Water Evaluation and Planning System (WEAP)

Description	This is a PC based surface and groundwater resource simulation tool, based on water balance accounting principles, which can test alternative sets of conditions of both supply and demand. The user can project changes in water demand, supply, and pollution over a long-term planning horizon to develop adaptive management strategies. WEAP is designed as a comparative analysis tool. A base case is developed, and then alternative scenarios are created and compared to this base case. Incremental costs of water sector investments, changes in operating policies, and implications of changing supplies and demands can be economically evaluated.
Appropriate Use	What-if analysis of various policy scenarios and long-range planning studies. Adaptive agriculture practices such as changes in crop mix, crop water requirements, canal linings; changes in reservoir operations; water conservation strategies water use efficiency programs ; changes in instream flow requirements; implications of new infrastructure development. Strengths include detailed demand modeling.
Scope	All locations, surface- and groundwater systems; national, international or site-specific.
Key Output	Mass balances, water diversions, sectoral water use; benefit/cost scenario comparisons; pollution generation and pollution loads.
Key Input	Configuration of system (can use GIS layers for background) and component capacities and operating policies. Water demand: Spatially explicit demographic, economic, crop water requirements; current and future water demands and pollution generation. Economic data: Water use rates, capital costs, discount rate estimates. Water supply: Historical inflows at a monthly timestep; groundwater sources. Scenarios: Reservoir operating rule modifications, pollution changes and reduction goals, socio economic projections, water supply projections.
Ease of Use	Relatively easy to use. Requires significant data for detailed analysis.
Training Required	Moderate training/experience in resource modeling required for effective use.
Training Available	On-line tutorial available at http://www.weap21.org/. Contact SEI for details regarding available training (see below).
Computer Requirements	200 MHz or faster Pentium class PC with Microsoft Windows 95 or later (a 400 MHz PC with Windows 98 or later is recommended). A minimum of 32 MB of RAM and 50 MB of free hard disk space is also required (64 MB of RAM recommended). In addition Microsoft Internet Explorer version 4.0 is required for viewing WEAP's HTML Help. Monitor should be set to a minimum resolution of 800x600, but preferably even higher (e.g., 1024x768 or 1280x1024), to maximize the presentation of data and results.
Documentation	WEAP21 User Guide; available online at http://www.weap21.org as pdf file/.
Applications	Has been used for projects in the Aral Sea; Beijing, China; Rio San Juan, Mexico; Rajasthan, India; South Africa; West Africa; California, Texas, and Southeast, USA; Central Asia; India; Nepal; Korea; and Cairo, Egypt.
Contacts for Framework, Documentation, Technical Assistance	Jack Sieber, Senior Software Scientist, Stockholm Environment Institute (SEI), Boston; SEI-Tellus Institute, 11 Arlington St., Boston, MA 02116-3411 USA; Tel: +1.617.266.5400; e-mail: weap@tellus.com; website: http://www.weap21.org/.

Water Evaluation and Planning System (WEAP) (cont.)

Cost	US$2000 for commercial users includes free upgrades and technical support; discounts available for government, universities, and not-for-profit organizations; free to developing countries.
References	Huber-Lee, A., D. Yates, D. Purkey, W. Yu, and B. Runkle. 2003. Water, climate, food, and environment in the Sacramento Basin — contribution to ADAPT: Adaptation strategies to changing environment. Stockholm Environment Institute, Boston, MA, USA. Raskin, P., E. Hansen, Z. Zhu, and D. Stavisky. 1992. Simulation of water supply and demand in the Aral Sea region. *Water International* 17(2):55-67. Hansen, E. 1994. WEAP — A system for tackling water resource problems. In *Water Management Europe 1993/94: An Annual Review of the European Water and Wastewater Industry*. Stockholm Environment Institute: Stockholm. *U.S. Water News*, Oct. 1992. Aral Sea is classic example of ecological suicide. No. V4, p. 12.