



Mainstreaming Drought Risk Management, with a focus on proactive measures

SWIM-H2020 SM, Expert Facility Activity No. EFS-JO-1-WP1

CONCEPT NOTE AND AGENDA TRAINING No. 1

Setting up and Calibrating WEAP Model for a Selected Sub-Catchment in Amman-Zarqa Basin (AZB)

4-6 March, 2018

Ministry of Water and Irrigation, Amman – Jordan

Background

Within the scope of work of the EU funded SWIM-H2020 SM, the project is undertaking an activity titled: "*Mainstreaming Drought Risk Management, with a focus on proactive measures*" (Activity no. (EFS-JO-1). The activity aims to support Jordan in enhancing preparedness & response to drought-related natural disasters and boost the resilience in the water sector through a series of interrelated activities that include training of the MWI staff and relevant stakeholders on the application of the "Water Evaluation and Planning" (WEAP) system in drought risk management. In order to achieve that, two training events will be conducted:

Training no. 1 (the subject of this concept note/agenda): focusing on building the capacity of the MWI towards the efficient use of the WEAP water resources management model;

Training no. 2: focusing on the application of the "Water Evaluation and Planning" (WEAP) system in drought risk management

Introduction

WEAP was selected as an appropriate tool to fulfil all the requirements to enable the water policy-directorate at Ministry of Water and Irrigation – Jordan (MWI) in order to enhance strategic water resource planning. As part of task 5 of the above mentioned activity, SWIM-H2020 SM undertook a review and assessment of the current capacity of the WEAP model available at MWI for Amman Zarqa Basin (AZB), with a view to identify any gap in the current simulation and existing conceptual model and in the data needed for adequate simulation; again focusing on the pilot area of Amman-Zarqa Basin and indicating the required model enhancements. To this effect, a demo model covering the said gaps was built aiming to improve the WEAP results to show the complete hydrological processes. The demo model has been built for AZB, and was populated with relevant data. The conceptual design of the model included the calculation of irrigation demand requirements, hydrological analysis for AZB, water balancing. The model will integrate hydrological input data and crop yield requirements together with environmental and other restrictions that follow the sustainability context. Available data actually should allow more complex approaches on rainfall – runoff mechanisms in dry climates.

Objectives of Training no. 1:

1. Introduce the relevant MWI staff to the findings of the WEAP model assessment deployed in MWI
2. Train the staff on setting up the WEAP model



3. Introduce the WEAP model improvements (the enhanced demo model that has been developed by SWIM-H2020 SM Project for the pilot case of Amman-Zarqa Basin (AZB)) covering the gaps and improving WEAP results to show the complete hydrological processes using hydrological approach.
4. Train the staff on the demo model to enter relevant input data (climatic data - rainfall, temp, evaporation) needed for the calculation of runoff and data needed for the calculation of crop water requirements (ETO + Crop factors))
5. Train them on simulating the water budget for the pilot case in AZB using hydrological analysis, also including the calculation of crop water requirements, and water balancing with special reference to the notion of “unmet demand” and water deficits from groundwater.
6. Hands on training for calibrating the demo model

Expected Results:

After successful completion of the training, the participants will:

1. Have a general understanding of how water resources assessment tools can be used to determine water demand and availability at the basin and sub-basin levels.
2. Understand and use the WEAP tool for AZ Basin.
3. Be able to calibrate and set up the model for other basins
4. Be able to Make changes and build additional scenarios on the WEAP system

Target Participants

The invitees should be directly involved, in drought management/ water resources management and planning, hydrological and water balance modeling (Ex: Water Policy Directorate).

Representatives from MWI, WAJ, and JVA are targeted in this training.



Agenda

Day 1: Opening and Overview

Time	Session	
9:00	Registration	
9:30	Opening Session Welcome Speech from MWI coordinator Opening Remarks Ex-Post Assessment and evaluation form	
10:00	Introduction to water resources management modelling <ul style="list-style-type: none">• Principles• Hydrologic (surface and groundwater) modelling (empirical, conceptual, physically based & lumped, semi distributed, fully distributed)• Water resources simulation and software models Introduction to WEAP• Potential of Water Evaluation and Planning tools: WEAP Model• WEAP Environment and structure• WEAP Conceptual Design	
11:30	Break	
12:00	WEAP Capabilities and Limitations <ul style="list-style-type: none">• Capabilities of WEAP<ul style="list-style-type: none">- Data Models built in WEAP- Simulation of water management Systems- Data and Model Requirements• Limitations	
12:30	Break	
13:30	Calculating Water Budget by WEAP <ul style="list-style-type: none">• Simplified Rainfall-Runoff Model• Penman-Monteith Approach• Setting up (data and methods)• Understanding time-steps, Current Account year, calculation procedures and reporting formats	
15:00	Wrap up of Day 1	



DAY 2: Application and Calibration of WEAP		
9:30	Recap from Day 1	All participants
10:00	<ul style="list-style-type: none"> • Application of WEAP on local water management : a case study from AZ Basin • Understanding water system dynamics in AZ Basin and the mass-balance elements 	
11:00	Break	
11:30	Building an aggregated model on WEAP at Zarqa River sub-catchment <ul style="list-style-type: none"> • Creating a new WEAP project • Adding supply and demand to the WEAP project (eg. irrigation and catchment areas-Rainfall Runoff Model) • Simulation of more detailed model in AZ catchment 	
12:30	Break	
13:30	Model Calibration and Understanding the Inputs Running the Amman-Zarqa WEAP model <ul style="list-style-type: none"> • Running the model • Viewing and understanding outputs • Understanding unmet demand and deficits from groundwater 	
15:00		
Day 3: Scenario Building of WEAP		
9:30	Recap from Day 2	All participants
10:00	WEAP application and scenario building <ul style="list-style-type: none"> • Application of WEAP through case studies Discussion on potential of scenario building in WEAP Demonstration of the AZ WEAP model <ul style="list-style-type: none"> • Walking through the general WEAP model • Expanding the model and adding more nodes, data 	
11:15	Break	
11:45	Continued...	
12:30	Break	
13:30	Continued... Changing the model and understanding outputs <ul style="list-style-type: none"> • Viewing and understanding the outputs • Discussion 	
15:00		