

ERS Peer Review Plan

Preliminary Title: The Impact of Climate Change on Global Rangeland Livestock Production

Type of Report (ERR, EIB, EB) ERR

Agency: Economic Research Service [X] Influential Scientific Information
USDA [] Highly Influential Scientific Assessment

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Subject of Review: A changing climate could threaten cattle and other livestock production. Heat stress, when temperatures are higher than an animal's thermoneutral zone, can affect weight gain, milk yield, and fertility. In addition, a changing climate can indirectly affect livestock production by reducing the quantity and quality of food available as feed, increasing competition for fresh water, and spreading disease-causing pathogens. Grazing, or land-based production systems in which livestock, including cattle and other species, obtain most of their food from grasslands and crop residues may be particularly vulnerable to climate change because animals are exposed to the weather, and producers may be limited in their adaptive capacities. To consider how a changing climate could affect cattle globally and regionally, we use a simulation model to estimate losses in global meat and milk production stemming from reductions in forage availability on rangelands by 2050 under different climate scenarios. Because there is scientific uncertainty about how plant growth may respond to increased atmospheric carbon dioxide, we simulate results in which we consider a positive carbon fertilization effect on plant growth in rangelands, and we simulate results with no such effect.

Purpose of Review: The purpose of the review is to ensure the high-quality of the economic analysis, transparent explanation of methods, objective interpretation of results, and effective communication to the intended audience.

Type of Review: [] Panel Review [X] Individual Reviewers
[] Alternative Process (Briefly Explain):

Timing of Review (Est.): Start: 12/21/2023 Completed: 4/8/2024

Number of Reviewers: [] 3 or fewer [X] 4 to 10 [] More than 10

Primary Disciplines/Types of Expertise Needed for Review: Economists

Reviewers selected by: [X] Agency [] Designated Outside Organization

