HELPFUL DATA FOR WEAP

All of the data below will not be needed in every analysis. It will depend on the broader question you are answering, as well the physical environment. Please, also remember that WEAP is largely about planning for the future, so projections and possible infrastructure options should be collected as well. Typically, analyses are done using a monthly time step. Therefore, monthly data are the best. WEAP can import/export data in Excel and Comma Separated Values (CSV) files.

1. **Schematics, maps, etc. of the river basin you wish to model. Ideally, these would be in a vector (e.g. ArcView Shape files: *.shp) or raster format (e.g. ArcView GRID) for easy uploading into WEAP.**
   - Maps may include GIS layers of DEMs, rivers, land use, vegetation cover, soil type, geology, irrigated areas, and location of relevant infrastructure (i.e. reservoirs, hydropower plants, irrigation channels).
   - In order to upload them into WEAP, they should be in Geographic coordinates (preferably, in WGS84).
   - Some of these maps may be used for other purposes, like for subwatershed and catchments delineation, or land cover type areas estimation, so appropriate software for processing may be necessary (e.g. ArcGIS, Grass, QGIS).

2. **Demand data**
   - Municipal, domestic, industrial, irrigation, livestock, etc.
     - Total withdrawals from surface and groundwater categorized at the level of detail desired for the model (e.g., % of groundwater going to agriculture versus urban or rural domestic).
     - Drivers (i.e. population, irrigated area, etc.)
     - Water use rates (e.g., per capita urban or rural water use)
     - Withdrawal vs. consumption (% Return Flow)
     - Monthly variation in water use (e.g., irrigation schedules)
     - Loss and reuse

3. **Hydrology**
   - River and tributaries head flows
     - Time series data or monthly inflows
   - River flow monitoring data (e.g., streamgauge data)
   - Depending on the level of complexity of hydrologic modeling you wish to use, additionally:

- Land use/land cover data. In the case of agricultural land: Kcb, growth stages, maximum height, max/min root depth, technical itineraries for crops (planting dates, irrigation schedules,…).
- Soil type (to estimate relative hydraulic conductivity)
- Climate data: average temperature, precipitation, humidity, average wind speed

4. **Groundwater** (the following data would be needed for each aquifer, if more than one hydraulically separate geologic unit is used)
   - Maximum storage capacity
   - Initial storage
   - Maximum withdrawal per month
   - Natural (or artificial) recharge volume (monthly or annual) either directly from precipitation or from river losses to the aquifer

5. **Reservoirs**
   - Inflow (if not on a river)
   - Initial and maximum storage capacity
   - Volume elevation curve (to calculate evaporation or for hydropower)
   - Monthly evaporation rate
   - Levels of reservoir storage (inactive zone, buffer zone, conservation zone, flood control zone)
   - Hydropower
     - Max and min. turbine flows, tailwater elevation, efficiency, etc.

6. **Other Supply Sources (imports, transfers, desalinization, etc.)**

7. **Losses in the system (pipes, etc.)**

8. **Major point sources for pollutants (e.g., industries)**
   - pollutant loads contributed

9. **Wastewater Treatment Facilities**
   - volume of wastewater treated and discharged
   - percent of pollutants removed or load discharged (e.g., phosphorus, nitrogen)

10. **Water Quality data, and estimates of the river cross-section and length**

11. **Basic economic information, such as the marginal costs of operation of infrastructure, as well as capital costs, what prices different uses of water are charged.**