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Circularity of Water in Small Islands: A Case Study of Rainwater Harvesting in Ameland

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Abstract

As climate change continues to impact small islands, the consequences on freshwater resources become increasingly pronounced. This paper explores the critical realm of the circularity of water, focusing on the case study of Ameland, a small island in the North Sea and part of the Netherlands' West Frisian Islands.

Ameland sources freshwater from underground reservoirs located on the island and predominantly relies on a mainland pipeline for its water supply. As the island experiences an upswing in population and tourism and heightened freshwater demands during the summer, envisioning alternative sustainable water resources emerge as a judicious strategy within the circularity of water. This aligns with the pursuit of self-sufficiency and the aim to reduce dependence on the mainland for water resources and maintain the number of groundwater reservations on the island.

In response to these challenges, the study delves into rainwater harvesting as a sustainable and effective measure within the circularity of water. Rainwater harvesting offers multifaceted benefits, from mitigating water scarcity to promoting year-round sustainable water management practices, particularly crucial during the summer months. The research methodology employs quantitative data collection to analyse Ameland's current state of water resources. A feasibility analysis is conducted highlighting the technological, economic, social, geophysical, institutional and environmental aspects for rainwater harvesting adoption at household level using insights from external case studies, specifically focusing on adapting viable and sustainable solutions to suit the distinctive context of Ameland. The key findings underscore the potential success of rainwater harvesting in Ameland, detailing challenges and proposing solutions. These insights highlight the initiative's ability to address water scarcity and alleviate pressure on the island's freshwater resources. The study contributes valuable insights to the broader discourse on sustainable water management practices, offering a template for implementing rainwater harvesting in similar small island environments

Keywords: Island, Ameland, Rainwater harvesting

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