



As of 2 December 2014

## Workshop

### Land Use and Irrigation Planning and Monitoring

Fergana, 2 December 2014

- Report -

**Location:** conference room of the Syrdarya-Sokh Basin Irrigation System Administration (BISA), Fergana (Uzbekistan)

#### Participants:

29 staff-members of BISA, ISA and WUAs, including:

- 6 persons from Namangan province;
- 5 persons from Andizhan province;
- 18 persons from Fergana province.

Invited: Begmatov R., Deputy Head of Fergana province BISA, Umarov H.U., Kholikov O., Saimatov Zh.

**Aim of the training:** familiarize with scientific outcomes, methods and analytical tools developed and applied in CAWA project activities

**Organizers:** The training workshop was organized by the CAWA project partners ZEU University of Giessen, Wuerzburg University, and SIC ICWC.

#### Agenda:

The training program included important practical exercises and arouse much interest between the participants.

The following reports were presented:

#### **1. Introduction of Spare:Water application for irrigation planning on different planning units, demonstration of the Spare:Water Tool and Remote Sensing based monitoring techniques**

*Dernedde Y. (Giessen University, Germany)*

Yvonne Dernedde briefly described the fundamentals of the model.

## **2. Socio-economic forecasts for Fergana Valley**

*Gozhenko B. (SIC ICWC, Tashkent)*

Boris Gozhenko made an interesting report on the current socio-economic situation in the Uzbek part of the Fergana Valley and demonstrated the results of construction of future regional development scenarios that included a lot of factors, among which were demographic growth, changed cropping patterns, etc. The scenarios also consider probable climate change. The results of socio-economic development scenarios for the Uzbek part of the Fergana Valley developed by our researchers allowed tracing trends, with orientation to food security and improvement of living conditions in the Fergana Valley. In turn, water factor plays a very important role in socio-economic development of every nation and it is especially relevant for the conditions of Central Asia.

## **3. Hydromodule zoning improvement for irrigation planning. Adaptation to climate change**

*Stulina G.V. (SIC ICWC, Tashkent)*

Galina Stulina in her presentation demonstrated a need for improvement of the hydromodule zoning because of dynamical changes in parameters, which crop water requirements depend on. The presented zoning contributes to the optimization of the irrigation regime. One of the factors that affect irrigation depths in each hydromodule zone is climate change. Temperature rise leads to increased evaporation from the soil surface and from leaves. Therefore, one should take into account climate change scenarios in order to adapt to these changes.

## **4. Expected implications from climate projections**

*Ukhalin Yu. (SIC ICWC, Tashkent)*

The report addressed issues related to probable changes in the Fergana Valley during the period from 2020 to 2050 in the context of climate projections made within the CAWA Project in 2014.

He described in details the methodology of assessment of expected changes - selection of climatic scenario REMO-0406, hydrological model WASA, agricultural development scenarios, crop water requirements models (CropWat, ASBmm), the model of flow regulation and water allocation between provinces in the Fergana Valley, assessment of impacts of hydropower stations on water supply for the Valley's provinces under climate change, and presented a wide list of tools used in the project.

He addressed the issues related to an impact of climate change on crop water requirements and the effects of innovations on reduction of crop water requirements and improvement of crop yields (productivity), as the adaptation measures. Various water scenarios in irrigated agriculture were considered in light of climate projections.

This work is very relevant since it produces concrete results that can be used in daily practices and for future planning. For instance, the calculations indicated to an importance of the adoption of



innovations (drip irrigation, sprinkling) and modern technologies in agriculture. Food security and orientation towards import substitution and export of agricultural products should be the main guiding lines in agricultural policies.

Flow regulation for energy-generation purposes remains the main destabilizing factor for agricultural production in 2020-2050, reducing water for irrigated agriculture; the long-term regulation under combined energy-irrigation regime is an important measure for adaptation to changes in the river flow and its regimes caused by climate changes.

Given the global challenges (climate impact, population growth), the strategy of Fergana Valley development (as coordinated development plans of individual provinces in the Valley's countries) should be aimed at enhancement of water management effectiveness, prevention of conflicts related to flow regulation and water allocation, and improvement of water demand management.

## **5. Spare:Water evaluation of land use scenarios and climate impacts on the water requirements**

*Y. Darnedde (Giessen University, Germany)*

Professional participants have shown their interest in Yvonne's report. An important part of this model is the possibility to evaluate water use efficiency. As a result of implementation, GIS maps were produced. The maps show (using WUA Akbarabad as an example) amounts of irrigation water and leaching water needed for each field.

## **6. ReqWat current use short term (decadal) propagation and results of the analysis of future climate impact**

*Solodkiy G. (SIC ICWC, Tashkent)*

Georgiy Solodkiy demonstrated the results of water requirement calculation made using the ReqWat model. This model takes into account the components of water balance that are needed for calculation of irrigation depths for every crop, including groundwater contribution. The model uses the database developed for the three provinces in the Fergana Valley.