

Draft Overview

Impact of Climate Change on Rural Communities¹

Rural communities tend to be more dependent on climate-sensitive livelihood activities and have lower resources and social support systems compared to urban populations. As a result rural communities face large potential impacts from future climate change events. This white paper evaluates three categories of direct and indirect impacts of climate change on rural communities-ecological, economic and social and potential mitigation and adaptation opportunities and policies for reducing the impacts on rural communities.

The introductory section discusses climate change vulnerability in the US and why rural communities are more vulnerable than others in terms of the direct and indirect impacts of climate change as well as the magnitude and scale of the problem. The second section briefly reviews ecological impacts on communities such as- shifts of vegetation types and associated impacts on biodiversity; changes in forest density and agricultural production; expansion of arid land; decline in water quantity and quality; stresses from pests, diseases and fire; relocation from coastal areas. The economic impacts include - reduced production of non-market goods and services; increased risk and uncertainty of forest or agricultural production; alteration in productivity of crops and forest products in different regions; increased cost of utilities and services such as insurance; and changes in transportation pathways. The social impact analysis examines changes in employment, equity, risk distribution, impact on human health via direct impacts (e.g., thermal stress) and indirect impacts (e.g., disease vectors and infectious agents).

The third section reviews the literature on potential climatic impacts specific to forestry such as the likelihood of increased wildfire risk; changes in harvest density and associated impacts

¹ Authors: Janaki Alavalapati and Pankaj Lal, Virginia Tech University, Evan Mercer, USFS,

through prices; shifts in agro-ecological zones; changes in tree growth for some species; increased chance of pest attacks; lower access to forests. We also cover some of the benefits that may be associated with higher temperatures in term of expansion of west coast coniferous forests. The fourth section delineates regional vulnerabilities for rural communities and associated opportunities for climate change mitigation or adaptation opportunities. Finally, the policy environment is discussed in terms of current policies related to climate change, opportunities for the domestic forestry sector in carbon sequestration, and associated benefits to rural communities. The last section examines potential policies for assisting rural communities in adapting to and/or mitigating the impacts of climate change.