Impacts of Climate Change on Turkish Arable Land and its Economic Consequences

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SUMMARY

This study investigates the impact of carbon dioxide (CO2) emissions on Turkish arable land and their economic implications, with the aim of providing policymakers with empirical evidence underscoring the importance of encouraging CO2-emitting sectors to adopt climate-friendly practices promptly. The study adopts a quantitative research approach based on an extensive literature review, an analysis framework, and model specifications. Therefore, annual data from 1990 to 20023 were obtained from the Turkish Statistical Institute to evaluate the effects of climate change, and the ARDL method was used as the analytical approach. The dependent variables include Turkish arable land and Gross National Product (GNP), while the independent variables encompass CO2 emissions from agricultural land use, energy consumption, industrial processes, and waste generation. GNP serves as a measure of economic impact. The findings reveal that emissions from various sectors negatively influence arable land in Turkey. Specifically, CO2 emissions from the energy sector and industrial processes have a detrimental effect on arable land. Conversely, emissions from the agricultural sector and waste management show a positive correlation with arable land. Additionally, GNP is positively associated with arable land. The results further indicate that emissions from the agricultural, energy, and industrial sectors significantly contribute to economic growth, as reflected in increased country revenue, while also causing substantial environmental damage. An increase in CO2 emissions is linked to both economic advantages and environmental degradation. These findings underscore the urgent need to address emissions from the energy sector and industrial processes to mitigate adverse effects; therefore, developing effective transition strategies remains vital.