

## Economics of Everglades Restoration, The

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The Economics of Everglades Restoration, R. Weisskoff. Edward Elgar Publ., Inc., P.O. Box 575, Williston, VT 05495-0575. 2005. 345 pages. \$110. ISBN 1-84376-224-2.

Using the Everglades Restoration Project as an example, this book gives an excellent presentation, backed up by numerous relevant tables and charts, of the problems associated with employing "off-the-shelf" forecasting software and existing data sets often collected for a different purpose - to develop accurate forecasts of water demand and economic growth. The forecasting models employed are REMI and IMPLAN. The author contends that most forecasts using these models yield inaccurate results because of biases built into the forecasting software and the inability of the software to account for "missing pieces." The Everglades Project Impact Restudy "missing pieces" were the effects of investment, agriculture, tourism, and project expenditures. Potential pitfalls of forecasting model assumptions are also identified. These included assuming that a subregion has the same characteristics as a national or larger region and that historical patterns will continue into the future.

The study area was divided into five basic subregions on the basis of socioeconomic and ecological considerations. Four areas were made up of county groups in the Everglades ecosystem and the fifth was the rest of Florida. An area that summarized all of the counties in the Everglades study area was also included. Population, employment, and economic output were projected for slow, medium, and fast growth rates for the subregions, study area, and State of Florida. The relationship between water and these socioeconomic variables was examined. It was decided to divide water users into public service provided (mostly residential) and other users (mining, agriculture, manufacturing, and tourism). While the expected residential connection growth could be adjusted for, the other use category proved more elusive as many of the special use estimates were based on inaccurate data. Adjustments were not made for the introduction of better commercial water user practices or the possibility that higher prices might reduce water demand for residences. Because of tourism and seasonal resident factors, population growth was not found to be a good predictor of water use growth in the study area.

Since urban and agricultural growth consume land, destroy ecological habitat, and increase demand for water resources, forecasting the demand for urban land is discussed intensively in Chapter 4 and mentioned elsewhere in the book.

Part II makes clear that ecology is about the natural system while economy deals with production, consumption, and welfare in the human sphere. While conflict between these two spheres exists, it is important to remember that ecology provides the platform on which the economy can act. An excellent review of literature on the conflict between environment and economy in the South Florida region is presented in Chapter 5. Economic development activities beginning in 1881 have adversely affected the Everglades. At first these irrigation and drainage activities were centered in agriculture and included several channeling and canal

projects. Later, construction of highways, the Tamiami Trail and Alligator Alley, contributed to water flow problems. Since the 1950s high population growth rates have also contributed to ecological destruction of the Everglades.

Historical shifts in population and dominant agriculture activities are carefully documented for each subarea in the study. For example, the Lower East Coast region was dominated by cattle and vegetable raising in the 1950s but is now dominated by sugar cane production. The growth of population in this region since the 1950s is also notable. Chapter 10 relates the author's efforts to give ecosystem services an economic value. This involved using local GIS land cover studies and using existing international land cover values to achieve the estimates.

Part III discusses the application of economic forecasting models in general and the characteristics of REMI and IMPLAN. Inclusion of the "missing pieces" is discussed in four separate chapters - each dedicated to a piece. The "one-size-fits-all" forecasting models tend to understate agricultural employment, income, and water use in the region's labor and water intensive agriculture. Investment is adjusted for large capital inflows generated by construction in South Florida as the "ready made" software assumes local capital sources. Tourism is not identified in the REMI base but gets mixed in with local resident spending. Thus, local resident spending may be overstated and, if tourism grows, the growth rate of local spending becomes overstated. In the study area, the beaches, coral reefs, the City of Miami, and the Everglades are important tourist destinations that generate considerable income that must be included in any economic base study. Careful analysis revealed that annual construction costs for the project (\$600 million to \$743 million) would have only a small impact on the region's already existing \$140 billion annual product.

Part IV discusses the present and future of South Florida. The author criticizes a number of conflicting forecasts that consistently underestimate the future water use and population of the area. He particularly dislikes the practice of applying "standard" water use coefficients that are proprietary and do not have relevance to the local water use conditions. Accurate projections are necessary because fast growing economies put pressure on ecosystems like the Everglades. Weisskoff opposes the view that economic growth is the solution to many of society's ills and should not be questioned. Several scenarios of future growth prospects for South Florida are discussed. The forecasted data for these scenarios is presented in an extensive appendix.

I found the book informative and recommend it to those considering similar studies of ecological and economy conflict, water resources planners, and urban and regional economists. The book is an excellent guide for studying urban growth impacts in ecologically sensitive areas, as it is about methodology in addition to being about the Everglades region.

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