
Abstract: The Chesapeake Bay watershed saw an increase in the growth of corn crops due to the interest in biofuels. Typically, analyses are limited to single metrics whether environmental (such as nitrogen loading), economic (such as energy), or social (such as impacts to recreation and the Bay culture and economy). This study demonstrates the feasibility of more sophisticated analyses but also illustrates the difficulties in obtaining relevant agricultural and other data. In a case-based study, three crops (corn, wheat, and soybeans) are examined for their contribution to the environmental impact to the Chesapeake Bay watershed. The economic and phosphorus fertilizer requirements for each of these crops are translated to economic costs for manufacture, transport and application of these fertilizers, and then with crop revenues and the carbon footprint of energy use required by the fertilizers. This case study demonstrates how different policy scenarios can be explored and compared. The case study demonstrates the need for data and decision support tools that can be used to assess the environmental, economic, and social impacts from the policies. The approach uses a multi-criteria Integrated Resource Assessment (MIRA) framework to develop a decision hierarchy, present decision options, and, finally, to develop and test policy scenarios. The MIRA approach can be used to develop decision hierarchies to identify effective policy options in a specific case, and to develop decision options to be tested in the same decision hierarchy. The ultimate goal of the MIRA approach is to present decision makers with a tool that can be used to develop and test policy scenarios in a specific case. The MIRA approach can be used to develop decision hierarchies to identify effective policy options in a specific case, and to develop decision options to be tested in the same decision hierarchy. The ultimate goal of the MIRA approach is to present decision makers with a tool that can be used to develop and test policy scenarios in a specific case.