



Research Article

Challenges and Opportunities for Sustainable Management of Riverine Forests in Sindh Province, Pakistan

Abdul Fatah Khoso

Forest and Wildlife Department, Government of Sindh, Pakistan.

Abstract | Riverine forests in Sindh are among the most productive ecosystems of Pakistan, supporting biodiversity, livelihoods, and regulating the Indus River system. Over the years, however, these forests have been degraded due to reduced water flows, encroachment, illegal logging, and weak management. This article examines the present status of riverine forests in Sindh, highlights key challenges, and proposes sustainable management solutions with a focus on community participation and policy reforms.

Received | September 14, 2025; **Accepted** | March 03, 2026; **Published** | April 23, 2026

***Correspondence** | Abdul Fatah Khoso, Divisional Forest Officer, Forest and Wildlife Department, Government of Sindh, Pakistan; **Email:** khosoabdulfatah@gmail.com

Citation | Khoso, A.F., 2026. Challenges and opportunities for sustainable management of riverine forests in Sindh Province, Pakistan. *Pakistan Journal of Forestry*, 76(1): 01-03.

DOI | <https://dx.doi.org/10.17582/journal.pjf/2026/76.1.01.03>

Keywords | Riverine Forestry, SFM, Climate Change, Biodiversity Conservation



Copyright: 2026 by the authors. Licensee ResearchersLinks Ltd, England, UK.

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Introduction

Sindh province hosts extensive riverine forests along the Indus River, stretching from Guddu Barrage to Kotri Barrage. Historically, these forests provided timber, fuelwood, grazing, wildlife habitat, and acted as natural flood barriers. Today, they remain vital for rural livelihoods and climate resilience. Despite their importance, riverine forests have declined drastically in both area and density over the last decades.

Current challenges

1. Reduced water flows: Construction of dams and barrages has limited freshwater availability downstream, disturbing natural regeneration cycles (WWF, 2010; FAO, 2019).
2. Encroachment and agriculture: Riverine forest

lands are increasingly encroached upon for farming and settlements (GoS Forest Department, 2016).

3. Overgrazing and fuelwood collection: Local dependence on forests for fodder and fuel has caused rapid degradation (Shah *et al.*, 2013).
4. Weak governance: Limited capacity of the forest department and insufficient enforcement of laws hinder effective management (FAO, 2019).
5. Climate change: Rising temperatures and erratic rainfall patterns add further stress to these fragile ecosystems (IPCC, 2022).

Opportunities for sustainable management

1. Community participation: Empowering local communities through joint forest management schemes and awareness campaigns (Khan *et al.*, 2018).

2. Restoration projects: Large-scale reforestation with native species such as *Prosopis cineraria*, *Acacia nilotica*, and *Tamarix* (Qureshi *et al.*, 2017).
3. Alternative livelihoods: Introducing eco-tourism, non-timber forest products (NTFPs), and agroforestry to reduce direct dependence on forests (FAO, 2017).
4. Water allocation policies: Ensuring minimum ecological flows for downstream forests through improved water governance (WWF, 2010).
5. Donor and institutional support: Collaboration with organizations like FAO, WWF, and IUCN to finance and implement sustainable forest management plans.

Recommendations

1. Establish riverine forest conservation zones with strict protection measures.
2. Introduce community-based monitoring systems to curb illegal logging and encroachment.
3. Integrate forest restoration into provincial climate adaptation plans.
4. Strengthen institutional capacity of Sindh Forest Department through training and technology.
5. Strengthen infrastructure capacity of Sindh Forest Department including DFO office buildings and mobility specially 4×4 vehicles for riverine topography.
6. Capacity building of mid career officers of Sindh Forest Department with innovative and modern knowledge with reference to changing climate and improving monitoring.
7. Outdated forest law may immediately revised and forest officials may be declared as forest force like KPK and other provinces of Pakistan.

Conclusion

The survival of Sindh's riverine forests depends on immediate restoration efforts, strong governance, and community participation. Protecting these forests will not only conserve biodiversity but also secure the livelihoods of thousands of people and contribute to Pakistan's commitments to climate resilience and sustainable development.

Acknowledgement

The author is grateful to the Chief Conservator of
June 2026 | Volume 76 | Issue 1 | Page 2

Forests, Sindh Riverine and Inland Forests, Mr. Riaz Ahmed Wagan, for his guidance and support.

Novelty Statement

This study provides a holistic and updated assessment of the challenges and opportunities for the sustainable management of riverine forests in Sindh, Pakistan. The novelty of the study lies in integrating ecological, socio-economic, and governance dimensions to understand the drivers of degradation of Indus riverine forests. Unlike previous studies that mainly emphasized ecological aspects, this article proposes a practical and policy-oriented framework that highlights community participation and institutional reforms as key pathways for long-term sustainability and conservation.

Generative AI and AI assisted technology statement

The authors declare that no generative AI and AI assisted technology was used in the creation of this manuscript.

Statement of conflict of interest

The authors have declared no conflict of interest.

References

- FAO, 2017. Forest and Landscape Restoration Mechanisms in Pakistan. Food and Agriculture Organization of the United Nations.
- FAO, 2019. National Forest Monitoring System Report – Pakistan. FAO, Islamabad.
- Government of Sindh, Forest Department, 2016. Sindh Forest Department Annual Report. Karachi.
- IPCC, 2022. Climate change 2022: Impacts, adaptation and vulnerability. Intergovernmental panel on climate change. <https://doi.org/10.1017/9781009325844>
- Khan, N., Qureshi, R. and Shaheen, H., 2018. Community participation and forest management in Pakistan: A review. *J. For. Res.*, 29(6): 1525–1534.
- Qureshi, R., Shaikh, Z. and Khan, N., 2017. Forest degradation and restoration challenges in Sindh, Pakistan. *Pak. J. Bot.*, 49(5): 1857–1864.
- Shah, M., Hussain, A. and Ali, A., 2013. Socio-economic dependence of rural communities on riverine forests of Sindh. *Pak. J. For.*, 63(2): 45–54.

WWF, 2010. Riverine Forests of Sindh: Status and Management Issues. World Wide Fund for Nature, Pakistan.