



Bioenergy hotspots in Switzerland: spatially-explicit analysis of bioenergy potentials and socio-economic characteristics

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Bioenergy can make an important contribution to the transition towards renewable electricity and heat generation in Switzerland and elsewhere. Spatially explicit estimates of theoretical and sustainable bioenergy potentials are typically quantified in order to inform decisions. However, these estimates provide only partial insights on which regions shall be prioritized for effectively harvesting bioenergy. Using the spatially-explicit data on potentials of ten types of bioenergy in Switzerland (N= 2274 municipalities), we conduct three subsequent analyses. First, a spatial hotspot analysis is applied to identify groups of neighboring Swiss municipalities with high or low overall bioenergy potentials (so-called hotspots and cold spots, respectively). Second, using k-means clustering, five clusters of municipalities are identified in terms of having a similar structure of bioenergy potentials, namely clusters of high shares of forest wood, high shares of manure, high shares of mixed agricultural bioenergy, high shares of anthropogenic bioenergy (wastes), and lower-than-average bioenergy regions. Third, socio-economic characteristics of these bioenergy hotspots and these clusters of municipalities are analyzed in order to shed light on patterns between bioenergy potentials and socio-economic characteristics that can help initiate the bioenergy uptake. The results serve as a basis for municipal, inter-municipal and national energy planning. Furthermore, location of municipalities with promising “bioenergy portfolios” may be identified to prepare further case study analysis.