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Soot: It's Effect on Property Value in Abuloma, Port Harcout, Rivers State, Nigeria

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Abstract
The study examined the effects of soot (environmental degradation) on property values in Abuloma, Port Harcourt City Local Government Area of Rivers State. Four objectives and four research questions guided the study. The study is quantitative and the researchers adopted a survey research method. The targeted study population was 130 respondents which constitutes practicing real estate firms in Port Harcourt, community landlords in charge of sales of land and tenants in the study area. The study adopted the snowball sampling techniques in arriving at 130 respondents for the sample size in essence, the researcher made use of the entire population; this is because the population size is small and manageable. On retrieval of the questionnaires, 114 of the questionnaires were retrieved giving a response rate of 87.7%. Both primary and secondary sources of data were used for study. Mean rating was used to answer the research questions posed. Based on the findings, the study concluded that residential property values are reduced by increased proximity to hazardous waste sites, property values differed depending on property distance from the source of pollution. Hence, the study recommends that the Federal Government of Nigeria should ensure that the regulatory bodies in charge of pollution control such as soot carry out their functions effectively and efficiently so as to eradicate cases of low property values in the study area, properties should be erected in areas far from environmental pollution which increases the number of tenancy populace and in turn promotes property developments.
KEYWORDS: Soot, Effect, Property Value, Abuloma, Port Harcourt.

I.0 Introduction

The word "environment" is of broad spectrum which brings within its ambit, hygienic atmosphere and ecological balance. It is therefore not only the duty of the state but also the duty of every citizen to maintain hygienic and sustainable environment (Mercado, 2008).

Generally, speaking problems with environmental degradation are often linked with process of development and therefore have effects on local, regional, as well as global levels. These effects which are the result of human activities have devastating consequences on the environment and so are harmful on human beings, animals and plants and can be passed on to

future generations (Mercado, 2008). In the face of global economic recession environmental degradation poses a great challenge to property value. Hence this study is carried out to examine the effect of environmental degradation on property value.

Real property is considered one of the three fundamental necessities of life from time immemorial. The fact remains that unlike food and clothing, real property is difficult to acquire. People need to be housed (shelter), as it is very essential and indispensable because it is the platform of all human activities. Hence, it plays a vital role in social, economic and psychological development of an individual, a state and a nation at large (Ibrahim, 2013). In view of the rapid urbanization coupled with rapid population growth, demand for rental properties has experienced an upsurge. According to Nikolaos, Dimitra and Agapi (2011), the market value of a real estate is affected by its location among other factors.

Property value is defined as the highest price in terms of money which a particular property will fetch in the open market under a free market condition (Nelson, 1999). In the word of Ekenta (2010), property value is the amount of money which can be obtained for the interest on a property at a particular time from persons able and willing to purchase it. There are only two well-known forms of property value such as capital value and rental value.

1.2 Problem Description

The influence of a polluted environment on public health as a result of where the people stay has been established by different scholars. The present effect of environmental degradationon property value in Abuloma Area of Rivers State cannot be emphasize because environmental degradation such as soot has ravage the entire state as a result of illegal oil business has affected property value in the study area because so many people are relocating from the environment because of the air pollution, that is affecting the residents previously it was only gas flaring and it was manageable because its effect is not directly on the health of the people in the study area and property value was high however, because of the black soot, so many people are relocating from that environment has affected property value because people are

no longer developing their property as a result of the high level of air pollution, presently, the cost of property is low in terms of house rent and cost of land this is as a result of the environmental degradation such as soot this has prompted the researcher towards finding a lasting solution to this problem.

1.3 Study Area

Port Harcourt is one of Nigeria's quickest developing urban areas. The normal yearly development rate of Port Harcourt between of 1963 and 2010 has been estimated to be 5.2%. The development of Port Harcourt is attached to the social and financial history of the nation. The city is the oil capital of Nigeria, since it has the greater part of the country's multi-national oil and gas, two refineries, petroleum-related administration organizations, and in addition a quick extending business sub-area (Johnbull and Ikiriko, 2021).

Abuloma is one of the principal communities in Port Harcourt City Local Government Area is one of the area that make up the Port Harcourt Metropolis. The Local Government area covers 100km^2 and a population of 546,789 Persons.

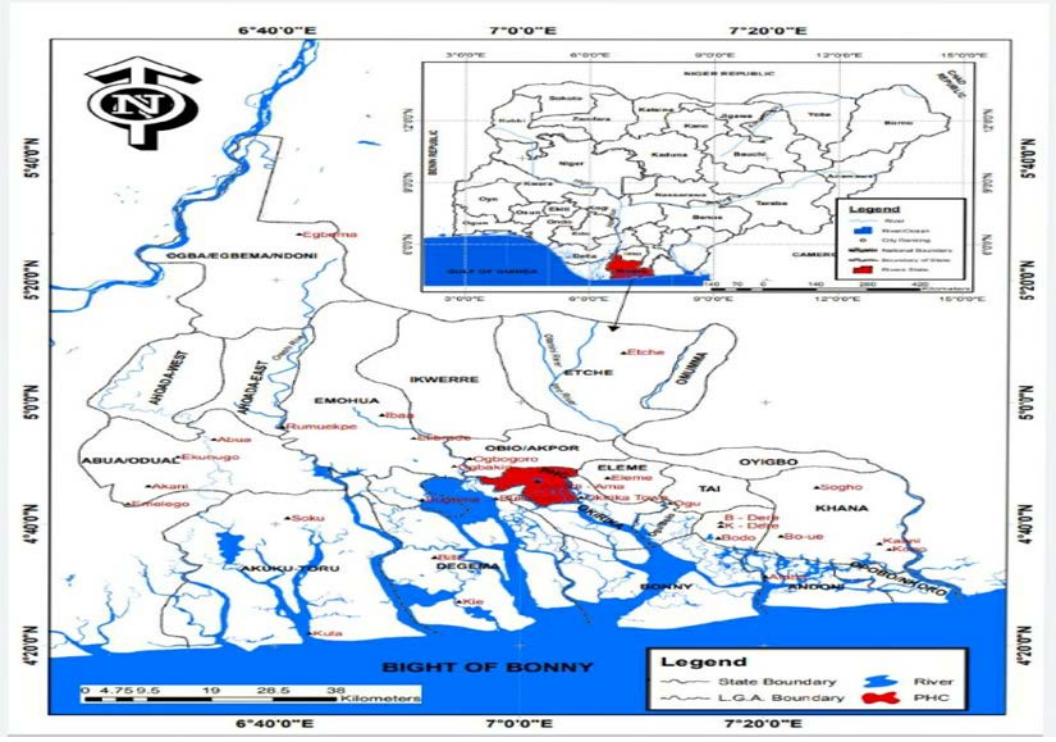

Fig. 1 Map of Port Harcourt showing the Study Area-Abuloma.
Source: URP GIS LAB, RSU, Port Harcourt

2.0 Review of Related Literature

2.1 Concept of Environment

The concept of environment has been viewed from diverse perspectives and defined in various ways (Singh, 2003). The variety of definitions and conceptions of environment is closely linked to the fact that the study of environment is multi-disciplinary, and thus each discipline tends to develop and adopt definition(s) in line with its interest. This multiplicity of definitions, concepts and usage of terms in various disciplines was clearly captured by Porteous (1977: 99) in the statement The multiplicity of the usage and concept of the term environment have resulted in a variety of adjectival forms which include social environment, molar environment, physical environment, home environment, psychological environment, behavioural environment, geographical environment. For instance, a sociologist, Bain (1973), defined environment as all the external and non-personal conditions and influences that determine the welfare of a people in a given area.

Efobi, (1994) posited that Hagget- a geographer, defined environment as the sum total of all conditions that surround man at any point on the earth's surface, while the Nigeria's Federal Environmental Protection Agency (FEPA, 1989) states that the environment includes water, air, land, plants, animals, and human beings living therein, and the inter-relationships that exist among them. However, a more comprehensive and all-embracing definition of the environment was offered by Keller in Efobi (1994) as the: Total set of circumstances that surrounds an individual or a community, these circumstances are made up of physical conditions such as air, water, and climate and landforms; the social and cultural aspects such as ethics, economics, aesthetics and such circumstances which affects the behaviour of an individual or a community according to these definitions, environment can be viewed as all physical, non-physical, external, living and non-living situations surrounding an organism that determine its existence, development and survival at a particular time. It encompasses constantly interacting sets of physical (natural and manmade) elements and non-physical, living and non-living (e.g. social, cultural, religious, political, economic) systems, which

determine the characteristic features, growth and sustainability of both the component elements of the environment and the environment itself (Johnson,1992, Muoghalu, 2004).

Hence, sustainability in this context relates to the ability of the ecological, economic and socio-cultural systems in a manner that does not limit the possibility of meeting the present and future needs of the various components and aspects of the environment. It can also be viewed as the carrying capacity of the supporting ecosystems (Marcuse, 1998). Evidences suggest that the prevailing global environmental degradation poses serious threat to sustenance of capacity of the ecosystem. Therefore, environmental sustainability has taken priority position in housing, infrastructure provision, planning, land use and urban development among others (Marcus, 1998; Aribigbola, 2008).

Urban areas are centres of arts, culture, education, entertainment, technological innovations, specialized services and "economic engines" (Kadir, 2006; Kjellstrom and Mercado, 2008). The products of urbanization come with far reaching economic and socio-spatial and health implications. The ecological and sociological "footprint" of cities has spread over wider areas and fewer places on the planet earth are unaffected by this phenomenon. Changes in the ecology of urban environment occasioned by increasing population, overcrowded habitations and uncontrolled exploitation of natural resources may have accounted for this wide ecological footprint of urban areas which is not peculiar to developing countries (Acho, 1998; Marmot, 2006; Hales, 2000). Agbola and Agbola (1997) and Areola (2001) clearly indicate that the spatial structure of Nigerian cities evolved before, during and after the colonial rule in the country made the introduction of modern infrastructural facilities very difficult and expensive, especially when dealing with areas having the bulk of ancestral homes of indigenous people. It is also opined by demographic experts that the high rate of urbanization put at 5.3 % in Nigeria, which is among the highest in the world, has the tendency of spurring up environmental degradation (Goldein, 1990).

Closely related to this is the fact that most urban areas in Nigeria have grown beyond their environmental carrying capacities and existing infrastructure (National Population Commission, NPC, 1998). For instance, the 2006 Nigeria's national population census data (FRN, 2007) revealed that most of the urban areas in Nigeria with small land mass have their capacity to take further population increase already exhausted or extremely limited. With a population figure of more than 140 million and land mass of about 924, 000 km^2, current estimates indicate that 10% of the land areas accommodated 28% of the country's total population (Taylor, 2000). The implication of this is that there is disequilibrium between the population and the environment, and this has adversely affected the carrying capacity of the urban areas in the country, hence the increasing poor quality of the living conditions and the low liveability index of urban areas in Nigeria.

2.2 Concept of Air Pollution

Air is a mixture of gases that constitutes the earth's atmosphere in relatively fixed volume but varies across different geographic space depending on the quality of the air space which is a function of existing natural and anthropogenic activities of the different environmental landscapes. It is imperative to state here that, virtually all the elements within the earth's crust are also present in the atmosphere but in very small amounts as compared with those in the soil. These elements find their way naturally into the atmosphere through geological processes (earthquakes, volcanic eruptions), meteorological processes (hurricanes, tornadoes, dust bowl, and cyclones), and weathering processes (abrasion); or through human activities such as industrial processes, space explorations and testing of nuclear missiles and weapons of mass destruction into the atmosphere, mining activities, chemical discharges, gas flaring, bush burning, burning of wastes at dumpsites, thermal heating at homes, etc (Ukpere, 2017; Ukpere, et.al, 2016).

Air Pollution is therefore the presence of one or more contaminants or pollutants in the atmosphere in such a quantity and duration that seems to impair the free air (i.e. quality of the

atmosphere) and which is harmful to man, animals, plants, other materials or properties exposed in the environment such as cars, house roofs, metal objects.

Air pollution is the introduction of chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms, or cause damage to the natural environment or built environment, into the atmosphere (Tawari & Abowei, 2012). It can be defined as the presence in the outdoor or indoor atmosphere of one or more gaseous or particulate contaminants in quantities, characteristics and of duration such as to be injurious to human, plant or animal life or to property, or which unreasonably interferes with the comfortable enjoyment of life and property (Odigure, 1998). Air pollution is one of the problems associated with the growing population of various cities. This has increased tremendously with urbanization and associated industrial development and growth in mobility which have deteriorated air quality and intensified air pollution in densely populated areas. The severity of the air pollution problems in the cities reflects the level and speed of development (APMA, 2002; Molina et al., 2004; Grutter et al., 2014), and most of these pollutants are emitted from “fugitive” sources such as evaporation of solvents or leaks at industrial facilities, incinerators and flare stacks can also be source of atmospheric emissions (Fort Air Partnership (FAP), 2014). Air pollution is the contamination of the air with unwanted gas, smokes, particles and other substances. Air pollution is also considered as waste remaining from the ways we produce goods and generates energy to heat our environment. According to the World Bank Report (1980), air pollution is the presence in the outdoor atmosphere of one or more contaminants such as dust, fumes, gas, midst, odour, smoke or vapour in such quantities, characteristics and duration as to make them actually harmful or potentially injurious to human, plant or animal life or property, or which unreasonably interfere with the comfortable enjoyment of life and property

Environmental air pollution arises from people economic and domestic activities such as be modern agriculture, which requires pesticides that pollute the atmosphere or enter water systems via run-off and sewage. Industrial activities are responsible for a wide range of

pollution. Thermal power stations, burning fossil fuel and moving vehicles emit harmful pollutants like sulphur dioxides, nitrogen oxide and carbon dioxide that cause acid rain, global warming and malfunctioning of human / animal's haemoglobin's. Air pollution is the contamination of air due to the presence of substances in the atmosphere that are harmful to the health of humans and other living beings, or cause damage to the climate or to materials. There are many different types of air pollutants, such as gases (including ammonia, carbon monoxide, sulfurdioxide, nitrousoxides, methane, carbondioxide and chlorofluorocarbons), p articulates (both organic and inorganic), and biological molecules. Air pollution can cause diseases, allergies, and even death to humans; it can also cause harm to other living organisms such as animals and food crops, and may damage the natural environment (for example, climate change, ozone depletion or habitat degradation) or built environment (for example, acid rain). Both human activity and natural processes can generate air pollution.

2.3 Soot

Soot is a type of air pollutant. Its diameter is about 2.5mm. As a pollutant, it comprises a variety of other pollutants like chemical acids, metals, and dust particles. By its nature, it can take the form of a solid, liquid, or gaseous state. Ordinarily, soot is a type of product of burning fossil fuels like oil refining and smokes from vehicles. Given its small particle nature, soot particles are emitted into the air while some others form gas particles that can travel thousands of miles from their source. Over the years, soot has been classified as a threat to public health as public health generally, is concerned with promoting and protecting the health of people and the community where they live, learn, work and play (American Public Health Association, 2020). By this, an incidence that is capable of affecting negatively the economic activities such as property value, safety and well-being or improvement in the health of the people is considered a public health problem.

The findings from the study revealed that soot caused an estimated 131,000 premature deaths in Latino city of America in 2015. Nwachukwu, Chukwuocha and Igbudu (2012) in their

study titled “the effects of air pollution on diseases of people of Rivers State, Nigeria” discovered that the pollution level in Rivers State is high. That it is higher than the World Health Organization standard and that is the cause of high morbidities and mortalities in Rivers State.

2.4 Nature of Soot and its Effects on Property Value

The nature of soot found in the study area is the black soot. The black soot is a type of air pollutant. Its diameter is about 2.5mm. As a pollutant, it comprises a variety of other pollutants like chemical acids, metals, and dust particles. By its nature, it can take the form of a solid, liquid, or gaseous state. Ordinarily, soot is a type of product of burning fossil fuels like oil refining and smokes from vehicles. Given its small particle nature, soot particles are emitted into the air while some others form gas particles that can travel thousands of miles from their source. Over the years, soot has been classified as a threat to public health as public health generally, is concerned with promoting and protecting the health of people and the community where they live, learn, work and play (American Public Health Association, 2020). By this, an incidence that is capable of affecting negatively the safety and well-being or improvement in the health of the people is considered a public health problem.

Human being depends on the environment and its resources. That is, both enjoy mutual influences. The striking thing in this ecological theory is that one thing (whether negative or positive) which occurs in this mutual influence between organism and the environment, produces an equivalent event on the other. When the individual in the environment, for example, abuses the environment when he exploits the resources endowed in the environment, such abuse produces negative consequences on man.

2.5 Impact of Soot on Property Value

Soot deposits which began to be noticed in homes and surrounding environment in Rivers State in 2016 has become a serious environmental issue for not just the residents of the state

but also for the country and international community. The soot first appears as clouds laden with dark particulate matters on the skyline in several parts of the state. But for their blackish nature and the fact that they are not characterized with cooler temperatures, these soot-laden clouds would have been mistaken for harmattan haze. This sight is easily noticed in the morning and evening hours and particularly, between the months of November and March when the rains subside. The menace of the soot is not discriminatory neither is it a respecter of persons and locations as its deposits and particles filter into homes and other closed areas just as it settles on cars, streets, water bodies, wetlands, plants and animals – there is virtually no safe place against soot in the state.

This perhaps lays credence to the April 2018 ranking of Port Harcourt as the worst polluted city in the world with an air index of 188. Similarly, in December 2020, AirVisual ranked Port Harcourt as "very unhealthy" for sensitive groups having attained an air index of 207.817. In what appears to be a trend, AirVisual's ranking of air quality in Port Harcourt for July, 2021 threw up an air index of 152 far above the standard (0-50) and moderate (51-100) levels. Currently, Air Visual Air Quality Index for Port Harcourt is 150 US AQI and classed as unhealthy for sensitive groups. It went further to state categorically that PM2.5 (Black Soot) is the major pollutant with concentration more than 10.7 times above the WHO annual air quality guideline value (Air Quality Air Visual, 2022). After 76 years of oil exploration and exploitation in the Niger Delta particularly in Rivers State, it is expected, and this has formed the basis of major public outcries, that a comprehensive environmental audit to ascertain how the environment has fared is long overdue. Sadly, this is yet to be successfully done. For this reason, the environmental impact assessment of 76 years of oil exploration and exploitation in Rivers State is somewhat unknown hence not much appreciated. This, perhaps, explains why the issue of black soot pollution in Rivers State which has lingered for about six years is yet to receive the desired attention.

2.6 Concepts of Property and Property Values

Concept of Property

The concept of property has no single or universally accepted definition and various academic disciplines like law, economics, anthropology, and sociology treat the concept more systematically and within or between the different disciplines and field definitions vary.

In common use, property may be regarded as simply one's own thing and it is the relationship between individuals and the objects, which is seen as being the holders' "own" to dispense with as they see fit.

The social scientists conceive property as a bundle of rights and obligations. In the property species, Wilson, (2016), explores how Homo sapiens acquires, perceives, and knows the custom of property, and why it might be relevant to social scientists, philosophers, and legal scholars for understanding how property works in the twenty-first century. Arguing from some hard-to-dispute facts that neither the natural sciences nor the humanities – nor the social sciences squarely in the middle – are synthesizing a full account of property, Wilson offers a cross-disciplinary compromise that is sure to be controversial: Property is a universal and uniquely human custom, (Wilson, 2016).

Elinor, Ostrom and Edella, (1992), identified property as bundles of rights, having five elements of these rights to natural resources that appear in various bundles: access, rights to hike or canoe, for instance, but excluding rights to withdraw resource units; withdrawal, such as the right to catch fish or divert water; management, the right to maintain, improve, and transform a resource; exclusion, the right to decide who has access and withdrawal rights and how those rights are transferred; and alienation, the right to lease or sell exclusion and management rights. The legal concept of "property" refers to the many different kinds of relationship between a person and an object, object rather than the object itself (CB1.5), also Yanner vs Eaton.

Concept of Values

In an attempt to define "value", as widely as possible, it can be referred to as "any consideration, sufficient to support a simple contract", Opara, (2013). Values are standards or

ideals with which we evaluate actions, people, things, or situations. Beauty, honesty, justice, peace, generosity are all examples of values that many people endorse, Lau and Chan, (2014). Values can be defined as broad preferences concerning appropriate courses of actions or outcomes. As such, values reflect a person's sense of right and wrong or what "ought" to be. "Equal rights for all", "Excellence deserves admiration", and "People should be treated with respect and dignity are representatives of values. Values tend to influence attitudes and behavior.a publication by Bankrate, (2019) property value refers to the worth of a piece of real estate based on the price that a buyer and seller agree upon. According to economic theory, the value of a property converges at the point where the forces of supply meet the forces of demand. In other words, the value of a property at any given time is determined by what the market will bear.

2.7 Sources of Soot in the Study Area

Emissions from asphalt plants, combustion of fossil fuels and tyres, vehicular emissions, etc releases gases and chemicals into the air in an especially destructive feedback loop. The introduction of carbon dioxide and other greenhouse gases which are by-products of combustion raises the earth’s temperature or rather increases heat. Air pollution not only contributes to climate change but is also exacerbated by it. This increasing warmer weather facilitates smog formation due to atmospheric chain reactions in the presence more ultraviolet radiation. Haze is an atmospheric phenomenon in which dust, smoke and other dry particulates obscure the clarity of the sky.. This results in the pall of aerosols that covered the skies of Port Harcourt metropolis. The implication of the situation is quite varied and can be expressed in the following scenarios: (i) Ecological damage to plants (crops) through deposition of oxides of carbon, nitrogen, sulphur and volatile organic compounds in the aerosols on plant leaves, acidification of soils and water bodies. This will ultimately lead to poor crop/fruit yields, fish catches, dwindling agricultural productivity and livelihoods. (ii) Increased Health Hazards expressed as heightened respiratory diseases especially in children

and the elderly, and the risk of developing mutations, carcinogenesis in the long term and teratogenic possibilities in developing foetuses, as a result of constant inhalation of these carbonised aerosols (iii) Rapid deterioration of amenities such as car chassis, roofing sheets and other metallic and non-metallic materials. (iv) Increased cost of house care as constant cleaning and washing of household ware is required. (v) Reduction in the Aesthetic value of our surroundings, due to the deposition of the black soot on all surfaces. (vi) Black rains!

3.0 Research Method

The study is a survey research, as it seeks to ask the opinions of practitioners, landlord and tenants, on the effects of environmental degradation on real property value in Port Harcourt; the study population was grouped into two, with peculiar questions to their circumstances. The first group consists of real estate firms, because they are in charge of land development and 40 practicing real estate firms in Port Harcourt who indicated having management properties in Abuloma were used , 90 community landlords in charge of the sales of land, in Abuloma, Port Harcourt City Local Government Area. The sample size for the study consist of 130 respondents who were administered questionnaires and 114 of the questionnaires were retrieved giving a response rate of 87.7%.

4.0 Findings of the Study

Sources of Soot Found in the Study Area

Table 1: Response on the sources of soot found in the study area

S/N	Variables	SA	A	UD	D	SD	∑	Mean
1	Burning fossil fuels like oil refining and smokes from vehicles	39	30	20	16	9	416	3.64
2	Emissions from asphalt plants	50	40	10	10	4	464	4.07
3	Remnants from burned bushes	43	39	15	11	6	444	3.89
4	Burnings from illegals refinery stations	45	29	15	15	10	426	3.73

5	The introduction of carbon dioxide and other greenhouse gases which are by-products of combustion	40	31	19	13	11	418	3.66

Source: Field Survey, 2022

The table 1 shows the responses of the respondents on the sources of soot found in the study area, there are 5 items on the questionnaire as shown in table 1. First item on Burning fossil fuels like oil refining and smokes from vehicles has a mean score of 3.64, second item on Emissions from asphalt plants mean score is 4.07, third item on Remnants from burned bushes has a mean score of 3.89, fourth item on Burnings from illegal refinery stations has a mean score of 3.73 and finally the fifth item on The introduction of carbon dioxide and other greenhouse gases which are by-products of combustion has a mean score 3.66. From the mean score, it is observed that the responses are all above 2.5 which represent a moderate response to 3.5 which is an indication of a strong response.

Nature of Soot and Its Effects on Property Values in Study Area

Table 2: Response on the nature of soot and its effects on property values in study Area

S/N	Variables	SA	A	UD	D	SD	∑	Mean
1	The black soot is a type of air pollutant that can have a defect on the body of a building because of its chemical composure	41	40	16	12	5	442	3.87
2	Less property acquirements by tenants due to the effects of black soot on the study area	30	40	15	19	10	403	3.53
3	Tenants who live in areas affected by black soot are likely to generate respiratory diseases	30	54	15	10	5	436	3.82
4	Soot are black in colour and they reduce the value of properties due to its deterioration causes on the building	45	39	20	10	-	461	4.04
5	Areas largely affected by soot depletion results to low populace of living and housing properties in such areas are left retarded	36	34	22	20	2	424	3.71

Source: Field Survey, 2022

The table 2 shows the responses of respondents on nature of soot and its effects on property value in study Area, there are 5 items on the questionnaire as shown in table 2. First item on The black soot is a type of air pollutant that can have a defect on the body of a building because of its chemical composure has a mean score of 3.87, second item on Less property acquirements by tenants due to the effects of black soot on the study area has a mean score of 3.53, third item on Tenants who live in areas affected by black soot are likely to generate respiratory diseases has a mean score 3.82, fourth item on Soot are black in colour and they reduce the value of properties due to its deterioration causes on the building has a mean score of 4.04 and finally the fifth item on Areas largely affected by soot depletion results to low populace of living and housing properties in such areas are left retarded has a mean score of 3.71. From the mean score, it is observed that the responses are all above 2.5 which represent a moderate response to 3.5 which is an indication of a strong response.

Challenges of soot on the physical properties in the study area

Table 3: Response on the challenges of soot on the physical properties in the study area

S/N	Variables	SA	A	UD	D	SD	∑	Mean
1	Soot deposits in homes and surrounding environments reduces the rate of property development	44	30	20	10	10	422	3.70
2	Residential property prices have increasingly been influenced by the quality of air and its deterioration therefore, affects urban property values	50	39	15	0	10	461	4.04
3	Environments with high degradation results to poor purchase of properties	40	39	11	14	10	427	3.75
4	Tenants avoid acquiring properties in areas with high level of environmental degradation	32	33	24	18	7	407	3.57
5	The rate of property development is measured by the level of environmental degradation	44	30	15	20	5	430	3.77

Source: Field Survey, 2022

The table 3 shows the responses of respondents on the challenges of soot on the physical properties in the study area and there are 5 items on the questionnaire as shown in table 3. First item on Soot deposits in homes and surrounding environments reduces the rate of property development has a mean score of 3.70, second item on Residential property prices have increasingly been influenced by the quality of air and its deterioration therefore, affects urban property values has a mean score of 4.04, third item on Environments with high degradation results to poor purchase of properties has a mean score of 3.75, fourth item on Tenants avoid acquiring properties in areas with high level of environmental degradation has a mean score of 3.57 and finally fifth item on The rate of property development is measured by the level of environmental degradation has a mean score of 3.77. From the mean score, it is observed that the responses are all above 2.5 which represent a moderate response to 3.5 which is an indication of a strong response.

The Impact of Soot on Property Value in Study Area

Table 4.7: Response on the impact of soot on property value in study area

S/N	Variables	SA	A	UD	D	SD	∑	Mean
1	Tenants are willing to pay high for a property in an environment with improved air quality	30	29	28	17	10	394	3.45
2	One of the ways to improve the values of property is by effective pollution control	29	40	15	20	10	400	3.51
3	The decision to buy a home is measured by environmental quality	20	36	20	28	10	415	3.64
4	Proper soot management helps in the development of property values	29	40	23	13	9	409	3.58

Source: Field Survey, 2022

The table 4 shows the responses of respondents on the impact of soot on property value in study area and there are 4 items on the questionnaire as shown in table 4 First item on Tenants are willing to pay high for a property in an environment with improved air quality

has a mean score of 3.45, second item on One of the ways to improve the values of property is by effective pollution control has a mean score of 3.51, third item on The decision to buy a home is measured by environmental quality has a mean score of 3.64 and finally the fourth item on Proper soot management helps in the development of property values has a mean score of 3.58. From the mean score, it is observed that the responses are all above 2.5 which represent a moderate response to 3.5 which is an indication of a strong response.

5.0 Discussion of Findings

The study revealed that burning fossil fuels like oil refining and smokes from vehicles, emissions from asphalt plants are some of the sources of soot found in the study area. This study is in line with Carter, (2019), who concluded that Emissions from asphalt plants, combustion of fossil fuels and tyres, vehicular emissions, etc. releases gases and chemicals into the air in an especially destructive feedback loop. The introduction of carbon dioxide and other greenhouse gases which are by-products of combustion raises the earth's temperature or rather increases heat.

The study also revealed that black soot is a type of air pollutant that can have a defect on the body of a building because of its chemical composure, less property acquirements by tenants due to the effects of black soot on the study area, soot are black in colour and they reduce the value of properties due to its deterioration causes on the building. This was in agreement with American Public Health Association, (2020), who viewed that the nature of soot found in the study area is the black soot. The black soot is a type of air pollutant. Its diameter is about 2.5mm. As a pollutant, it comprises a variety of other pollutants like chemical acids, metals, and dust particles. Over the years, soot has been classified as a threat to public health as public health generally, is concerned with promoting and protecting the health of people and the community where they live, learn, work and play.

The study further revealed that soot deposits in homes and surrounding environments reduces the rate of property development, residential property prices have increasingly been influenced by the quality of air and its deterioration therefore, affects urban property values, environments with high degradation results to poor purchase of properties. This finding was in line with Zavadskas *et al.,* (2007), who identified that Property prices differed depending on property location from the source of pollution, whereby it exerts a rather sizeable influence on property prices.

Finally, study revealed that the decision to buy a home is measured by environmental quality; proper soot management helps in the development of property values. This finding is in line with McCluskey and Rausser (2003), who viewed that residential property owners in close proximity to the hazardous waste site experienced lower housing appreciation rates.

6.0 Conclusion

From the findings the researchers concluded that:

The Effects of Environmental Degradation on Property Value in Abuloma Area of Rivers State includes factors such as residential property values are reduced by increased proximity to hazardous waste sites, property prices differed depending on property location from the source of pollution, whereby it exerts a rather sizeable influence on property prices, Soot deposits in homes and surrounding environments reduces the rate of property development, Tenants avoid acquiring properties in areas with high level of environmental degradation, The decision to buy a home is measured by environmental quality.

Based on the findings of this study and conclusions drawn, the following recommendations were made:

7.0 Recommendations

1. The Federal Government of Nigeria should ensure that regulatory bodies in charge pollution control such as soot carry out their functions effectively and efficiently to eradicate cases of low property values due to soot.

2. Property investors should erect properties in areas far from environmental pollution which increases the number of tenant population and in turn promotes property developments.
3. Real estate valuers should ensure that clients are adviced properly on location of their investments and the need to carry out environmental assessment before investment is carried out.

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