



# THE ATTITUDE OF UN-EDUCATED INDIGENES OF KOGI STATE TOWARDS CLIMATE CHANGE: A FOCUS ON SUSTAINABLE ENVIRONMENTAL DEVELOPMENT.

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## ABSTRACT-----

*Because of human activities, emission of the greenhouse gases resulting Deforestation, agricultural activities, and the combustion of fossil fuels have all contributed to global warming and climate change. It has been observed from decades back that there is a tremendous change in climate, The implications on human and ecological systems as a result of these changes include increased temperatures, altered rainfall patterns, increased frequency and distribution of meteorological events including heat waves, storms, and floods, as well as rising sea levels., even in the distribution of disease- carrying vectors. Scientists are unanimous that climate is always changing. The horrifying effects of climate change are global, altering the environments and threatening people's livelihood, and perceived differently at different levels of conceptualization and awareness. However, the issue of climate change is doubted and misconstrued by non-experts largely due to communication challenges (Rohling et al., 2016). The lack of awareness and lack of education has its toll on climate change and the reaction of the locals towards it. A large proportion of Kogi indigenes are not educated enough about climate change and its effect on human lives and activities, while the world battles the eminent changes in its climate and environment, they are left in the dark. This paper is therefore a means of reaching out to Kogi indigenes on climate change and its effect and possibly on how it affects our environmental development and sustainability.*

**KEYWORD:** Climate Change, Indigenes, Environmental Development, Kogi state, Non-educated, Sustainability.-

## INTRODUCTION

Climate: A region's climate is the long-term pattern of its weather, which can vary from hour to hour, day to day, month to month, and even year to year. Climate is the averaged weather at a certain location on Earth over a period of time, usually 30 years. It is the average and variance of climatic variables over a period of time that can range from months to millions of years (Matthews, et al., 2021). Based on past observations, climate is typically expressed or measured in terms of meteorological variables such temperature, humidity, air pressure, rainfall, and wind conditions. A location's latitude and longitude, topography, altitude, land use, and proximity to water bodies and their currents all have an impact on the climate (Gough et al.2022). The following is the definition from the Intergovernmental Panel on Climate Change (IPCC) 2001 glossary:

In a broad sense, climate is typically described as "average weather" or, more precisely, as the statistical description of important values over timescales ranging from months to thousands or millions of years. The World Meteorological Organization defines the standard term as 30 years (WMO). Surface variables like temperature, precipitation, and wind are most frequently used to describe these values. The status of the climatic system, including a statistical description, is referred to as climate in a broader



meaning. (IPCC., 2017).

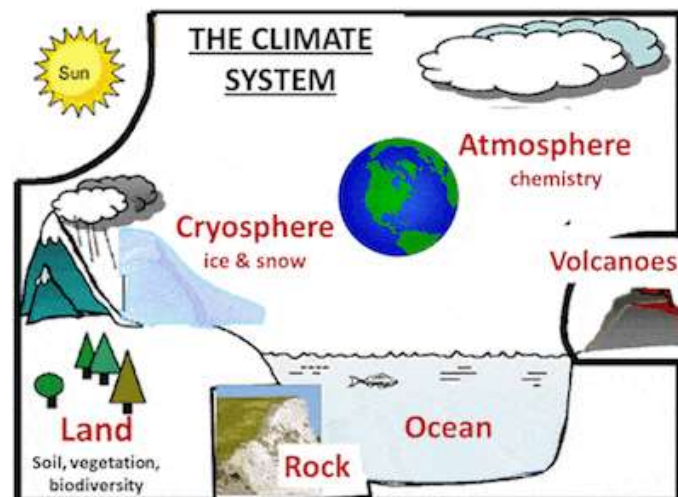
The term "climate normal" is defined by the World Meteorological Organization (WMO) as "reference points used by climatologists to compare current climatological disposition to that of the past or what is considered typical. A climate normal is defined as the arithmetic average of a climate element (e.g., temperature) over a 30-year period. A 30-year period is used as it is long enough to filter out any inter annual variation or anomalies such as El Niño–Southern Oscillation, but also short enough to be able to show longer climatic trends." (WMO., 2014).

The amount of rainfall, seasonal temperature changes, and other factors can all be used to describe a location's climate, such as Kogi State.

### The Climate System

A description of the global climate highlights, for instance, how the warming Pacific Ocean fuels typhoons, which blow harder, drop more rain, and cause more damage. It also highlights how shifting global ocean currents melt Antarctic ice, which causes sea levels to rise gradually until New York is submerged. This systemic interconnection is what makes global climate change both crucial and challenging. (Warmheartworldwide.org).

Although humans and other living beings experience climate locally, we need to look at the global Earth system to gain an understanding of what constitutes climate. This involves understanding how air, land, oceans, snow and ice, and all living things contribute to and interact with the global climate. This complex array of relationships is commonly referred to as the climate system (IPCC, 2007a). The Earth's climate (including wind, rain, clouds, temperature, etc.) is determined by energy exchanges and changes that take place in the atmosphere above the surface of the planet and in its oceans. The Earth's climate is mostly consistent over time because the energy received balances the energy lost (the energy budget is balanced). An average solar brightness of 1370 watts per square meter (W/m<sup>2</sup>) strikes the surface of the planet. (World Meteorological Organization 2012).



(Source: Us Environmental Protection Agency)

### Climate Change

Significant, long-term changes in the world's climate are what are referred to as "climate change." Extreme weather conditions, increasing ocean conditions, shifting wildlife populations and lands, as well as a variety of other effects, are all part of it in addition to rising temperatures.

The sun, the earth, the oceans, the wind, the rain, the snow, the forests, the deserts, the ups and downs, and everything that people do together make up the global climate. Climate change can be a natural process where temperature, downpour, wind and other particles vary over decades or further. In millions of ages, our world has been warmer and colder than it's now. But now we're witnessing rapid-fire warming from man exercise, primarily due to burning fossil energies that bring about greenhouse gas flows.(Fastfacts.com). Greenhouse gas flows that pan out Fossil fuel extraction and burning are significant



causes of air pollution and climate change.(WHO., 2014).

### Causes of Climate-Change.

“ We're humans who want the same thing every other man wants — a safe place to live on this earth we call home. So, while our work must continue to be equitable and objective, progressively we're raising our voices, adding to the clear dispatch that climate change is real and humans are responsible, the impacts are serious and we must act now ”.(Katharine Hayhoe, Climate Scientist). What this statement mean, is that we humans are responsible for our environs and whatever happens to it, and are progressively affecting the temperature of the planet and its climate. This increases the amount of greenhouse gases already present in the atmosphere, intensifying the greenhouse effect and causing global warming.

Fossil fuels, such as oil and gas, are frequently burned in almost all businesses. The most common uses for it are in manufacturing, automobiles, constructions, and the creation of energy. Burning coal, oil, and gases significantly contributes to the climate issue. Fossil fuel consumption puts wildlife and the environment at risk because the poison it releases poisons plant life and renders areas uninhabitable.

**Deforestation:** Deforestation refers to the clearing of forest and woodland areas, which may also be done for the wood or to make room for farms or estates. When forests and trees are removed, the stored carbon is also released into the atmosphere since they convert carbon dioxide into oxygen. Naturally occurring deforestation also occurs and has a greater impact because of the smokes generated by fires.

**Livestock farming:** This requires a lot of green land, therefore native ecosystems may be lost to make room for agriculture. These creatures produce a tremendous amount of trash in addition to a great deal of greenhouse gases, such as methane. Because of the excessive pollution, factory farming does in reality contribute to greater climate problems.it produces and the more animals it can hold.

**Power plants:** Because they run on fossil fuels, power plants produce a wide range of impurities. They produce pollution that not only ends up in the atmosphere but also in waterways, which greatly aids in the process of global warming. About 46 percent of all carbon emissions are caused by burning coal, which is utilized in power plants.

**Transportation & Vehicles:** The majority of transportation is done by trains, automobiles, boats, and airplanes, nearly all of which are powered by fossil fuels. When fossil fuels are burned, carbon and other toxins are released into the atmosphere. In light of this, transportation is partially to blame for greenhouse emissions. The usage of electric automobiles could lessen this effect.

Industrialization is risky in a number of different ways. All of the waste produced by this industry is disposed of in landfills or in our immediate surroundings. Industrialization uses substances that not only pollute the atmosphere but also the land that lies beneath it.

**Consumerism:** Thanks to advances in manufacturing and technology, customers can purchase any good at any time. This indicates that we are consistently overproducing new products at a rapid rate. The majority of the things we purchase are not truly sustainable, and since electronics and wearable technology have shorter lives than other items, we are producing more waste than ever.

**Oil drilling;** Oil drilling is responsible for about 8 of the carbon dioxide pollution and 30 of the methane population. The process of oil drilling is used to gather petroleum oil hydrocarbons, but since other gases are released into the atmosphere as a result, it also poisons nearby wildlife and the environment.

**Waste:** Due to the extensive packaging used and the short product lifespans, humans are producing more waste than ever before. Since a lot of items, garbage, and packaging cannot be recycled, they end up in landfills. The decomposition of garbage in landfills releases harmful chemicals into the atmosphere that contribute to global warming.(Sustainabilitymag.com).

### Global warming.

The increase in global temperature is a result of excessive heat in the earth's atmosphere. Climate change is a direct result of global warming and keeps on doing so. Extreme weather conditions, rising ocean levels,



and community damage are all effects of climate change. Over geological time, the climate of the planet has changed continuously, with notable shifts in the average world temperature.

However, compared to other warming periods, this one is occurring more quickly. It has become evident that humans are primarily to blame for the recent century's warming by releasing gases that trap heat, commonly known as greenhouse gases, to fuel our modern lifestyles. We are contributing to this via using fossil fuels, farming, land use, and other activities that cause climate change. Greenhouse gases are at the topmost rankings they've ever been over the last,000 ages. This rapid-fire increase is a challenge because it's changing our climate at a rate that's too fast for living effects to acclimatize to.(IPCC., 2017)

Periodic climate changes on Earth have occurred throughout history, including four significant ice ages. These are periods separated by interglacial periods that are composed of glacial ages with conditions that are colder than usual. As snow and ice accumulate during a glacial epoch, the face's albedo improves, reflecting more solar radiation into space and maintaining a lower air temperature. The general temperature can rise and an interglacial period can result from increases in greenhouse gases, such as those caused by volcanic activity. The placements of the continents, changes in the Earth's axis, fluctuations in solar yield, and volcanism are thought to be the causes of ice age eras (Illinois State Museum, 2002).However, compared to the current rate of change brought on by the release of greenhouse gases by human activity, these naturally occurring variations in the climate occur over far longer time scales ( Joos Etal., 2008).

#### Greenhouse Gases

According to the first theory of climate change, greenhouse gas emissions from humans—primarily carbon dioxide (CO<sub>2</sub>), methane, and nitrous oxide—are to blame for the uncontrollable rise in global temperatures. The amplified greenhouse effect is the mechanism through which this occurs. This theory is known as "anthropogenic global warming," or simply AGW. The sun's energy travels through space and eventually reaches Earth. Since most of the sunlight entering the earth's atmosphere is transparent, it can reach the planet's surface, where part of it is absorbed and some is reflected back as heat into the atmosphere. As a result of some gases in the atmosphere, referred to as "greenhouse gases," absorbing external or internal thermal radiation, the atmosphere of the Earth becomes warmer than it otherwise might be. The greenhouse effect is the primary driver of climate change. Some gases in the Earth's atmosphere act somewhat like the glass in a greenhouse, trapping the sun's heat and preventing it from escaping back into space, resulting in global warming. Water vapor is the primary greenhouse gas, accounting for between 36 and 90% of the greenhouse effect.( IPCC, NOAA). numerous of these greenhouse gases happen naturally, but man exercise are accelerating the attention of some of them in the atmosphere, in particular

- ❖ carbon dioxide( CO<sub>2</sub>)
- ❖ methane
- ❖ nitrous oxide
- ❖ fluorinated gases

The main cause of global warming is CO<sub>2</sub> that is produced when people exercise. Its importance in the atmosphere had increased to 48 over pre-industrial levels by 2020. ( before 1750).

Lower levels of other greenhouse gases are released by human activity. Although methane has a shorter atmospheric life than CO<sub>2</sub>, it is a more significant greenhouse gas. Like CO<sub>2</sub>, nitrous oxide is a long-lasting greenhouse gas that builds up in the atmosphere over many decades to centuries. Aerosols like soot, which are non-greenhouse gas contaminants, have a variety of warming and cooling effects in addition to being linked to other problems like poor air quality (Europa.EU). The level of greenhouse gas emissions is at its highest point in 2 million years and continue to rise. As a result, the earth is about1.1 °C warmer than it was in the 1800s. The last decade was the warmest on record.(Fastfacts.com).

Literature indicates climate change is one of the biggest risks to public health at the moment( Deja Arnett, etal., 2018; Watts etal., 2015; Crimmins etal., 2016). In 2016, Cao and Hu reported a significant increase in the quantity of CO<sub>2</sub> seen in the atmosphere due to the burning of fossil fuels to beget energy. In their study, Richie and Roser( 2017) establish that the CO<sub>2</sub> atmospheric concentration in 2013 is 40 advanced than it was in the 1800s. The hunt for energy sources has also increased greenhouse gas emissions, which in turn has led to a high rise in atmospheric temperature, which has a profound effect on health. According to WHO( 2014), health threats associated with thermal extremes include weather



disasters, infections, food-related illnesses, vector borne illnesses, photochemical pollution, and in extreme cases death. Investigators are agreeable that the climate is changing continuously. Climate change is doubted and misconstrued by non-experts largely due to communication challenges (Rohling et al., 2016). Conservative non-experts are proponents of climate change (Campbell Hibbs et al., 2014) who question its validity. Despite the devastating effects of climate change, which threaten the terrain and threaten people's livelihood (Ai Sian et al., 2017), it's largely the result of man exercise, such as burning fossil fuels (Royal Society, 2010 1), and is perceived else at different situations of conceptualization and knowledge (Onyekuru and Marchant, 2017). As a result of the enormous health and environmental impacts of climate change, world leaders formed the Paris Climate Agreement in 2015 to agitate the effect of their conduct and inactions on climate change (United Nations, 2018). Taking track to curb the climate change risk will provide the topmost opportunity for public health, argues Patz (2016). However, ozone layer reduction, drought, if way aren't taken to mitigate climate change greenhouse discharges. Generally, air pollution substantially caused by greenhouse gas discharges contributes to 7 million unseasonable deaths each year, according to WHO estimates (2018). (NCD, 2016) proposed that cultures associated with fossil fuel burning are responsible for fattiness, chronic and irrecoverable illnesses, and a worrying unseasonable death rate of about 5.3 million annually. Solomon and Larocque (2019) stress the impact fossil fuels have on the terrain, including flooding, wildfires, drought, air pollution, insect-borne illnesses, and other affiliated health issues. It's believed that fossil fuel burning shortens man life, with basic health issues posing a risk to man health and existence, with women and children in less developed countries suffering the most.

## METHOD AND MATERIALS

An online survey will be used as part of the study's quantitative research strategy. To be more precise, information from the state's three senatorial districts will be gathered to assess how climate change is perceived and how it affects both people and the environment.

A questionnaire will be utilized in this study to gather quantitative data. The study will produce primary data through structured outline surveys that are sent digitally. It is highly appropriate to utilize surveys to gather raw data for the analysis of quantifiable factors, and they can also be used to produce digital data from the study's participants

### Validity and Reliability of Data

A study's data reliability is determined by the credibility and consistency of its findings, according to Mellinger and Hanson (2020). Data generated in this study will be validated through the use of online questionnaires. By triangulating the project's data and conclusions, various qualitative methodologies are employed to offer confirmation and credibility for the findings at the same time. (Breskin et al., 2019) Both internal and external validity are possible. The external validity of project research refers to how much the findings from the study can be generalized beyond the current study, while the internal validity refers to how the dependent variable changes as a result of the independent variable. In this study, reliability will be assessed using Cronbach's alpha.

### Questionnaire Design

An online survey software will be used to manage the questionnaire. Using the respondents online, the respondent will be sent a link to the questionnaire.

### Sampling Technique

Sampling methods can be probability-based or non-probability-based (Singh and Singh, 2018). In probability sampling techniques, every element or member of a population has the same chance of being selected, while in non-probability sampling techniques, there is no equal opportunity. A purposeful sampling technique will be used to obtain quality responses for this study.

### Sample Population and Size

The sample population will be random selection from industry professionals and academic researchers to Civil Servants and Agriculturist. The sample size for this study is 300 respondents spread across the three geopolitical zones.



**RESULTS AND DISCUSSION**

The display and analysis of information gathered and compiled from questionnaire responses. A social sciences statistical software was used to analyze the data (SPSS).

The target audience for the survey, which was put out using social media platforms, was 300 people. However, 245 responses in total were received from the respondents, who included both experts in their professions and regular people.

**DATA ANALYSIS**

**Table 1: Respondents sex.**

Variable	Percentage
Male	68.16
Female	31.84
TOTAL	100

Source: Typeform Survey,2022

The table above depicts that 68.16 percent of the entire respondents are male while the female respondents constitute 31.84 percent.

**Table 2: Respondent Educational Status**

Variable	Percentage
O’Level	10.20
ND/NCE	15.51
HND/B.SC	49.38
No Response	6.14
Others	18.77
Total	100

Sources: Typeform Survey, 2022.

The information above reveals that 49.38 percent of the entire respondents possess HND/B.Sc. as educational qualification while those with ND/NCE represent 15.51 percent, O’level qualification represents 10.20 percent and others at 18.77 percent. This simply means that they had an understanding of the question raised.

**Table 3: What is your Local Government Area?**

Variable	Percentage
<b>Dekina</b>	24.48
<b>Ofu</b>	22.04
<b>Olamaboro</b>	7.76
<b>Koton-Karfe</b>	8.57
<b>Ijumu</b>	9.80
<b>Lokoja</b>	6.12
<b>Okehi</b>	11.43
<b>Adavi</b>	9.80
<b>Total</b>	100

Source: Typeform Survey, 2022

The information gathered from above indicates the three senatorial districts well represented, meaning, all Kogi State indigenes were well represented in this research.



**Table 4: What Do You Do for a Living?**

Variable	Percentage
Civil Servant	55.10
Farming	17.14
Fishing	13.06
Factory Worker	11.02
Business	3.63
Others	0.05
Total	100

Source: Typeform Survey, 2022

From the above data, the highest population of Kogi indigenes are Civil Servants, this is followed by Farming and fishing, and then Fishing.

**Table 5: Have You Ever Heard About Climate Change?**

Variable	Percentage
Yes	81.63
No	18.37
Total	100

Source: Typeform Survey, 2022

A higher population of Kogi indigenes have heard about Climate Change, with 81.63 percent agreeing to hearing about it and 18.37 percent saying no.

**Table 6: If yes, Do You Think It Has Affected You Directly or Indirectly?**

Variable	Percentage
Yes	74.29
No	25.71
Total	100

Source: Typeform Survey, 2022.

Those who have heard or know about Climate Change agreed that it is affecting them in one way or another, while 25.71 percent of the respondents said it has not affected them.

**Table 7: If No, Are You Willing to Learn About It?**

Variable	Percentage
Yes	100
No	0
Total	100

Source: Typeform Survey, 2022.

All respondents are willing and ready to learn about Climate Change.

**Table 8: Kogi State Has Checked Positive to All it Takes to be a Contributing Factor of Climate Change, do you agree?**

Variable	Percentage
Yes	68.25
No	31.75
Total	100

Source: Typeform Survey, 2022.

From this data, it can be inferred that 68.25 percent of the respondents believe that the state contributes negatively to Climate change while the remaining 31.75 percent do not agree.



**Table 9: How Prepared do you think Kogi State is to Mitigate against the Adverse Effect of Climate Change, in your own opinion?**

Variable	Percentage
Very Prepared	24.49
Prepared	28.25
Not prepared	47.26
Total	100

Source: Typeform Survey, 2022.

47.26 percent are of the opinion that Kogi state is not prepared to mitigate against the adverse effect of Climate Change, 28.25 percent and 24.49 percent said the state is prepared and very prepared.

**Table 10: Does Kogi State educates its indigenes on Climate Change?**

Variable	Percentage
Yes	8.16
No	91.84
Total	100

Source: Typeform Survey, 2022.

91.84 percent of the respondents said Kogi state does not educate its indigenes on Climate Change, while the lesser 8.16 percent agree that the Government educates them on Climate Change.

### DISCUSSION ON FINDINGS

The study has shown the attitude of Kogi state indigenes to Climate change and its effect, a finding that is reflected both in the case studies and in the statistical analysis. Moreover, the analysis of the responses from the questionnaire distributed shows that:

- 49.38 percent of the entire respondents possess HND/B.Sc. as educational qualification while those with ND/NCE represent 15.51 percent, O’level qualification represents 10.20 percent and others at 18.77 percent. This simply means that they understand the question raised by this study.
- That the three senatorial districts well represented, meaning, all Kogi State indigenes were well represented in this research, no part was left out.
- A higher population of its indigenes are Civil Servants, this is followed by Farmers and then Fishermen.
- A higher population of Kogi indigenes have heard about Climate Change, with 81.63 percent agreeing to hearing about it and 18.37 percent saying no
- Those who have heard or know about Climate Change agreed that it is affecting them in one way or another, while 25.71 percent of the respondents said it has not affected them.
- All respondents are willing and ready to learn about Climate Change.
- From this data, it can be inferred that 68.25 percent of the respondents believe that the state contributes negatively to Climate change while the remaining 31.75 percent do not agree.
- 47.26 percent are of the opinion that Kogi state is not prepared to mitigate against the adverse effect of Climate Change, 28.25 percent and 24.49 percent said the state is prepared and very prepared.
- 91.84 percent of the respondents said Kogi state Government does not educate its indigenes on Climate Change, while the lesser 8.16 percent agree that the Government educates them on Climate Change.
- When asked the question of how they will personally mitigate against the adverse effect of Climate Change, responses were diverse and came from different points of view and their individual understanding. Views went as follows;
  - Adoption of environmentally friendly energy for household use.
  - Helping to educate people about Climate Change and its effects on humans and environment.
  - Helping to educate about the dos and don’ts of maintaining a good climate.
  - The use of renewable energy for our day-to-day activities.





- Initiating campaigns on risk associated with Climate Change.
- By supporting and practicing green energy, green Africa.

### **SUSTAINABLE ENVIRONMENTAL DEVELOPMENT.**

The definition of environment includes the full scope of our planet's natural resources. This encompasses the interdependent biotic and abiotic factors. Air, water, land, and other biotic elements such as birds, animals, plants, forests, fisheries, etc. are abiotic elements. Therefore, the study of the environment is the study of how these biotic and abiotic elements of the environment interact with one another. (Bharucha, 2005).

Sustainability refers to quite just individual resources such as a river or farm; true environmental sustainability takes into account the entire biosphere, including the oceans, land, and atmosphere.

Environmental sustainability, talks about responsibly managing natural resources so that they will still be available in the future. This includes both limiting use of natural resources and protecting them from degradation. (study.com).

After all been said and done, Kogi state has many manufacturing companies, situated at Ajaokuta area of the state and also around Obajana, where ceramic companies are because of the minerals found in the former, steel manufacturing company and cement manufacturing companies located at the latter. Mining companies in numerous areas of the state, as the state is blessed with lots of solid minerals which are economically viable to the state. all these companies are operated with the use of fossil-fuels (burning of fossil-fuels) found in different Local Government Areas of the state. and all these are contributing factors to Climate Change (Global warming), this then raise the question on how to educate the indigenes on climate change and how to mitigate against the cause of global warming in their own little ways and endeavours.

Currently, climate change is a major obstacle to sustainability, as excess greenhouse emission pollution changes the chemical composition of the atmosphere and causes damage to natural resources. Other environmental issues — such as deforestation, habitat loss, species extinction, over-fishing, and excess water waste — arise when the environment is not used sustainably. (study.com). an important part of sustainability is education. many of us do not effectively use their resources because they don't know how to do so. the primary objective of environmental sustainability is to allow for sustainable development. Sustainable development ensures resources are used sustainably without negatively impacting economic process. Sustainable development requires consideration of environmental limits — also called planetary boundaries. These boundaries determine the maximum amount of degradation a resource can endure before it is severely compromised. to ensure environmental sustainability, resources must be carefully managed at both the global and local levels (study.com).

To sustain environmental development in Kogi state, the practice of environmental sustainability are often applied in three (3) major industries: Agriculture, Forestry and Energy; as these industries utilize large amounts of land, Air, soil and water. it is important to employ the best strategies to preserve these resources for future use. (study.com).

□ **Decarbonization:** Renewable energy could be a major point of sustainability. Energy use could be a large contributor to pollution and resource misuse. Renewables can produce energy indefinitely, unlike non-renewable energy sources, which are eventually exhausted. Renewable energy also typically produces less pollution than non-renewable energy. The switch to renewable and low-emission energy, require innovative ideas that go beyond electric power. Especially energy-intensive applications, heavy vehicles and therefore the process industry need power-to-x solutions to master the transition to clean energy. Low-carbon hydrogen offers high potential in industrial use. In Kogi State, production are the primary consumers of hydrogen, most of the hydrogen continues to be supplied using fossil fuels. Retrofitting these existing production facilities with Carbon Capture and Storage (CCS) technology, (moving from grey to blue hydrogen) is a technique to decarbonize hydrogen applications in the near-to mid-term. in the long term, these companies will benefit from the vast potential of low-Carbon hydrogen. (tuvsud.com).

□ **Mining:** can cause significant environmental damage and pollution. Recycling metals and minerals instead of discarding them reduces the amount that needs to be mined.

□ **Deforestation:** Deforestation ought to be prevented and replaced with sustainable forestry and land-



use practices. Crops effectively absorb ambient CO<sub>2</sub> because they breathe and store it. Therefore, there are two simple ways to address climate change. First, cut back on emissions of greenhouse gases including carbon dioxide, methane, and laughing gas. Allowing trees, oceans, and other natural structures to act as carbon sinks—as they do inherently—will help remove CO<sub>2</sub> from the atmosphere. We can promote this removal of greenhouse gases from the atmosphere by putting an end to deforestation, destroying ocean habitat, and encouraging sustainable forestry. 2019 (Nikita).

□ **Agriculture:** methane gas released in animal waste, contribute to global warming, even in farming, over use of the lands is imminent. Practice the fallow or the crop rotation can help to sustain our lands for a touch more time before depletion.

## RECOMMENDATION

During the course of this study, it became clear as day, that there is a need for more awareness and education with strict compliance to set down rules on mitigating against Climate Change.

Again, Climate Change campaign should be taken to the hinterlands, villages, hamlets and this should be done in our native dialect (for the un-educated to fully grasp the concept and try to make adequate adjustments).

On decarbonization, due to the technological complexity and high amounts of clean energy needed, the industry will require political support and low renewable electricity prices to access the opportunity for decarbonization.

This research will be of immense importance to meeting the sustainable development goal, it is important for environmentalist, development planners and communities. It would benefit the government and people of Kogi State and Nigeria.

It would be interesting to environmentalist and researchers and policy makers men, who have interest in sustainable energy generation that is affordable, accessible and carbon free.

The research will also be of great relevance to other researchers who could take findings from this research work as a basis for further investigation.

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