

# Thailand - Climate Change

## **WEAP, Climate and Decision Making Training-Workshop Agenda**

May 19 to 22, 2015

### **Introduction**

The following is the training agenda for the Thailand WEAP, Climate Change and Decision Making activities, with a focus on the training, use, and application of the Water Evaluation and Planning System (WEAP) software for climate change impact assessment and response. The proposed training will take place from 19 to 22 May, 2015 in Bangkok. Within this document is a draft agenda for the training set to span 4 days. The agenda includes theoretical and practical sessions. The theoretical sessions include introduction to the WEAP system components and their functionality and an overview of climate change background, manifestations in weather, and approaches to predictions and projections. The practical sessions include hands on training on the model used in the tutorial exercises and an independent model setup and running.

### **Agenda Details**

In the current draft of the agenda, there is time set aside for trainees to build their own WEAP model for select River Basins in Thailand, in particular the Phechaburi and Prachuap watersheds. Previous experience has shown that trainees learn the concepts and understand the software better if they are given the opportunity to think through the development of a model using data with which they are familiar.

Another question about the agenda is related to the more advanced topics. TBD

### **Session Descriptions**

1. Opening and introduction - During this session the training will be introduced. Often this includes a brief introduction by the host institution, introduction of the participants, and introduction of the trainers. Following that, provision of a general overview of water resources modeling and the WEAP software and the Robust Decision Making approach.
2. WEAP in one hour - this first hands-on session will introduce the trainees to the WEAP graphical user interface and to the basic skills required in working with the software. This tutorial has a simple problem in which the balancing of demand and supply is introduced. Basic tools in WEAP - this hands-on session introduces the user to the basic functionality in WEAP that allows for specification of parameters, equations, and operations rules. This functionality will be used in later sessions to build more sophisticated representations of supply and demand.

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3. Introduction to Climate Change science, discussion of possible impacts at global, regional and local scales, and introduction with examples projection and prediction concepts.
4. Scenario analysis in WEAP - this hands-on session introduces the concept of scenarios in WEAP. This functionality is a very powerful tool which allows users to easily study "what if" questions using the software.
5. Building a WEAP application of the “ “ River Basin - Days 1-4. In these sessions, we will introduce the “River Basin” and the data that are available for use in a model. Assuming that data can be prepared, we can lead the trainees through the steps necessary to build a simple, functioning WEAP model of the basin. The types of data that will be required include:
  - a. water supplies - this will include data on the major sources of water supply such as stream flow rates and groundwater availability.
  - b. demand for water - this can be water use rates for urban areas, crop acreages and use rates for irrigated areas, and/or water demands for hydroelectricity generation.
  - c. infrastructure data –this includes information on reservoir capacity and operating rules, hydroelectric plant capacity, and irrigation canal capacities.
  - d. GIS shapefiles of the basin – these are very useful in model building as they provide a foundation upon which the model can be built. They do not have to be very detailed. Often it is sufficient to have a shapefile of the basin boundary, the major streams, location of the water resources infrastructure, and location of the major population centers and irrigated areas.

With this these data we can lead the trainees through the construction of a model that will balance supply and demands. In order to do this successfully we will need to have the data provided to us in advance of the training and we may need assistance in preparing the data for use in the model. Please provide us with more information on the availability of data for this exercise.

6. Refining the supply and demand - this hands-on session will guide the trainees as they learn about (a) supply priorities, the modeling of reservoirs, in-stream flow requirements, and simple models of groundwater supplies; and (b) disaggregate the demand into a more detailed representation of demand. It will also cover the setting of demand priorities.
7. Practical exercise 1 – Creating a WEAP area from scratch – this hands-on tutorial will allow the users to practice the skills they have learned in the previous tutorials by building a model from scratch.
8. Hydrology – this hands-on tutorial will introduce the rainfall runoff modeling capabilities in WEAP. This is a more advanced topic yet it is very useful as it allows model users to simulate more of the hydrologic cycle. When this module is used, WEAP directly uses climate inputs such as rainfall and temperature and not measured stream flow rates.
9. Weather and Climate Vulnerability: Introduction to climate variability and effects of climate change on occurrence and impacts of different weather-scale events.

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10. Practical exercise 2- Modeling hydrology, calibrating and creating climate scenarios – this hands-on tutorial will allow the users to practice the concepts introduced in the hydrology tutorial.
11. Climate Change Projections: concept of multi-model future emission-scenario driven projections of change at different scales, how to work with model output, model evaluation, and defining scenarios
12. Practical Exercise: Climate Change Scenarios. Hands-on exercise to assemble an ensemble of climate data for different impact scenarios.
13. **Demonstration - agricultural water use in WEAP – this tutorial will introduce the different methods available for simulating agricultural water use.**
14. Continue building WEAP application of selection watershed
15. Financial analysis – this hands-on tutorial will introduce the ecological application capabilities that are available in WEAP.
16. Completion of WEAP River basin application

## Workshop Agenda

Time	Day 1	Day 2	Day 3	Day 4
8:00 – 10:00	<b>Opening and Introduction</b>  XLRM-Problem Formulation	<b>Tutorial</b>  Building a basic WEAP application for the Basin	<b>Tutorial</b>  Climate & Weather Vulnerability exploration	<b>Demonstration – Agricultural uses?</b>
10:00 – 10:30	<i>Coffee Break</i>	<i>Coffee Break</i>	<i>Coffee Break</i>	<i>Coffee Break</i>
10:30 – 12:00	<b>Tutorial</b>  WEAP In One Hour Basic tools	<b>Tutorial</b>  Refining the supply and Demand	<b>Practical Exercise</b>  2 -- Modeling hydrology, calibrating and creating scenarios	Building a WEAP application of the “ “ Basin
12:00 – 13:00	<i>Lunch break</i>	<i>Lunch break</i>	<i>Lunch break</i>	<i>Lunch break</i>
13:00 – 15:00	<b>Tutorial</b>  Climate Change Intro, Impacts, Predictions and Projections	<b>Practical Exercise</b>  1 – Creating a WEAP area from scratch	<b>Tutorial</b>  Climate Change Projections	<b>Tutorial – Modeling ecological uses?</b>
15:00 – 15:30	<i>Coffee Break</i>	<i>Coffee Break</i>	<i>Coffee Break</i>	<i>Coffee Break</i>
15:30 – 17:00	<b>Tutorial</b>  Scenario analysis in WEAP	<b>Tutorial</b>  Hydrology	<b>Practical Exercise</b>  3 – Climate change scenarios	Completion of “ “ River Basin application and discussion of next steps