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**Water resource management and climate adaptation in semi-arid regions****Ahmed El-Sayed**

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Climate change has intensified water scarcity in semi-arid regions, affecting agriculture, ecosystems, and human livelihoods. This research investigates sustainable water management approaches including rainwater harvesting, wastewater recycling, and efficient irrigation systems. The findings demonstrate that integrated water resource management enhances resilience against climate variability while supporting sustainable development. The study

recommends collaborative governance and technological innovation to ensure long-term water security in vulnerable regions.

**Biography**

Ahmed El-Sayed is a water resources specialist focusing on sustainable water management and climate adaptation strategies in semi-arid environments. His research addresses water scarcity challenges and integrated resource management systems.