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## FIRE OUTBREAKS IN THE SOUTHEAST NIGERIA AND INADEQUACIES IN SERVICE AND FIGHTING STATIONS

**Onwumere, Basilia O.; Ihekuna, Chinonye Prisca; Johnson, Jessica Ogechi; Obiadi, Bons and Onuorah I. M.**

### **Abstract:**

Southeast Nigeria lacks and needs an up-to-date fire service station. The impression and the general attitude of the public towards the services provided by the fire service agency are discouraging. People are still living in the past and without the knowledge of what the services of the agency are. They are used to seeing old and abandoned fire stations and fire apparatus without knowing what they are used for hence, the need for education and awareness of the services of the agency. The primary aim of this study is to bring to the attention of Enugu State, Federal Government of Nigeria and the people of the southeast region that, there is no Regional Fire Service and Fighting Station in the region. This study investigated inadequate fire service and fighting stations in southeast, Nigeria and the architectural solutions and policies to ameliorate the problems. The disciplinary focus area of this study is architecture as such; content base analysis was used and looked into previous studies done in the subject matter by different authors. Enugu, in Enugu State, has a fire service station located along Ogui Road opposite the NIPOST and built in the 1960's by the colonial masters. It was the first fire service station built by the colonial master which served the old eastern region and till date, it is still in its original state without modifications. The need for a modern day fire station in an area is a necessity and not to be negotiated because of the services they provide. A regional fire fighting station is needed in a region in order to provide fire fighting services, safety operations, improved health and wellness of the fire fighting personnel in that region. This paper recommends creating an inclusive environment for the staff, where they would have the opportunity to meet people from the community, exercise themselves and have the privilege of working in an environment with an eating establishment.

**Key words:** Enugu, population, congestion, fire outbreak, architecture, fire fighting

### **Introduction**

From the earliest time, the fire that empowered man to cook food, ward off animals, forge tools and also enabled him to survive intense cold has also been an everlasting hazard to him. The history of occupational fire hazard causing significant damage is very old. The Great Fire of Rome (67CE) started in the shops of merchants who sold flammable goods near the Circus Maximus, while the Great Fire of London (1666CE) was started in a bakery, within a merchant's district that held oil,

pitch, tar, coal, tallow, fats, sugar, alcohol, turpentine, and gunpowder. As with the other cases, the Great Fire of London led to situations that were previously acceptable being reclassified as hazardous (Kodur et al., 2019). Fire hazard in buildings can be defined as the potential of accidental or intentional fire to threaten life, structural, and property safety in a building. Fire hazard constitute of all factors present in a building that can cause ignition, aggravate fire severity, incapacitate building fire safety provisions, and hinder escape or fire fighting operations.

Based on available statistics, it is suggested that cooking is the leading cause of fire in both residential and non-residential buildings (USFA, 2016). Other sources of ignition in buildings include all live flames, heaters and hot surfaces, electrical malfunction, fireworks, and arson and vandalism (Drysdale, 2011). With rapid development across the globe, fire hazard in buildings have undergone significant transformation in terms of severity and versatility and have become a growing concern in recent years (Brushlinsky et al., 2017).

Another source of fire hazard, especially in populated areas close to wild lands, is one arising from forest fires (wildfires). Due to increase in human encroachment on the wild land urban interface, number of buildings and people living in the fire prone wild land is increasing significantly in recent years. This has made wildfires, resulting primarily from arson and lightning, a major source of fire hazard in wild land urban areas across the globe (Kodur et al., 2019). In USA alone, an average of 66,903 wildfires occurred between 2009-2018 which burned an average of 6.9 million acres and caused an average of US\$1.8bn for fire fighting costs. In 2018, a total of 25,790 structures were destroyed by wildfires including 18,137 residences, 6,927 minor structures, and 229 commercial/mixed residential structures; which is highest number of structures lost to wildfires since 1999 and almost double of previous highest of 12,306 in 2017 (NICC, 2018).

When man began to live in villages and later build cities the possibility of a blaze spreading into a conflagration increased. A conflagration is an intense, area-wide, disastrous fire characterized by great sheets of flame and cyclonic winds. Severe updraft in a conflagration causes winds on the perimeter to reach near hurricane strength and can suck people into the firestorm (Arnold, 2005). Many of the conflagrations have occurred as secondary events to natural disasters, such as

volcanic eruptions, floods, earthquakes that rupture natural gas liners, and lightning from powerful thunderstorms. There are man-made ignitions as well, including carelessness with open flames and smoking materials (Kramer, 2009). The deadliest single location fire in the world, which killed 1,700 people, was a 1949 conflagration at a Chungking, China riverfront complex (Arnold, 2005). Some conflagrations had been deliberately set by incendiary bombing of cities, including Coventry (800 killed) and London (1,500 killed), England; Hamburg (100,000 killed) and Dresden (300,000 killed), Germany; and Tokyo, Japan (185,000 killed). Some of these conflagrations were so severe, people on the outskirts died from oxygen starvation as 125 to 150 mph winds fed the firestorms and vacuumed air from their lungs. These intense fires will explode buildings as they approach, due to the air pressure difference between the interior and exterior of the building, and usually burn all buildings in a city down to the brick walls, with no steel remaining (Arnold, 2005).

Fire is the rapid oxidation of a material in the exothermic chemical process of combustion, releasing heat, light and various reaction products. At a certain point in the combustion reaction called the ignition point, flames are produced. The flame is the visible portion of fire (Fire History, 2014). The risk of fire is one of the greatest threats to health and safety, property and the delivery of essential services in any community. Fire outbreaks usually occurs accidentally, deliberately or out of carelessness, and when it occurs it can devastate, terrorize and damage lives as well as property. It could equally contribute to the decline in socio-economic and physical development of a society. The earliest known fire fighting service was formed in ancient Rome by Marcus Ignatius Rufus who used his slaves to provide a free fire service.

These men fought fires using bucket chains and also patrolled the streets with the authority to impose corporal punishment upon those who violated fire prevention codes. The emperor Augustus established a public fire department in 24 BCE, comprising 600 slaves distributed amongst seven fire stations in Rome (Cote et. al, 1988).

Today, in Nigeria, buckets are still in use in fighting fire outbreaks even with the establishment of the fire stations mostly before 1960 and after the Nigerian independence. Fire houses or stations are houses designed and built to accommodate several fire fighting apparatus and equipment and provide adequate and fast response to emergencies in fire extinguishing, safe guarding human as well as properties. Properly designed fire houses, especially large ones, provide facilities for training, maintenance, supply, prevention and protection. A fire station supports the needs of the fire department and the community in which it is located. It must accommodate extremely diverse functions, including housing, recreation, administration, training, community education, equipment and vehicle storage, equipment and vehicle maintenance, and hazardous materials storage. While it is usually only occupied by trained personnel, the facility may also need to accommodate the general public for community education or outreach programs (Mion, 2017).

In Nigeria, fire fighting started in 1901, during the colonial era. It was an arm of the Nigerian police and the fire station then which was the first and located at Tinubus, square in Lagos State (Njoku and Itu, 2016). The Lagos Fire Brigade, as it was called, was a formation of Nigerian police forces which started with the station as part of the central police force building. The fire service was then known as Police Fire, all fires which threatened life and property (police ordinance, chapter 176, section 47). The first set of fire stations were built in 1945 at Savage Street, Ebute-meta and Marine

Beach, Apapa to serve the then Lagos territory. Since then, the number of fire stations has been on the increase (Ugwu, 2010). The fire stations then were commercial in nature and had no autonomy. They gained autonomy and became a government parastatal and immediately were separated from the police force in 1964 forming the Federal Fire Service (Njoku, 2012). Not later than three months after they gained autonomy, police officers who were members of the Police Fire Brigade established under the provisions of the Police Act were transferred, under the approval of the Fire Commissioner, and with the consent of the Inspector General, the Police Service Commission and the Federal Civil Service Commission from the Nigeria Police Force to the Federal Fire Service (Fire Service Act, 1964).

The Federal Fire Service was established in 1901 by the British colonial regime as a unit within the Lagos Police Service Department, to prevent and combat fire outbreak in the government reserved areas of Lagos colony. The unit was formed and incorporated alongside the then Lagos police and was known as the Lagos Police Fire Brigade. The Lagos Police Fire Brigade was thus an apparatus of the British colonial government. Its leadership and administration rested squarely on the colonists. The agency essentially developed along the line of protecting the colonial regime's interests and infrastructure. It became Federal Fire Service by an act of parliament in 1964 known as The Fire Service Act of 1964. All the offices and men serving in the agency were transferred to the Federal Ministry of Internal Affairs as officers and men of the Federal Fire Service. The Federal Fire Service therefore, became a paramilitary organisation, under the supervision of the Minister of the Federal Ministry of Interior, with the Controller General as its head (Federal Fire Service Portal, 2020).

Since the establishment of the fire service by the Fire Service Act (law) of 1964, it has not been reviewed. Fire Service today in Nigeria is still the only statutory organization established by a law mandated with the sole responsibility of mitigation, prevention and extinction of fire and other emergencies as well as performs other sundry duties. These services include fire fighting, fire prevention, search and rescue services, humanitarian services etc. Increments in population and urbanization, with no commensurate improvement and expansion in public infrastructure, have in no small measure contributed to the increase in fire incidents and fire related fatalities (Oserogho, 2018). The federal and various state governments have Fire Service Laws. Common to both federal and states Fire Service Laws are the establishment of the Fire Service Departments whose principal statutory responsibility is to facilitate all fire-fighting and fire-prevention activities in their jurisdictions. Some of the fire-fighting activities envisaged by statutes include the prevention, control and extinguishment of any kind of fire. Others are the saving and protection of lives and properties; and other humanitarian services related to fire prevention and control. The Fire Service Laws also require each Fire Service Department to make efficient arrangements for the fire service to manage distress calls for fire or other emergency assistance whenever the need arises (Oserogho, 2018). In line with meeting up with these demands, both the Federal, all thirty-six (36) states of the federation and the federal capital territory have their own fire service established to tackle fire and related disaster within their locality (Agbili, 2013), but that seem not to be the case in Nigeria. The fire stations and their apparatus in almost all the states of the federation are in total disrepair and need immediate attention. Unfortunately, the Water Cooperation, charged with providing and supplying water in each of the state are equally collapsing without the capacity to supply water to their communities and including the fire service stations as a result, almost all the fire stations in all

the states in Nigeria have no dependable water supply and do not have the capacity to provide and maintain boreholes for their water supply. These fire stations, not only that they are in disrepair, they do not have adequate water to fight fire in their communities.

Nigeria is made up of thirty-six states. All the states in Nigeria are grouped according to regions, and with six different geopolitical zones; North Central, North East, North West, South East, South South, South West (Olawale, 2018). These zones are the key construction to Nigeria. This system of geopolitical zones and states under them was adopted under the regime of President Ibrahim Babangida. States in Nigeria are implemented into the zones. Nigeria contains more than 400 ethnic groups, which speak more than 450 languages. Therefore, it's necessary to keep all people in harmony within these zones. The federal capital territory and 36 states are distributed between these six geopolitical zones in Nigeria. The zones are divided according to economic, political and ethnical preferences of Nigeria. Yoruba takes South-West, Hausa takes North-East and North-West, and South-East is taken by Igbo. The states of Nigeria contain various ethnic populations which are needed to be properly controlled (Ibenegbu, 2017). The North Central Zone is made up of six states: the Niger, Benue, Nassarawa, Plateau, Kogi and Kwara states. The Federal capital territory is also included in this zone. The North Central Geopolitical zone is also referred as the middle belt of Nigeria. The top cities in this zone are Lafia, Jos, Minna, Makurdi, Lokoja, Ilorin and Abuja. The ethnic groups presented in this zone are Mangu, Berom, Gbagy, Nupe, Tiv, Mada-Eggon, Yoruba, Igala, Idoma, Gwandara and Idoma. The North-West geopolitical zone is presented by seven states: the Jagawa, Kano, Katsina, and Kaduna, Kebbi, Zamfara and Sokoto states. The top cities of the North-West geopolitical zone

are Gusau, Dutse, Birnin-Kebbi, Katsina, Kano, Kaduna, Zaria, and Sokoto. This zone covers more than a quarter of the total population of Nigeria. The ethnic diversity is presented by Kanuri, Hausa-Fulani, Maguzawa, Zara, Bajju, Gbagyi, Zuru, Jabba. North East is one of the geopolitical zones in Nigeria presented by six states: the Gombe, Bauchi, Yobe, Borno, Adamawa and Taraba states. Top cities in the zone are Jalingo, Damaturu, Potiskum, Gombe, Bauchi, Maiduguri, and Yola. The ethnic diversity of the zone is presented by Fulani, Fulfulde, Babur, Kanuri, Tangalawaja, Balewa, Tiv and Mumuye. The South-South geopolitical zone is presented by six states: the Akwa-Ibom, Cross-River, Bayelsa, Rivers, Delta and Edo states. Top cities in this zone are Asaba, Yenagoa, Uyo, Warri, Calabar, Port Harcourt, and Benin. The South-South is populated by Ejagham, Annang, Efik, Ibibio, Ikwere, Ogoni, Itsekiri, Urhobo, Essan, Bini, Ijaw. The South-West geopolitical zone is presented by six states: the Ekiti, Ondo, Osun, Oyo, Ogun and Lagos. The top cities of the zone are Ado-Ekiti, Oshogbo, Ogbomoso, Abeokuta, Akure, Ibadan and Lagos. The South-West is mainly populated by Yorubas. The South-East geopolitical zone is presented by five states: the Abia, Imo, Ebonyi, Enugu and Anambra States. The largest cities in the zone are Abakaliki, Owerri, Enugu, Onitsha and Aba. The South-East is mainly populated by Igbos (Ibenegbu, 2017).

With the establishment of the geographic zones, the establishment and building of the fire stations in the zones to fight and protect life and properties were not adequately considered. The ones built before and after the Nigerian independence are in disarray and need structural attention. Enugu, being and assumed to be the regional centre for the southeast had one fire service station and it is not functional. The increasing rate of fire outbreaks in Enugu State due to population, congestion, poor planning and waste over the years, has become an issue especially, in cases where there were no quick response from the fire department. Government records indicate that the last time

three fire service stations located at Ogui, Enugu North local government area, Nsukka, Nsukka LGA and Idaw river, Enugu South LGA were built in 1962, when Enugu State was under the defunct Eastern Region (Premium Times, 2018). Part of the problems with the existing fire stations are primarily infrastructural and lack maintenance, suffer from abandonment, lack of interest on the part of the government. Modern equipment used in fighting the fire outbreaks were lacking, as well as, inadequate staffing. The public lacked the knowledge as to the benefits of the agency.

The impression and the general attitude of the public towards the services provided by the Agency are discouraging. The people are still without the knowledge of what the services of the agency are. People are used to seeing old and abandoned fire stations and fire apparatus hence, the need for education and awareness of the services of the agency. The problem is that the impression needs to be changed with the establishment and design of an ultra modern facility in the area. Not only that, there is no existing Federal Fire Service Regional Headquarter in the eastern part of Nigeria, resulting in the need for one, to start educating both the government and the public on the needs and importance of the fire fighting agency and their service, communication problems included.

### **The study**

This study brings attention to the non-existence of Regional Fire Service and Fighting Station in the South East zone of the country. And with the steady increase in the area's population, the region risks the likes of the fire outbreaks of the 67CE in Rome and the 1666 CE Great Fire of London.

### Methodology

The paper therefore examines the inadequacies in fire service and fighting stations in South East of Nigeria and the architectural solutions and policies to address the situation. The area of focus is architecture. Content base analysis was used and looked into previous studies done in the subject matter by different authors.

### Findings

Enugu, in Enugu State, has a fire service station located along Ogui Road opposite the NIPOST and built in the 1960's it served the old Eastern Region (plate 1).



**Plate 1:** South view of the Enugu State Fire Service Station, located along Ogui Road  
Source; Onwumere (Retrieved March 16<sup>th</sup>, 2021)

In Imo State, the state Fire Service Head Quarters was built in the Owerri in 1991 and located along Egbu Road, opposite NIIT (plate 2).



**Plate 2:** South view of the Owerri, Imo State Fire Service Headquarters.  
Source; Onwumere (Retrieved March 16<sup>th</sup>, 2021)

Of all the fire fighting stations visited during this study and the interviews conducted, not a single personnel of the fire fighting stations mentioned anything about the educational part of their services to the community nor the equipment needed for their services. Their foremost interest was on salaries and work conveniences and the collapsing infrastructure, although these were equally important. However, upon further investigation, the researchers noticed that the major equipment needed in a fire service stations were conspicuously missing. According to the Importance of fire service (2017), safety against Fire is a very important thing at work places as well as at homes. Every year, large numbers of people die due to Fire. Fire safety can easily be ensured by having Fire Fighting Equipment and proper Fire Protection. The Importance of Fire fighting Equipment cannot be over stretched as they ensure maximum protection against Fire. The Fire Fighting Equipment also ensures safety of the fire fighters themselves who risk their lives to save others. There are many and different types of fire fighting equipment available to the fire fighter. Some major ones are:

**The Fire Extinguisher** – Fire Extinguisher is the primary need of any small or big establishment. Every house should have sufficient numbers of Fire Extinguishers to ensure Fire safety. There are different types of Fire Extinguishers available in the market for different types of Fire (plate 3).



**Plate 3: Fire Extinguisher**

Source: Importance of fire service (retrieved May 8, 2021)

**Fire Alarms** – This is the first and most important thing to put in place in order to have a full proof Fire Protection System. The Fire Alarms alert in cases of Fire and the loud Fire Alarm directs people to the exact place where the Fire occurs.

**Fire fighting Blankets** – Fire fighting Blankets are really helpful in preventing the fire from spreading. The large Fire fighting Blankets cover the fire and cut off the oxygen supply and result in reducing or extinguishing the Fire.

**Fire Sprinklers** – The moment there is a Fire Alarm the Fire Sprinklers start releasing and raining water with a constant pressure and force. It is a known fact that Fire Sprinklers have effectively prevented major Fires in many cases.

**Fire Hose** – Fire Hose is a major necessity for fighting major Fires. Fire Hose is a hose having high pressure and is made to carry water or a Fire retardant like foam to extinguish Fire. This is a Fire Equipment that every building should have (plate 4).



**Plate 4:** Typical Fire Hose

Source: **Importance of fire service** (retrieved May 8, 2021)

**Fire Fighting Truck** – describes any vehicle that has been customised for use during fire fighting operations. These vehicles are highly customised depending on their needs and the duty they will be performing. These duties can include fire fighting, vehicle extrication, dangerous goods investigations, rescue, medical, swift water rescue and plane crashes (Importance of fire service, 2017).



**Plate 5:** Typical Fire Fighting Truck

Source: **Importance of fire service** (retrieved May 8, 2021)

The equipment and fundamental materials needed to fight fire outbreaks are lacking in the fire stations visited. As noted in the Importance of Fire Protection in Buildings (2018), fire safety is of the highest importance in any building, to ensure safety of the employees and the protection of the building. Fire protection systems and procedures are a legal requirement and need to be put in place in buildings to make employees aware in the event of a fire and they should understand that, fire safety is of the highest importance in any building, to ensure their safety and the protection of the buildings. Buildings must comply with The Regulatory Requirements of Fire Safety, which applies to general fire safety across the board and both residential and work premises are required to provide minimum fire safety standards, with

individuals having the responsibility to carry out risk assessments to identify, manage and reduce the risk of fire.

To comply with the Fire Safety Order, firstly a fire risk assessment must always be carried out by the person responsible. This is where employees are provided with the adequate fire safety training, in order to carry out the correct procedures in case of an emergency. It's crucial that fire detection and suppression systems are always completely functional, including ensuring the appropriate equipment is properly installed, tested and maintained for safe use in the event of a fire. A fire alarm detection system is designed to sense smoke, extreme heat or fire and provide a high frequency alert to personnel throughout a building. Fire alarms need to be installed in centralized areas and should also be installed in the head of stairways on every floor of a multi-storey structure. The detection systems can be activated automatically or manually, via call points on the wall. It is vital these systems are installed and operate effectively, to protect life from the danger of a fire. A fire suppression system is used to prevent and extinguish fire in a building, using dry chemicals or wet agents. The types of systems include, inert gases, Co<sub>2</sub> and water mist.

The chemical agent is released after the fire suppression system detects smoke and raises an alarm. The sounders are the final warning before the agent is released. Fire extinguishers play a crucial role in protecting buildings, by fighting fires in their early stages. Located in easily accessible spots, fire extinguishers can be used by anyone to eliminate fires, using chemicals such as, water, powder, foam, Co<sub>2</sub> and wet chemical.

Fire safety signs provide clear guidance to mark the location of equipment, fire alarm activation points, warning signs and fire exits. Through imagery and text, employees are aware of where they can find the correct equipment in case of an

emergency. Every business needs specially trained individuals who ensure safe evacuation of everyone on the premises in a fire emergency. These are called fire marshals or fire wardens. Depending on the business and size, more than one fire marshal may be needed (Importance of fire protection in buildings, 2018).

### **Conclusion**

Fire station in an area is a necessity and not to be negotiated because of the services they provide. A fire station is a facility or structure for storing fire fighting apparatus such as fire fighting equipment, vehicles, personnel protective equipment and so many others. In most cases, they have working and living space for the fire fighters and support staff. These are primarily important for every community to have. The personnel of the fire stations prevent fires and protect buildings, attend to accidents in accident sites and save lives. House, industrial and accident fires kill and injure thousands of people yearly and at the same time, cost a lot of people their valued possessions and memories. Not only that fire stations are needed in every community, regional fire stations are equally important because, they are the places where the staff of the community fire stations are trained and seminars conducted. In order to provide safe operations and improved health and wellness of the fire fighting personnel in the region, a regional fire fighting station will be needed.

A regional fire fighting station is needed in a region in order to provide safe operations and improved health and wellness of the fire fighting personnel in that region. This facility will not only provide facilities for equipment and apparatus storage, but would provide working and living space for the fire fighters and support staff. Staying and working in a fire fighting station is not only boring according to most staff of the fire fighting stations in South East Nigeria, but also treacherous to their lives.



To avoid these situations, this paper recommends creating an inclusive environment for the staff, where they would have the opportunity to meet people from the community, exercise themselves and have the privilege of working in an environment with an eating establishment.

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