

EIACP

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Editorial

Festivals have become an attractive contributor to tourism for the indigenous communities by attracting visitors which contributes to the economic and socio-cultural health of the communities and the state. Some of these festivals are organized to accommodate more than a thousand people per day with days spanning from one to even a whole week or more. These festivals are centered on showcasing art, culture, food, and various other elements that one does not experience in their everyday lives. However, it has also been recognized in the literature that festival activities can produce significant and long-lasting environmental damage to the destinations. One of how such festivals may cause environmental degradation can be attributed to excessive waste production. With no proper mechanism for waste management in place,

unsegregated and non-recycled waste is one of the largest contributors to the ecological footprint. With thousands of attendees every year, it is expected that the negative environmental effects of these events will become more of a pressing concern for the host community and the country. This issue highlights the inventorization and quantification of solid wastes by the Nagaland Pollution Control Board at the 24th Hornbill Festival at Kisama Heritage Village, Kohima.



Mr. Akangmeren Imchen, Scientist B, Nagaland Pollution Control Board at the NPCB Hornbill stall in Kisama, Nagaland



EIACP (Environmental Information, Awareness, Capacity building and livelihood Programme) is a project of the Ministry of Environment Forests and Climate Change, Govt. of India

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INTRODUCTION

Nagaland known as the Land of Festivals is home to 17 indigenous tribes celebrating different festivals throughout the year in every pocket of the state. To showcase the diverse cultural and traditional elements of each tribe and to strengthen inter-tribal interaction, the Government of Nagaland (GoN) organizes the Hornbill Festival every year in the first week of December at Kisama, Kohima. The 10-day-long festival is aimed at reviving and protecting the rich cultural heritage of the tribes in Nagaland through showcasing dances, folk songs, artistic performances, sports, food, and traditional art like paintings, wood carvings, and sculptures. The festival also includes traditional Naga Morungs, flower and agricultural produce exhibitions and sales, beauty contests, and indigenous games, and also hosts musical concerts.

Given the myriad of activities that take place during the Hornbill Festival at Kisama, it is only expected that hundreds of tonnes of solid waste are generated per day which goes undocumented or unaccounted for. During the 10-day-long festival, the organizers, participants, and various stakeholders generate wastes ranging from biodegradable organic wastes to non-biodegradable wastes. Food stalls generate wastes like disposable plates, cups, cutleries like spoons and forks, food packaging films, and food waste, while the other stalls selling locally made indigenous products will generate waste such as packaging materials made from paper or plastics. Even though waste generated at the festival is collected and disposed off at the dumpsite or burned at the venue, there has not been a solid waste quantification study carried out to date.

Hornbill Festival has made its mark in the global tourism sector and has attracted many foreign tourists and invited world-known guests like Gary Mehigan and other foreign dignitaries in

the past. Popular festivals around the world have gained traction for taking steps to make green festivals by making them plastic-free and putting in place efficient sustainable waste management systems. In the current time and space, people are getting more environmentally conscious and therefore it is very easy for global festivals to gain a bad reputation for outdated waste management practices and bad reputation can be extremely damaging as it can affect an event dramatically, from decreased attendance and support from sponsors.

OBJECTIVES OF THE STUDY:

To date, no studies have been carried out concerning air, noise, and solid waste management during the Hornbill Festival. Therefore, the Nagaland Pollution Control Board (NPCB) with a vision and motives keeping in mind the importance of studying the environmental impact during the Hornbill Festival which is the largest festival celebrated in the state of Nagaland had decided to study and monitor the ambient air quality, ambient noise level and solid waste management during the 10 days celebration, which is one of the first of its study done in any of the festivals in the state.

This research presents the festival, as a case study, to assess the implementation of environmental management for events, to promote environmental sustainability through waste management and legal compliance.

STUDY AREA:

Hornbill Festival is held at Naga Heritage Village, Kisama which is about 12 km from Kohima city. All the tribes of Nagaland take part in the festival. The festival aims to revive and protect the rich culture of Nagaland and display its extravaganza and traditions. It lies on coordinate 25°36'58" N 94°06'52" E.



NPCB Inventorization team at Kisama Heritage Village Solid Waste Inventorization and Quantification site

METHODOLOGY OF THE STUDY:

To efficiently conduct the waste inventorisation and quantification study, a series of stall-to-stall awareness and education was conducted by NPCB officials followed by the manual collection and segregation of wastes collected.

PUBLIC AWARENESS: Waste characterization and sensitization campaigns about waste segregation were conducted in all the food stalls and morungs on the first day and on other days of the festival by the officials of NPCB whereby the stall owners were made aware of the study being carried out and the need for their cooperation to dispose of segregated waste in different bins provided to them. Segregation of wastes collected from the venue was carried throughout the festival

COLLECTION, SEGREGATION, AND QUANTIFICATION: Solid waste generated at Kisama Heritage Village was collected by the Department of Tourism through TATA mobile from all stalls, morungs,

and trash pickup points which were transported to the collection and segregation point behind the parking lot below the second gate of the venue.

- Manual segregation of wastes collected from the venue was carried throughout the festival.
- Segregation was done based on recyclable, non-recyclable, biodegradable, and non-biodegradable categorizing them into Paper, Single-use plastics (SUPs), Multilayered Plastics (MLPs), Tetra packs, Biomedical, Organic, Food wastes, Disposable plates and cups, etc.
- The volume of each of the categories was measured and documented daily.
- Furthermore, the collected segregated waste was handed over to the Kohima Municipal Council (KMC) for disposal, recycling, and recovery.



Unloading of waste collected from the trash bins, Morungs, and Stalls at the segregation site



Separation of wastes from the trash bags to be segregated into different categories



Segregated wastes were measured on a measuring scale and their volume recorded in Kgs



Segregated aluminum cans crushed to be recycled



Freshly dumped thrash bags being separated and segregated



Collection of Segregated waste by KMC to be transported to the KMC dumpsite

FINDINGS AND DISCUSSIONS

Hornbill Festival, a globally known and promoted festival draws people from across the globe, country, and region to witness the 10-day-long cultural extravaganza. With the myriad of activities spread across 10 days comes a generation of high volume of waste at the venue which is not segregated and its disposal unaccounted for in the past. A total volume of **22,480.1 kgs** of solid waste was assessed at Kisama Heritage Village during the Hornbill Festival.

Sl. No	Date	Total Volume (in kgs)
1	01.12.2023	763
2	02.12.2023	3,073
3	03.12.2023	3138
4	04.12.2023	2377
5	05.12.2023	2398
6	06.12.2023	2326
7	07.12.2023	2116
8	08.12.2023	2394
9	09.12.2023	3681

Generation of waste on a daily basis

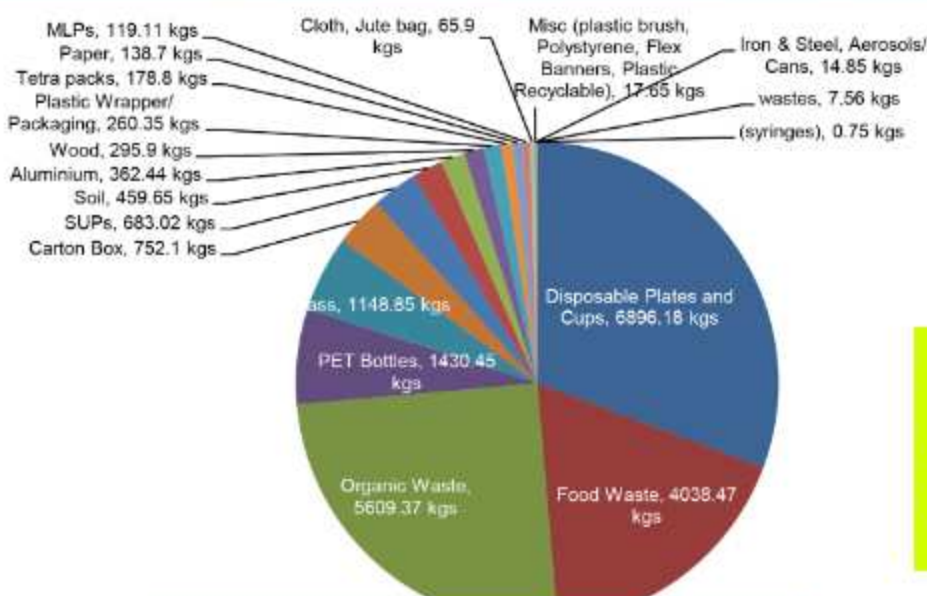
The total volume of waste generated on the first day was comparatively lesser than the other days with the total volume standing at 763.51kgs. A factor that may be contributing to the smaller volume on the first day might be the commencement of the festival in the evening and visitors arriving at the venue in the later part of the afternoon.

GENERATION OF WASTE ON A DAILY BASIS i.e. from 01st December to 09th December, 2023



During the later days since the commencement of the festival, the waste generation increased to even a total of 3681.37 kgs per day owing to an increasing number of attendances ranging from 11,000 to 15,000 per day (as per reports from the Department of Tourism, GoN).

With a total number of 17 Morungs and about 100 stalls in and around the venue, a substantial portion of the waste at the Hornbill Festival has been contributed by the volume of disposable plates, cups, and food waste. During the study, it was found that the category of waste being the largest contributor to the total volume was Disposable Plates and Cutleries which was found at a total of 6,896.18 kgs followed by organic waste and food waste at 56,09.37 kgs and 4,038.47 kgs respectively. Behind the scenes of this vibrant festival lies a significant challenge of solid waste management. Other contributors of waste include, PET bottles SUPs 1430.45 kgs and 683.02 kgs respectively.



Graphical Representation of the total volume of waste generated by each category throughout the Hornbill Festival at Kisama Heritage Village

COMPOSITION OF DIFFERENT TYPES OF SEGREGATED WASTE (in Kgs)

Through the inventorization and quantification of solid waste carried out at Kisama Heritage Village during the 24th Edition of the Hornbill Festival, it was found that on average, the volume of waste generated is projected at 2,248 kgs per day. However, as per the waste segregated and measured every day, it was on the last days of the festival that the volume was comparatively higher with volume ranging from 2,300 kgs to 3,600 kgs per day.

Despite showing an increase in volume from the days before, the total volume of waste

that was analyzed showed a downward trend on the 6th and 7th day of the festival even though it could have been estimated to show an upward trend in the volume of waste generated. One possible factor could be attributed to the rains and lower attendance of the visitors.

The data for the 10th December 2023 could not be assessed and quantified as the collection of waste was not done by the responsible agency, thereby, no assessment could be carried out leading to the assessment data only for the 09 days of the festival.



Final accumulation of waste ready to be transported to the KMC dumping site



Segregated PET Bottles which contributed to a significant percentage of the total volume

ADDITIONAL OBSERVATIONS AND LIMITATIONS

By comparing the total number of attendees at the venue each day to the total volume of the waste collected and segregated, the study would have provided average data on the total volume of waste generated per person per day or even given an overview of whether the population of attendees determines the volume of waste generated per day. However, that approach was disregarded as a large number of Officials,

participants, and delegates who had Official passes to the venue without availing an entry ticket was not accounted for without which the data projection would have been skewed.

In addition, it was observed that there was a prevalence of stray wastes in and around the venue which were left uncollected thereby leaving heaps of uncollected waste in different locations on the last day of the festival.



During the study period of 10 days from 1st Dec-10 Dec 2023, haphazard throwing and burning of garbage were found as depicted in the above picture.

BIOMEDICAL WASTES: Poorly disposed medical syringes were also recovered from the waste collected on two occasions for which the NPCB officials consulted with the medical team and NSACS mobile testing van at the venue. It was observed that the syringes found did not match up to the ones used at these two medical assistance points. However, better bio-medical waste management needs to be streamlined to prevent the possible spread of infection among sanitation workers in the future.



Improper disposal of medical syringes containing needles and blood stains



*NPCB officials interacting with the medical team
Kisama, Department of Health & Family Welfare*

Deficient Analysis

FOR WASTE MANAGEMENT

Action	MSW Rules 2016 [4]	Present Status of SWM
SEGREGATION	<ul style="list-style-type: none"> a. To organize an awareness program. b. Segregation of wet and dry waste at sources. c. Promoting recycling & reuse of segregated material. d. Program to ensure community participation in waste segregation. 	<ul style="list-style-type: none"> a. Programmes and Campaigns initiated for Public Awareness by stakeholder departments in the state. b. Segregation at source not carried out. c. Recovery and Recycling of recyclable waste channelize through the informal sectors comprising of scrap collectors and dealers.
PRIMARY COLLECTION	<ul style="list-style-type: none"> a. No burning of waste. b. Recycling biodegradable waste. 	<ul style="list-style-type: none"> a. Burning of waste was observed. b. No segregation was done at the transfer station.
SECONDARY COLLECTION	<ul style="list-style-type: none"> a. Adequate number of covered storage bins. b. Colorization of the bins. 	<ul style="list-style-type: none"> a. Covered storage bins present. b. Colored bins were placed.
TRANSPORTATION	<ul style="list-style-type: none"> a. Covered transportation vehicles. b. Avoid multiple handling of waste. c. No open dumping. d. Clearance frequency. 	<ul style="list-style-type: none"> a. No covered transportation vehicle. b. No multiple handling of waste. c. Open dumping observed. d. Regular clearance frequency.
PROCESSING	<ul style="list-style-type: none"> a. Recyclable should be recycled. b. Biodegradable waste has to be inserted and preferably reused after processing like compost, etc. 	<p>Processing of the segregated waste like PET bottles and aluminum cans are recycled which will be sold to the scrap dealers. However, segregated biodegradable waste is dumped in the KMC dumping site.</p>
DISPOSAL	Landfill/ incineration plant	Open dumping

WAY FORWARD:

Suggestions & Mitigation Measures

● **SOLID WASTE MANAGEMENT:**

Addressing the waste management challenges should become a shared responsibility of the organizers, volunteers, and attendees. The organizers must establish rules to prohibit non-biodegradable items from the venue and the attendees and the stall owners are expected to comply with these guidelines. By encouraging the food stall owners to opt for biodegradable or reusable cutlery options like bamboo cups, plates, etc., the volume of disposable plates and cups wastes can be controlled by a significant percentage.

To combat the growing problem of single-use plastic waste, the organizers must implement a ban on single-use plastic bottles (in this case the Rs.10/- PET bottles) and provide alternative options like water filling stations in and around the venue where the organizers can also take an innovative approach to provide the option to purchase refillable water bottles as a festival souvenir or merchandise at the entry gate to the visitors in collaboration with companies that manufacture water bottles making them as partners for the event and also generating income for the festival.

Solid waste recycling is an efficient measure that can reduce the total quantity of disposed wastes and greenhouse gas emissions where the public plays a vibrant part in its success. However, low public participation is a problem facing

the success of the waste management systems in the state and even for such festivals.

Therefore, it should be of utmost importance to create an effective festival waste management plan involving all the stakeholders and departments.

● **IMPORTANCE OF SEGREGATION:**

During the segregation process of the study carried out, it was observed that some of the bags of waste were well segregated into wet and dry wastes which made it simpler for the workers to segregate and categorize. Segregation at source is regarded to be the best and first step towards a sustainable waste management system which the organizers can continually emphasize for the festival in the future- "Promoting source separation".

- **CONVENIENT BIN LOCATIONS:** The provision of two separate bins for wet and dry waste should be taken up by the organizers alongside the campaign to segregate waste at source to be practiced by all the stalls and Morungs.

Make recycling and waste disposal as easy as possible for festival goers and vendors to manage rubbish effectively. Placing food waste, general waste, and mixed recycling bins close to food and drinks stalls makes sense, as it's where plenty of rubbish is produced. The more the number of bins around the venue, the less work/walking is required for people

to dispose of rubbish thereby reducing the risk of waste negatively impacting the environment.

- **BIODEGRADABLE WASTE:** The biodegradable waste i.e. the organic waste and food waste accounted for a total of 9647.84 kgs. The biodegradable waste should be easily managed as it naturally decomposes over time, returning valuable nutrients to the soil.

An example of good food waste management is initiating the concept of having a compost pit at the festival premises which can be adopted by the nearby villages or educational institutions for socio-economic activities in the future. Composting the wet waste at the venue, itself cuts a lot of costs on the transportation of waste to a dump site.

- **GREEN MORUNG CONCEPT:** By initiating a "Green Morung" concept, the organizers can make provision to award the Morung with the Best Waste Management Practices Certification of Recognition and if possible, prize money to encourage the 17 tribes Morungs to take account of their wastes and proper disposal of the waste generated in their Morungs. The assessment can be carried out by experts from KMC, NPCB, and the representatives from the host department/organizers.

The waste hierarchy should be aimed at promoting firstly the prevention, reduction, and reuse of products and materials, and secondly the options for waste treatment and disposal.

- **ZERO WASTE APPROACH:** Implementing a zero-waste approach at festivals is challenging because of the efforts required to organize measures for managing and

preventing waste at the entire venue. To implement such measures, it is necessary to educate consumers effectively over time about how to sort materials, to communicate with suppliers and change how retail food and drink is packaged for sale, to establish indicators for assessing the efficiency of the measures applied, and to develop and test new methods for assessing the performance of waste reduction measures.

Our study shows that this approach can be implemented at the Hornbill Festival which is capable of reducing the amount of waste generated during the festival and by the food stalls and morungs.

The use of tissue paper should be limited. During the study it was found that most of the tissue papers are mixed along with the food waste, thereby, making it difficult in the process of segregation. An example of effective management of waste involving non-usage of tissue papers can be highlighted and showcased at the famous food street in Indore city known as Chappan Street, Indore city is categorized as the Cleanest city in India. Chappan Street is a food lover's paradise, where the aroma of spices, the sizzle of street vendors, and the vibrant colors of food create an unforgettable culinary experience. From traditional Indori specialties to global street food delights, Chappan Street offers an array of flavors to tantalize your taste buds. In the quest to banish plastic and disposable cutlery at Chappan, vendors had reportedly already established a common wash area for reusable utensils. Handwashing basins and waste segregation are placed in every corner and front of the shop, tissue papers are not provided in any of the shops.

- **WASTE MANAGEMENT TEAM:** Train and prepare a waste team, and assemble a team dedicated to festival waste management to combat those rogue festivalgoers. Include Waste educators or litter pickers to educate and sensitize the festival goers to reduce the amount of waste. Also, have professionals overseeing the wider waste operations – ensuring bins don't overflow, access routes are clear, and collections happen on time.
- **AWARENESS AND PEOPLE'S PARTICIPATION:** Efforts must be made to increase the awareness of attendees about waste prevention, reduction, and recycling measures, to develop guidelines and methods to quantify the waste prevention measures, and to formulate policies aimed at increasing the application of the

zero-waste principle.

As the festival concludes, effective waste management and disposal becomes paramount. Responsible waste management requires a collaborative approach between the organizer and the attendees. While festivals have implemented various sustainable initiatives, the litter issues demand continuous efforts to raise awareness, enforce rules, and implement innovative solutions. By learning from the research and studies alongside building upon past experiences, the Hornbill Festival can also become a model for other events and festivals that aim to strike a balance between the cultural and musical extravaganza and environmental sustainability.



KMC staff collecting and packing the segregated PET bottles

NATIONAL WILDLIFE WEEK CELEBRATION

at Nagaland Zoological Park, Rangapahar, Chumoukedima.



Chief Wildlife Warden, Dimapur, Shri H Tokaho Kinimi, IFS, Director, Nagaland Zoological Park, Chumukedima, Smt. Zupeni Tsanglao, C-CERP team, students and EIACP Officials

National Wildlife Week which is celebrated every year from 2nd October to 8th October, strives to spread awareness about preserving wildlife and also to honor individuals and organisations who are making a positive impact on wildlife conservation. Environmental Information Awareness Capacity Building & livelihood Programme (EIACP) Nagaland Pollution Control Board, along with Care-Center for Environment and Rural Poor (C-CERP) in collaboration with Nagaland Zoological Park, Rangapahar, Chumoukedima District organized a program on the

occasion of National Wildlife Week on 6th October 2023 on the theme "Partnerships for Wildlife Conservation" with Shri H Tokaho Kinimi, IFS, and Smt. Zupeni Tsanglao as a Special guest speaker. The program was attended by 14 students, 2 each from 7 different schools in Jalukie, Peren District, members from C-CERP, Officials, and staff from Forest Dept and EIACP, Nagaland Pollution Control Board. Resource materials like boxes, pencils made from recycled paper, notepads, and newsletters were given to the participants.

NAGALAND NORTH EAST YATRA:

The EIACP Nagaland Pollution Control Board conducted the Statewide Northeast Yatra (Jatha) for Lifestyle for Environment (LiFE) from 7th November 2023 by engaging the Tribal Welfare Society in the state covering 16 districts. To conduct this yatra, four teams were formed and each team covered four districts. The 16 districts covered are namely Zunheboto, Wokha, Mokokchung, Tseminyu, Tuensang, Noklak, Shamator, Kiphire, Mon, Longleng, Phek, Dimapur, Chumoukedima, Nuland, Kohima, Peren.

Pamphlets on Mission LiFE and Millets were distributed among the students and the public in all 16 districts.

Dissemination of Audio in Public places using Loud Speakers was conducted in every district at various police points, traffic points, and clock towers, with various stakeholders, shopkeepers, auto drivers, students, and individuals taking an interest in the awareness campaigns. Appreciation and suggestions to conduct more awareness campaigns were shared with the Yatra teams. The theme of Yatra focuses on the following points as indicated below:

A. Single Used Plastic Reduced:

- Awareness Campaign of Single-Use Plastic Reduced.

B. Energy Saved:

- Awareness Campaign on Energy saved

C. Water Saved:

- Awareness of Millet Mission

D. Reduce Waste (Swachhata Actions):

- Awareness of types of wastes (Dry, wet, medical, etc.)

E. E-Waste Reduced:

- Awareness of proper disposal of E-Waste (e-circle and Karo Sambhav)

F. Healthy Lifestyle Adopted:

- Awareness of discarding fast food, preserved food, packaged food, etc

G. Sustainable Lifestyle Adopted:



MEGA EVENT NORTH EAST YATRA for Lifestyle for Environment (LiFE) and North East Zone Regional Evaluation:

The culmination Programme of the North East Yatra for Mission LiFE was conducted on 11th December at Guwahati with Shri Keshab Mahanta, Hon'ble Minister, Science Technology and Climate Change Department, Government of Assam, as the Chief Guest. The programme was attended by Yatra participants, EIACP officials from all North East states, and Officials from the Ministry of Environment, Forest & Climate Change.



Culmination Programme of North East Yatra for Mission LiFE at Guwahati



Officials from the Ministry of Environment, Forest & Climate Change, Government of India, North East EIACP Officials, at the North East Regional Evaluation in Guwahati



EIACP Nagaland Officials at the Mega Event North East Yatra for Lifestyle for Environment (LiFE)