate results of the project (demo-activities, tasks 1.4.1 – 1.4.4).

MINUTES:

Welcoming speech was made by the director of CSRC, V. Lyashevs'ky. Then, participants introduced themselves and organizations, and were acquainted with the workshop agenda.

1. V. Popovych - Presentation of the PREPARED project, about its goals and objectives. He spoke about the fulfilled work in the project, and future developments.

Q: Prof. Holoptsev A. (Sevastopol NTU): "Are the evaporation rate, types of underlying surfaces, anthropogenic factors taken into account in studying flow of Salgir river?"

Answer: "Yes, these factors were taken into consideration in the models, are used in the project (models are being adapted to our region)."

Q: Lyashevsk'y V. (CSRC): "Based on the experience of the project participants, what we can recommend to our local organizations?"

A: By the end of the project stages (deliverables) it is possible to develop guidelines/recommendations for the authorities of Simferopol and other Crimean and Ukrainian cities.

Ie.Dunaieva - Presentation on "Urban water cycle and climate change." She explained the WCSP, its structure and stages of development.

Q: V. Musiyenko: "Bridges in Simferopol were designed for a certain capacity, which is insufficient for the joint discharge of storm water from river Salgir and river Small Salgir. Can we taken it into account in this project (passing maximum flow)? "

Answer: This is one of the types of the risk for the city infrastructure and it should be included in WCSP.

V. Tarasenko (NGO "Ecology and Peace") - Presentation on "Functional objectives, approaches and principles of integrated water resources management (IWRM)". He talked about integrated water management, water quality and quantity, and also interactions between concerned problems (WCSP) and IWRM.

In discussion the next participants took part:

Zaharov R. (NAERD), Holoptsev O. (Sevastopol NTU), Vsadnikova I. (Hydrometeorological Center), Sugak O. (Reskomvodhoz), Umerov A. (Simferopol RSA).

2. V. Popovych proposed the list of working group, composed of organizations, presented at the workshop.

V. Lyashevs'ky offered to have an open list of the working group to be able to include other stakeholders. Besides, he pointed on the necessity of the procedure of informing heads of organizations-participants, and also provision of participation permanent representatives from of the organizations in workshops.

V. Popovych proposed to apply to the heads of the organization-participants with informational letter about 1st workshop and ask to confirm participation in the workshops certain permanent person.

Then the participants were proposed a draft decision on the workshop. In discussion the next was suggested: (Sevastopol NTU) to include two new blocks in the project (climate and ecology, and also put attention on the problem of water quality and evaluation of possible social consequences); (NAERD) to invite representatives of Ministry of economy to discuss questions of attraction funds (local and investments) and evaluate possibilities of financing of WSCP development; (SDWSC) to consider the possibility of including development of WCSP into the program "Crimean drinking water", put attention on water availability problems and building sewerage system in Dobroe valley, and also absence of centralized sewerage system in old part of the city (i.e. consider perspective, but not forget about current vital tasks).

Resolved: To adopt the draft decision of the workshop on the basis.

Then each of the participants expressed their views on the workshop.

Closure of the workshop. Director of CSRC V. Lyashevs'ky thanks all present for attending the meeting and has noted that in general the workshop was successful and effective, and he expect active participation of all stakeholders and participants in the next demo workshops.



Figure 2 - Workshop participants

№	Organization	Name, occupation
1	Dobroe village Council (Simferopol district, Crimea)	didn't participate
2	Design institute "Krymhyprovodhoz"	didn't participate
3	Crimean Bsin Dpartment of water Resources Management	Novik Valentyna, leading specialist
4	CSRC	Lyashevs'ky Valery , director Popovych Victor, senior scientist Popovych Valentyna, scientist Volkova Natalia, junior scientist Dunaieva Ielizaveta, junior scientist Samartseva Valentyna, leading engineer
5	Crimean Hydrogeological and Land Reclamation Expedition	Reznikov Sergey, head
6	National Academy of Environmental and Resort Design	Zaharov Roman, head of a chair of land reclamation
		Nikolenko Illia, head of a chair of drinking water supply and sanitation
		Stepantsova Natalia, chief of laboratory
		Denisova Anastasia, chief of laboratory of water chemistry and technology
7	Crimean republican association "Ecology and peace" (NGO)	Tarasenko Victor, PhD, academician, chairman of NGO and President of Crimean academy of science
8	Crimean republican sanitary-and-epidemiologic station	not participated
9	SDWSC (participant of the PREPARED project)	Safonov Oleksandr, main engineer
		Arhipov Konstantyn, head of a department
10	Crimean Republican Committee of Water Management	Sugak Oleksandr, head of a department of water resources
11	Crimean Republican Committee of Environment Protection	Serova Irina, head of a department
12	Saki Water Management Department	Kalabsky Mikhail , engineer
13	Salgir Water Management Department	Kulikova Julia, deputy head
		Orlova Tamara, head of information center
		Gnatyshin E., engineer information center
14	Simferopol city Council	represented by SDWSC
15	Simferopol State District Administration	Umerov Aider, head of a department of infrastructure development
16	State entity "Uzecogeocenter"	didn't participate
17	Center of Hydrometeorology in Autonomous Republic of Crimea	Vsadnikova Irina, head of a department of hydrology
		Ohremenko Natalia, deputy head of a department of hydrological forecast
18	Sebastopol National technical university	Holoptsev Oleksandr, prof. of ecology chair
19	Representative of public	Musiyanenko Victor, ecologist

3 Workshop WCSP and WCHDB

Meeting: Core team workshop for Demo activities WP 1.4
Meeting number: 2
Secretary: Valentyna Popovych
Date and place: 8.12.2011 Salgir IWMD, Simferopol, Ukraine

AGENDA:

1. Familiarization with the current situation of water supply and other problems in the urban water cycle (Simferopol DWSSC, Salgirsky IWMD, Dobrovský Village Council)
2. Detailing the methodology of development and testing of WCSP

MINUTES:

Welcoming speech was made by the Chief Deputy of SIWMD Kulikova Yu. Then, the participants briefly introduced themselves and their organizations, and were acquainted with the workshop agenda.

On the first issue were:

1. Kulikova Yu started with a presentation "Prospects of development of water resources in Simferopol district." She spoke about the current state of meliorative complex in whole and, in particular, Simferopol district, achievements and problems, as well as of Salgirsky IWMD.

Q.: Popovych V. (CSRC): "How much water is need for irrigated agriculture development in this area?"

Answer: In 1990, irrigation was applied to 10 million m³ of water. At the present time due to the large worn-out infrastructure, we can speak about the prospects of no earlier than 2020.

Q: Lyashevsky V. (CSRC): "Is the reuse of waste water?"

Answer: No, now re-used water is not, but we are interested in this.

2. Maksimov M. (Simferopol DWSSC) with the presentation "Simferopol DWSSC - prospects of development, including projected levels of water resources use ". He reported on the company's problems and prospects for the future.

Q.: Popovych V. (CSRC): "What are the prospects for implementation of the latest water treatment technology?"

Answer: It is planned to use in addition to hypochlorite Na, ultraviolet disinfection, now in Mezhhornoye reservoir ozone is used.

3. Lokaychuk L. (representative of Dobrovský village council) with information "Prospects for the development and improvement of Dobrovský Valley." She noted that population growth in Dobrovský Valley increased the demand for drinking water, but particularly acute problem arose with sewerage. She spoke about the ways and possibilities of solving of these

problems.

Q: Maksimov M. (Simferopol DWSSC): "If it will be not enough water, what will provide for in the future?"

A: "We plan to use the Malinovaya gully, worked out the question about construction of a new reservoir on the river Kizil-Koba".

On the second question was Dunayeva I. with presentation "The System safety plan." She briefed the participants on the methodology of plan development.

Q: Lisowski A. (CBDWM): "What regulations are used in the preparation of the plan?"

Answer (V. Popovych): "One of the documents is a Methodology, developed by WHO, and ratified by Ukraine".

Q: Holoptsev AV (Sevastopol STU): "If there is no prediction, can scenarios be used for risk assessment?"

Answer (Popovych V.): "A working model for prediction is needed exactly for the Crimea".

Then Popovych V. suggested the composition of working groups and talked about the work organization in groups: team creation, identification and risk assessment, the designation of priorities, the decision of the most pressing problem by the method of "back".

After completing the planned work in groups the summarization was made by Zakharov R. (NAERD). He spoke about identified risks and ways to eliminate them or reduce.

In the second part of the meeting a presentation was made by Prof. Holoptsev A. (Sevastopol NTU) on "Global and regional climate change projections. Localization of climate models for the Crimea". The presentation was taken into consideration with great interest, and in the discussion following participants took part: Popovych V., Lyashevsky V., Kulikova Y.

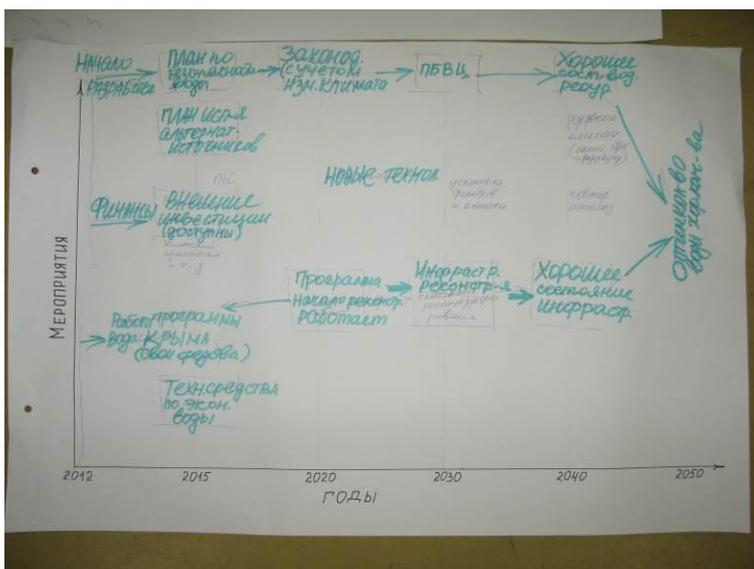


Figure 3 - Results of 'backcasting' exercise



Figure 4 - Participants at the meeting

№	Organization	Name, occupation
1	Dobroe village Council (Simferopol district, Crimea)	Lokaychuk L.
2	Design institute "Krymhyprovodhoz"	didn't participate
3	Crimean Bsin Dpartment of water Resources Management	Gubskaya Uliana, leading specialist
4	CSRC	Lyashevs'ky Valery , director Popovych Victor, senior scientist Popovych Valentyna, senior scientist Volkova Natalia, junior scientist Dunaieva Ielizaveta, junior scientist
5	Crimean Hydrogeological and Land Reclamation Expedition	Reznikov Sergey, head
6	National Academy of Environmental and Resort Design	Zaharov Roman, head of a chair of land reclamation
7	Crimean republican association "Ecology and peace" (CRA)	Tarassenko Victor, PhD, academician, chairman of CRA and President of Crimean academy of science
8	Crimean republican sanitary-and-epidemiologic station	Tsiganov S.
9	SDWSC (participant of the PREPARED project)	Safonov Oleksandr, main engineer Arhipov Konstantyn, head of a department
10	Crimean Republican Committee of Water Management	Sugak Oleksandr, head of a department of water resources
11	Crimean Republican Committee of Environment Protection	Serova Irina, head of a department
12	Saki Water Management Department	Kalabsky Mikhail , engineer
13	Salgir Water Management Department	Kulikova Julia, deputy head Orlova Tamara, head of information center Gnatyshin E., engineer information center
14	Simferopol city Council	represented by SDWSC
15	Simferopol State District Administration	Umerov Aider, head of a department of infrastructure development
16	State entity "Uzecogeocenter"	didn't participate
17	Center of Hydrometeorology in Autonomous Republic of Crimea	Vsadnikova Irina, head of a department of hydrology Ohremenko Natalia, deputy head of a department of hydrological forecast
18	Sebastopol National technical university	Holoptsev Oleksandr, prof. of ecology chair
19	Representative of public	Musiyanenko Victor, ecologist

4 Workshop RRDB

Meeting: WP 1.4.3 Demo Workshop “Database of risk reduction options”
Meeting number: 3
Secretary: Valentyna Popovych
Date: June 14 2012
Place: SDWSC 's hall, Simferopol, Ukraine

PURPOSE: Acquaintance of participants with the current tasks of the PREPARED project, structure of Risks Reduction Database, related to affecting of climate changes on sanitation systems, and acquaintance with tasks, directed on the using of GIS for planning of water resources usage and structural visualization of hydroeconomic information (DEMO tasks 1.4.3, 1.4.4).

AGENDA:

1. Current information about the PREPARED project
2. Presentation about the structure of RRD database
3. Informing of participants about GIS tasks in a project
4. Discussion of the information presented. Suggestions for improvement and adaptation of tasks to the conditions of SDWSC

MINUTES:

Welcome speech was made by head of department of SDWSC Arkhipov K. Then Popovych V. acquainted the meeting participants with agenda, told about a project and work, conducted jointly with SDWSC on the PREPARED project.

1. Dunaieva Ie. - presentation “Project PREPARED and current tasks”. She acquainted briefly new workshop participants with goals, tasks of the project, its partners and more about current projects results and activities.

2. Popovych V. - presentation “WCSP - Risk Reduction Database usage for reduction of risks”. He told about main risks, caused by the climate change (one of main for Simferopol is a crisis of availability and presence of water resources), about development of the Risk reduction database, about possibility of development of scenarios on risks management and mitigation.

3. Popovych V. and Dunaieva Ie. - presentation “GIS for planning of water resources usage and structural visualization of hydroeconomic information”. They acquainted participants with possibilities of the GIS using, about software products, which are used by project partners; gave examples of modeling with MWSWAT, example of precipitation change scenarios on a long-term period.

Discussion

Markova M. (head of department of Crimean Basin Water Management Department). She notes that the work is actual, because the risks appearance, related to the climate change, is a matter of the nearest future.

Pastushko A. (lead engineer of SDWSC) asked a question about the consideration in the project tasks, related with probable new pollutants of water.

Answer (Popovych V.) | reply | : Modern software models allow taking into account appearance of the new pollutants or changes in level of contamination.

Mekhedov E. («Ecology and Mir») has noted, that the program has work not only as theoretical model, but it has to develop certain questions, which will help the utility specialists in the specific situations too.

Arkhipov K. said about the necessity of support of this important work within the project, and about the necessity of such workshops, which give possibility to find integrated solutions for above mentioned tasks.

Suggestion: To prepare feedback from the workshop for improving RRD content with expending the information and options, which have to deal with water scarcity increasing (to incorporate it in the final version of the database) – responsible IAC (CSRC) and SDWSC experts.



Figure 5 - Explaining the risk reduction database

	Organization	Name, occupation
1	IAC of Crimea of NAAN (CSRC)	Popovych V.F., senior scientist Popovych V.V., scientist Dunaieva Ie., junior scientist
2	SDWSC	Arkipov K., head of department Erkoshev A., head of department of PS Nabokov R. head of department Fisharov V. head of laboratory disp Pastushko A., lead engineer Martynenko O., engineer
3	Crimean Basin department of water resources management	Markova M., head of department
4	Crimean republican association "Ecology and Mir" (CRA)	Mekhedov E.
5	Salgir Water Management Department	Kulikova J., deputy head

5 The WCSP on World Water Day

The WCSP framework, WCHDB and the RRDB were presented at the World Water Day meeting on 12 March 2012.



Figure 6 - Introduction of the WCSP framework, the WCHDB and the RRDB

List of participants

No	Name	Occupation
1.	Arkipov K.	head of production engineering department of Simferopol DWSC
2.	Bashta A.	PhD economical science, director Crimean Scientific Centre (CSC) of National academy of science of Ukraine and Ministry of education and science of Ukraine
3.	Emelianova N.	engineer CSC, PhD student (biology)
4.	Varivoda E.	Teacher of geography in №3 named after A. Makarenko
5.	Lisowski A.	Head of CBDWR
6.	Gubskaya U.	Main specialist of CBDWR
7.	Kaz'ko O.	Head of department of CBDWR
8.	Golubeva N.	Leading engineer of Crimean Dasin Department of Water Management (CBDWR)
9.	Novik V.	Main specialist of CBDWR
10.	Lyashevs'ky V.	Head of department of IAC (CSRC)
11.	Popovych V. F.	Senior scientist of IAC (CSRC)
12.	Dunaieva Ie.	Junior scientist of IAC (CSRC)
13.	Kelip A.	Junior scientist of IAC (CSRC)
14.	Paniutin V.	Head of Salgir Water Management department
15.	Oliferov A.	DPhil, prof. Taurida National University named after Vernadsky
16.	Ohremenko N.	deputy head of a department of hydrological forecast Center of Hydrometeorology in Autonomous Republic of Crimea
17.	Sozkova L.	PhD on geography science, associate professor of cathedra of geoecology at Taurida National University named after Vernadsky
18.	Chechel S.	Head of department of water monitoring and soil Crimean Hydrogeological and Land Reclamation Expedition
19.	Glupkina Zh.	