


Chapter 15


Constructed Wetlands as a Greywater Management Alternative in the Tourism Industry

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ABSTRACT

The exponential increase in tourism escalates greywater production from laundry, gardening, bathing, and sewage treatment, leading to water scarcity. Simple physical and biological processes can purify greywater for reuse, leading to water conservation. Constructed wetlands offer new approaches to dealing with greywater, especially in polluted tourist areas, through plant, soil and microbial activity filtration processes. These systems are feasible for tropical regions with limited water resources. This chapter examines the suitability of constructed wetlands for greywater treatment, highlighting techniques, performance evaluations and environmental benefits. By integrating these systems, tourism facilities can reduce their ecological footprints with significant savings on water consumption. Constructed wetlands aid in improving greywater management and promoting sustainable water use because they have numerous advantages, such as low maintenance costs and adaptability, which are crucial in ecological preservation amidst rising tourism numbers.

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1. INTRODUCTION

Freshwater is vital for sustaining life, ecosystems, and human activities. It is essential for drinking water, agriculture, commerce, and recreation. Among these, tourism is an important sector that relies heavily on freshwater resources (Goncharuk & Goncharuk, 2019). Recreational tourism, especially around beaches, rivers, and lakes, requires much clean water for many purposes, including shelters, land for recreational activities, and maintenance of grounds and gardens. The rapid expansion of international tourism is placing increasing pressure on freshwater resources, often leading to significant ecological impacts. Sustainable water management is essential because the industry uses significant quantities of fresh water (Jones et al., 2005) due to many activities such as tourism, skiing and golf, spas, swimming pools, fishing, landscaping, and other infrastructure (Gössling et al., 2012). This trend is seen as a significant ecological problem. Moreover, many types of tourism also involve water-based, counting landscapes with snow winter, farming, or nature travel.

Backwater tourism forms the foundation of the tourism industry in Kerala (Safoora & Devadas, 2014). These interconnected channels serve as a vital rural tourism resource in many regions, attracting numerous tourists and representing one of the state's distinctive products. Alleppey and Kumarakom are the primary centres of this industry (Rajan et al., 2011). Houseboats on still waters use water for various purposes, including drinking, cooking, cleaning, hygiene, and maintenance. In the hotel sector, water consumption is categorised into aquatic use, hydrology, water usage, and best practices (Antonova et al., 2021). Several factors influence water use in restaurants. Some research identifies the tangible attributes of hotels as determinants of drinking water usage (Gabarda et al., 2017; Gössling et al., 2012). Other factors include environmental certification and the use of water-saving products. Studies have also examined the function and composition of water prices (Antonova et al., 2021). Pereira et al. (2021) focus on a luxury five-star hotel in Portugal, detailing water-saving measures and strategies for differentiating itself from competitors.

The Mediterranean region is the most visited tourism destination globally, attracting 300 million tourists annually (Lanquar, 2011). It is described as a location where tourism induces a crisis in water supply, competing with local users for resources (Kent et al., 2002; Tortella & Tirado, 2011; Rico et al., 2009). Consequently, the Mediterranean has become the most extensively studied area regarding water consumption within the tourism sector. However, similar stresses on local water supplies have been observed in Indonesia, particularly in Bali, where the tourism industry reportedly consumes 65% of the area's water, leading to noticeable tensions between the hotel industry and neighbouring communities.

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