

Climate Change Scenario: Implications For Human Health, Agriculture and Food Security Challenges in Nigeria

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Abstract- Health is wealth and a healthy nation is a wealthy nation is an old English adage. Health impacts of climate change in the 21st century are undisputable as it is felt globally and in diverse forms. Climate affects health directly and indirectly as well as the entire ecosystem – the lithosphere hydrology and the biosphere. Climate change is caused by both natural occurrence and anthropogenic effects. The consequences of climate change, directly or indirectly, natural or anthropogenic has a negative impact on human and animal, and green vegetation. This in one way or the other contributes to health challenge on man as result of unhealthy climate. Man is subject to climate via weather and other meteorological influences that control the atmosphere. The shortage of safe quality drinking water, poor agricultural crop, food security challenge, inability of persons or households to have access to sufficient, safe – sound and nutritious dietary demand gives rise to health implications and the consequences of these is a manifestation of climate change scenario. Therefore, we x – rayed these attendant consequences of the climate change effects on human health, agriculture and food security, and providing the solution as a getaway to these challenges

I. INTRODUCTION

Climate change has contributed significant damages to human health, the ecosystem, and to animal life. Land and agriculture have also been badly affected by these consequences of climate change scenario in varying degrees, hydrological systems not exempted. The EU defined “dangerous climate change as that with an increase in 20C of average global temperature” [1]. The World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP) in an effect to combat the worsening situation set up the Intergovernmental Panel on Climate Change (IPCC) in 1990 [2]. The fourth Assessment report of the

IPCC has identified three major areas that climate change has affected human health which include;

- i. Alteration and distribution of some vector borne infectious diseases;
- ii. Seasonal (periodical) distribution of allergenic pollen species;
- iii. Increase in death related heat wave syndrome [3]; [1].

Climate change has affected health in diverse ways in that the World Health Organisation (WHO) has chosen April 7th annually to mark the World Health Day of which in April 7th 2015 the topic read, And the 2024 team read. “ My health my right chosen to champion the right of every one’s health everywhere to have (WHO,2024) [4]. “Protecting Health from Climate”. The topic emphasizing how serious and damaging the climate change effect could to life, atmosphere and the ecosystem. The effect of climate change on human health is an old phenomenon that has a multi-dimensional base, as reported in many scholarly literatures and systems of medicine dating back to about three thousand (3000) years. Evidences abound in various disciplines as in bones, ancient graphics writings, historical monographs, fossil excreta and other antiquates studied in archaeology [1]. Similarly, evidences resulting from climatological studies have a testimonial variety of diseases in the past climates [3]. However, it is strongly believed that the root cause as analysed is based on the social and economic development which is the driving force that exerts pressure on the environment and the after effect is the change in the state of the environment [1].

According to [4], extrapolated those variations in temperature, precipitation and other weather-related

parameters as result of climate change may possibly affect the statuses of human health of millions of individuals, mostly vulnerable ones with low adaptive capacity with high confidence. Climate change contributes to the global burden of disease, and disease vectors as well as premature deaths. Meanwhile, the WHO did emphasis that climate change causes over one hundred and fifty thousand (150,000) deaths annually and in another form about five million disability – adjusted life years (DALY), [6] meanly in developing world (like Nigeria). Ironically, developing and less developed countries are the least contributors to climate change scenario and global warming impacts. Various related health conditions and diseases are sensitive to climate change; versa viz related illness such as;

- i. Infectious disease, transmitted indirectly through water;
- ii. Rodent and insect vectors (Lassa fever, Ebola virus, monkey pox etc);
- iii. Refugee health issues forced by population migration.

Meanwhile, changing landscape patterns can meaningfully alter local weather predictions acutely than long – term climate change [6]; [1].

II. HEALTH EFFECTS OF CLIMATE CHANGE

Climate change impacts are witnessed directly due to heat, cold and injuries, glacial ice retreat and flooding and indirectly through changes in the environment, agriculture and agricultural crop productivity and yield, animal grazing and pasturing, desertification, drought, wild / forest fires, due to increased temperature and heat wave, human behaviour and migration. The implications of the health consequences of climate change effects are grouped in four phase versa viz;

- i. Vector borne diseases (VBD): According to [1], climate change is expected to affect animal species, human health and the green vegetation through indirect forms and there will be a geographical dislocation of infectious diseases and pests, and distribution of Vector Borne Diseases (VBD's) highly

sensitive to climate change conditions. Extreme weather events create the thriving environment for VBD's to expand its terrestrial habitat;

- ii. Temperature Changes: Any change(s) in temperature and precipitation patterns [7], is likely to alter the number of available sites, thereby creating an enabling environment for the explosive varieties of epidemic VBD's, such as mosquito borne disease like malaria, dengue fever, chikungunia, yellow fever, filarial which are climate sensitive diseases with direct correlation to temperature and precipitation. Tetospirosis which are rodent diseases have been reported in the after – math of flooding. Regional alterations in temperature may reduce the spread of various mosquito borne diseases in some regions thereby giving way to reduction in population of immune persons, and to a larger content the amount of susceptible people as drought resides. As the climate changes, temperature alterations occur alongside also, pest borne diseases becomes an important dominant vector disease following these changes. Plague, west Nile and Lyme diseases are public health disease impacts associated with pests [1].
- iii. Air Quality and Health: The movement of air quality causing pollution, expanding the horizon and patterns of human exposure to climate change effects resulting to health effects is as result of changing patterns in climate. Changing weather factors like temperature and air humidity partly gives rise to formation of air pollutants. Weather parameters strongly support the transportation and dispersion of air pollutants from source regions away to others of free air radicals. These changes in climate influence the pollutant concentrations and adversely affect health. Air pollution is related to cardiorespiratory health, exposure to high rates of ground ozone from the exhaust of vehicles also increases the risk of respiratory disorders like chronic obstructive airways, asthma, increase in mortality rate [7]. In drought prone areas, wildfires, burning of vehicle tyres and wood for fuel increases the

CO₂ concentrations in the atmosphere and reducing the oxygen content of the air and giving rise to high temperature changes – a case of global warming. The ozone depletion effect is accompanied with acute myocardial infarction, various forms of communicable diseases is in part modified by agents' patterns of weather and climate change, thus leading to increased risk of cardiovascular diseases and strokes.

- iv. Water Borne Disease (WBD): High temperatures, water scarcity, high CO₂ content in the atmosphere, drought is as result of low rainfall and the inability of the oceans to absorb the CO₂ content of the atmosphere, while water abundance, flooding is connected to heavy precipitation patterns leading to diarrheal diseases. Severe rainfall causing flooding may lead to increased rates of diarrheal diseases as a result of sewage system blockages, overflow and increase in soil run – off are due to contaminate water sources. On the other hand, drought causes lack of water for personal hygiene, washing of foods, vegetables and fruits which may lead to diarrheal diseases and other skin diseases associated with poor hygiene as a result of lack of water. Increased temperatures contribute to high risk of diseases such as salmonella typhus and cholera. According to [1], more than 3 million people die annually from available water related diseases mostly in developing countries.

The contamination by anthropogenic activities, animal faeces, urine infected with pathogenic viruses and bacteria during flooding is a major contributing factor of water borne diseases. Water borne disease can come in any of these forms;

- a. Water – washed – diseases: This is due to the scarcity or inadequate clean and safe water which may lead to inadequate personal hygiene, drinking, cooking and other domestic purposes [8]. This may also result in eating foods, fruits and vegetables contaminated with virus and or bacteria without proper washing which the likelihood of inaccessible portal safe drinking water;
- b. Water – based – diseases: in this case, water is the intermediate host for parasites where they reside in or near water bodies that proliferates the parasitic life causing water related diseases such as guinea worm, testes fly those causes sleeping sickness, cholera;
- c. Water – related – diseases: Water related diseases are those caused insects vectors that leave and habitat in or around water mosquitos that causes malaria. The insect vectors habitat in areas like stagnant water around homes, carelessly disposed cans and vessels and bushes around living quarters;
- d. Water – dispersed – diseases: diseases and infections that proliferate in fresh water which enter the human body through the respiratory track. These include legionella [1]; [9].

III. CLIMATE CHANGE AND FOOD SECURITY

The current environmental problems facing global community today is as a result of climate change. This has posed serious challenging threats to sustainable development across global today, especially in developing countries. The impact of the climate change is felt in the ecosystem, water resources, food and health [10]. The 1972 – 1974 world food crises occasioned a very serious interest about food security concern. This also has generated lots of concerns on the issue of food security and nutritional values mostly in developing countries over the years. The interest that arose both within the social scientists, researches, government and non – governmental agencies [11], including individuals and other stalk holders. Climate change and food security are directly related globally mostly in developing countries where it is compounded with poverty [10] and illiteracy.

In Africa, food security challenge is rising astronomically and this is centred on agriculture, [11], with poor government policies and nonchalant attitude of the government towards developmental and economic policies and the neglect of the agricultural sector and other environmental related problems occasioned by dwindling economy [11]; [10], that results from corruption of government officials. This is exacerbated by climate factors as

precipitation, humidity and sunshine duration etc which form the bases of harvest [10]. There has been this clarion call on policy makers, communities, organisations, stakeholders and government and non – governmental organisations to incorporate into their policy a framework to mitigate climate change that will help to enhance agriculture and agricultural crop yield and productivity as a means to boost food production and animal grazing for dairy foods. If there is a strong government policy with a determined zeal to foster these policies, it will go a long way improve economy, create employment opportunities especially for the youths and the entire growing populace, reduce youth restiveness etc.

In arid and semi – arid regions the one major solution among others is the practice of irrigated agriculture. Food security has become so much disturbing and very important that it has gained global attention, after the World food Conference and World Food Council [11]. The scope of the food security includes various organs as individuals, households, communities, national and international [12];[11]. Agriculture is yet to gain a mechanised root in many developing countries (like Nigeria, Ghana, and Kenya etc) as the mainstay of the economy. Efforts should be geared towards ensuring food surplus for the wellbeing of the citizenry, good and healthy growth and development of infants and children, and an aid to nursing mothers.

IV. CONCLUSION

Food security (food sufficiency) thrives in an environment where the citizens have the physical and economic freedom to access sufficient, safe and nutritious water and food to meet with their dietary needs and demand (FAO, 1997). Global Food Security is defined as a condition whereby a family member or individual has the physical and economic ability to access these food preferences for an active and healthy living. Food has to be affordable, safe and healthy, culturally acceptable and meeting some or all the dietary needs of the people. It should be obtained in a dignified manner, produced in an environmentally sound and friendly way and in a socially justifiable form. Hence, adequate healthy food satisfying the dietary requirements for a healthy life style makes a healthy nation and people thereby

creating wealth for the good and betterment of the greater populace. Sequel to this is the enhancement of the agricultural sector and the development of other economic yielding sectors of the economic by the government and the provision of enabling laws by the same government to that will enable stakeholders and interest groups key into the various developmental strategies for the socio – economic and well – being of a healthy nation and individual good life style. Thus, a healthy nation is a wealthy nation.

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