

Modeling economic, social, and environmental issues surrounding woody biomass

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Those working towards sustainable solutions must take into consideration the conditions and relationships among the environmental, social, and economic spheres locally, as well as at the broader landscape scale. Each of these factors affects the amount and type of biomass that are potentially available given the economic and societal regulatory constraints on total available biomass supply. Key to ensuring sustainable cellulose supply is the spatial assessment of the economic availability of woody and agricultural cellulosic biomass feedstocks. Policy makers, businesses, and investors need to identify implications of external variables on bio-based market conditions to better guide bio-based market organization decisions.

This study explores the biophysical environment and its impacts on biomass access and the measure to which competing land uses are physically restricted by current land use and will include a spatial competition model and risk assessment for biomass resources. Data selected for variables and attributes include those from the natural and social-economic environments. Imagery enhanced decision support tools can provide rapid visualization to improve the ability to scrutinize bio-resource cost, consumption, and consequences. The resulting targeted landscape analysis will yield new analytical insights into likely biomass opportunity zones. This study builds upon work already completed and is an extension of the Biomass Site Assessment Tool (BioSAT) web-based system, <http://www.biosat.net/>. BioSAT contains transportation, harvesting, and resource cost models that provide spatially-explicit biomass economic supply curves for agricultural and forest bio-basins at a 5-digit ZIP Code Tabulation Area (ZCTA) resolution providing 25,307 potential analytical polygons or site locations.