Chapter 6
Promoting Clean Air and Water for Environmental Sustainability in Sundarbans

Oindrilla Ghosh
https://orcid.org/0000-0001-9609-0781
Christ University, India

Binod Kumar
https://orcid.org/0009-0002-9721-1367
Radha Govind University, India

ABSTRACT

The Sundarbans, a UNESCO World Heritage Site, is crucial for biodiversity and the livelihoods of millions. To promote environmental sustainability in this unique mangrove ecosystem, a focus on clean air and water is paramount. Addressing pollution from industrial discharges and agricultural runoff is essential to protect the region's fragile ecology. Community awareness programs can educate locals about the importance of maintaining air and water quality. Implementing eco-friendly agricultural practices, such as organic farming, can reduce chemical pollutants. Collaboration with NGOs and governmental bodies can facilitate sustainable development initiatives and stricter regulations on waste disposal. Restoration projects for mangroves also play a vital role in improving water quality and sequestering carbon. By prioritizing clean air and water, we can ensure the health of the Sundarbans for future generations while supporting the diverse wildlife that thrives in this remarkable habitat.

DOI: 10.4018/979-8-3373-0139-6.ch006

INTRODUCTION

The Sundarbans, a UNESCO World Heritage Site, is a unique and ecologically rich delta region located at the confluence of the Ganges, Brahmaputra, and Meghna rivers in India and Bangladesh (Chen et al., 2024). It comprises a vast network of mangrove forests, islands, and waterways, making it one of the largest and most biodiverse coastal ecosystems in the world (Vats & Mathur, 2024). Comprising intricate ecosystems, this region plays a crucial role in maintaining environmental sustainability, particularly in terms of supporting (Tiwari et al., 2024) both terrestrial and aquatic life. However, the Sundarbans is increasingly under threat (Pachar & Singh, 2021) from pollution, climate change, and human activities that compromise the quality of air and water vital for the health of both the ecosystem and the local communities that depend on it (Adom, 2024).

Promoting clean air and water in the Sundarbans is not merely a regional concern (Shrestha & Aryal, 2011); it has global implications. The mangroves in the Sundarbans serve as important carbon sinks, helping to mitigate climate change by sequestering carbon dioxide from the atmosphere (Kuir-Ayius, 2024). Their role in improving air quality cannot be overstated, as they filter pollutants and contribute to overall atmospheric balance (Jolly et al., 2024). Furthermore, clean water is essential for sustaining fish populations and the livelihoods of local fishermen, while also maintaining the health of various species, including the iconic Bengal tiger (Hosterman & Smith, 2025). In essence, ensuring clean air and water is integral to the broader objective of environmental sustainability in the Sundarbans, and it requires a concerted effort from policymakers, NGOs, and local communities (Amarnath et al., 2017).

To achieve sustainable environmental practices, it is imperative to adopt a multifaceted approach that includes regulatory measures, community engagement, and the incorporation of traditional ecological knowledge (Gunaratne et al., 2021). Educating local populations about the importance of clean air and water can lead to a stronger commitment to conservation practices (Zappacosta & Hollema, 2017). Community-driven initiatives, such as reforestation, waste management, and water conservation projects, can further enhance the region's resilience against the pressures of pollution and climate change (Ait Kadi & Ziyad, 2018). Technology also plays a pivotal role in promoting clean air and water. Innovative solutions such as pollution monitoring systems, advanced water purification methods (Aryal et al., 2024), and satellite technology for tracking forest cover can provide valuable data and insights, informing better resource management practices (Singh et al., 2022). Ultimately, promoting clean air and water in the Sundarbans requires a holistic approach, integrating environmental stewardship with socio-economic development (Koswatte et al., 2024).