



## COVID-19 pandemic and the habitat: Natural balancing and climate change in Bayelsa State

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### Abstract

This study examines COVID-19 pandemic as it affects natural balancing in the habitat thereby encouraging improvement in climate change. It adopts textual and expository analysis. The findings of the study revealed that COVID-19 pandemic though it causes havoc and catastrophic effect on man, in the habitat; it improves the population, growth and development of organisms both terrestrial and aquatic, thereby maintaining the natural environment in Bayelsa State. This is done through natural balancing facilitated by the lockdown imposed by government the world over, this natural balancing leads to improvement in climate change. Therefore it concluded that COVID-19 pandemic was a holocaust to man while to nature it was a great festivity through natural balancing and improvement of the ozone layer, thereby improving climate change.

**Keywords:** natural balancing, COVID-19 pandemic, habitat, climate change, ecosystem

### Introduction

Philosophy teaches us that man has an innate desire to better his life and that feeling begins from cradle and only ends in the grave. This desire for survival and sustainability makes man to explore nature and its environment. The activity of man on the environment makes man to discover things beneficial to him while others detrimental and hazardous/harmful to his existence. These elements have chemical, biological and atomic components that have become a threat to man and its survival and existence.

Man's continued quest to better his life socially, economically, medically, etc, has made man to distort and disrupt nature's harmony and uniformity to the detriment of man. Such activities of humans lead to the outbreak of diseases of various dimensions and severity. Some of such diseases are respiratory diseases, cardiovascular diseases, etc, that rose to Epidemic Status. One of such diseases that affect man seriously that man suffered holocaust like a chemical weapon was dropped was the COVID-19 Epidemic which was a respiratory disease which millions of people died in the world. The death ratio was more than even the first and second world wars of 1914 – 1918, 1945 – 1949 respectively. But despite the fact that man suffered in an alarming proportion, in another perspective nature was at ease with the suffering of man. It seems there was a natural balancing of man and nature in terms of environmental/climate change and its creatures both plants and animals in the world particularly in Bayelsa State in the Niger Delta of Nigeria.

Man was confined in-doors, no human activities for months called Lock-down. Almost all the cities and villages in the world were lockdown. Everybody was indoors, no travelling, no contacts, no movements of any kind, no work of any kind apart from the hospitals and few essential services.

### COVID-19

Covid-19 first appeared in Wuhan a city in the Hubei province of China in November, 2019. More than 180 countries have reported cases since then. Some health experts believed that the new strain of Corona virus likely

originated in bats or pangolin. The first transmission to human was in Wuhan, China. Since then the virus has mostly spread through person – to – person contact.

Corona virus is common in certain species of animals also from cattle and camel, although, the transmission of corona virus from animal to human is rare. This strain of COVID-19 likely came from bats, though one study suggest as stated above pangolins may be the origin. However, it remains unclear exactly how the virus first spread to humans. Some reports trace the earliest cases back to a sea food and animal markets in Wuhan.

The new Corona virus – COVID-19 has spread rapidly in many parts of the world. On March 11, 2020, The World Health Organization (WHO) declared COVID-19 a pandemic. A pandemic takes place when a disease that people are not immune to spread across large regions. COVID-19 at present has two main variants – the Delta Variant and the Omicron Variant. Since the outbreak of COVID-19, the disease has caused a lot of detrimental impact on man in every sphere of his life and the global economy.

The first confirmed case in Nigeria was announced on the 27<sup>th</sup> of February, 2020 when an Italian national tested positive for the virus. Also the New York Times reporters Maclean Ruth Dahir and Abdi Latif reported on 28<sup>th</sup> February, 2020 of the first case of COVID-19 in Sub-Saharan Africa. A second case of the disease was reported in Ewekoro, Ogun State, Nigeria where a Nigerian citizen who had contact with the Italian was infected.

Prior to the first case of the virus in Nigeria, the federal government of Nigeria on the 28<sup>th</sup> of January, 2020, assured citizens of the country of its readiness to strengthen surveillance at the five (5) international airports to prevent the spread of Corona virus. The Nigeria Centre for Disease Control (NCDC) also announced same day that they had already set-up Corona virus group and was ready to activate its incident system of any case emerged in Nigeria. With all these preparations, the virus has continued to spread like wild fire in Nigeria were almost all States and the Federal Capital Territory has incidences of the virus infection.

In Benue state where there are majority of Tiv people, the virus was first recorded in March 28, 2020. One Mrs. Susan Okpe flew in from Europe and was hospitalized at Grace Cottage hospital in Markudi, the capital of Benue state and tested positive for the virus. There is increase in the incidences of the virus in the country. Therefore as at 9<sup>th</sup> of December, 2020, there were 70,669 confirmed cases, 65,242 recoveries and 1,184 deaths in Nigeria.

That notwithstanding, however, the World Health Organization (WHO) has identified many symptoms of COVID-19. WHO says that the virus affects different people in different ways like development of mild to moderate illness and recovers without hospitalization. But most common symptoms are aches, pains, sore throat, diarrhea, conjunctivitis, and headache, loss of taste or smell and rash on skin or discoloration of the fingers or toes. Serious symptoms are difficulty in breathing, or shortness of breath, chest pain or pressure, loss of speech or movement. There are protocols to be observed such as social distancing, washing of hands in running water and detergent up to the elbow, use of hand sanitizers, and use of face masks, coughing in the elbow or toilet paper and disposing same properly, no shaking of hands and general cleanliness.

### Habitat

Habitat is the natural home or environment of an animal, plant or other organism. The habitat could synonymously be referred to as natural environment, natural element, natural territory, natural surroundings, natural terrain, home, domain, haunt, habitation, abode, etc.

Habitat in ecology is the array of resources, physical and biotic factors that are present in an area, such as to support the survival and reproduction of a particular species. A species habitat can be seen as the physical manifestation of its ecological niche. Thus, habitat is a species-specific term, fundamentally different from concepts such as environment or vegetation assemblages for which the term habitat- type is more appropriate. Habitat is divided into aquatic and terrestrial.

### Aquatic Habitat

Aquatic habitat is a body of water in which certain organisms live naturally (Michael, 273). In other words, aquatic habitats are habitats or places that relates to lives in water. Organisms that live in water are called aquatic organisms. Examples of aquatic organisms are fishes, crabs, toads, plants, etc. Aquatic habitats are divided further into three types namely;

1. Marine or Salt Water Habitat: This refers to aquatic habitats which contain salt water. E.g. oceans, lakes, shores and the open seas.
2. Estuarine Habitat: This habitat is a body of habitat formed of the coast as a result of the action of tides which mix salt water from the sea with fresh water from the land (Michael, 277). The mixing of fresh water and salt water results in the formation of blackish water, this blackish water is what is called estuarine. The types of estuarine habitats are: delta, lagoon, bay.
3. Fresh Water Habitat: Fresh water habitat is a body of water formed mainly from inland waters and contains very low level of salinity (Michael, 279). E.g. rivers, ponds, streams, springs and lakes.

### Terrestrial Habitat

Terrestrial habitat refers to the life on land. The nature of soil, rainfall and temperature are the major factors affecting the nature of terrestrial habitats (Michael, 285). Terrestrial habitat is divided into four (4) groups namely: Marsh, Rain forest, Savanna or Grassland and Arid land.

1. Marsh Habitat: Marsh habitat refers to a lowland habitat which is usually flooded or water-logged all the time (Michael, 285). Naturally, grasses and shrubs grow in marsh but when trees grow there it is called a swamp. Marsh is often regarded as a transition between the aquatic and terrestrial habitats (Michael, 285).
2. Forest Habitat: A forest is an extensive community of plants dominated by tall trees; the trees are of different species and height (Michael, 286). The distribution of forest is mainly determined by climate especially rain fall and temperature (Michael, 287).
3. Grassland or Savanna Habitat: A grassland habitat is a plant community in which grass species are dominant with short but scattered trees and shrubs. The grassland or savanna lies between the forest and the deserts or arid land (Michael, 289). There are two main types of grasslands namely; tropical grassland (savanna) and the temperate grassland. Tropical grassland or savanna is located around the Equator i.e. between 5° and 20° north and south of the Equator. Areas where the grassland is found include Africa where it is called Savanna, in Brazil where it is called Campos, and in South America where it is called Ilanos (Michael, 290). In Nigeria, the Savanna has three major belts; these are Guinea Savanna, Sudan Savanna and Sahel Savanna. The luxuriant nature of the grassland decreases northwards, from Guinea to Sudan and finally to Sahel Savanna (Michael, 290).
4. Arid land: The Arid lands or deserts refer to areas of very low rainfall and high evaporation rate. Arid lands are the driest habitats receiving less than 25cm of annual rainfall (Michael, 292). There are two (2) types of arid land or desert namely; hot deserts and cold deserts. Hot deserts of the world are located in the Western Coasts of the Continents within Latitude 15° – 30° north and south of the Equator. Examples, Sahara desert (North Africa), Arabian desert and Kalahari deserts (South Africa), Great Australia desert (Australia) and Atacama desert of South America. While Cold deserts are located or found in the interiors of the Continents around 45° – 60° north and south of the Equator. The desert is found in interior of Eurasia, North America and in Patagonia (South America).

### Balance of Nature

Balance of nature is a concept in Ecology which describes that the natural systems are in a state of equilibrium. Simply, it means the balance of nature is a concept that speaks of maintaining a balance in nature. If we disturb any one element, then all the other elements get interrupted in the entire system. It is usually interpreted that the natural state of any system is the best preferred state and you should not disturb it. The balance of nature is also considered as the state where the natural communities of plants and animals exist. It is then maintained to competition, adaptation and other interaction between the members of a community and their non-living environment. The theory of balance of nature may apply when the population depends on each

other, E.g., Relationship between herbivores and other food items. It also applies in the relationship between Earth and its Ecosystem, the composition of the atmosphere and the weather of the world.

### History of the Theory of Balance of Nature

This concept that nature maintains its own conditions is from the ancient times itself. It is a relationship between both the predator and the prey species. There is always proportion maintained between both predator and the prey as the predator never consumes its prey in excess.

The concept of "Balance of Nature" once ruled the ecological research and also governed the management of natural resources. All this led to a doctrine which became popular among few of the conservationists. It said that nature was best left to its own devices. Human activities can also assist in maintaining the balance of nature.

### Natural Balancing

Natural balancing is a theory that proposes that ecological systems are usually in a stable equilibrium or homeostasis which is to say that a small change (the size of a particular population), for example will be corrected by some negative feedback that will bring the parameter.

Balance of nature is for the maintenance of nature. It is for our existence and the existence of other living organisms.

In discussing this sub-topic on Natural balancing, we will dwell more on population in the habitat and the environment of plants and animals in various species. This disequilibrium is on natural and man-made factors in our environment.

A population is a group of members of the same species living in an area, and the populations of different species living together in one area are known as a community (Wright and Boorse, 76). Ecologists often want to know the pattern of change in the numbers of individuals in a population. In any population, this is easy to figure out if you have enough information. Births and immigration cause the population to grow and deaths and emigration cause the population to shrink (Wright and Boorse, 76). This can be described by a simple equation:

$$(\text{Births} + \text{Immigration}) - (\text{Deaths} + \text{Emigration}) = \text{Change in population number}$$

$$(B + I) - (D + E) = \text{CIPN}$$

The equation shows the change in population, or population growth. If births plus immigration are more or less equal to deaths plus emigration over time, population is said to be in equilibrium.

But often, populations are either increasing or decreasing – that is, their population growth is not zero. If you take the amount the population has changed and divide it by the time it had to change, you get the population growth rate (Wright and Boorse, 76).

### Water Pollutants

#### Sources of Water Pollution

Water pollution originates from a host of human activities and reaches surface water or ground water through an equally diverse host of pathways. For purposes of regulation, it is customary to distinguish between point sources and non-point sources. Point sources involve the discharge of substances from factories, sewage systems,

power plants, underground coal mines and oil wells (Wright and Boorse, 521), while non-point are mainly agricultural run-offs, storm-water drainage and atmospheric deposition. Pollution occurs as rainfall and snow-melt move over and through the ground picking up pollutants as they go (Wright and Boorse, 521). In sum, the most important water pollutants are disease organisms, organic wastes, chemical pollutants, sediments and nutrients, all of which have objectionable impacts on human health and environment (Wright and Boorse, 518).

That is pathogens, organic wastes, chemical pollutants, sediments, nutrients, waste water treatment and management, e.g. Debris and grit, Particulate organic materials, Colloidal and dissolved organic materials.

### Air Pollutants

Major Air Pollutants are divided into two classes namely, Primary Pollutants and Secondary Pollutants.

#### Primary Pollutants

- Suspended particulate matter (PM), e.g. soot, smoke, metals, and carbon from combustion, dust, salt, metals and dirt from wind erosion, atmospheric reactions from gases.
- Volatile organic compounds (VOC), e.g. incomplete combustion of fossil fuels, evaporation of solvents and gasoline, emissions from plants.
- Carbon monoxide (CO) – e.g. incomplete combustion of fuel.
- Nitrogen oxides (NO<sub>2</sub>) – e.g. From Nitrogen gas due to high combustion temperatures when burning fuels: also from wood burning.
- Sulfur dioxide (SO<sub>2</sub>) – e.g. Combustion of sulfur – containing fuels: especially coal.
- Lead (Pb) – e.g. battery manufactured, lead smelters, combustion of leaded fuels and solid wastes.
- Air toxics (various) – e.g. fuel combustion in vehicles; industrial processes; building materials; solvents.
- Radon (Rn) – e.g. rocks and soil; natural breakdown of radium and uranium.

#### Secondary Pollutants

- Ozone – (O<sub>3</sub>) e.g. petrochemical reactions between VOCs and NO<sub>3</sub>.
- Peroxyacetyl nitrates (PAN) e.g. petrochemical reactions between VOCs and NO<sub>3</sub>.

Primary pollutants are so called because they are direct products of combustion and evaporation. Some primary pollutants may undergo further reactions in the atmosphere and produce additional undesirable compounds called secondary pollutants e.g. ozone, peroxyacetyl nitrates, sulfuric acid and nitric acid (Wright and Boorse, 487). Power plants are the major source of sulfur dioxide; industrial processes are the major source of particulates and transportation accounts for the lion's share of carbon monoxide and nitrogen oxides (Wright and Boorse, 487).

### Climate Change

Climate change is understood by different scholars in different perspectives. Some scholars view climate change as "all forms of climate inconsistency, regardless of their statistical nature (or physical causes)" (Mitchell et al, 68). However, the inter-governmental panel on climate change (IPCC) gave a wider definition of climate change as any

change in climate over time whether due to natural variability or as a result of human activity (IPCC, 28). In contrast, the Limited Nations Framework Convention on Climate change (UNFCCC, 110 – 124) views it as a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability over comparable time periods. In other words, climate change refers to significant change in global temperature, precipitation, wind patterns and other measures of climate that occur over several decades or longer. Changes in the climate system occur in various ways namely: natural variability and anthropogenic activities.

Natural climate change or nature-driven variability refers to change caused by interaction among geophysical elements including the atmosphere, ocean and land as well as change in the volume of radiation reaching the earth's surface, which can be traced from past geological records (Ibeh, Uzuegbu and Ogbofa, 14), while anthropogenic (human-induced) climate change refers to change resulting from human activities which lead to build-up of green house gases in the atmosphere, e.g. Nitrous oxide (N<sub>2</sub>O), Carbon dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>) and other fluorinated carbon contents which trap heat in the atmosphere (USEPA, 282).

Although the effects of human interferences are instrumental to the increase in atmospheric green house gas but there may be natural presence of certain amount of green house gases in the atmosphere. This natural green house gas is required for the maintenance of a balanced combination of atmospheric gases for the sustenance of life.

In this regard, natural green house gas performs stabilizing functions in the mix of atmospheric gases and persisted for nearly 10,000 years prior to recent anthropogenic upsurge which dates back to the last two centuries (Rogers, 46 – 53). Some human activities which contribute to the build-up of green house gases and the changes in the climate system are burning of fossil fuels for the generation of electricity and industrial activities, felling of trees and cleaning of forests for industrial development and urbanization (Ibeh, Uzuegbu and Ogbofa, 14). The main characteristics of climate change are increase in average global temperature (global warming), changes in cloud cover, and precipitation particularly over land, melting of ice caps and glaciers and reduced snow cover, and increases in ocean temperature and ocean acidity because of sea water absorbing heat and carbon dioxide from the atmosphere (Ibeh, Uzuegbu and Ogbofa, 14).

Climate change can cause species extinction and the displacement, decrease or loss of habitats which may lead to the determination of biodiversity and ecosystem services.

Again, changes in the ecosystem and ecosystem services affect agriculture, forest/forestry, fisheries, tourism, water resources, the life of citizenry and urban life. Although, climate change is a global phenomenon but developing countries are the most vulnerable to its impacts because they have fewer resources to adapt socially, technologically and financially (Assan, Caminade, and *et al*, 403 – 418). However, some of the countries may have the resources but refuse to take appropriate measures. Thus, it may affect the sustainable development of developing countries and their ability to attain the United Nations Sustainable Development Goals.

### **Covid-19 Pandemic and the Habitat: Natural Balancing and Climate Change**

During the COVID-19 epidemic, the disease was very contagious, harmful and deadly, governments all over the world introduced a policy of lockdown as the only panacea to the spread of the disease as well as a preventive measure. Lockdown is the idea of everybody staying indoors to avert the deadly nature and effect of the disease, by doing so, no movements of any kind. Almost 80% of the world was indoors, no going to work, business, farming, fishing. That is, industrial workers were indoors, waste disposal workers were indoors, no vehicular movements, no train movements, airports were closed, no international travelling, no lumbering activities, no land grazing, limited hunting activities and most importantly oil exploration and exploitation activities came to a halt. That apart, during the peak of the epidemic, bush burning, farmland cultivation, palm cutting, fishing activities in the high seas and local fishing activities was drastically reduced as a result of the total lockdown to reduce the spread and devastating effect of the Corona virus (COVID-19) epidemic.

However ironically, since there was a total lockdown in the activities of man either industrial or subsistence as well as on its general wellbeing, it has a large positive effect on the environment particularly on the ecosystem and the habitat.

During the peak of the COVID-19 epidemic and the lockdown imposed by countries in the world, the period witnessed a lot of significant growth in the population of aquatic animals. Because man was barred from his daily fishing activities for escape from the deadly disease, it now enables aquatic animals to heave a sigh of relief from the activities of man. The killing of fish and other aquatic animals was reduced and disturbance by man on the aquatic environment was brought back to its natural state thereby increasing the number of fishes and other aquatic animals.

Similarly, due to the lockdown imposed by governments the world over; there was a significant growth in the population of plants. Plants of all kinds grew luxuriantly due to the less disturbance and the destructive activities of man in terms of developmental needs, grazing, lumbering, plant cultivations, bush burning, etc. The reduction in all these activities of man led to jubilation in the plant kingdom as plants grew in leaps and bounds with fresh and luxuriant leaves with concomitant nutrients. In addition to that, terrestrial animals no longer had any disturbance from man and they witnessed the natural stage of the environment. This improved the quality of the ecosystem, the habitat and the natural environment in general. That is, the destruction and devastation of the environment by man reduced drastically and this led to the growth in the population of aquatic and terrestrial animals and plants. Though as the population of animals and plants increased in the environment the world over, the food chain in the ecosystem and the habitat also occurred and this led to a natural equilibrium in the environment.

In short, the reduction of air pollution and water pollution by man during the peak of the COVID-19 epidemic period led to the improvement and replenishment in aquatic and terrestrial life in our environment as well as reduction in the depletion of the ozone layer. No industrial activities, no oil exploration and exploitation, etc by man. But the question is this; does the COVID-19 epidemic occur as a curse to man and a blessing to our natural environment and an improvement on climate change?

COVID-19 epidemic as it were, caused a lot of havoc and devastation to man and humanity in general. Its negative effect on the economy, social, and political and psychology of man was so deadly and destructive that even World War I and World War II could not match the death toll witnessed by man in different societies. Spectacularly, the COVID-19 disease was even a respiratory disease that knew no bounds. It was an international havoc inflicted on man in 2019 that humanity cannot forget.

But however, viewing on another perspective vis- a- Vis man and the environment, we witnessed that while man was in agony and devastated, sorrow and misery, our natural environment particularly the ecosystem and the habitat was in high jubilation, celebration and festivities. The natural environment was calm, peaceful, happy and in its natural state devoid of man's destructive activities. What happened during the COVID-19 epidemic period was a holocaust to man which for the natural environment it was a life in boom. It could be seen that during the COVID-19 period there was a natural equation balancing between man and the nature especially its environment and there was an improvement in climate change. With this natural balancing, man's value chain with the natural environment was improved though man suffered from the epidemic.

### Conclusion

The COVID-19 epidemic was a disease so devastating and deadly to man that it affected man in all aspects of his life negatively. The death toll was so high that it was recorded as worse than even World War I and II. Man suffered to a level that almost the whole of the world was lockdown and all man's activities was grinded to a half but in another perspective, this was a period that nature and our surrounding was in a boom. The population of both aquatic and terrestrial life improved tremendously because man had stopped from polluting the environment in all aspects of pollution either water pollution or air pollution thereby reducing the depletion of the ozone layer as well. The COVID-19 epidemic period was a period of Natural Balancing of the activities of man and the environment in one hand, and a natural balancing of man's life which is dependent on nature and the environment in the food chain, ecosystem and the habitat.

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