Review of: "Revitalizing Key Conditions and Integrated Watershed Management to Mitigate Land Degradation and Sustain Water Availability for Agriculture in Semi-Arid Regions: A Case Study of Ethiopia"

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The present research on revitalizing key conditions and integrated watershed management to mitigate land degradation and sustain water availability for agriculture in semi-arid regions of Ethiopia provides a comprehensive overview of the research objectives, methodology, and key findings, demonstrating a thorough approach to understanding the challenges and constraints hindering the promotion of watershed-based interventions. The identification of key challenges and limitations, including poor institutional support, lack of participation, inadequate planning of soil and water conservation technologies, absence of research and development linkages, and insufficient capacity building, reflects a nuanced understanding of the complexities involved in implementing watershed-based interventions. By delineating these challenges, the author lays a solid foundation for proposing actionable recommendations to revitalize the Integrated Watershed Management (IWSM) approach. Furthermore, the emphasis on ensuring institutional support, community participation, and the establishment of a watershed-based platform for scientific tools and capacity building demonstrates a forward-thinking approach to addressing the identified constraints. These key conditions for revitalizing watershed-based interventions hold the potential to mitigate soil erosion-induced land degradation, rehabilitate watershed resources, and sustain water availability for agriculture in Ethiopia, setting a precedent for other semi-arid regions facing similar challenges.

The research may further benefit significantly from drawing insights from related studies conducted in contexts analogous to the Ethiopian semi-arid regions (cited in this review and can be accessed from the reference section). The seminal studies on water management using traditional tank cascade systems in semi-arid region of Southern India provides valuable insights into the efficacy of traditional water recharge structures, notably tank cascade systems, in alleviating water scarcity challenges. By examining the case of Southern India, these studies underscore the historical efficacy of traditional water management practices in semi-arid environments. The findings illuminate the potential applicability of similar strategies in Ethiopia, where analogous environmental and climatic conditions prevail. Moreover, the researches on the revival of traditional cascade tanks for achieving climate resilience in drylands of South India presents a compelling argument for the revitalization and maintenance of traditional tanks to enhance climate resilience. These studies emphasize the critical role of proper management and desilting of traditional tanks in fulfilling both domestic and agricultural water requirements [1][2][3][4][5][6][7][8]. By elucidating the benefits of restoring traditional water

infrastructure, such as cascade tanks, these researches provide actionable insights for policymakers and stakeholders in Ethiopia seeking to enhance water security in semi-arid regions.

Furthermore, the studies on watershed development interventions for rural water safety, security, and sustainability in semi-arid region of western-India offers crucial lessons on combating water scarcity for irrigational requirements and water imbalance in rural areas. Through an exploration of watershed development interventions in Western India, these research highlights the significance of devising effective strategies tailored to local contexts. By focusing on rural water safety, security, and sustainability, these studies underscore the importance of community-centric approaches and decentralized water management initiatives along with community mobilization on digital methods of collecting hydrologic and hydrogeologic data and exploiting the benefits of artificial intelligence and machine learning approaches in agricultural water management [9][10][11][12][13][14][15][16][17]. The insights gleaned from this research serve as a valuable resource for informing policy formulation and implementation strategies in Ethiopia, particularly in semi-arid regions grappling with similar water security challenges.

Collectively, these related studies provide a rich tapestry of insights into various facets of water management in semi-arid regions, ranging from the effectiveness of traditional water infrastructure to the importance of community engagement and decentralized interventions. Building upon the insights from these related studies, future research endeavors could explore the potential applicability of traditional water management practices and decentralized watershed development approaches in the Ethiopian context. Besides, the author is to be commended for the meticulous approach to the research, which includes a systematic review of over 60+ published articles and engagement with 65+ peer reviewers. The author's commitment to rigor and inclusivity in scholarly discourse is evident, and the incorporation of diverse perspectives enriches the study's credibility.

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