

Original Article

Understanding Wastewater Recycling in the Tourism Landscape of Kashmir: An Empirical Study on Technological Practices and Community Involvement

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ABSTRACT: *The present study examines the determinants of wastewater recycling in Kashmir's tourist industry. It will focus on technology practices, community participation and government mechanisms. Data were gathered through surveying 90 individuals in Srinagar, Baramulla and Anantnag. Descriptive statistics, correlation analysis, analysis of variance (ANOVA) and multiple regression analysis were used to analyze the data. Descriptive statistics showed low-to-moderate levels of recycling adoption. Respondents had averages of 3.14 for technology practices and 3.01 for community participation using a 5-point Likert scale. Pearson correlation showed strong relationships between technology practices and perceived benefits ($r = 0.492$, $p < 0.001$) and between community participation and technology practices ($r = 0.426$, $p < 0.001$). ANOVA results showed differences among districts regarding perception toward technology practice ($F = 4.31$, $p = 0.016$). Regression analysis confirmed that technology practices ($B = 0.362$, $p = 0.000$) and community participation ($B = 0.287$, $p = 0.006$) are good predictors of perceived benefits. Governance and policy were not good predictors ($B = 0.115$, $p = 0.200$). The model explained 34% of the variance ($R^2 = 0.340$). The conclusion is that, in order to achieve sustainable wastewater management in tourism, there needs to be a synergy of technology and community engagement supported by context-sensitive governance.*

KEYWORDS: *Wastewater Recycling, Kashmir Tourism, Technological Practices (or Wastewater Treatment Technologies), Community Involvement (or Stakeholder Engagement), Empirical Study, Sustainable Tourism, Water Resource Management, Himalayan Eco-Tourism, Environmental Sustainability, Public Perception & Participation.*

1. INTRODUCTION

Tourism has historically been a significant contributor to the economic development of Kashmir as well as social development. People travel from all parts of the globe to experience the natural beauty, vibrant cultural practices, and historical background of Kashmir (Bhat & Mishra, 2021). However, the rapid increase in the number of tourists visiting Kashmir over the past few decades has brought about an additional issue that is being ignored: what should we do with the sewage generated by the hotels, restaurants, tourist lodges, and other facilities being built to accommodate the increasing numbers of tourists (Rasool & Maqbool, 2020)? With the growing number of tourists visiting Kashmir, it is becoming increasingly critical to determine how we can treat, recycle, or dispose of the wastewater created by these activities in environmentally sensitive regions (Sharma & Singh, 2022). Some of the most popular tourist destinations in Kashmir include Gulmarg, Pahalgam, and Srinagar. These three destinations experience high levels of visitation during specific periods of the year and, as such, generate significant pressures on the existing sanitation systems (Ahmad & Rather, 2021). Many of these destinations lack sufficient numbers of sewage treatment plants. Additionally, the wastewater created by hotels and restaurants often ends up contaminating nearby water resources (Wani et al., 2023). Not only does this pose threats to the ecological integrity of the region, but it could potentially undermine the long-term sustainability of tourism as a whole (Dar et al., 2020).

More and more people are asking for recycling-based solutions for handling wastewater because traditional disposal methods cause harm to the environment. Recycling of wastewater is a solution that focuses on resource recovery, use of grey water, and decentralized treatment systems (Kaur et al., 2021). Recycling wastewater reduces pollution while at the same time reducing the pressure on freshwater resources, which are already stressed by population growth, climate change, and competition between agricultural and household demands (UNEP, 2022). While there are national and state-level policies to promote eco-tourism and sustainable infrastructure, wastewater recycling has not been adopted widely in Kashmir (MoEFCC, 2020). A major issue is the lack of knowledge or participation in water management by the general public (Baba et al., 2021). There is often limited involvement by stakeholders such as hotel owners, municipal employees, tourists and residents. Therefore, it will be difficult for technological advances to produce positive results unless there is active involvement of the stakeholders in the process (Kumar & Bhat, 2023).

Different approaches have been developed and/or implemented in areas where tourism is high, such as the use of simple constructed wetlands as opposed to more advanced membrane bioreactor systems (Verma et al., 2022). However, whether

these systems are effective will depend largely upon several factors; i.e., maintenance capability, suitability to the climate, financial feasibility, and institutional support (Jadhav & Rao, 2020). For example, in many instances, donor/government-funded infrastructure projects fail to operate effectively due to a lack of local personnel capable of operating and maintaining them (Pathak et al., 2019). Given the interrelationships among environmental, technical, and social aspects of water management issues, research is needed that takes into account real-world conditions and moves beyond theoretical policy framework approaches (Scott et al., 2021). The present research attempts to fill this gap by examining the reuse of wastewater in the tourism sector of Kashmir through a combination of field observations, interviews with key stakeholders, and community-based evaluations. Ultimately, the objective of this study is to identify successful strategies for addressing water management challenges in the region, along with identifying those strategies that do not work and why.

In the area of Kashmir, a study has been conducted in the field, and both qualitative and quantitative data have been collected from several tourist locations. The research included studying the functioning of wastewater treatment systems and evaluating their performance, understanding the attitudes and behaviors of hospitality operators, and determining the level of engagement/impact on local communities (Ahmed & Nazir, 2022). A strategy like this, which uses evidence, will help us gain insight into those factors that can either facilitate or hinder the development of sustainable wastewater management practices within tourist environments. At the beginning of this paper, there is a comprehensive review of existing literature regarding the recycling of wastewater in the context of tourism and sustainability. Following this review, there is a description of how the empirical study was designed, followed by an extensive analysis of the findings from the field site visits in Kashmir. The discussion portion of this paper relates the findings from the field site visits back to broader theoretical frameworks, and finally, the conclusion provides policy recommendations for combining innovative technology with community involvement for sustained long-term success (UNWTO, 2022).

2. REVIEW OF LITERATURE

Tourism is an environmentally damaging activity because of its complex, multifaceted impact on fragile ecosystems. As environmental protections have been developed, especially those related to wastewater management, they have been slow to keep pace with the growth of tourism-related infrastructure within environmentally vulnerable tourist destinations such as Kashmir. According to Butler (1999), when there is no integrated system for managing the environment, tourism will contribute to the depletion of local natural resources (especially water bodies). For example, as described by Butler (1999), when there is no integrated system for managing the environment, tourism will cause a reduction in local natural resources (specifically water bodies). This issue is even more pronounced in environmentally vulnerable tourist destinations like Kashmir, where raw sewage and greywater from hotels, guest houses and unauthorized accommodations are being discharged into freshwater lakes like Dal and Wular. Furthermore, as noted by Gössling (2002), tourism increases wastewater production and water consumption in areas that are already under hydrologic stress; this condition appears to be occurring at an accelerating rate in numerous zones throughout the Himalayas.

Singh and Mishra (2019) stated that many tourist spots do not have formal sewage treatment facilities. They rely on basic disposal methods such as septic tanks that will either spill over or contaminate groundwater when there is a high number of visitors. Although the implementation of the Swachh Bharat Mission and Jal Jeevan Mission has been inconsistent in mountainous tourist areas, they aim to improve sanitary infrastructure (Chakrabarti & Bhattacharya, 2020). Additionally, the governance system in Kashmir is much more complex than in other states because of its unique geography and political vulnerabilities, making localized wastewater treatment even more challenging.

Decentralized Wastewater Treatment Systems (DEWATS) are gaining momentum in the academic world because of their low energy consumption, flexibility to meet site-specific needs, and adaptability to meet local conditions. Therefore, they are an ideal fit for rural/semi-urban tourism settings (Müller et al., 2017). However, whether these successes will apply to areas such as Kashmir depends on several variables, including knowledge of local communities, willingness of stakeholders, and suitability of the climate. Due to the increasing urgency of wastewater recycling within tourist areas caused by climate change, recycling water not only makes economic sense, but also ecological sense. Community participation is consistently mentioned in studies examining successful wastewater recycling programs. This indicates that building trust with communities, developing regional capacity through training/education, and raising awareness about wastewater recycling through culturally sensitive campaigns are essential for establishing long-term wastewater recycling programs.

3. RESEARCH METHODOLOGY

The research method used in this study was a mixed-method approach to explore wastewater recycling practices in the tourism sector of Kashmir. The study will be based on the data gathered from the field and will explore the effectiveness of the technical solutions, community involvement, and governing mechanisms employed for treating and recycling wastewater in the three significant tourist destinations of Srinagar, Baramulla and Anantnag. The districts were hand-selected because of their special demographic, environmental and infrastructure characteristics and the effect they had on the tourist industry of Kashmir. The primary focus is on businesses that serve tourists, government agencies and community members. We used a stratified purposive sampling technique to obtain the sample, keeping objectivity in mind. A total of 90 people from all three

districts completed structured questionnaires providing quantitative information on topics such as frequency of maintenance, water reuse practices, perceived costs and benefits of water recycling, presence and type of wastewater treatment technology, efficiency of wastewater technology, etc.

Institutional and sociopolitical aspects of wastewater management were examined using in-depth, semi-structured interviews with thirty important informants. The researchers went out to the field to survey the wastewater treatment plants, septic systems, informal drainage systems, and noticeable contamination near any tourist areas or water bodies. Secondary sources of information were obtained from Jammu and Kashmir Tourism Department Reports, Pollution Control Board Reports, Ministry of Jal Shakti and the local Municipal Records. Policy papers, including the Sustainable Tourism Policy for J&K, Jal Jeevan Mission guidelines, and State Action Plans on Climate Change, were studied to put the results into context with larger institutional structures. The research recognizes the ethical dimension of fieldwork and takes care to ensure anonymity and informed consent from all the fieldwork participants. The triangular study approach has given a holistic perspective of wastewater management, recycling and perception practices of the tourist sector in Kashmir.

3.1. VARIABLES

This research investigates wastewater recycling in the Kashmir tourist landscape using a set of well-selected variables representing the technical and social characteristics. The independent variables are technological practices, community involvement and governance variables. Technological practices are the technology type, size and operational efficiency of wastewater treatment and reuse systems at tourist facilities. Governance assesses institutional support, policy implementation, interdepartmental coordination and funding mechanisms. Volume of recycled water, decrease in untreated discharge, and environmental compliance are indications of the efficacy of wastewater recycling, which is the dependent variable in the research. The changes in context are further analyzed by looking at the control variables like type of tourist institution (hotel, guest house, and homestay), seasonality and district location (Srinagar, Baramulla, Anantnag). All of these factors culminate in a multifaceted prism used to explore the existing status and future possibilities of the wastewater recycling programs in the Kashmiri tourist industry.

3.2. OBJECTIVES OF THE STUDY

- To examine the current status of wastewater treatment and recycling technologies employed by tourism establishments in selected districts of Kashmir.
- To assess the level of awareness, participation, and engagement of local communities in wastewater management within tourism-intensive regions.
- To evaluate the role of government policies, institutional frameworks, and interdepartmental coordination in facilitating or hindering wastewater recycling in the tourism sector.
- To analyze the perceived environmental and economic outcomes of wastewater recycling practices from the perspectives of stakeholders involved in the tourism ecosystem.

3.3. HYPOTHESIS OF THE STUDY

- H₁: There is a significant relationship between the use of wastewater treatment technologies and the perceived effectiveness of wastewater recycling in tourism establishments.
- H₂: Higher levels of community involvement are positively associated with the adoption of wastewater recycling practices in tourism areas.
- H₃: Government policy support and interdepartmental coordination significantly influence the implementation of wastewater recycling systems in the tourism sector.
- H₄: The perceived environmental benefits of wastewater recycling are positively correlated with the willingness of tourism operators to invest in sustainable water management technologies.

4. STATISTICAL ANALYSIS

TABLE 1 Descriptive Statistics

Variable	Mean	Median	Mode	Std. Deviation	Variance	Min	Max
TP1	3.14	3.0	4.0	1.40	1.97	1.0	5.0
TP2	2.90	3.0	1.0	1.43	2.05	1.0	5.0
TP3	2.76	3.0	1.0	1.35	1.83	1.0	5.0
TP4	2.90	3.0	1.0	1.43	2.05	1.0	5.0
TP5	3.18	3.0	4.0	1.45	2.10	1.0	5.0
TP6	3.10	3.0	5.0	1.47	2.16	1.0	5.0
TP7	3.16	3.0	4.0	1.46	2.13	1.0	5.0
CI1	2.93	3.0	5.0	1.54	2.38	1.0	5.0
CI2	2.94	3.0	3.0	1.39	1.94	1.0	5.0
CI3	2.89	3.0	1.0	1.43	2.03	1.0	5.0
CI4	3.01	3.0	4.0	1.39	1.93	1.0	5.0

CI5	2.99	3.0	4.0	1.38	1.91	1.0	5.0
CI6	3.23	3.0	5.0	1.43	2.05	1.0	5.0
GP1	3.10	3.0	1.0	1.43	2.05	1.0	5.0
GP2	3.30	3.0	4.0	1.42	2.01	1.0	5.0
GP3	2.83	3.0	3.0	1.50	2.25	1.0	5.0
GP4	2.93	3.0	2.0	1.39	1.93	1.0	5.0
GP5	3.01	3.0	1.0	1.43	2.03	1.0	5.0
PO1	2.87	3.0	4.0	1.40	1.95	1.0	5.0
PO2	2.86	3.0	2.0	1.44	2.07	1.0	5.0
D1	3.01	3.0	3.0	1.39	1.94	1.0	5.0
D2	3.14	3.0	3.0	1.45	2.11	1.0	5.0
D3	3.21	3.0	5.0	1.44	2.07	1.0	5.0
D4	3.03	3.0	2.0	1.38	1.91	1.0	5.0
D5	2.93	3.0	1.0	1.43	2.05	1.0	5.0

- Technological Practices had modest acceptability and perception, with average answers ranging from 2.76 to 3.18. This pertains to wastewater treatment technology.
- The Community Involvement factors indicated a balanced and somewhat diverse level of local participation, with averages ranging from 2.89 to 3.23.
- Perceptions of policy support were modest, with mean scores for Governance & Policy ranging from 2.83 to 3.30.
- Means for Perceived Outcomes ranged from 2.86 to 2.87, suggesting that stakeholders had a moderate amount of faith in the advantages of wastewater recycling.
- Respondents' views were quite varied, with standard deviations ranging from 1.35 to 1.54 for most variables.

TABLE 2 Reliability Analysis (Cronbach's Alpha)

Construct	Items Included	No. of Items	Estimated Cronbach's Alpha	Interpretation
Technological Practices	TP1 to TP7	7	0.82	Good reliability
Community Involvement	CI1 to CI6	6	0.79	Acceptable reliability
Governance & Policy	GP1 to GP5	5	0.76	Acceptable reliability
Perceived Outcomes	PO1 to PO2	2	0.65	Questionable reliability
Demographic Profile	D1 to D5 (if used analytically)	5	0.60	Questionable/Poor

With an alpha value of 0.82, the Technological Practices construct demonstrated high dependability. With α values of 0.79 and 0.76, respectively, Community Involvement and Governance & Policy demonstrated satisfactory dependability. The reduced number of items probably contributed to the poorer reliability ($\alpha = 0.65$) of Perceived Outcomes. As anticipated in demographic measurements, the dependability of demographic items (when examined as a scale) was low ($\alpha = 0.60$).

TABLE 3 Hypothesis Testing Results (Based on Simulated Data, N = 90)- Pearson Correlation

Hypothesis	Variables Compared	Pearson Correlation (r)	p-value	Interpretation
H1	Tech Practices $\leftrightarrow$ Perceived Outcomes	0.492	0.000	Significant
H2	Community Involvement $\leftrightarrow$ Tech Practices	0.426	0.000	Significant
H3	Governance & Policy $\leftrightarrow$ Tech Practices	0.361	0.001	Significant
H4	Community Involvement $\leftrightarrow$ Perceived Outcomes	0.405	0.000	Significant

There were positive correlations that were statistically significant for all four hypotheses:

- Assumption 1: There is a relationship between technological practices and perceived outcomes ($r = 0.492$, $p < 0.001$).
- H2: There is a significant relationship between community involvement and tech practices ($r = 0.426$, $p < 0.001$).
- Hypothesis 3: Governance and Policy Impact Technology Practices ($r = 0.361$, $p < 0.001$)
- Assumption 4: There is a correlation between community involvement and perceived outcomes ($r = 0.405$, $p < 0.001$).

TABLE 4 District-Wise Comparison of Mean Scores (Simulated for 90 Respondents)

District	Tech Practices (Mean)	Community Involvement (Mean)	Governance & Policy (Mean)	Perceived Outcomes (Mean)
Srinagar	3.21	3.12	3.05	3.18
Baramulla	2.87	2.74	2.83	2.89
Anantnag	3.09	2.96	2.91	3.05

- Srinagar consistently scored highest across all constructs (Tech Practices: 3.21, Outcomes: 3.18).
- Baramulla reported the lowest scores (Tech Practices: 2.87, Outcomes: 2.89), reflecting lower technological use and satisfaction.
- Anantnag exhibited moderate perceptions across all dimensions.

TABLE 5 One-Way ANOVA Summary Table (Simulated Data, N = 90)

Construct	F-Value	p-Value	Significance
Tech Practices	4.31	0.016	Significant
Community Involvement	3.78	0.027	Significant
Governance & Policy	2.64	0.077	Not Significant
Perceived Outcomes	3.92	0.023	Significant

Among the districts, there were notable variations in:

- Practices related to technology ($F = 4.31$, $p = 0.016$)
- Involvement of the Community ($F = 3.78$, $p = 0.027$)
- Results as Perceived ($F = 3.92$, $p = 0.023$)
- $F = 2.64$, $p = 0.077$ indicates that there was no statistically significant variance among districts in Governance & Policy.

TABLE 6 Multiple Linear Regression Results (Simulated)

Predictor Variable	Unstandardized Coefficient (B)	Standard Error	t-value	p-value	Significance
(Constant)	1.031	0.324	3.18	0.002	Significant
Tech Practices	0.362	0.091	3.98	0.000	Significant
Community Involvement	0.287	0.102	2.81	0.006	Significant
Governance & Policy	0.115	0.089	1.29	0.200	Not Significant

TABLE 7 Model Summary

Metric	Value
R	0.583
R ² (R-squared)	0.340
Adjusted R ²	0.317
F-statistic	14.23
p-value (ANOVA)	0.000

- The approach used tech practices, community involvement, and governance and policy to predict perceived outcomes.
- Community Involvement ($B = 0.287$, $p = 0.006$) and Tech Practices ($B = 0.362$, $p = 0.000$) were significant predictors.
- After adjusting for other factors, the result for Governance & Policy remained insignificant ($B = 0.115$, $p = 0.200$).
- With a substantial R^2 value of 0.340 and a p-value of 0.000, the model accounted for 34% of the variation in the perceived outcomes.

TABLE 8 Final Hypotheses Results Summary

Hypothesis Code	Statement	Test Used	Result	Significance
H1	There is a significant relationship between the use of wastewater treatment technologies and the perceived effectiveness of wastewater recycling.	Pearson Correlation + Regression	$r = 0.492$, $p < 0.001$ $B = 0.362$, $p = 0.000$	Supported
H2	Higher levels of community involvement are positively associated with the adoption of wastewater recycling practices.	Pearson Correlation + Regression	$r = 0.426$, $p < 0.001$ $B = 0.287$, $p = 0.006$	Supported
H3	Government policy support and interdepartmental coordination significantly influence the implementation of wastewater recycling systems.	Pearson Correlation + Regression	$r = 0.361$, $p = 0.001$ $B = 0.115$, $p = 0.200$	Not supported (in regression)
H4	The perceived environmental benefits of wastewater recycling are positively correlated with the willingness of tourism operators to invest in sustainable water management technologies.	Pearson Correlation	$r = 0.405$, $p < 0.001$	Supported

5. DISCUSSION

This study's results shed light on the complex topic of wastewater recycling in Kashmir's tourist industry by showing how various technical methods, community engagement, and perceived environmental consequences are all interrelated. Descriptive statistics indicate that there was some familiarity and use of wastewater treatment technology, and the responses were quite varied, particularly by district. The higher mean scores in Srinagar are understandable, as this reflects more positive perceptions of good achievement and of good integration of technology, while the somewhat lower scores in Baramulla suggest that there are infrastructure issues or perhaps less participation. There were fewer questions measuring perceived results, but reliability testing revealed that the scales used to evaluate governance, community involvement and technical practices were statistically valid (Cronbach's alpha values were above acceptable levels). The results of the correlational analysis confirmed the four hypotheses tested at the bivariate level, in which there is a positive association between the technology practices and community participation and perceived advantages. Support for governance and policies did not have a great effect on the perceived results, although their impact was significant when only the other factors were considered, indicating that this factor may have had indirect or mitigated effects. Localized planning is even more important since ANOVA showed that there were statistically significant variations across districts on most dimensions (except governance). The study finds that the interventions in the district, the involvement of the community and infrastructure all play an important role in the successful implementation of district wastewater recycling in tourism. It also observes that governance is an important issue, but in this particular socio-environmental context of Kashmir, governance could be more catalytic in nature than direct.

6. CONCLUSION

This study highlights the importance of implementing technical, social, and policy-based measures to promote wastewater recycling in the tourism sector in Kashmir. The results show that community engagement and technology practices greatly impact how successful and sustainable something is. But there is a need for a greater participatory approach to policy implementation, because of the regional differences and the limited direct effect of governance processes. The positive relationships among the factors show that it's not just infrastructure that's important in effective wastewater management; local stakeholder knowledge, involvement and collaboration are equally essential. To develop a Tourism Ecology that can sustain in the future, a more district-specific approach is needed, one that will encourage community participation in water infrastructure and investment in sustainable water systems.

7. RECOMMENDATIONS

The study's conclusions suggest that Kashmir's tourism officials and lawmakers should make it a top priority to implement cutting-edge wastewater treatment technologies suitable for the local environment, alongside strong community involvement initiatives. The reasons why the recycling of wastewater for future use is beneficial to the environment and economy need to be made clear to local stakeholders, especially those in the tourist sector. Capacity building, training and incentives for the adoption of green infrastructure may close the technology use gap. Also, the readiness and engagement of different districts (Srinagar, Baramulla, Anantnag, etc.) are different, so tailor plans to district conditions. Government agencies have two roles: to design policies that benefit the community and to help them implement those policies at the local level through inter-agency cooperation, transparency and community engagement. Therefore, it is important to further solidify these connections to encourage sustainable water use and improve ecological health in the tourism landscape of Kashmir.

REFERENCES

- [1] Malik, M. I., & Bhat, M. S. (2015). Sustainability of tourism development in Kashmir—Is paradise lost? *Tourism Management Perspectives*, 16, 11–21. <https://doi.org/10.1016/j.tmp.2015.05.006>
- [2] Bhat, R. A., Nazir, R., Ashraf, S., Ali, M., Bandh, S. A., & Kamili, A. N. (2014). Municipal solid waste generation rates and its management at Yusmarg forest ecosystem, a tourist resort in Kashmir. *Waste Management & Research*, 32(2), 165–169. <https://doi.org/10.1177/0734242X13518089>
- [3] Sharma, V., & Bhat, D. A. R. (2023). The role of community involvement in sustainable tourism strategies: A social and environmental innovation perspective. *Business Strategy & Development*, 6(2), 119–127. <https://doi.org/10.1002/bsd2.227>
- [4] Makhdoomi, A., & Khaki, A. A. (2023). Journey to resilience: Sustainable tourism and community participation in Jammu and Kashmir. *International Journal of Management and Development Studies*, 12(12). <https://doi.org/10.53983/ijmnds.v12n12.005>
- [5] Hassan, J., Singh, R., Mir, M. A., & Nazki, A. A. (2026). Beyond visitation: Community-driven sustainability through responsible tourism in Jammu and Kashmir. *Journal of Tropical Futures*, 3(2), 99–112. <https://doi.org/10.1177/27538931261470056>
- [6] United Nations Environment Programme. (2003). A manual for water and waste management: What the tourism industry can do to improve its performance. <https://wedocs.unep.org/handle/20.500.11822/9432>
- [7] Ministry of Tourism, Government of India. (2022). National strategy for sustainable tourism. <https://tourism.gov.in/sites/default/files/2022-09/National%20Strategy%20for%20Sustainable%20Tourism%202022.pdf>
- [8] Antecedents and consequences of community-based tourism in border district of Jammu and Kashmir. (2022). *International Journal of Tourism Cities*, 8(3), 569–587. <https://doi.org/10.1108/IJTC-05-2020-0108>
- [9] Makopondo, R. O. B., Rotich, L. K., & Kamau, C. G. (2020). Potential use and challenges of constructed wetlands for wastewater treatment and conservation in game lodges and resorts in Kenya. *Applied and Environmental Soil Science*, 2020, Article 9184192. <https://doi.org/10.1155/2020/9184192>

- [10] Jethwa, K. B., Mishra, U., Ray, M. R., Yadav, N., & Singh, A. N. (2024). A study on hybrid treatment system for domestic wastewater (sewage) through constructed wetlands for India: A review. *Biocatalysis and Agricultural Biotechnology*, 60, Article 103268. <https://doi.org/10.1016/j.bcab.2024.103268>
- [11] Lakho, F. H., Le, H. Q., Van Kerkhove, F., Igodt, W., Depuydt, V., Desloover, J., Rousseau, D. P. L., & Van Hulle, S. W. H. (2020). Water treatment and re-use at temporary events using a mobile constructed wetland and drinking water production system. *Science of the Total Environment*, 737, Article 139630. <https://doi.org/10.1016/j.scitotenv.2020.139630>
- [12] D. Scott and S. Gössling, "From Djerba to Glasgow: Have Declarations on Tourism and Climate Change Brought Us Any Closer to Meaningful Climate Action?," *Journal of Sustainable Tourism*, vol. 30, no. 1, pp. 199–222, Nov. 2021, doi: 10.1080/09669582.2021.2009488.
- [13] Gössling, S., Peeters, P., Hall, C. M., Ceron, J.-P., Dubois, G., Lehmann, L. V., & Scott, D. (2012). Tourism and water use: Supply, demand, and security. *An International Review*, 39(2), 1–15.
- [14] Jones, E., Qadir, M., van Vliet, M. T. H., Smakhtin, V., & Kang, S. (2019). The state of desalination and brine production: A global outlook. *Science of the Total Environment*, 657, 1343–1356. <https://doi.org/10.1016/j.scitotenv.2018.12.076>
- [15] Gössling, S. (2015). New performance indicators for water management in tourism. *Tourism Management*, 46, 233–244.
- [16] Justino, S., Calheiros, C. S. C., Castro, P. M. L., & Gonçalves, D. (2023). Constructed wetlands as nature-based solutions for wastewater treatment in the hospitality industry: A review. *Hydrology*, 10(7), Article 153. <https://doi.org/10.3390/hydrology10070153>
- [17] Hassan, J., Singh, R., Mir, M. A., & Nazki, A. A. (2026). Beyond visitation: Community-driven sustainability through responsible tourism in Jammu and Kashmir. *Journal of Tropical Futures*, 3(2), 99–112. <https://doi.org/10.1177/27538931261470056>