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Enhancing Livestock Market Access for Sustainable Rangeland Management and Improved Livelihoods in Kenya

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Abstract

Despite the value of rangelands terrestrial ecosystem services, their stewardship is undermined by various factors leading to considerable rangeland degradation around the world. In Kenya, productivity of rangelands is limited by increasing crop farming especially in more fertile range areas, decoupling formerly intact rangeland landscapes. This encroachment by crop farming on rangelands occurs as a response of the rural livestock producers' to economic opportunities with the development of local and international crop markets. We hypothesise that the existing market inefficiencies characterising livestock markets, especially the price disincentives that livestock producers face, are a major risk rangelands face. Using Narok County as a case study we analyse the effect of livestock market conditions on rangeland management. We draw data from a countrywide comprehensive household survey and economic modelling tools. A stochastic dynamic programming model for livestock systems is developed to analyse the effect of improving livestock market access on rangeland management. A positive mathematical programming (PMP) model is used to assess rangeland allocation decisions under improved market access conditions. Results indicate that market price disincentives among livestock producers' mainly arise from livestock traders' rent seeking behaviour and high transport costs to terminal markets. Linking livestock producers to the end market and adoption of efficient methods of transporting livestock at the prevailing road infrastructure conditions increases the livestock producers' margin by more than 50 percent as a percentage of selling price. Higher producer margins lead to less modifications and conversions of rangeland and higher sales volumes of livestock. The optimal livestock units also increase while the livestock densities are much lower from the base scenario characterised by high exhortations by middlemen and high transportation costs of livestock to terminal markets. Given the strong relationship between responses to economic opportunities, rangeland use decisions and sustainability of the ecosystems, policy implications drawn by this study encourage strategies that increase returns from rangeland uses to ensure the sustenance of the ecosystems.

Keywords: Ecological-economic model, extensive livestock production, Kenya, market access, mathematical programming model, positive

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