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Global Climate Change and the Impact of Harmattan on Theatre and Film Costumes in Nigeria

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ABSTRACT

Climate change is a phenomenon characterised by long-term temperature and weather shifts in a particular geographical location. Over the years, human activities have increased their severity on the global environment leading to global environmental degradation mostly caused by gas emitted from greenhouses through industrialisation and indiscriminate urban waste disposal systems. The consequence of this in the world is the harsh ecosystem and declining biodiversity. To address these challenges in the 21st century, theatre/film practitioners among other climate change dissenting voices engaged literary and entertainment platforms to express their opinions on the devastating state of global climate and the quest for positive environmental transformation. Thus, live theatres and films were energised to produce productions reflecting the negative impact of climate change and provide solutions to them. To this effect, costumes worn by the actors become a very significant visual tool for disseminating the message to the audience. However, the management of theatre costumes is also affected by the changing climate that results in extreme weather events. Thus, this paper examines the vulnerability of some selected fabrics from the costume room of the Department of Performing Arts, University of Ilorin, Kwara state, Nigeria to determine the impact of harmattan season. Temperature and wind velocity were used as signals of harmattan severity in the study area. Findings revealed that dust and heat are the most prevalent hazards of costume during this season and coping strategies for managing them were recommended.

Keywords: Global climate change; harmattan; theatre; film costume; Nigeria.

INTRODUCTION

Global environmental crises and climate change are products of global warming perceived in extreme weather conditions and harsh ecological environments. Most of the time, these climatic conditions are caused by the emission of greenhouse gases through industrialisation and illicit waste disposal systems in urban and rural communities. As (Jibunoh, 2020) rightly posited these climatic changes occasioned by human activities are perceived in rising temperatures, rising sea levels, dust, drought and desertification that immensely affect every aspect of human lives. Several incidences of ecological system changes range from environmental degradation to instability in government, economics, agriculture, and health

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amongst others. (Okan, 2021). Tropical climates like West Africa are more exposed to the sun on an average of 25^0C to 28^0C (77 - 88^0 Fahrenheit). It is disheartening to note that, climate change has over the years heightened the negative effect of harmattan. A typical example of this trend in recent times can be found in Nigeria, where drastic climate change has made harmattan pervasive, less predictable and hazardous to human health. Due to the excessive dust it carries from the Sahara into the cities it causes havoc for urban and rural dwellers as well as those living along the fringes of the desert (Ogunseitan, 2007).

To address the challenges of climate change initiated by human activities in global space in the 21st century, environmental mitigation and resilience principles were adopted by stakeholders. Hence, each nation formulated and implemented strategic environmental policies and approaches that work best in their local context and interest for their survival under harsh climatic conditions (Beyioku, 2016). United Nations and Non-governmental organisations also embarked on aggressive campaigns to raise global consciousness about the impact of climate change on the global environment (UN Sustainable Development Goal13 Report, 2023). To this extent, Scientific research and publication of findings were generated by scientists to address the situation. Environmental topics bordering on reforming global climate have equally become front burners in physical science, life science, and earth science discourses all over the world.

The attention of African playwrights, performing artists, theatre practitioners and filmmakers was also drawn to the quest for environmental reformation and transformation occasioned by the adverse effects of climate change. Thus, they engaged literary and entertainment platforms such as live theatre and films to project and interrogate the negative impact of climate change in Africa to create awareness about the environmental malaise to the public and proffer workable solution. In Nigeria, for example, topical discourses on climate change have become palpable human experience championed by many theatre scholars and film practitioners to drive meaningful change and promote sustainable solutions through the Arts because Nigeria is classified as one of the ten most vulnerable countries in the world grossly affected by climate change and natural hazards (World bank group, 2021).

Hence, these aforementioned practitioners creatively enacted theatrical/film productions highlighting the devastating effects of climate change on the Nigerian environment and human lives to the Nigerian populace with a view of finding lasting solutions to them. These disturbing climate conditions are usually dramatised to the audience through the themes of extreme weather patterns perceived in longer and fiercer harmattan seasons, intense rainfall, flooding, land degradation, and higher temperatures, etc. Other climatic hazards associated with a harsh ecological environment caused by human factors were also exposed in their productions by projecting the negative effect of gas flaring and oil spillage activities of Western multinational oil-producing industries on the ecosystem of host communities in Nigeria. Instances of such plays and films in Nigeria can be visualised in (Mbajiorgu's *Wakeup Everyone,* 2009*)*: a commissioned stage performance by Africa Technology Policy Study Network (ATPS) for their international conference on climate change at Nicon Luxury Hotel, Abuja, Nigeria. The eco-drama articulated the negative impact of climate change in post-colonial Nigerian society with environmental adaptive solutions. It was a literary response to the multi-facets problems of climate change perceived in the overarching themes of deforestation, emission of greenhouse gas, blockage of natural waterways, drought and abject poverty in oil producing communities due to incessant oil spillage by multinational oil producing companies on their land and rivers because of their selfish economic interest (Eze, 2021). Similarly, (Burnaboy's, *Whiskey* 2022*)*; equally addresses the issue of climate through a film documentary that focused on the environmental harm of oil spillage and flooding in Niger Delta, Nigeria. Some of the ecological concerns were depicted in the gas flaring activities

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of oil companies in that area which resulted in the pollution of the atmosphere, rivers and land of host communities leading to serious environmental, health and economic problems for people living in those communities.

Costumes worn by the actors in the aforementioned theatrical/film productions have thus become important visual elements for climate change communication. Through these costumes' the actors were able to successfully characterised their roles to the audience with fabrics and accessories show casing seasonal changes, geographical location, historical antecedent, and the contemporary environment of the productions. Therefore, costume in conjunction with other technical components of performance play pivotal roles in foregrounding the environmental background of live performances and films. Interestingly, the preservation and management of this integral component of the theatre production are also affected by climate change such as rainfall and harmattan amongst others. It is against this backdrop, that this paper examines the adverse effect of harmattan on theatre costumes and how they can be managed and preserved during this harsh weather in Nigeria for the utility of the actors.

Harmattan season in Nigeria, occurs between the end of November and persists through middle of March of the following year. Its commencement, cessation and duration vary over space based on the geographical location of an area to the Sahara Desert. Although, the farther a location from the Sahara, the lesser the impact. The direction of the wind follows a seasonal shift in atmospheric high pressure to the north from the south but starts earlier, persist longer and more severe in the northern part of the country. It is usually characterised by a dry dust-laden northeasterly wind originating from Sahara Desert, with high evaporation rate, low humidity, heavy cloud of dust that result in poor visibility and wide fluctuations in day and night ambient temperatures (Ochei &Adenola, 2018). The impact of harmattan season is not limited to health, transportation systems but also extends to fabric and other textile management as it affects human comfort and many people have to buy sweaters and related clothes to manage the cold dusty weather condition. (Ojaide, 2016). (Ibrahim et al, 2020) also reported that harmattan period is a season of widespread airborne diseases and dry skin. This period is also associated with the problem of sore throat, catarrh, headache, chapped lip, eyes, dehydration, and respiratory system that can aggravate asthma. In the same vein, (Eli-chukwu & Onoh (2019) explained that travelers usually express their displeasure over harmattan as it brings discomfort to them. More so, in the aviation industry, harmattan haze has cost airlines millions of dollars in flight cancellations and diversions each year. The above therefore constitute the adverse effects of harmattan that are noted and obvious to man.

Background of Study Area

One of the two recognised theatre outfits in Kwara State, Nigeria as noted by (Shuaib & Olanrewaju, 2015) is the Department of Performing Arts, University of Ilorin, Kwara State. This constitutes the study area. The study area is in Ilorin, located on latitude 8°30', 8° 35' North of the equator, and longitude 4 30' and 4° 37' East of Greenwich meridian. The city is situated on a gently rolling plain which has an average elevation of 263m above sea level. North of Ilorin, the monotony of the plain is broken by a conspicuous Sobi Hill with an elevation of 433m above sea level because Ilorin is drained by River Asa and its tributaries.

The climate of Ilorin is controlled by the two major winds of West Africa; the moist Southwest wind during the rainy season and the dry Northeast wind during the dry season (Olaniran, 2002). The rainy season starts in April and lasts until October with a period of short dry spells in between called the 'August break'. The temperature is constantly high, except

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during harmattan, which begins in November and lasts until February. The weather is cold and dry during this period coupled with a hazy atmosphere and dust particles flowing around.

The Impact of Harmattan Weather on Theatre Costumes

Textile Technology and Fabric Composition

Textile technology is an important aspect of costume management, that a professional theatre costumier/ costume designer must know and deeply understand for the advancement and survival of her/his craft. It is a special domain that encourages costumiers to explore varied technologies in designing, producing and managing theatre costumes because costume designs are largely created from textile art materials, particularly fabric. The fabric according to (Gillette, 2002) is the basic material from which costumes are made. Thus, a customer must be knowledgeable about its workings. (Elmogahzy, 2020) opined that the technology involved in the making of fabric encompasses a wide range of disciplines that borders on Sciences, Engineering and the Arts amongst others. Two dominant textile fibres are usually used in the manufacturing of fabric and they are obtained from natural (plant and animal) and synthetic (mechanical) sources, Interestingly, each fabric has its distinctive characteristics about its type, texture and weight. To this extent, the fabrics selected for this study are carefully chosen according to the aforementioned properties to have a broad knowledge of how harmattan weather affects the costumes in the costume room of our study area. The fabrics under investigation include but are not limited to Cotton, Silk, Wool, Lace, Linen, Nylon, Velvet, Brocade, and Aso-oke. Below are short explanations of the selected fabrics, their composition and uses to foreground their significance in this paper.

Cotton is a fabric that is made from natural hollow fibre found in the seed pod of cotton plants. As a soft and fluffy fibre, the thread is entwined with ribbon-like twists made from 95% cellulose and 5% insoluble organic compounds of the cotton plant (Koh, 2011). The weight, texture and finishes of this fabric make it durable and lovely to behold as well as amenable because it is dye absorbent, wrinkles easily and removes heat moisture. They are mostly used in designing shirts, aprons, nightwear, medical outfits, etc. Silk is another natural fibre produced from silkworm cocoons. It is a fabric with unique lustre and strength. It is lightweight and soft with good elasticity to drape effortlessly (Babu, 2019). Silk is commonly utilised in the designs of formal occasions such as dinner wear, wedding dresses and office attires.

Wool also known as Cashmere is a unique fibre fabricated from the fleece of sheep or other similar animals. There are two types of woollen yarn; woollen and worsted. The woollen has a soft and weak fussy texture while the worsted is stronger with a fine texture (Gillette, 2002). Generally, wool is lightweight and easily absorbs moisture and also dyes without wrinkles. They are ideal for sweaters, hats, gloves, socks and outdoor clothing amongst others. Just like silk, Linen is a popular natural fibre made from the stalk of a flax plant. It is usually lightweight with a strong texture and lustre appearance. It also has the attribute to conduct heat but is not able to dye well. It has excellent aesthetic and drape properties for making suits, skirts, shirts and dresses (Bahera, 2007). Lace fabric is a blend of synthetic and natural fibres derived from chemical compounds through patented processes. (Buckley-FTI,2009) describes it as threads of one or more materials interwoven, drawn, plaited, looped or twisted to form a patterned texture with a decorative and beautiful outlook. It is mostly heavyweight and often employed in highlighting costume designs depicting wealth, affluence and luxury.

Nylon is also a fibre generated through a synthetic process with the chemical interaction of air, water and coal (Xometry,2022). This particular fabric is lightweight, and highly elastic with a strong texture. Apart from its highlighted properties, it is very useful for the creation of

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undergarment support for costumes, sportswear, tights and stockings. Brocade is another product of synthetic fibre made from Rayon or Silk through mechanisation. It is opaque and mostly heavyweight (Birds of Fabric Lore, 2022). The fabric is characterised by a rich, reflective and multi-textured lustrous surface and it is used in making royal, cultural and ornamental outfits. Velvet, on the other hand, is a woven fabric with a smooth and soft texture. The threads of this fabric are evenly distributed with a short dense file which accounts for its softness and lustrous appearance (Masterclass, 2022). The fibre of this fabric is commonly derived from natural and synthetic sources. Velvet can be designed into robes, eveningwear, hat and shoes to depict royalty, culture and affluence. Lastly, Aso-oke is a traditional woven fabric that is synonymous with the Yoruba people of Southwest Nigeria. The fibre of this fabric is processed from cotton seed into horizontal and vertical looms (Ojo, 2007). It is usually heavy weight with a beautiful appearance and it is worn mostly on special occasions like weddings, burials and chieftaincy celebrations to mention a few.

METHODOLOGY

Secondary sources of data were used in this study. Maximum and minimum temperatures were collected from the convectional weather station while data on wind speed was collected from the automated weather station both located at the Department of Geography and Environmental Management, University of Ilorin. Also, an accumulation of dust that settled in the costume room where the costumes are kept in the Department of Performing Arts, University of Ilorin was collected for a period of four months, which spanned through November, December, January and February of the year 2021/2022. This is because harmattan season which commences in mid-November of the year spills into January and February of the following year and this marks the duration of harmattan season in Ilorin. Data which were collected daily were partitioned and summarized every month. Both descriptive and inferential statistics were employed to analyse the data. Monthly means of the data were calculated from daily records while the results were subject to correlation analysis to establish the strength of the relationship between variables.

Both temperature and wind velocity were used as signals of harmattan severity in the study area. The quantity and quality of aerosols (dust) in the atmosphere determine the level of scattering of the incoming solar radiation and hence the amount of heat energy that reaches the earth's surface. Under a clear atmosphere less scattering occurs, thus, much heat energy gets to the earth's surface, and the temperature rises. Wind strength determines how far dust travels and the level of diffusion and buoyance of dust particles in the atmosphere.

Maximum and minimum temperature (^{0}C) and wind velocity (Km/h) records were collected daily and summarised every month to obtain mean temperature. Similarly, a monthly accumulation of dust (gram) that settled was collected and weighed in the laboratory. This makes for an easy comparison of weather variables and the monthly accumulated dust gathered.

RESULTS AND DISCUSSION

Results in Table 1, reflect both the thermal characteristics and wind speed of harmattan weather type as compared with the quantity of accumulated harmattan dust gathered from the study area during the period under review.

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TABLE 1. Average Monthly Weather Variables and Accumulated Dust

Month	**November (2021)**	**December (2021)**	**January (2022)**	**February (2022)**
Maximum Temperature (℃)	34.6	33.2	33.5	34.4
Minimum Temperature (℃)	25.4	22.1	21.3	22.6
Mean Temperature (℃)	30	27.6	27.4	28.0
Windspeed (Km/h)	11.9	5.4	10	11
Dust (gram)	40	244	247	200

Temperature declined from November through January but peaked in February. Wind speed fluctuates as it declines sharply from November through December and rises sharply from January through February. The quantity of dust gathered increases from November through January and declines through February. It appears dust accumulates more with a decline in temperature and wind speed as well (Table 1). The exception of this is the month of January which witnessed an increase in wind speed from 5.4km/h in December to 10km/h in January and witnessed a greater volume of dust accumulation of 247grams as against 244grams. The relationship between mean temperature and volume of dust accumulated also reflects this. For instance, when the mean temperature dropped from 30^0C in November to 27.6^0C in January, the volume of dust accumulated also increased from 40 grams to 244 grams. An increase in temperature by about 1^0C in February caused a reduction in the volume of dust accumulated to 200 grams. However, to be very precise about the relationship between the weather variables and the rate at which dust accumulates the data is further subjected to correlation analysis of the result discussed.

Table 2 shows the strength of the relationship between the weather variables of harmattan season and the accumulated dust particles during the period under study.

TABLE 2. Table of Correlation Between Variables

		Maxt	Mint	average	Wind	Dust
Maxt	Pearson Correlation	1	.771	.779	.864	-.803
	Sig. (2-tailed)		.229	.221	.136	.197
	N	4	4	4	4	4
Mint	Pearson Correlation	.771	1	.992**	.521	-.985*
	Sig. (2-tailed)	.229		.008	.479	.015
	N	4	4	4	4	4
Average	Pearson Correlation	.779	.992**	1	.586	-.998**
	Sig. (2-tailed)	.221	.008		.414	.002
	N	4	4	4	4	4
Wind	Pearson Correlation	.864	.521	.586	1	-.633
	Sig. (2-tailed)	.136	.479	.414		.367
	N	4	4	4	4	4
Dust	Pearson Correlation	-.803	-.985*	-.998**	-.633	1
	Sig. (2-tailed)	.197	.015	.002	.367	
	N	4	4	4	4	4

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Results in Table 2, reflect a negative relationship between maximum temperature, minimum temperature, mean temperature and the volume of accumulated dust. The relationship is

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significant at 0.05 level for minimum temperature and at 0.05 level for average temperature. The implication is that, as temperature increases, the rate at which dust accumulates decreases, high temperature does not support dust accumulation. An increase in temperature results in a low rate of dust accumulation and vice versa. In the same vein, the relationship between wind and the rate at which dust accumulates is negative. This implies that an increase in wind speed brings a reduction in the rate at which dust accumulates in the study area. An increase in wind speed can result in dust diffusion, dispersal and dust buoyancy thus keeping the particles afloat in the atmosphere for a long period until the condition is suitable for the particles to settle on earth surfaces.

Based on these findings, it can be adduced that low temperature coupled with low wind speed enhances dust accumulation in the study area. This substantiates the submission that dust is one of the prevalent characteristics of harmattan. It was also discovered that harmattan is more severe in December and January in the study area during the period under study. Based on these findings, costume fabrics in the costume room of the Department of Performing Arts are more prone to discolouration occasioned by harmattan dust and heat during December and January and the fabrics that will be worse affected are cotton and wool according to (Shuaib & Olanrewaju, 2015).

Strategies for Transforming the Negative Impact of Harmattan Weather on Theatre/Film Costumes

Our findings in this paper have revealed that dust and heat are major environmental hazards of costumes during harmattan season, Therefore, transforming the negative impact of this weather on theatre/film costumes, in this context, is another way of saying removing the negative effect of harmattan weather from those costumes by strategically managing and preserving them for actors use. As such, the realisation of this approach requires meticulous planning and execution on the part of the costume designer to keep the costumes in good condition and make them readily available to actors when occasion demands. To this end, some of the various coping strategies and equipment necessary for their maintenance, functionality and sustainability during this season are highlighted below:

Provision of Functional Storage Facilities

Storage facilities such as wardrobes, boxes, hangers, and racks are important parts of every costume room. They are cogent furniture employed by the costumier to neatly arrange and classify fabrics and accessories into different compartments in line with the requirements of various theatre productions. However, during harmattan weather, special attention should be given to the arrangements of these furniture and the costumes within them by the costumier to prevent fabric congestion and damage due to excessive heat. To prevent such occurrences, all the storage facilities must be spatially positioned and not clustered together. Also, acid-free storage boxes and wrapping papers are recommended for fabrics at this time than wooden containers. This is because most wooden containers except for red cedar wood allow specks of dust and dirt as well as acid-producing agents to settle on their surfaces which invariably aid harmful microbial to incubate the fabric and cause discoloration to the fabric and diseases to the wearer (Front Range Lumber Company, 2024). Hence, furniture made from red cedar wood such as hangers, clothing hampers, and drawers are considered good storage facilities because they naturally repel moths and absorb air from humid space for their sustainability.

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Adequate Room Ventilation

Adequate cross ventilation of airflow in the costume room is also necessary for effective management and preservation of costumes during harmattan. This mitigating strategy reduces the build-up of volatile organic compounds and airborne pollutants in the room. By this, the room environment will be devoid of a dusty and chilly atmosphere that enables dust to penetrate costume fabrics and make them unhygienic for actors' use. (Stocker& Gibson, 2022) attested that "if a closet is in a room that has high humidity, keeping the door closed can trap moisture and create unpleasant smell". Therefore, it is necessary to keep the closet door open during the day or overnight to encourage air circulation. Similarly, condensed costume room conditions due to poor ventilation can equally be a threat to human health. (Okeahialam, 2016) affirms that a stuffy environment can negatively impact human health. He further expatiated that low temperature of harmattan and atmospheric dust pollution combine to produce an amplified deleterious on the cardiovascular system of people affected by this weather. The good news is that proper ventilation of the costume room can stop costume room staff and actors from being victims of cardiovascular diseases such as meningococcal meningitis, asthma and other respiratory diseases such as catarrh, cold, COVID-19 that may arise due to adverse effects of excessive heat and cold environment associated with harmattan.

Cleaning of Costume Fabrics and Room

Cleaning is a credible means by which a costumier examines the condition of actors' costumes beforehand and devises ways of improving their outlook. Given this, the regular cleaning of actors' costumes is a pertinent maintenance culture that all customers must factor into their cleaning routine to remove dirt, stains and germs from fabrics and other textile materials and keep them in good hygienic condition for actors' use, especially during harmattan weather. There are various methods of achieving this feat, but the basic ones according to (Loscerbo, 2016) are "hand washing, machine washing, wet washing, and dry cleaning". When these cleaning methods are meticulously applied the appearance of the costume is bound to be clean, inviting, and safe. More so, cleaning the costume room is another way of sanitising the environment and keeping costumes intact. Some of the avenues of implementing this approach are by removing dust from storage facilities, doors, and windows of the room. As well as, regularly washing the curtains, and vacuuming the floor and carpets with soaps, detergents and vinegar. It is also pertinent to make sure that, costumes are very clean and dry before putting them back into their storage containers to avoid musty odours and stains that can affect their outlook and utility.

Disinfecting Costumes with Odour Absorbent Agents

As earlier highlighted, costumes used in theatre productions are usually kept in the costume room to keep them safe and clean. However, it was discovered in our experiment, that during harmattan excessive dust, heat and humidity make costumes prone to offensive odour because they easily absorb pathogens from their wearers' bodies and the environment where they are kept. In line with the expatriated point, it is observed that the triggers of bad odour in costumes during harmattan include body sweat, poor washing method, bad hygienic condition of wardrobes, and wrong arrangement of costumes in wardrobes. Consequently, to control body odour and transform the situation, the insertion of odour-absorbent agents into the wardrobes of the costume room is advisable. (Stocker & Gibson, 2021) opined that tucking scented dryer sheets or lavender sachets in between fabrics as well as placing cotton balls soaked with

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perfume or essential oils such as lavender, rosemary or geranium in the closets and drawers improves the nice fragrances of costumes. In the same way, (Sapirman, 2022) asserted that coffee, baking soda powders and activated charcoal are potent disinfectant agents against unpleasant odours in costumes. Especially, when they are packaged and hung in wardrobes for a day or more, they will absorb bad odour and produce fresh fragrant necessary for the hygienic condition of actors' costumes.

Applying Protective Covering, Lubricant and Personal Hygiene

The regular interactive activities of collecting and returning costumes between actors and costume room attendants in the costume room have made health-induced protective covering such as face masks, hand gloves, sanitisers and eyeglasses essential service delivery equipment of the costume room during harmattan weather. This equipment will enhance excellent service delivery and equally serve as a preventive measure against the transmission of harmattan-related diseases from one person to the other. (Adunwoke, 2017) highlighted that during this period dusty particles in the air can find their way into the eyes causing tearing, redness, itching and allergic eye diseases. Therefore, it is safer for all the costume staff involved in the activities of the costume room to wear non-medicated protective eyeglasses to protect their eyes from dusty air that can cause irritation and infection. In the same way, face masks and hand gloves will serve the purpose of preventing costume staff and actors from contracting airborne infectious cardiovascular and respiratory diseases peculiar to this harsh weather condition. Given this, (Akshayaa et al, 2020) submitted that they are personal protective equipment very efficient for preventing the entry of toxic chemicals and microbes into the body.

Another significant coping strategy for managing theatre costumes successfully during harmattan season is personal hygiene. This is because the practice of cleanliness protects the body against any form of disease from external parasites. (Shaikh, 2024) explained that good personal hygiene involves keeping all parts of the external body and clothing clean and healthy. Thus, when costume room attendants and actors adhere strictly to personal hygiene rules through regular washing of their hands with soap and water and the application of hand sanitisers before and after they come in contact with costumes, this will help to eliminate dust and germs-related infectious diseases that can enter their bodies and costumes through their hands.

Maintaining Standard Room Temperature

Irrespective of the weather type an ideal room temperature and humidity are required for proper storage of costumes in the costume room. This is because too much heat and humidity can make fabric develop mildew, moulds and offensive odours. The ideal environment for textile storage is what (Lynagh, 2023) describes as a constant temperature range of 65°F to 75°F and a constant humidity level between 40% and 57%. This temperature and humidity range when put to good use will assist in monitoring and controlling the severity of the two weather conditions on costume. In respect of this, (Shuaib & Olarewaju, 2015) asserted that to control the air moisture of a costume room during the dry season, Installation of air conditioner with a relative humidity level of not more than 40% to 50% should be considered to prevent dust infestation that can make fabrics dry and brittle due to the adverse effect of harmattan. In this context, an air conditioning system can be viewed as a viable source of dehumidifier. (Summitt-Nelsen, 2022) further affirmed that air conditioning systems that are appropriately installed can remove moisture from the air, chill it, and re-circulate the cool dry air back into

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the costume room to keep the fabric in good condition and prevent moth harborage and fungi growth.

Prevention of Fire Outbreak

There is no gainsaying the fact that fire is a constant threat to costumes in the costume room. This is because most of the fabrics are made from natural and synthetic fibres which are highly flammable or combustible especially when they come in contact with fire during harmattan weather. Recent studies conducted by (Yaumadobi, 2021) have also validated the submission that the incidence of fire outage is more pronounced during the dry weather than raining season and the most frequent causes are electrical gadgets, tobacco smoking, heat caused by friction in industrial machinery, and hot surface devices such as boilers, hot plates stove amongst others. To curb the devastating effect of fire during this season, (Pallardy, 2024) averred that some preventive measures must be put in place. These measures include; aggressive awareness programme on sources of fire outbreaks and safety regulations, installation of fire preventive measures, safety consideration in architectural design. As well as, placement of fire extinguisher at strategic positions within the costume room as first aid and the introduction of alarm system that identifies the specific location of the fire outbreak so as to alert occupant to leave the building immediately for safety.

Adequate Knowledge of Textile Technology

Textile technology is an advanced field of study that every costumier or costume designer must understand and put to practice in the sourcing, designing and management of theatre/ film costume fabrics especially during harmattan season. It is a unique technology involving Science, Arts, Engineering and others, which gives costumiers the opportunity to have an in-depth knowledge of fabric composition, their variants, production, finishing and management. When a costumier is equipped with these skills, he or she will be able to determine which fabric is good for making a particular design, the production process and the management. Apart from that, he or she will also be able to establish the relationship between seasonal changes and costume management. For example, a costumier with textile technology knowledge will understand that certain fabrics such as wool and polyester conduct electricity shock (static shock) on the wearer during harmattan season, so they must be cautious and strategic when selecting costumes for production during that period to avoid any health challenges on the wearer. In the same vein, this highligted technology provides information of how germs interact with fabrics, the degradative properties of germs interaction on fabrics, and the fibre that enhance or inhibit the progress of their interaction (Sherry &Scott, 2020). With this knowledge, a costumier will be able to manage costumes effectively and bring about sustainable growth and development to his/her profession during the highlighted weather condition.

CONCLUSION AND RECOMMENDATION

Human activities through emission of greenhouses gases by industries and illicit waste disposal system particularly in urban communities have been identified in this paper as some of causative factors that culminated into global warming and harsh ecological system with negative impact on the global climate. The aforementioned reasons, have to a great extent, exacerbated the quest for environmental decongestion and transformation in most countries of the world in order to entrench their socio-economic, psychological, cultural and political independence and development. To this end, each nation formulated and implemented strategic

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environmental policies and approaches that work best in their local context and interest for their survival under harsh climatic condition. In line with the amplified global action, the impact of climate change on ecosystem is equally highlighted in Nigeria through this paper, via the lens of theatrical/film platforms with the focus on actors' costumes in the entertainment industry in order to sensitise the general public about some of the devastating impact of harmattan weather on this sector of the country.

To stem the tide of the articulated climate change challenge in this paper, strategic mitigation action focusing on eradicating the problems of theatre costumes during harmattan season was adopted to positively transform its effect through climate resilient developmental pathways. The adopted approach was evident in the experiment conducted on some selected theatre costumes in department of Performing Arts, University of Ilorin, during harmattan where the costumes were subjected to temperature and wind velocity test in order to examine the impact of the weather on them. The findings generated from the experiment were used to determine and recommend the strategic ways of managing and preserving actors' costumes during this season. This goes to establish the fact that, beyond rhetoric, when proffering solutions to issues pertaining to adverse impact of climate change on global scale, the concept of rigorous research, innovative ideas and environmental transformation initiatives are sacrosanct to achieving successful outcomes in post-colonial discourse.

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