

Introduction of Dams Impacts on Downstream Wetlands: Case Study in Ahwar Delta in Yemen

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Abstract : The construction of dams can provide various ecosystem services, but it can also lead to ecological changes such as habitat loss and coastal degradation. Yemen faces multiple risks, including water crises and inadequate environmental policies, which are particularly detrimental to coastal zones like the Ahwar Delta in Abyan. This study aims to examine the impacts of dam construction on downstream wetlands and propose sustainable management approaches. Research Aim: The main objective of this study is to assess the different impacts of dam construction on downstream wetlands, specifically focusing on the Ahwar Delta in Yemen. Methodology: The study utilizes a literature review approach to gather relevant information on dam impacts and adaptation measures. Interviews with decision-making stakeholders and local community members are conducted to gain insights into the specific challenges faced in the Ahwar Delta. Additionally, sensing data, such as Arc-GIS and precipitation data from 1981 to 2020, are analyzed to examine changes in hydrological dynamics. Questions Addressed: This study addresses the following questions: What are the impacts of dam construction on downstream wetlands in the Ahwar delta? How can environmental management planning activities be implemented to minimize these impacts? Findings: The results indicate several future issues arising from dam construction in the coastal areas, including land loss due to rising sea levels and increased salinity in drinking water wells. Climate change has led to a decrease in rainfall rates, impacting vegetation and increasing sedimentation and erosion. Downstream areas with dams exhibit lower sediment levels and slower flowing habitats compared to those without dams. Theoretical Importance: The findings of this study provide valuable insights into the ecological impacts of dam construction on downstream wetlands. Understanding these dynamics can inform decision-makers about the need for adaptation measures and their potential benefits in improving coastal biodiversity under dam impacts. Data Collection and Analysis Procedures: The study collects data through a literature review, interviews, and sensing technology. The literature review helps identify relevant studies on dam impacts and adaptation measures. Interviews with stakeholders and local community members provide firsthand information on the specific challenges faced in the Ahwar Delta. Sensing data, such as Arc-GIS and precipitation data, are analyzed to understand changes in hydrological dynamics over time. Conclusion: The study concludes that while the situation can worsen due to dam construction, practical adaptation measures can help mitigate the impacts. Recommendations include improving water management, developing integrated coastal zone planning, raising awareness among stakeholders, improving health and education, and implementing emergency projects to combat climate change.

Keywords : dam impact, delta wetland, hydrology, Yemen

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