



Waste Management In Tourist Landscapes Of Meghalaya: Compliance, Challenges, And Ecological Consequences Under Swm Rules, 2016

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ABSTRACT

The development of tourism in Meghalaya, India, has led to a significant increase in solid waste generation, posing a major threat to the state's environmental sustainability. The lack of individual or societal respect towards the environment, coupled with inadequate waste management practices, has resulted in rampant littering and pollution in tourist areas which negatively impact the environment and the local communities as well. This study aims to analyze the current practices of solid waste management in tourism areas of Meghalaya and identify the challenges and opportunities for sustainable solid waste management. The study also aims to develop a framework for effective waste management that integrates stakeholder engagement, waste reduction, and recycling strategies to maintain cleanliness and hygiene in tourist areas. This study critically examines the implementation of the Solid Waste Management (SWM) Rules, 2016 in prominent tourist destinations across the state, focusing on compliance levels, operational challenges, and environmental consequences. The study contributes to the discourse on sustainable waste management in tourism spot by offering actionable insights for policy reform and participatory governance in Meghalaya's tourism sector.

Keywords: Tourism, Meghalaya, solid waste management, environmental impact, implementation.

I. INTRODUCTION

Meghalaya, a northeastern state of India, is well-known for its breathtaking landscapes and natural wonders that captivate tourists from around the world. Meghalaya's rich ecological beauty and cultural heritage including its biodiversity, flora and fauna, mountains, waterfalls, caves, natural resources, and historical monuments¹ have contributed to a steady rise in tourist inflow, placing increasing demands on the tourism sector to expand infrastructure, develop new attractions, and generate sustainable livelihood opportunities for local communities. This growth, while economically beneficial, has also intensified environmental pressures particularly in the areas related to waste management.

Solid waste pollution is becoming the main concern in our country especially in municipal areas and rural areas as well. The world Tourism Organization defines sustainable tourism as “tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities”.² Human population and the development of tourism, most part of the region are being exposed to human interference. The number of tourists visiting has increased with every passing year. This increase in tourist activities has had adverse impact on the environment. Consequently, not only do the ecological components (flora and fauna, water, etc.) and the landscapes stand affected by this increase in tourist influx, but this influx has also caused many social and economic problems to its inhabitants.³

Tourism spots in Meghalaya face significant challenges in implementing the Solid Waste Management (SWM) Rules, 2016. Despite the existence of a robust legal framework for systematic waste handling, compliance remains weak in tourism intensive zones. The main cause of these issues such as poor segregation at source, inadequate waste processing infrastructure, failure of the visitors to follow the rules arranged by the local authorities in that particular tourism spots, and inconsistent enforcement mechanisms. These operational gaps not only hinder sustainable tourism development but also pose serious threats to the region's fragile ecosystems. Sustainable Solid waste management is the complete process of collecting, treating and disposing of solid wastes in order to preserve and enrich the natural beauty of the environment.

In Re: Cleanliness of Umiam Lake 2023, The Meghalaya High Court stated that *“In the absence of any other employment opportunities and in the name of promoting tourism, the natural beauty of the State should not be destroyed and the State should be alive to the problem. Several of the rivers, including the Umkhrah in Shillong itself are carrying such contaminated water that they may not be fit even to*

¹ Meghalaya Biodiversity Board, “Towards Securing the Rich Biodiversity of Meghalaya”, available at: <https://megbiodiversity.nic.in/sites/default/files/securing-rich-biodiversity-meghalaya.pdf> (last visited on January 25, 2025)

² “Sustainable Tourism” United Nation Sustainable Development , available at: <https://sustainabledevelopment.un.org/topics/sustainabletourism#:~:text=The%20World%20Tourism%20Organization%20defines,the%20environment%20and%20host%20communities%22> (last visited on December 2022)

³ Jagdish C Kuniyal, Arjun P Jain, Ardhendu S Shannigrahi “Solid waste management in India Himalayans tourists' treks: a case study in and around the valley of flowers and Hemkund Sahib” 23 Issue 9 Waste management (Elsevier) 807-816 (2003), available at: <https://www.sciencedirect.com/science/article/abs/pii/S0956053X03000278> (last visited on December 2022)

step into. Elsewhere, rivers and streams which may not be perennial carry so much filth and dirt that people living downstream are deprived of the use of the water altogether.”⁴

II. RESEARCH METHODOLOGY

This study is based on both secondary and primary data. Secondary data were collected from various internet sources, published works, newspapers, and articles etc. Primary data were obtained through direct interviews with local residents at several tourism sites in Meghalaya to gain clear insights into solid waste management practices across different tourism sites.

III. LITERATURE REVIEW

1. The United Nation designated 2017 as the International Year of Sustainable Tourism for Development, tourism can contribute to all the three dimensions of sustainable development – economic, social and environmental – and each of the 17 Sustainable Development Goals. Not only does the sector spearhead growth, it also improves the quality of people’s lives. It can bolster environmental protection, champion diverse cultural heritage, and strengthen peace in the world.⁵
2. Development of travel and tourism creates jobs; increase exports and prosper the economy, according to the World Travel and Tourism Council. In India Travel and Tourism is the third largest source of foreign exchange i.e., 5.4% of our total exports. The recent statistics showed that the tourism sector had contributed 3.3 % of GDP in 2016 directly which is 9.6 % in case of total contribution. The sector had provided 5.8 % of direct employment and 9.3 % total employments. The tourism sector can be divided into two streams namely leisure tourism and business tourism. In India, 94.6 % of the total tourism is running under leisure tourism which contains Cruise tourism, adventure tourism, medical tourism, religious tourism, etc.⁶
3. Tourism can cause of many forms of pollution as any other industry such as air emission, noise, solid waste and littering, release of sewage, oil and chemicals, even architectural/visual pollution.⁷

⁴ Jayanti Pahwa “in the name of promoting tourism, the natural beauty of the State should not be destroyed: Meghalaya High Court”, available at: <https://www.verdictum.in/court-updates/high-courts/in-name-of-promoting-tourism-natural-beauty-of-state-should-not-be-destroyed-meghalaya-high-court-1485894> (last visited on December 2022)

⁵ “Sustainable Tourism - A Tool for Development” UNWTO, available at: <https://www.unwto.org/world-tourism-day-2017> (last visited on December 2022)

⁶ Austin Sinesh Das and G. Dilip Diwakar “Solid Waste Management for Sustainable Tourism” 6(2) International of Applied social science 399-406 (2019) available at: https://www.academia.edu/50235787/Solid_Waste_Management_for_Sustainable_Tourism, (last visited on January 06, 2023)

⁷ Sunlu, Ugur, “Environmental impacts of tourism”, available at: https://www.researchgate.net/deref/http%3A%2F%2Fom.ciheam.org%2Farticle.php%3FIDPDF%3D4001977?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uRGV0YWlsIiwicGFnZSI6InB1YmxpY2F0aW9uRGV0YWlsIn19, (last visited on January, 01, 2023)

IV. TOURISM SUSTAINABLE DEVELOPMENT

In 1987, the United Nations Brundtland Commission defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”⁸ The main concept of tourism sustainable development is based on the ability of the present generation to protect and preserve the natural beauty of the environment and to meet the needs of the society which promote the economic development of that community without compromising the future generation to meet their own needs.

V. POLLUTION

Tourism can cause the same forms of pollution as any other industry such as air emission, noise, solid waste and littering, releases of sewages, oil and chemicals, even architectural/visual pollution⁹.

VI. TYPE OF TOURISM SITE/DESTINATION IN MEGHALAYA

Illegal waste disposal in the tourism site create nuisance to the public and tarnished the natural beauty of the environment. There are two types of tourism spot or destination in Meghalaya.

1. **Picnic site/ destination:** Picnic site/destination is the place which is open in nature and there is no proper maintenance by the community and there is no local volunteer to look after the cleanliness and hygiene of that place. Picnic site usually located near the rivers, stream and landscape where the person goes to have fun, cooking and enjoying their holidays with their family and friends. But after cooking, eating and drinking they dump their waste in the same areas such as beers, soft drink, alcohol and water bottle, food packets, plate, spoon, cup etc., these action of the tourist or visitors create problem to the volunteers of that communities to clean and collect the wastes which scattered everywhere in that particular area. Some place where there are no volunteers or proper systems to collect and manage waste, tourist spots often become unsightly and unhygienic, discouraging future visits. The impact of this waste which illegally discarded by the visitors it tarnished the serenity and natural beauty of the nature, and it affect the health and safety of the people and animals living in and around those areas. Most picnic sites typically do not charge an entry fee.
2. **Tourism site:** Tourism site is the place which gain recognition from the government and well maintain by the locality. In every tourism site there is one entry point to collect the entry fee of the tourist/visitors to make the solid waste management service sustainable and to develop the tourism in that area. Some

⁸ Michelle E. Jarvie, “Brundtland Report, Our Common Future”. *Encyclopedia Britannica*, 20 May. 2016, available at: <https://www.britannica.com/topic/Brundtland-Report> (last visited on September, 01, 2023)

⁹ Hari Srinivas “Environmental impact of tourism” 10 UNEP (1999), available at: <https://www.gdrc.org/uem/eco-tour/envi/one.html> (last visited on January 04, 2023)

tourism site also allows people to cook and enjoying party, but the visitors after they finish their work, they left their waste in that area without proper disposal and treatment.



Kyrdemkhla Free entry (uncheck waste disposal).

Double Living Root Bridge (Entry Fee Applicable)

VII. IMPACTS OF TOURISM

The impacts of tourism could be in the point of economic, socio-cultural, and environmental aspects.

1. The positive impact

The positive impact of the tourism are as follows:

- It boosts the business and economy of the country.
- Its benefit the local communities having control over those particular areas and develop it in a sustainable way.
- Its benefits the local communities in getting jobs and earn their livelihood.
- Encourages the local communities to protect the environment and its natural resources.
- Its help the community to be recognized and identify by different part of the world for its rich cultural and heritage.
- Its benefits the local for getting many different types of schemes for the development of the tourism site.

2. Negative ecological impact

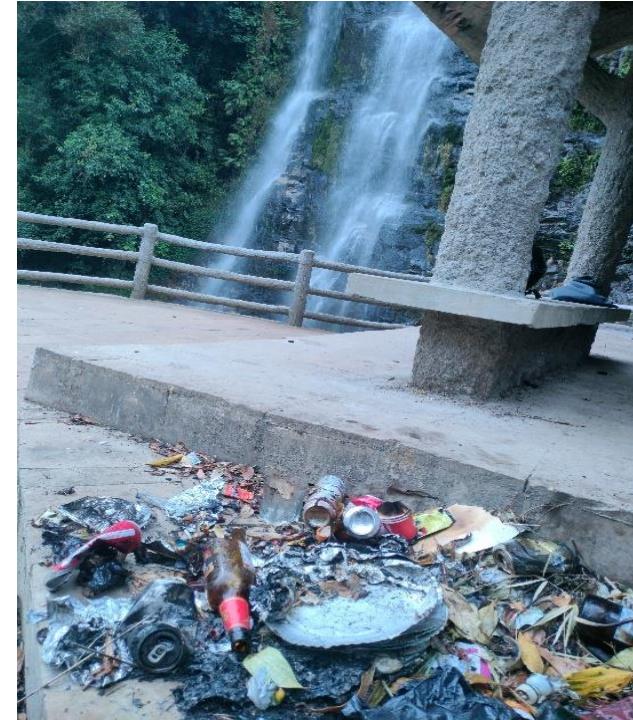
Negative impact of tourism on environment includes in three areas: (1) diminished experience of tourists caused by too many tourists present at once, (2) direct damage to natural or cultural objects caused unintentionally by tourist use of the site, or intentionally as vandalism, and (3) environmental effects of tourism on the support systems of tourist facilities, such as community support and increased solid waste and waste water releases.¹⁰

Nature-based tourism, while economically beneficial, often causes many disturbances to the environment such as loss of biological diversity, deforestation, land and soil degradation, natural water contamination, air and noise pollution, unchecked construction and infrastructure activities and so on. A major concern is the behavior of tourists who disregard environmental norms by indiscriminately throwing all sorts of garbage along foot path, road and public places, thereby causing health hazards to the local inhabitants and contributing to the environment polluting and degradation.

Illegal waste disposal and ineffective waste management practices such as littering, no waste segregation at source, lead to mixed waste contaminating land, water bodies, and scenic landscapes in tourism areas. Pollution in lakes and rivers in several areas such as Umiam Lake, Kyrdemkhla, Sohra and so on, have the critically impacted the environment and prompted government and judicial intervention through AI-enabled robotic cleaning technologies¹¹. However, these measures address only surface-level pollution and do not resolve the systemic issues. The accumulation of plastics and other non-biodegradable materials at tourist sites disrupts ecological balance, harming local flora and fauna and diminishing the visual appeal crucial for sustainable tourism. In the absence of a comprehensive and planned waste management strategy, long-term risks emerge for water quality, soil health, and the livelihoods of communities dependent on tourism and natural resources.

¹⁰ David S. May, "Tourism and the Environment." 14, no. 1 *Natural Resources & Environment*, 58 (1999) available at: <http://www.jstor.org/stable/40924705> (last visited on December 2, 2022)

¹¹ ET Government, "Meghalaya uses AI-enabled tech to clean up tourist hotspot Umiam lake", available at: <https://government.economictimes.indiatimes.com/news/governance/meghalaya-uses-ai-enabled-tech-to-clean-up-tourist-hotspot-umiam-lake/103320068> (last visited on August 23, 2025)



Umiam Lake during winter

Thangsning Falls

VIII. WASTE MANAGEMENT



Waste management refers to the process of collection, transportation, handling and disposal of all types of wastes¹². Waste management from the tourism perspective means the management; treatment and handling of waste in a proper manner without harming and tarnished the natural beauty of the environment.

IX. SUSTAINABLE SOLID WASTE MANAGEMENT IN TOURISM AREA

Tourism Development and solid waste management should go hand in hand and not contradict one another for the better future and sustainable environment. The types of solid waste management and treatment mention herein below:

1. Generation of waste
2. Collection of waste – waste is collected by the local communities or the person owned the tourism area.
3. Transfer or transportation of waste
4. Disposing of waste
5. Treatment of waste
6. Land fill.

¹² Waste Management – Everything You Need to Know About Waste Management, available at: <https://www.recyclingbristol.com/waste-management-everything-you-need-to-know-about-waste-management/> (last visited on December 2, 2022)

X. TOURIST AND VISITOR BEHAVIOR TOWARD SOLID WASTE MANAGEMENT

Littering and illegal dumping of waste is the main cause of the piling and scattered of waste everywhere in the tourism area. Tourist activities are one of the main reasons for the development of the tourism. Every community have their own rules and regulations to maintain the cleanliness and beauty of the tourism spot in their respective areas by prohibiting illegal dumping of waste in the tourist spot and its neighbor areas, damaging monuments, tarnished the structure of the areas and committing any illegal crimes which against the laws and practices of that particular communities and of nation. Bad behavior of the tourist brings bad reputation for the tourism department and the communities who have control in that area. Tourists or visitors should respect the rules and regulation provided by the communities in order to promote the development of tourism and sustainable livelihood of the community.

The impacts of tourism activity on natural areas and biodiversity are known and cover a wide field: from the growth of CO2 emissions linked to tourist travel to the fragmentation of environments, including the various types of pollution generated by tourist flows (waste production, wastewater, light pollution, etc.). The environmental consequences of tourism activities are therefore notorious (ransacking of fragile ecosystems, degradation of the physical environment and disturbance of wildlife)¹³

The first and significant rule to follow by the tourists or visitors is to maintain the cleanliness of the tourism area. Waste management is a must to maintain and preserved the beauty of the nature in order to protect and promote the natural beauty of the environment.

XI. TOURISM SOLID WASTE MANAGEMENT LEGISLATION IN INDIA

11.1. Constitution of India

The Indian constitution is one of the supreme laws of the land which provide the full support for the environmental protection as the basic fundamental right of the citizens. The Supreme Court in *Subhash Kumar v. State of Bihar, 1991* held that Article 21 includes the right to a wholesome environment. This position was again reaffirmed in *Virender Gaur v. State of Haryana 1994*, where it was held that enjoyment of life and right to live with dignity includes the protection and preservation of the environment and without it, life could not be enjoyed.¹⁴

Fundamental Duties under Article 51 A (f) of the Indian constitution stated that it is the duty of the citizen to value and preserve the rich heritage of our composite culture. Furthermore, Article 51A (g) lays down its important provision of the constitution which states the duties of every citizen of the country “to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living

¹³ Dalia Perkumiene, Ahmet Atalay, Larbi safaa and Jurgita Grigiene, “Waste Management for Clean and Safe Environments in the Recreation and Tourism Sector: A case study of Lithuania, Turkey and Morocco” 8 *Recycling ResearchGate* 56 (2023).

¹⁴ Vishes Gupta “Right to Pollution Free Environment” ipladers , available at: <https://blog.ipladers.in/right-to-the-pollution-free-environment/> (last visited on July 21, 2023).

creatures.¹⁵ Under Article 48A of the Indian Constitution provide the directive principle for protection and improvement of environment and safeguarding of forests and wildlife. It reads as: The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.¹⁶

11.2. Tourism Policy in India

Tourism policy in India was started after Independence. The first significant tourism policy initiatives were forged in the early 1980s with the prospect of hosting the Asian Game of 1982.¹⁷ The First Tourism policy was announced by the Government of India on November 1982. The mission of First Tourism Policy was to promote sustainable tourism as means of economic growth, social integration and to promote the image of India abroad as a country with a glorious past, a vibrant present and a bright future. Policies to achieve this will be evolved around six broad areas such as Welcome (Swagat), Information (Suchana), Facilitation (Suvidha), Safety (Suraksha), Cooperation (Sahyog) and Infrastructure Development (Samrachana). This policy also gives importance to conservation of heritage, natural environment, development and promotion of tourist products.¹⁸

11.3. Tourism Policy in Meghalaya

Meghalaya the “Abode of the Clouds” with its picturesque landscape of rolling hills, meandering rivers, cascading waterfalls, lush forests, diverse flora and fauna and unique culture and tradition has great potential for development of tourism¹⁹. During the last few years, Meghalaya has evolved as a fast-growing destination for both domestic and international tourists. The first Tourism Policy was framed in the year 2001 which was published vide Government Notification No. Tourism.136/96/264 dated 15th February 2001. With the evolving role of the tourism sector as a major engine of economic growth, it was felt necessary to revamp the existing tourism policy and come up with a new policy within which the Government helps to create the basic

¹⁵ The Indian Constitutional Act, 2014

• ¹⁶ Taruni Kavuri, “The Constitutional Scheme of Animal Rights in India” Michigan State University College of Law, *available at*: <https://www.animallaw.info/article/constitutional-scheme-animal-rights-india#:~:text=Article%2048A%20lays%20down%20the,ands%20wildlife%20of%20the%20country> (last visited on July 21, 2023)

¹⁷ Robert Jan Baken, Suresh Bhagavatula “Some reflections on tourism and tourism policy in India” SSRN Electronic Journal, 10.2139/ssrn.2122440 (ResearchGate), *available at*: https://www.researchgate.net/publication/256029202_Some_Reflections_on_Tourism_and_Tourism_Policy_in_India ,(last visited on December, 21, 2022)

¹⁸ Dayananda.K.C, Prof. D.S.Leelavathi “Evolution of Tourism Policy in India” 21 IOSR Journal of Humanities and Social Science (IOSR-JHSS) 26 (2016), *available at*: <https://www.iosrjournals.org/iosr-jhss/papers/Vol.%202021%20Issue11/Version-6/E2111062632.pdf> ,(last visited on November 14, 2023)

¹⁹ Meghalaya Biodiversity Board, “Towards Securing the Rich Biodiversity of Meghalaya”, *available at*:<https://megabiodiversity.nic.in/sites/default/files/securing-rich-biodiversity-meghalaya.pdf> (last visited on January 25, 2025)

infrastructure for tourism development, while the private sector helps to provide quality products and offer active support services.²⁰

XII. SOLID WASTE MANAGEMENT REGULATIONS AND COMPLIANCE AT TOURISM SITES

The National Environment Policy, 2006 also stresses on recycling, treatment and proper disposal of solid waste. It highlights that the polluters are responsible for the pollution and must bear the expenses incurred in removal of pollutants.²¹ The Government of India passed its different rules and regulations in handling, treating and proper management of solid waste such as the Hazardous Wastes (Management And Handling) Rules, 1989,²² Municipal Solid Waste (Management & Handling) Rules, 2000,²³ the Plastic Waste (Management and Handling) Rules, 2011,²⁴ the Solid Waste Management Rules, 2016.²⁵ These rules mandate source segregation, decentralized waste processing, extended producer responsibility, and the inclusion of informal waste workers in the management system.

In the context of waste management in tourist landscapes of Meghalaya, particularly in ecologically sensitive and culturally significant areas like Sohra, Mawlynnong, and Umiam, Kyrdemkhla and so on, the SWM Rules, 2016 provide a critical legal framework. However, compliance remains limited, and the study reports that the majority of tourism sites lack adequate infrastructure, lack of public awareness, and face weak enforcement of existing environmental regulations. The challenges include absence of public dustbins, informal disposal practices such as open burning, and inadequate transportation and treatment facilities. These gaps not only violate the mandates of the SWM Rules but also lead to ecological consequences such as soil and water contamination, degradation of scenic beauty, and threats to biodiversity.

²⁰ S.M. Pathaw “The Tourism Policy of Meghalaya”,*available at:*<https://tourism.gov.in/sites/default/files/2019-10/meghalaya.pdf> ,(Last modified February, 01, 2011) solid waste management in India , (last visited on November 14, 2023)

²¹ Deeksha Dave “Journey of Solid Waste Management Regulations in India: A Historical Account” Crdeep Journals DOI:10.13140/RG.2.2.14106.11200 *available at:*https://www.researchgate.net/publication/364327132_Journey_of_Waste_Management_Regulations_in_India_A_historical_account (last visited on October 14, 2022).

²² The Hazardous Wastes (Management and Handling) Rules, 1989, *available at:* <https://faolex.fao.org/docs/pdf/ind40674.pdf> (last visited on May 23, 2023).

²³ Municipal Solid Waste (Management And Handling) Rules 2000, *available at:*<https://indiankanon.org/doc/10681868/> (last visited on July 27, 2023).

²⁴ The Plastic Waste (Management and Handling) Rules, 2011, Press Information Bureau (PIB), Government of India, Ministry of Environment, Forest and Climate Change, *available at:* <https://pib.gov.in/newsite/PrintRelease.aspx?relid=69649> (last visited on Feb 7, 2023).

²⁵ The Solid Waste Management Rules, 2016, *available at:* <https://cpcb.nic.in/salient-features-of-msw-rules/> (last visited on July 17, 2023).

XIII. CURRENT PRACTICES AND CHALLENGES OF WASTE MANAGEMENT AT TOURISM SITES IN MEGHALAYA

The current solid waste management practices in Meghalaya based from the data collected from the local residents from several tourism spot in Meghalaya such as Nongjrong, Mawlynnong, Laitmawsiang Sohra, Nongriat, Kyrdem Khla, Umtong, Nohron, Umiam, Rapleng, Thangsning falls and so on. The current practices and challenges of waste management at tourism site in Meghalaya are:

- Mixing of all types of waste in one dustbin without separating biodegradable and non-biodegradable waste.
- There is a lack of public dustbins and frequent overflow of waste from existing bins, resulting in litter scattered across the area. This issue is particularly evident in picnic spots such as Umtong, Kyrdemkhla, Nohron, Rapleng, Syntung, and other tourist destinations where no entry fees are collected from visitors or areas with a weak enforcement of the local waste management norms.
- There is insufficient infrastructure for proper waste treatment in many tourism sites. Even Mawlynnong, widely well-known as one of the cleanest villages in Asia, lacks adequate facilities for waste processing and treatment. As a result, the village is compelled to transport its waste to the Marten city landfill for final disposal. In contrast, other tourist spots often resort to informal methods such as open burning, which pose serious environmental and health risks.
- There are few or no garbage collection vehicles available in rural areas for waste transportation. Reports indicate that such vehicles are present only in urban tourist sites, and in rural areas, Mawlynnong is the sole exception with one operational garbage truck that transfers waste twice a month to the Marten landfill for final disposal. In many tourist destinations, the absence of public sanitary landfills further exacerbates the issue. Even where garbage vehicles exist, they are often non-operational, leading to ineffective waste management and environmental degradation.
- “Out-of-sight, out-of-mind” waste disposal practices are a major contributor to solid waste pollution at tourism sites. This behavior is commonly observed among local tourists visiting from various districts of Meghalaya. To prevent severe damage caused by littering at popular local tourism spots in Sohra, a prohibitory notice was issued. This decision followed repeated complaints and direct observations of tourists leaving waste at viewpoints, roadsides, and near major tourist attractions, transforming once-pristine locations into unsightly and polluted areas.²⁶
- Lack of cooperativeness among the tourist/visitors and the volunteer of the locality for maintaining the cleanliness and proper disposal of waste in the given area.
- Burning and land filling of waste is the common practices of waste management in Meghalaya.

²⁶ Atiqul Habib, “Littering triggers ban on roadside picnics in Meghalaya’s East Khasi Hills”, *India Today NE*, Aug 01, 2025, available at: <https://www.indiatoday.in/meghalaya/story/roadside-picnics-banned-in-east-khasi-hills-to-curb-tourist-littering-1254542-2025-08-01> (last visited on October 10, 2025)

XIV. RESULTS AND DISCUSSION

Even though tourism boosted the economy of the country, brings decent jobs opportunities and empowering communities, preserving and enriching environment, developed peace among different countries, but the result finding from this research determine that the most common problems are in the context of waste management. The following problems mentioned herein below:

- Absence of a culture that respects cleanliness and responsible waste management. Out of sight and out of mind practices leads to indiscriminate disposal of waste such as food packaging, food wastes, plastics, water bottles, alcohol bottle etc., throwing anywhere at any time without concern to environment especially roads or the surrounding of the tourism area where there is lack or absence of public dustbin.
- Insufficient numbers waste bins or absence of waste bins especially in the picnic spots where people throw waste nearby and thus increase the volume of waste in that particular area
- Insufficient infrastructure
- Lack of control and supervision. Lack of strict enforcement of law.
- Lack of volunteer from the locality, and also lack of environmental awareness program held regularly in every locality.
- Lack of garbage vehicles to collect waste in many areas especially in the rural areas
- There is no proper management of biodegradable and non-biodegradable waste disposal or treatment.

Collaboration among local communities, government agencies, and tourism operators grounded in responsible behavior and circular economy principles is essential for minimizing the waste footprint and sustaining Meghalaya's unique landscapes²⁷. Such partnerships play a critical role in promoting inclusive tourism development, preserving cultural heritage, enhancing local livelihoods, protecting biodiversity, and ensuring long-term environmental stewardship across the region's ecologically sensitive and culturally rich tourist destinations.

XV. CONCLUSION

India is a country where regulatory frameworks are framed with utmost perfection but lack of enforcement has been the key issues along with the lack of accountability and transparency in regulatory agencies. Tourism development plays a significant role in the economic development of the state and the country as well, but let not forget that due to this type of development and visiting many biodiversity were disturbed. However, the main concern here is that how the tourism development not only developed economy but also creates

²⁷ S.M.Pathaw, Under Secretary to the Govt. of Meghalaya Tourism Department, "The Tourism Policy of Meghalaya", available at: <https://tourism.gov.in/sites/default/files/2019-10/meghalaya.pdf> (last visited on August 22, 2025)

disturbance to the environment in many ways. Whenever people visiting the tourism place, they also left something in that place which degrade the natural beauty of the environment. Many lakes, rivers and stream were polluted due to the influx of tourist. Effective waste governance in Meghalaya's tourist landscapes demands localized enforcement of SWM Rules, 2016 and inclusive community participation both from the visitors and the residents. Strengthening compliance mechanisms is vital to mitigate ecological degradation and preserve the region's natural heritage, and also strengthening the traditional local rules by prohibiting and punishing the violators of waste management.

REFERENCES

1. Meghalaya Biodiversity Board, "Towards Securing the Rich Biodiversity of Meghalaya", *available at:* <https://megbiodiversity.nic.in/sites/default/files/securing-rich-biodiversity-meghalaya.pdf> (last visited on January 25, 2025)
2. "Sustainable Tourism" United Nation Sustainable Development , , *available at:* <https://sustainabledevelopment.un.org/topics/sustainabletourism#:~:text=The%20World%20Tourism%20Organization%20defines,the%20environment%20and%20host%20communities%22> (last visited on December 2022)
3. Jagdish C Kuniyal, Arjun P Jain, Ardhendu S Shannigrahi "Solid waste management in India Himalayans tourists' treks: a case study in and around the valley of flowers and Hemkund Sahib" 23 Issue 9 Waste management (Elsevier) 807-816 (2003), *available at:* <https://www.sciencedirect.com/science/article/abs/pii/S0956053X03000278> (last visited on December 2022)
4. Jayanti Pahwa "in the name of promoting tourism, the natural beauty of the State should not be destroyed: Meghalaya High Court", *available at:* <https://www.verdictum.in/court-updates/high-courts/in-name-of-promoting-tourism-natural-beauty-of-state-should-not-be-destroyed-meghalaya-high-court-1485894> (last visited on December 2022)
5. "Sustainable Tourism - A Tool for Development" UNWTO, *available at:* <https://www.unwto.org/world-tourism-day-2017> (last visited on December 2022)
6. Austin Sinesh Das and G. Dilip Diwakar "Solid Waste Management for Sustainable Tourism" 6(2) International of Applied social science 399-406 (2019) *available at:* https://www.academia.edu/50235787/Solid_Waste_Management_for_Sustainable_Tourism, (last visited on January 06, 2023)
7. Sunlu, Ugur, "Environmental impacts of tourism", *available at:* <https://www.researchgate.net/deref/http%3A%2F%2Fom.ciheam.org%2Farticle.php%3FIDPDF%3D4001977?tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uRGV0YWlsIiwiGFnZSI6InB1YmxpY2F0aW9uRGV0YWlsIn19>, (last visited on January, 01. 2023)

8. Michelle E. Jarvie, “Brundtland Report, Our Common Future”. *Encyclopedia Britannica*, 20 May. 2016, available at: <https://www.britannica.com/topic/Brundtland-Report> (last visited on September, 01, 2023)
9. Hari Srinivas “Environmental impact of tourism” 10 UNEP (1999), available at: <https://www.gdrc.org/uem/eco-tour/envi/one.html> (last visited on January 04, 2023)
10. David S. May, “Tourism and the Environment.” 14, no. 1 *Natural Resources & Environment*, 58 (1999) available at: <http://www.jstor.org/stable/40924705> (last visited on December 2, 2022)
11. ET Government, “Meghalaya uses AI-enabled tech to clean up tourist hotspot Umiam lake”, available at: <https://government.economictimes.indiatimes.com/news/governance/meghalaya-uses-ai-enabled-tech-to-clean-up-tourist-hotspot-umiam-lake/103320068> (last visited on August 23, 2025)
12. Waste Management – Everything You Need to Know About Waste Management, available at: <https://www.recyclingbristol.com/waste-management-everything-you-need-to-know-about-waste-management/> (last visited on December 2, 2022)
13. Dalia Perkumiene, Ahmet Atalay, Larbi safaa and Jurgita Grigiene, “Waste Management for Clean and Safe Environments in the Recreation and Tourism Sector: A case study of Lithuania, Turkey and Morocco” 8 *Recycling ResearchGate* 56 (2023).
14. Vishes Gupta “Right to Pollution Free Environment”, ipleaders, available at: <https://blog.ipleaders.in/right-to-the-pollution-free-environment/> (last visited on July 21, 2023).
15. The Indian Constitutional Act, 2014
16. Taruni Kavuri, “The Constitutional Scheme of Animal Rights in India” Michigan State University College of Law, available at: <https://www.animallaw.info/article/constitutional-scheme-animal-rights-india#:~:text=Article%2048A%20lays%20down%20the,of%20the%20country> (last visited on July 21, 2023)
17. Robert Jan Baken, Suresh Bhagavatula “Some reflections on tourism and tourism policy in India” SSRN Electronic Journal, 10.2139/ssrn.2122440 (ResearchGate), available at: https://www.researchgate.net/publication/256029202_Some_Reflections_on_Tourism_and_Tourism_Policy_in_India ,(last visited on December, 21, 2022)
18. Dayananda.K.C, Prof. D.S.Leelavathi “Evolution of Tourism Policy in India” 21 IOSR Journal of Humanities and Social Science (IOSR-JHSS) 26 (2016), available at: <https://www.iosrjournals.org/iosr-jhss/papers/Vol.%202021%20Issue11/Version-6/E2111062632.pdf> ,(last visited on November 14, 2023)
19. Meghalaya Biodiversity Board, “Towards Securing the Rich Biodiversity of Meghalaya”, available at:<https://megbiodiversity.nic.in/sites/default/files/securing-rich-biodiversity-meghalaya.pdf> (last visited on January 25, 2025)

20. S.M. Pathaw “The Tourism Policy of Meghalaya”, available at:<https://tourism.gov.in/sites/default/files/2019-10/meghalaya.pdf> ,(Last modified February, 01, 2011) solid waste management in India ,(last visited on November 14, 2023)

21. Deeksha Dave “Journey of Solid Waste Management Regulations in India: A Historical Account” Crdeep Journals DOI:10.13140/RG.2.2.14106.11200 available at: https://www.researchgate.net/publication/364327132_Journey_of_Waste_Management_Regulations_in_India_A_historical_account (last visited on October 14, 2022).

22. The Hazardous Wastes (Management and Handling) Rules, 1989, available at: <https://faolex.fao.org/docs/pdf/ind40674.pdf> (last visited on May 23, 2023).

23. Municipal Solid Waste (Management And Handling) Rules 2000, available at: <https://indiankanoon.org/doc/10681868/> (last visited on July 27, 2023).

24. The Plastic Waste (Management and Handling) Rules, 2011, Press Information Bureau (PIB), Government of India, Ministry of Environment, Forest and Climate Change, available at: <https://pib.gov.in/newsite/PrintRelease.aspx?relid=69649> (last visited on Feb 7, 2023).

25. The Solid Waste Management Rules, 2016, available at: <https://cpcb.nic.in/salient-features-of-msw-rules/> (last visited on July 17, 2023).

26. Atiqul Habib, “Littering triggers ban on roadside picnics in Meghalaya’s East Khasi Hills”, *India Today NE*, Aug 01, 2025, available at: <https://www.indiatoday.in/meghalaya/story/roadside-picnics-banned-in-east-khasi-hills-to-curb-tourist-littering-1254542-2025-08-01> (last visited on October 10, 2025)

27. S.M.Pathaw, Under Secretary to the Govt. of Meghalaya Tourism Department, “The Tourism Policy of Meghalaya”, available at: <https://tourism.gov.in/sites/default/files/2019-10/meghalaya.pdf> (last visited on August 22, 2025)