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ASSESSMENT ON THE CAUSES AND FREQUENCY OF FIRE HAZARD AMONG THE STATE CAPITALS IN SOUTH-SOUTH NIGERIA.

WOKOCHA A.O., ELUDOYIN O.S. and AROKOYU S.B

Department of Geography and Environmental Management

University of Port Harcourt, Port Harcourt, Nigeria

Email:

Abstract

Fire outbreaks have risen to a worldwide attention in recent years as both an environmental and economic issue. Despite the fact that nothing could be sustainably done to completely stop the occurrence of fire disaster, something can be done to mitigate the spread. This study adopted the cross sectional and checklist research designs, and is carried out in three (3) south-south state of the Niger Delta. The state capitals selected for the study include Port Harcourt, Calabar and Uyo representing Rivers, Cross River and Akwa Ibom states within the South-South region of Nigeria. The study adopted the use of questionnaire for data collection and analysed through descriptive and inferential statistics such as frequency count, percentage, and analysis of variance respectively. The findings from the study revealed that respondents are aware of various fire hazard events in recent time (53.8%) and such events commonly take place with industrial (43%) and commercial building (29.4%). The outcome revealed limited emergency preparedness, response, and recovery practices among the respondents while those practices available are less effective. There were no statistically significant differences in the preparedness and response practices across the study area (where p-value >0.05).

KEYWORDS: Fire Disaster, Fire Incident, Fire Outbreak

Introduction

Fire is an unbelievably valuable element to man! It application very numerous

(Wrangham & Carmody, 2010). They range from domestic application (cooking, heating and environmental management), industrial application (processing, energy etc.) to military (warfare among other uses). Wrangham and Carmody (2010) credited Darwin with the opinion that the control of fire was perhaps the greatest discovery of all times, made by man. However, valuable as fire is to man, when man loses control of fire, it (fire) becomes an anathema no right-thinking person wants to have encounter with. Fire out of control becomes a hazard. Fires as hazards occur most frequently, whose causes are the most diverse and which require intervention methods and techniques adapted to the conditions and needs of each incident. Depending on the type of fire (nature of the material ablaze), meteorological conditions (wind) and the effectiveness of the intervention, material damage can be limited (a single car, building or production or storage warehouse installation), or affect wide areas (forest or agricultural fires, hydrocarbons, gas or other highly flammable products, storage or piping installations, harbour installations and rail or marine transport equipment). All projects are exposed to fire explosions and a myriad of risks but as a fundamental part of project management, disaster risk management enhances the delivery of projects within predefined cost, time and quality. According to Hopkins (2012) when implemented in line with good practice principles and organizational commitments, risk management also provides desirable benefits for project stakeholders in the case of a fire outbreak especially as it concerns built up areas.

Fire outbreaks have risen to a worldwide attention in recent years as both an environmental and economic issue. Agyekum et al. (2016) and Wahab (2015) expressed that a complete protection of life and property from fire in the built environment is unachievable, and even if achievable, it is prohibitively expensive. The complexity of fire as capture by Iyaji et al. (2016) is that its occurrence is mostly inevitable due to inherent human complexity, particularly man's attitude to handling things. In a world with cities constantly experiencing growth of varying proportion where there are fast growth in urban places of all sizes from Metropolis (like small market centers) to megalopolis, Wahab (2015) perceived that this increased developments and interaction heightens the potentiality of fire occurrences, consequently causing fire disasters. Globally, many fire incidences have been

reported. Most devastating as document in literature include among others the – fire disaster that befell Sweden in 1998 claiming 63 lives (Cassuto & Tarnow, 2003), collapse of the World Trade Centre due to terror attack in 2001 (Cowlard et al., 2013), Greenfell Tower Fire, London in 2017 (Guillaume et al., 2020) and Mumbai Kamala Mill fire in 2017 (Singh, 2018). There are instances where fire had triggered massive explosions that virtually reduced whole cities to rubbles. Notable among these is the April 16, 1947 fire of the Port of Texas City near Galveston in the state of Texas, USA. A fire outbreak in the cargo area of the Port, where 2,300 tons of Ammonium Nitrate was in storage triggered a massive explosion that resonated within a radius of over 240 kilometers, destroying the dock area and adjoining facilities. Like an atom bomb, a mushroom cloud of over 600 meters rose from the explosion into the air, ruining two planes flying over the area at the time. A nearby ship *(SS Highflyer)* laden with sulfur caught fire and exploded as crude oil tankers in the neighborhood burned for days. Over 2000 persons were killed, wounded, or rendered homeless.

This fire outbreak has caused a lot of disaster, and such a disaster has resulted from an extreme event that exceeds the capacity of the affected area to respond with measures to save lives preserve properties and/or maintain its social, ecological and economic stability (Au et al., 2000). The impacts of natural disasters have risen over recent decades, affecting social development and economic and political activities in developed and developing countries alike (Munasinghe & Matsui, 2019). These impacts include a range of direct, indirect, and secondary effects, and can be both tangible and intangible. Direct impacts relate to the physical damage people may suffer, such as disabilities, psychological harm, interrupted social services, loss of property and means of livelihood, and relocation, while indirect impacts reflect the burden put by displaced residents on friends and relatives who feel obligated to help.

2.0 Materials and Methods

Cobin (2014) put it succinctly when he highlighted that to be successful in managing fire disasters, good crisis preparedness, an optimal prediction and early warning and a well-defined management must be established to aid in quick response and recovery. All efforts must be well coordinated and distributed over the three columns "preparedness, response and recovery (prediction and

management). Most effective however is the preparedness. If this first and key aspect is not worked out at an early stage all other efforts will not work. Spatial data and their proper handling in geo-data servers provide the chance to combine interdisciplinary work.

Alimasunya, *et al*., (2019) analysed the fire disaster preparedness among secondary schools in Port Harcourt metropolis. Descriptive design method was adopted for this study using a sample size of 132 from 661 secondary schools in the study area. The result from the study revealed that fire disaster preparedness among secondary schools in port Harcourt was very inadequate as there was inadequate five fighting equipment, inadequate structures built to fire safety standard, inadequate training for secondary schools stakeholders, as well as inadequate five evacuation plans. Also, private secondary schools fare better in the provision of some of the above variable. It was therefore concluded that secondary schools in Port Harcourt metropolis are highly vulnerable to fire disasters and need to take fire safety measures seriously in their daily operation to prevent fire emergencies.

Ndetu and Kaluyu (2016) established the factors influencing fire disaster preparedness in primary schools in Makueni County in Kenya using multiple regression analysis. The outcome of the analysis showed that the fire safety policy knowledge, fire safety guidelines implementation practices and fire safety resources provision had a beta (β) of 0.172, 0.67 and 0.210 respectively. This infers that fire safety support resources provision affects fire disaster management preparedness in primary schools to a great extent followed by safety policy knowledge while fire safety guidelines implementation had the least effect. The study recommended more emphasis should be put on training of school stakeholders on fire disaster preparedness and provision of fire safety support resources for combating fire disasters in primary schools.

Adeleye *et al*., (2020) examined the fire disaster preparedness of public buildings in Ibadan Metropolis. Using cross-sectional survey, forty-three (43) public buildings and one hundred and eight (108) building occupants were conveniently selected and sampled. The finding indicated that only banks, leisure and health public buildings were well prepared in the event of fire disaster – as evident in their commitment to provide and maintain fire safety equipments while administrative, educational and

religious buildings are not well prepared to manage fire outbreaks. The results from the study suggests that it is imperative for fire safety provisions in building codes to be reviewed and implemented with defaulters punished in according with the law.

The paper employs the cross-sectional research design to examined the state capital fire disaster in the south south region. The study was limited to selected states within the South-South region, which include Rivers, Cross River and Akwa Ibom. The population used was 1,437,255 with a sample size of 400.

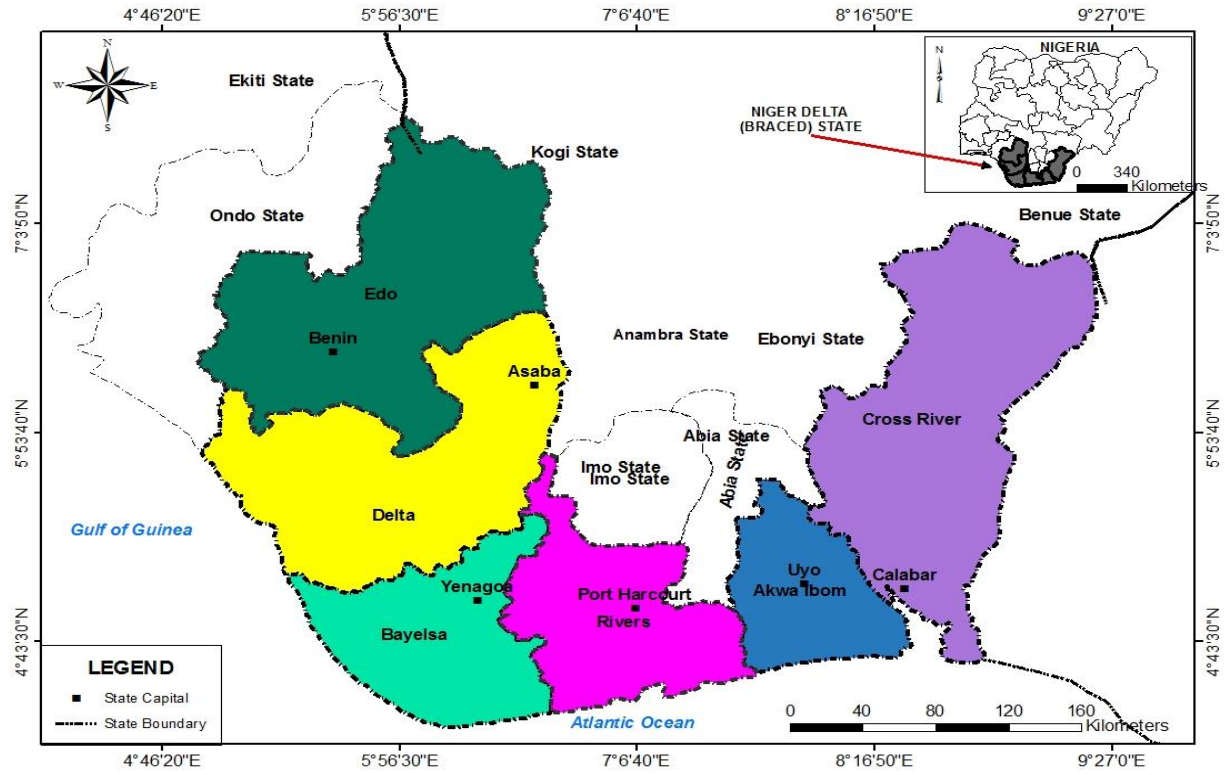

Figure 3.1: Overview of the South-South region of Nigeria showing the study areas

(Source: Cartography and GIS Unit, Dept. of Geography and Env. Mgt. UNIPORT, 2018)

3.0 Results

The causes and frequency of fire hazards among the state capitals studied was presented in Table 3.1 The outcome indicated 203 (53.8%) of the respondents are aware of various fire hazard events in recent time while 174 (46.2%) of the respondents are not aware. Considering the type of building that was involved in the fire disaster events, 38 (10.1%) of the respondents indicated the event involved a residential building, 111 (29.4%) indicated commercial building was involved, 162 (43.0%) indicated that industrial building was involved in the fire events while 59 (15.7%) and 7 (1.8%) of the respondents indicated that institutional and other forms of building were involved in the fire disaster events respectively. on the perceived causes of the fire events, 83 (22.0%) of the respondents indicated electrical fault, 33 (8.8%) indicated cooking equipment, 70 (18.6%) indicated arson, 73 (19.4%) indicated substandard electrical materials, 57 (15.1%) indicated faulty equipment while 45 (11.9%) and 16 (4.2%) of the respondents indicated careless in the use of fire and closeness of combustible site/material as the perceived cause of fire events. The frequency of the events showed

that 38 (10.1%) of the respondents indicated that fire incidents occurred daily/weekly, 27 (7.2%) indicated less than 6months, 100 (26.5%) indicated within 1years while 145 (38.5%) and 67 (17.8%) of the respondents indicated the fire incident occurs between 2-3years and 4-5years respectively.

Table 4.3: Causes and Frequency of Fire Hazard among the State Capitals

Variable	Frequency (n=377)	Percentage (%)
Aware of Fire Disaster Event		
Yes	203	53.8
No	174	46.2
Types of Building Involved		
Residential Building	38	10.1
Commercial Building	111	29.4
Industrial Building	162	43.0
Institutional Building	59	15.7
Others	7	1.8
Perceived Causes of Fire Disaster		
Electrical Fault	83	22.0
Cooking Equipment	33	8.8
Arson	70	18.6
Substandard Electrical Materials	73	19.4
Faulty Equipment	57	15.1
Carelessness in the use of Fire	45	11.9

Closeness of Combustible Site/Materials	16	4.2
Frequency of Fire Disaster		
Daily/Weekly	38	10.1
Less than 6-Months	27	7.2
Within 1year	100	26.5
2-3years	145	38.5
4-5years	67	17.8

Source: Researcher's Fieldwork, 2022

4.0 Conclusion

On the causes and frequency of fire hazards among the state capitals studied, the outcome indicated that respondents are aware of various fire hazard events in recent time and such events commonly take place with industrial and commercial building while the majorly perceived cause of such disaster was electrical fault, substandard electrical materials and arson among others. The outcome showed similarity with the study conducted by Ilori et al. (2019) where setting undergrowth on fire, non-insulated wiring system and sparks from wrong connections was the major cause of fire incidents in institutional building. The outcome also corroborated with that of Twum-Barima (2014) which asserted that wavering of electrical supply led to fire incidents in commercial buildings. The frequency of the fire hazards events was perceived to be mostly between 2-3years. The outcome showed similarity to the study conducted by Okwuonu et al., (2021) which asserted the frequency of fire incidents in

commercial building to be between 2-3years.

5.0 Recommendations

The following recommendations were made:

i. Residential buildings must be mandated to mount functional fire extinguishers, coupled with efficient building safety monitoring by the fire service.
ii. Education and enlightenment of residents on fire safety protocols and the need for equipment integration in homes through public demonstrations and target visits.
iii. Fire safety training should be conducted periodically first, in government establishments and in private organizations over time.
iv. Commercial and industrial buildings need to partner with government agency such as fire-fighting agency in order to improve their preparedness practice and activities across the market.

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