"I don't care about climate change": Climate skepticism, knowledge, and climate change engagement in Nigeria
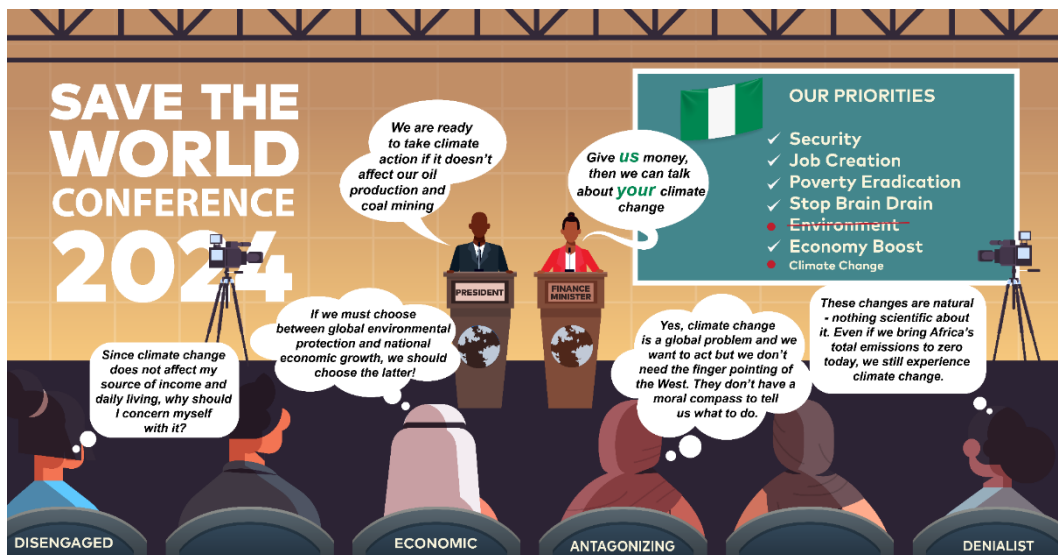
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Abstract

Over the years, climate change has been viewed in different ways, through scientific, natural, social and political lenses. This study explores the different ways in which people engage with climate change, including the linkages between access to knowledge and skeptical representations of climate change. Primarily, the study focuses on climate change skepticism in Nigeria.

Climate change skepticism has largely been examined in developed countries. Through my research, I show that insights from Nigeria, a developing country, can be useful to provide a broader and improved understanding of how climate change skepticism can be approached globally.

Using social representations (SR), a theory used in environmental communication research, I explore how Nigerians construct climate change and its implications. This research shows how the acknowledgement of climate change does not imply a complete absence of skepticism; building on that, the forms, structures and types of climate change representations that react with skepticism are presented. Through a qualitative analysis of 17 semi-structured interviews carried out across four Nigerian states, I examine how climate change is represented in different ways and the elements of skepticism that emerged. Four different social representations of climate skepticism in Nigeria emerged: disengaged, economic, antagonizing, and denialist. In particular, I examine the integration of economic scenarios, assessment of development inequalities, and missing localization of climate indicators into those for social representations.

Thereby, my thesis contributes to an improved understanding of climate skepticism in a developing country such as Nigeria – an under-researched issue –, situating these representations in their respective contexts, and offering a framework to engage with other universal topics that have tendencies for polarization.

Keywords: *Climate change; Climate skepticism; Climate knowledge; Social representations; Nigeria*

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Abbreviations

SR	Social Representations
GHG	Greenhouse Gases
SDGs	Sustainable Development Goals
IPCC	Intergovernmental Panel on Climate Change
COP	Conference of the Parties

1. Introduction

1.1 Background

"They ban coal, and we follow, they say firewood is not for fetching… they say we need to plant more trees and they are not giving us money. We need to open our eyes and tell the West, if you don't guarantee our finances and work with us to stop this, we are not going to comply with your climate change."

Nigeria's President Bola Ahmed Tinubu, October 17, 2022 (The Cable 2022).

As climate change increasingly becomes topical globally, individuals' and groups' knowledge about climate change is continuously evolving. People are exposed to and rely on different types and sources of information to make sense of climate change, an abstract concept.

Since climate change cannot be seen, smelled, heard, or touched as a discernible object, O'Neill & Hulme (2009) maintain that people make sense of and propagate climate change based on their interpretations. These interpretations, or more specifically, representations are epistemological that is, linked to knowledge they can relate to and understand. Similarly, these representations are formed by the process of group interactions (Moscovici 1988). Some of these representations lean on how the causes of climate change are multiple, the indicators are complex, the impacts are uncertain and interrelated, current mitigation efforts are hard to measure, and the potential solutions are unclear and might even cause further problems. These arguments justify the consideration of climate change as a 'wicked problem', or even a 'super-wicked problem' which is difficult to make sense of holistically and has no single path to addressing it (Saab 2019). Dunlap (2013) states that the complex nature of human-induced climate change and uncertainties in the risks it creates make it challenging for laypersons to understand its causes, perceive its impacts and take actions that might help alleviate future warming.

To organise people's understandings of, and engagement with, climate change in Nigeria, I have attempted to bring closer to them what might otherwise be

considered distant or non-topical. I do this by drawing answers to these five questions from the interviews conducted: (i) what is climate change seen to be? (ii) how is it evident or proven? (iii) who is seen as responsible? (iv) what must be done about it and by whom? and (v) how soon should something be done? – if there is a need to do something in the first place. Though the answers vary, they remain central through this research as patterns can be seen based on epistemic positionalities and community interactions. The answers to these questions bare why we have different representations of climate change that intersect and/or diverge to various extents, and the elements of skepticism.

As Capstick & Pidgeon (2014) describe, people or groups holding doubts about climate change and maintaining positions that challenge the normative, usually science-backed knowledge of climate change are referred to as 'skeptics'. Skepticism concerns itself with various aspects: on the one hand, the physical and scientific aspects; and on the other hand, the social, political, and behavioural aspects. It is worth keeping in mind that when people represent their construction of climate change with elements of skepticism, they do not necessarily deny that climate change exists. Associated with the constitutive nature of environmental communication (Cox 2010), there are blurred lines between what people know, what they mean to express, eventual ways of representation, and how their thoughts are interpreted by the receivers.

President Bola Tinubu of Nigeria (see quote above) is one of many voices contributing to the climate debate through what could be seen as "skepticism". The US' former president Donald Trump's description of climate change as a "hoax" (Time 2019) and Brazil's former Foreign Minister saying, "There is no climate change catastrophe" (Reuters 2019) contribute to this debate with similar representations.

However, these types of views are not just articulated by politicians. Ivar Giaever, physicist and Nobel Prize winner in 1973 frames climate change as lacking compelling data and a "new religion" for scientists (Morano n.d.); Björn Lomborg, economist and self-acclaimed skeptical environmentalist argues that climate change is not nearly as much a tragedy as it is portrayed (Jowit 2010). Journalists such as Matt Ridley question the scientific position that current emissions will lead to catastrophic environmental changes (Nuccitelli 2013). There are religious leaders who have presented their anti-environmental or climate skepticism beliefs in their knowledge that the end of the world is near and the earth will be consumed by fire anyway (Veldman 2019).

Looking at these multiple dimensions through which people present their climate skepticism, it becomes important to understand the underlying reasoning behind

their arguments and their construction of climate change. Acknowledging the unfamiliarity of climate change and the need for people to associate it with what they already know, we see that opinions about social topics are not formed in isolation. Inferring from Moloney et al. (2014), in addition to relying on an established body of knowledge, through interactions with other individuals, in groups, institutions, media and among communities, people make sense of, and transfer their understanding of socially relevant or problematic concepts and/or practices.

In this context, Social Representation (SR) theory becomes relevant to examine how climate change as a social phenomenon is constructed, understood, and presented by individuals or groups. Social representations, according to Marková 2008), is a "theory of social knowledge concerned with how individuals, groups, and communities collectively make sense of socially relevant or problematic issues, ideas, and practices" (p483).

The justification for this research focusing on social representations of climate change with elements of skepticism in Nigeria is not far-fetched. Three references illustrate why this research is interesting, timely and relevant for understanding Nigerians' shared beliefs and knowledge about climate change. The first is based on the discussions that ensued when Nigeria sent over 1400 delegates to attend the United Nations' 28th Conference of Parties (COP) in Dubai in December 2023 (Samuel 2023). The second stems from the divergent views criticizing Nigeria's positioning to benefit from the loss and damage funds operationalized at the same conference (Fagbohun 2023), a financial mechanism meant to help developing countries, such as Nigeria, cope with the effects of climate change. The third reference is connected to the recent attention that Africa has received from the international climate change community, in the light of the continent being considered as having huge deposit of materials needed for energy transition (Ogbonna et al. 2023). Putting together these three references points us to the various climate change representations and how skepticism materializes, in this case – in Nigeria, but also potentially in other similar climes.

In what ways do Nigerians with climate change views associated with skepticism express themselves? Are there specific contexts in which skeptical claims or alternative representations of climate change are framed? What informs these skeptical representations about climate change? How do these skeptical representations relate to the general understanding of climate change in Nigeria?

There is an abundance of literature that explores social representations of climate change, but little about climate skepticism and none that is focused on Nigeria. Using Social Representation (SR) theory, this research therefore aims to examine

social representations of climate change in Nigeria that involve elements of skepticism.

1.2 Aim and research questions

The aim of this research is neither to fuel the climate skeptics' movement, nor is it meant to validate the arguments of those who put forward alternative representation to the scientific consensus on climate change. This study provides a context for understanding climate skepticism in Nigeria reflecting the level of climate knowledge and contributing to broader climate change conversations, beyond Nigeria.

To this end, I pose the following research questions:

1. How is climate change represented in Nigeria and through what representations does skepticism become visible?
2. In what ways do these different representations relate to each other?
3. What is the connection between sources of climate change knowledge and representation of skepticism?

Beyond the context of climate skepticism, I hope that the insights from this research may also be useful to navigate polarization expressed through divergent representations that arise in other related contexts.

1.3   Structure of the study

This thesis begins with an introductory part that provides a background and outlines the research questions answered through the research. Using literature, the second section provides a robust description of climate skepticism including: the origin and rise of climate change skepticism, an overview of climate change perceptions globally and more specifically knowledge about climate change in Nigeria.

This is followed by the third section, detailing social representations (SR) as the main theory and conceptual framework used to analyse the interviews obtained. This section depicts how the climate change representations with elements of skepticism are structured and the types of social representations. Anchoring and objectification, two fundamental communicative mechanisms of social representations are also presented, emphasizing their relevance in understanding how skepticism could be represented.

The fourth section of this paper is the methodology section where I outline the data collection procedure (primarily through semi-structured interviews), and how data obtained were qualitatively used within the conceptual framework of social representation theory. In this section, I have also mentioned some limitations of this research and reflected on my position as the researcher.

The results are detailed in the fifth section where four different representations of climate change that were characterised by skepticism are presented: disengaged, economic, antagonizing and denialist representations. A further analysis of each representation is examined along the lines of the conceptual frameworks and other relevant concepts (such as hegemonic SR, emancipatory SR and polemic SR; role of knowledge; central core and peripheral element; anchoring and objectification).

The thesis is wrapped up, in section six, with an overall reflection on the process and outcome of the research. Here I also draw conclusions, outline some limitations and make recommendations.

2. Literature review

2.1 The origin and rise of climate change skepticism

Skepticism about climate change is not as recent as some might think, though such views have become more expressed and intensely engaged recently. The timeline in Figure 1, based on Weart (2011), gives a glimpse of how climate change skepticism has been expressed and developed since its earliest reference in 1896.

Climate skepticism can be seen to have its roots since 1896 when Swedish physical chemist Svante Arrhenius estimated that doubling the level of carbon dioxide in the atmosphere would raise the mean global temperature by several degrees. As Weart (2011) puts it, Arrhenius' knowledge was refuted and dismissed by the public, leading to outright rejection in 1900.

By 1956, new findings by physicist Gilbert N. Plass emerged, who used spectroscopic data, theories and electronic calculators to prove that adding carbon dioxide to the upper layers of the atmosphere blocks additional heat radiation from leaving the planet. Charles David Keeling followed up on this by measuring the global carbon dioxide level directly and announced that the CO2 level was indeed rising, and predictions of global warming could no longer be dismissed as fallacious (ibid).

The early 1970s saw the introduction of computer models that bore a rough resemblance to reality. Ice caps drilled in Greenland and the Antarctic in 1980 confirmed the linkage of carbon dioxide and increased global temperature. However, it was not until 1985 at a conference of experts in Villach, Austria, that it was affirmed that global warming was a problem so severe that governments should consider policies to restrict emissions of all greenhouse gases. Another international conference of scientists in Toronto in 1988 concluded that anthropogenic climate change posed a major risk to the security of many nations.

This announcement brought about division and shifting of grounds among climate scientists carving out two separate groups: 'non-skeptics' and 'skeptics' (ibid).

2.2 Overview of climate change perceptions globally – with a focus on skepticism

Our understanding of the natural environment evolves and this explains why we will continue to see multiple characterisation of subjects such as climate change. People give different meanings and display various practices in their presentation of climate change and how it should be engaged (Vulpe 2020). At the initial stage, climate change was engaged as a strictly scientific concept, then as a natural occurrence. However, climate skepticism became more popularized when people began to present climate change as a social topic and political tool (ibid).
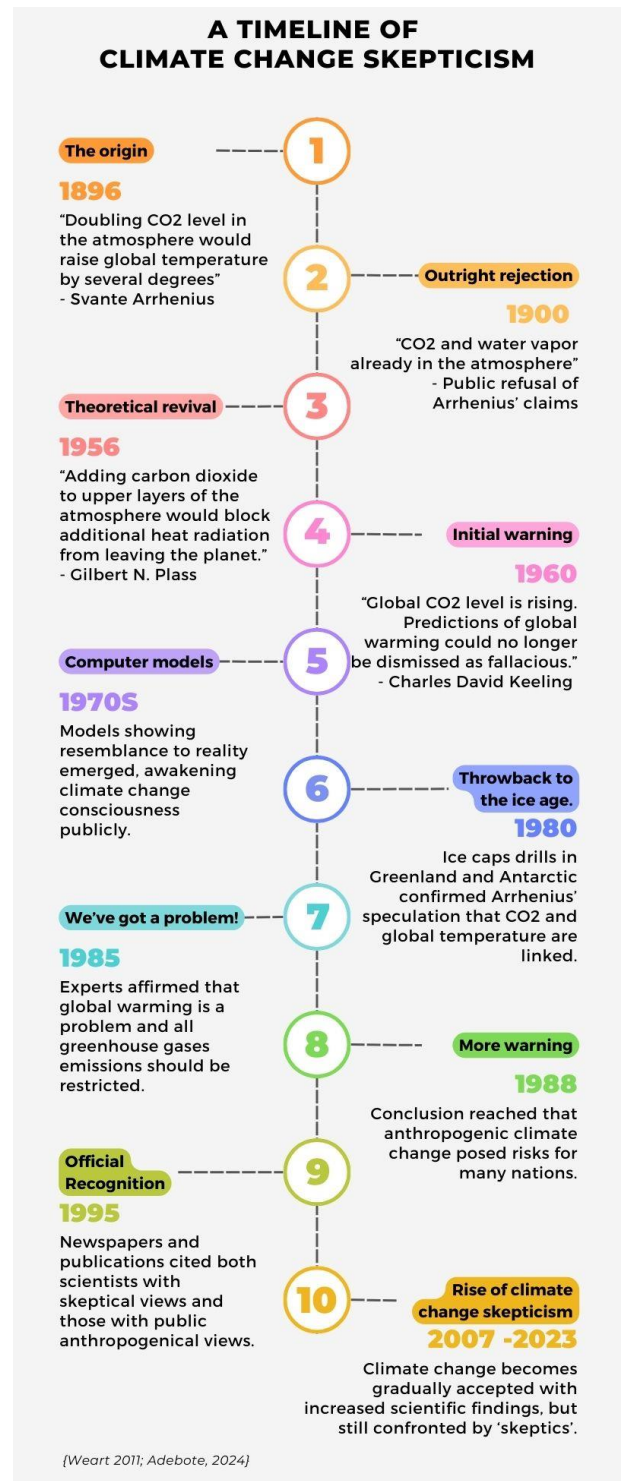
Figure 1. Timeline of climate change knowledge reflecting skepticism based on Weart, 2011.

There is a growing body of scholarly research that seeks to engage with climate skepticism – though mostly in developed countries like the USA, Australia, and parts of Europe. Ojala (2015) noted that:

> *"Although there is a fairly widespread scientific consensus that climate change is serious and to a large extent induced by humans (Brysse et al. 2013; IPCC 2007, 2013; Royal Society 2010), there is still quite a significant proportion of people all over the globe – including in low and middle-income countries – who are skeptical and who deny the seriousness of the climate threat (Davidson and Haan 2012; Eurobarometer 2009; Jackman 2009; Poortinga et al. 2011; Whitmarsh 2011)"* (Ojala 2015, 1135, 1137).

The diverse views of those denying the seriousness of climate change and what their associate themselves with serves as the primary source from which divergent climate change representation stems.

The United Nations, echoing the Intergovernmental Panel on Climate Change's (IPCC) report, acknowledge that climate change is real, already negatively affecting every inhabited region of the Earth and that human influence is the 'unequivocal' factor behind it (IPCC 2023). As the Secretary-General of the United Nations, Antonio Guterres puts it, "Scientific evidence is irrefutable… greenhouse gas emissions are choking the Earth and placing billions of people in danger" (Afinotan 2022:289).

97% of the scientific community agree that human activities are a major factor in current levels of climate change (Fischer 2019), however this scientific 'truth' is being challenged by a small minority. This is where a broad categorization into two groups, based on their climate change views, stems: "non-skeptics" and "skeptics". Non-skeptics are individuals or groups who accept scientific information about climate change, publicly defending those scientific views as common sense. In contrast to non-skeptics are skeptics that challenge scientific claims and often dismiss what others refer to as 'authentic' climate change references.

However, scholarly attempts have made further classification that carves out the concept of 'denial' as separate from 'skepticism'. Dunlap (2013) defines 'skeptics' as people or groups holding a skeptical view about climate change or Anthropogenic Global Warming while remaining open to evidence that might influence their positions. On the other hand, deniers are those who are in complete denial mode and have their minds made up. Fischer (2019) engages with the type of arguments that climate deniers put forward, he argues that climate deniers are not collectively concerned about the facts per se, rather, it is about the meaning

attached to them and the implications for them or their groups. This research focuses on skepticism – not denial.

It is not difficult to draw some type of relationship between climate skepticism and climate disinformation or misinformation. In Nigeria, it is usual to see people express skepticism as a result of climate misinformation they have been exposed to. Parallelly, people's confident and convincing expression of their skeptical views might be adopted by others as based on 'fact', thus cultivating the ground for climate misinformation to grow.

Ulrich (2022) reveals that misinformation campaigns exacerbate political polarization and decrease public trust in the scientific consensus on climate change, which has effectively delayed climate action for nearly seventy years. Feigning ignorance to climate skepticism has the potential to endorse spreading misinformation, obstruct development, and question scientific or academic relevance, especially considering how organized climate change denial and skepticism is being extended with well-funded conservative think tanks spreading from the US to other nations such as Great Britain, Canada, Australia, Denmark, and New Zealand (McCright & Dunlap 2011a). This calls for the need to examine, even in other parts of the world, how alternative knowledge about climate change are formed and brought to the fore and the interactions with climate skepticism (and, in the extreme, climate change denial).

As polarization about climate change views continues to increase, previous research such as Weber (2016), Vázquez et al. (2021) and Poortinga et al. (2023) has reflected on the reasoning of skeptics about the reality, causes, and impacts of climate change. Using political ideologies, social status, gender and age, these scholarly works have made inferences that agree with each other. For example, individuals with allegiance to certain political or social orientations justify their preferred system and its ideologies, even if it means denial of ecological problems and less willingness to take pro-environmental actions; wealthy individuals undermine support for pro-environmental behaviours; older people are more likely to express skeptical views than younger people, the latter being more concerned about the environment in general; and gender-wise, men are more skeptical about climate change than women (Poortinga et al. 2019).

Rahmstorf (2004) presents three dimensions of climate change skepticism: (1) Trend skepticism, which is about denying altogether that there is a problem with rising global temperatures; (2) Attribution skepticism, which is about denying that climate change is caused by humans to a large extent; and (3) Impact skepticism, which is about doubting that the future negative effects of climate change will be as powerful as many researchers claim. For my study and in line with the research

questions posed, I refer to Capstick & Pidgeon's (2014) two major forms of skepticism concerning climate change: epistemic and response skepticism. Epistemic skeptics are those who question the expertise while Response skeptics are those who question climate actions (Capstick & Pidgeon 2014:394).

2.3 Climate change perceptions and climate skepticism in Africa, with a focus on Nigeria

Our perceptions of climate change are not only imposed by experiencing changes in the climate, but they are also created through culture. Human cultures are central to how views are constructed on divisive topics, which explains why people's understandings of climate change, embedded in geographical, historical, and cultural knowledge, vary from each other.

Various studies have evaluated the perception of climate change among different groups. Klöck, C. (2021) in Afinotan (2022) emphasized that people in more developed countries (where there is improved access to information) have stronger, or more informed opinions about climate change – maintaining either skeptical or non-skeptical views, compared to those in less developed countries. Polls in the United States have shown that about 53% of the population consider climate change to be an 'urgent problem' requiring swift and immediate action, while 60% regard climate change as one of the most serious problems in the world even ahead of the economy or international terrorism (Hobson & Niemeyer 2013; Afinotan 2022).

Africa has been described as the most vulnerable region in the world to the impacts of climate change, where damages from climate change, relative to population and GDP, will be higher than in any other region in the world (AfDB 2011). However, in terms of access to information or public knowledge about climate change, Nigeria, and many other African countries, presents a contrasting picture when compared to developed countries.

Though climate change awareness appears to be higher in urban parts of Nigeria than in rural areas, results from general surveys in rural and urban areas infer that on aggregate only 30 per cent of Nigeria's total population were aware of climate change (Vipene 2016). Surveys by NOI Poll (2023) agrees with Vipene (2016) that more than six out of ten Nigerian have never heard about climate change.

Another survey carried out by Vipene (2016) among academic staff across six universities in southern Nigeria revealed that only 13% know about climate change

and 61% never discussed it among themselves. Students in tertiary institutions associate different meanings to climate change based on perceptions formed in connection with their views of the physical environment, the level of courses taught on climate change, and the degree received in tertiary education (Vipene 2016).

Similarly, Ayanlade & Jegede (2016) conducted a survey among Nigerian graduates and reported that in terms of awareness, 13% of the respondents agreed that there is a high level of awareness about climate change within the study area (the sampled institution), 33% of the respondents said they do not know and majority 54% of the respondents declined to respond (Ayanlade & Jegede 2016).

Riding on this, people with skeptical representations of climate change use resources at their disposal to influence the climate debate in ways that gives rise to climate skepticism. (Igbashangev et al. 2024).

Though considered a minority, it is important to note how individuals or groups with skeptical views link their position to other topical subjects in ways that shapes the broader understanding of climate change in Nigeria. This increase in polarized and skeptical views about climate change in Nigeria is anchored in themes such as politics, economics, climate justice, religion, historical records, the truthfulness of science, etc. Some of the ways that climate change has been framed and described by Nigerians include constraining Africa's energy and development choices (Osinbajo 2022), a clear handwriting of the West, an agenda to keep Nigeria (and the global south) under-developed, and a distraction from national priorities (Fasua 2016), among others.

When individuals or groups put forward claims that there is a need for more evidence bothering on anthropogenic climate change, we cannot label them deniers and ignore their claims. As Igbashangev et al. (2024) posit, people with some degree of skepticism in their representations of climate change are not outright deniers. It is therefore important to have a better understanding of why people make such claims. The myriads of skeptical viewpoints about climate change among a diverse group of people (irrespective of what fuels their positions) will continue to influence the collective body of climate knowledge being circulated in Nigeria – and beyond.

Nigeria, a developing, oil-producing, and oil-dependent country in the sub-Saharan region of Africa has been considered and chosen as a case for this project, primarily because it takes the focus away from 'the usual suspects'. In developed countries, hundreds of studies seeking to understand climate skepticism have been carried out, mostly identifying conservative, older, white, rich men as the group more likely to espouse skepticism and as active promoters of skeptical views about climate change

(McCright & Dunlap 2011a). These 'usual suspects' using their self-reported understanding of global warming have challenged the reality of climate change via conservative talk radio, websites, television news, and newspapers (McCright & Dunlap 2011b: :1171). McCright (2011) links this to a form of identity-protective cognition, reflecting a system-justifying tendency. Other researchers like Grindal et al. (2023) have also emphasized white identity in the formation and promotion of climate change skepticism to enhance their social dominance. One of such identity-based arguments that challenges scientific climate change recommendations is fuelled by groups and individuals that hold a strong social dominance. To them, embracing degrowth (that is, slowing down or halting economic growth to ensure environmental sustainability) directly challenges their political, economic, and cultural standing. Even within Nigeria, social dominance is associated with people's representations of climate change (Afinotan 2022).

To my knowledge, there is no scientific publication that seeks to understand or explore the dynamics of climate skepticism in Nigeria through social representations. Therefore, this research offers a new approach, with insights into dealing with climate skepticism in Nigeria and may serve as a basis for understanding climate skepticism in other parts of the world – particularly developing countries.

2.4 Climate change in Nigeria

Africa emits less than 4% of global greenhouse gases (GHG), which are primarily responsible for global warming and climate change. However, Nigeria is one of the top five GHG contributors on the continent and the greatest GHG emitter in Africa through the gas flaring from its oil and gas industry (Afinotan 2022).

Nigeria has Africa's largest population and economy. The World Bank (n.d.) describes this West African country as a multi-ethnic and culturally diverse federation, having approximately 202 million people and one of the largest populations of youth in the world.

Increased surface temperatures causing expansion of seawater and melting glaciers and ice sheets are largely responsible for sea level rise impacting Nigeria's economic capital Lagos, as well as Abidjan and Accra because of their low-lying coastal position on the African continent (ISS Africa 2023). If there is no sharp reduction in greenhouse gas emissions, global warming is projected to exceed the 1.5 degrees celsius threshold leading to changes that could become irreversible and more severe climate consequences, especially for such low-lying African countries with lower adaptive capacity (IPCC 2022).

Scholars such as Idowu et al. (2011) have recognized Nigeria's vulnerability to climate change highlighting adverse effects experienced across the 36 states of Nigeria and the Federal Capital Territory. Rising temperatures, unpredictable weather patterns, increased frequency of extreme weather events such as floods and droughts, and a notable rise in sea levels along its coastal areas are some of the many indicators of the effects of climate change in Nigeria (ibid.).

Haider (2019) divulges the unique impacts of climate change in Nigeria across geographic and sectoral specifics. The Northern region is considered most vulnerable experiencing a combination of rising heat, less rain hastening desert encroachment, loss of wetlands, fast reduction in the amount of surface water, flora and fauna resources on land. The southern region, though considered 'relatively less vulnerable' continues to witness sea level rise, increased precipitation, coastal erosion and flooding – which has resulted in the displacement of many settlements.

The sectoral impacts of climate change in Nigeria also varies. For agriculture, with about 70 percent of the country's population engaged in (mostly rain fed) agriculture-related livelihood, unpredictable rainfall variation makes it difficult for farmers to plan their operations. Coupled with higher temperatures, droughts, and desertification reducing farmlands, this results in lowers agricultural productivity (Haider 2019).

In the context of energy, climate change is impacting negatively the already limited electrical power supply in Nigeria. Reflecting in the impacts on hydroelectric and thermal generation, reduction of the availability of trees and biomass for fuel, flooding damaging energy transmission lines and substation equipment. Climate change also has serious implications for human health in Nigeria. This is reflected in various ways, for example, heat waves leading to mental stress and increased cases of meningitis, malnutrition due to food shortages, spread of infectious disease and food and water-borne illness (e.g. typhoid fever, malaria, cholera); increased air pollution leading to respiratory ailments. Security wise, the massive emigration and resettlement of people to areas less threatened by desertification pose threats to the security situation in Nigeria through conflict over resources. This has exacerbated communal clashes among herdsmen and farmers and inter-ethnic clashes, some of which have turned deadly (ibid).

3. Theoretical framework: social representations

3.1 Climate skepticism from a social representations perspective

At the core of this research is the aim to understand how climate skepticism is constructed and how these skeptical views or arguments are related to climate change representations in Nigeria. Social representation (SR) theory is a conceptual framework that helps understand the collective thinking in society. Here, I use a social representations (SR) lens to make visible prominent themes, associated social practices, knowledge sources and key skeptical arguments. I draw upon Marková's (2008), Moscovici's (1973, 1988, 2000) and Höijer's (2011) definitions of social representations. These definitions help with the understanding of why climate change as a social object remains a subject of debate, evoking strong feelings, with the possibility of leading to conflicts based on ideological struggle.

Social representation is a "theory of social knowledge concerned with how individuals, groups, and communities collectively make sense of socially relevant or problematic issues, ideas, and practices" (Marková 2008:483).

Höijer (2011:3) concisely defines social representations as "processes of collective meaning-making resulting in common cognitions which produce social bonds uniting societies, organisations and groups".

Moscovici who coined the term "social representations" and remains one of the most referred to scholars in this field defines social representations as "a system of values, ideas and practices with a two-fold function: first, to establish an order which will enable individuals to orientate themselves in their material and social world and to master it; and secondly to enable communication to take place among members of a community by providing them with a code for social exchange and a code for naming and classifying unambiguously the various aspects of their world and their individual group history" (Moscovici 1973:xiii). Acknowledging that

social representations are not static, Moscovici further developed SR as "networks of ideas, metaphors, and images, more or less loosely tied together that are socially developed and shared over time" ((Moscovici 2001:153).

Just as Wibeck's (2014) sense-making theory to which social representations are closely related, social representations theory can be a useful conceptual framework to get a grasp on climate skepticism. The concept of social representations can help with the analysis of both commonalities and variation in a broad international context. It is also context-sensitive as it presents an understanding of how actors in different cultural settings make sense of globalized concepts that are expected to find common ground worldwide (such as democracy, civil rights, equity, sustainable development, societal transformation, gender equality, and migration) (Wibeck 2014).

3.2 The structure of social representations

As earlier stated, over the years, the subject of climate change has evolved (and continues to evolve) from a purely scientific issue to a social one. As social groups are exposed to, and present, knowledge about climate change and its impacts, questions arise from opposing groups regarding how newly shared knowledge conflicts with previously held positions. How groups form their representations of climate change could be structured through questions such as: (i) what is climate change seen to be? (ii) how is it evident or proven? (iii) who is seen as responsible? (iv) what must be done about it and by whom? and (v) how soon should something be done –if there is a need to do something in the first place?

To understand the structure of social representations, Wachelke (2012) references Moscovici's (1961, 1976) work where he proposed that three minimum conditions have to be satisfied in a given SR context. First, there should be a social object that must be ambiguously defined. Secondly, people should feel the need to infer about it; and thirdly, there must be different aspects of that object that are salient for different groups. Where these three conditions are met, Wachelke (2012) and Monaco (2016) explain that representation is then formed by two qualitatively different elements: a central core and a peripheral element.

Baquiano & J Mendez (2015), building on Abric (2001, 2012) and Moliner (1995), describe the central core as the main element, which determines the significance of the representation as a whole as well as its structure. It is stable and non-negotiable and plays a key role in the functioning and the dynamics of representations (Abric 1996). The central core can be a belief, an opinion, or an attitude. The central core includes a few key elements that generate the global meaning of the representation

and organize the whole structure. The central core elements have strong historical and ideological roots and are consensual within a group. "It is the central core that defines and distinguishes representations; one can say that two representations are different when at least one element from their cores is not the same" (Wachelke 2012:731).

The peripheral elements, on the other hand, are organized around the central core, as explained by Baquiano & Joy P. Mendez (2015) making references to Abric (2012). They are flexible, adaptable, may be constantly changing and can put up with a group's interindividual differences, that are not necessarily shared within the group. They also serve to protect the central core. "The peripheral system integrates particular information to the structure, connecting it to environmental practices and modulations. […] Due to its flexibility, one of its functions is to defend the central core contents against contradictions; if there is a situation that challenges the meaning of central elements, the peripheral system is activated and tries to justify the contradiction in order to endure it" (Wachelke 2012:731).

3.3 Types of social representations

Moscovici (1988) distinguished between three types of social representations: hegemonic, emancipated and polemic. Jaspal et al.'s (2014) additional reflection helps to make these types of SR applicable to the context of identifying climate skepticism. Hegemonic representations are shared, often consensually, by members of a group or structured macro unit; such views are coercive and uniform. In the context of climate change, a hegemonic view within the global scientific community will be that the climate is changing largely as a result of human-induced industrial developments (Cooper et al. 2002).

Outside of those with hegemonic representations, the two other types of representations (emancipated and polemic) are categorized as 'alternative representations' by Gillespie (2008). Alternative representations are potentially competing representations from within a social representation. Linked to climate skepticism in Nigeria, alternative representations present themselves when "they" phrases (Gillespie 2008). These arguments could take forms such as: "They think they can tell us what to do about climate change!" "They claim to have the solutions…" or "They say we must act now!"

Emancipated representations as initially portrayed by Moscovici (1988) emerged from subgroups that create their own versions with "a certain degree of autonomy with respect to the interacting segments of society" (Moscovici 1988:221). An emancipated representation as Jaspal et al. (2014) further breaks down is developed

by subgroups within a larger social collective. These are views that emerge as a result of outgrowths of information and distinctive knowledge within these subgroups, usually constituting developments or minor amendments of the overarching hegemonic representation (Jaspal et al. 2014). Departing from a hegemonic representation that anthropogenic climate change will have negative outcomes for humanity, an emancipated representation, for example, might claim that since Africa is responsible for less than 4% of global greenhouses gases (UNFCCC 2006), if the continent complies with current climate change response mechanisms, this would only limit its economic and social development, while contributing little to mitigation.

The third type of social representations, polemic representations, can be said to be directly associated with climate skepticism. Polemic representations are predominantly generated in the course of social conflict, determined by "antagonistic relations", "struggles between groups", and "intended to be mutually exclusive" (Jaspal et al. 2014). Typically, polemic representations are perceived as being peripheral to "mainstream" thinking and thus unworthy of attention (e.g. McCright, 2007). However, there are possibilities, as Jaspal et al. (2014) al. posit, that some polemic groups may gain relevance and attempt to "upgrade" their representations of climate change to hegemonic status to advance their personal or collective goals. A vivid example of this is the climate critics' contestation of the ideas of the majority of climate scientists. While scientists present to the public that climate change is dangerous and largely dependent upon human activities, the critics (with polemic views) collectively challenge the legitimacy of this hegemonic representation (McCright & Dunlap 2011b; Jaspal et al. 2014).

In the context of climate skepticism, we can build on Jaspal et al. (2014) and Moscovici (1988) to further explain the two extremes of hegemonic and polemic representations. The hegemonic social representation of anthropogenic climate change gives rise to an understanding that in order to mitigate climate change, individuals will need to change their behaviour and that national and regional institutions will need to rethink current economic and industrial policies. In reaction to that, polemic representations (usually associated with conservative think tanks) question the reality of climate change, asserting climate change is a result of predominantly natural processes and encouraging individuals to do nothing since any attempt to mitigate climate change is regarded as futile (Jaspal et al. 2014).

3.4 The role of and sources of knowledge in social representations

It is argued that social behaviours are shaped by shared social knowledge. Our knowledge of the world becomes shared by others within specific communities that we belong to. This explains the transformation of individual representations into socially accepted facts, leading to the type of solidarity necessary to constitute a basis for people to act, and more particularly, to act together (Elcheroth et al. 2011).

Knowledge itself has been investigated across a variety of domains. In Nigeria, Vipene (2016) argues that lack of information and knowledge about climate change means that many Nigerians are reluctant to accept the reality.

Knowledge creation draws inferences from what is already known and is usually a collaborative process involving many individuals contributing their knowledge and building on and/or combining the contributions of others (Cress & Kimmerle 2008). With respect to climate change, knowledge could be created by different groups in varying contexts based on how they attribute meaning to climate change based on things previously known.

Knowledge about climate change is not fixed, but rather dynamic. This is why there are distinctions in how people and groups represent their understanding of climate change, what they say, how they say it and what effect it has within the social spaces they belong to. It is equally worth noting as Höijer (2011) argued that social representations (SR) are not to be seen as logical and coherent thought patterns. They may instead be full of thought fragments and contradictory ideas but SR alone cannot take the place of scientific knowledge, which informs hegemony representation in the context of climate change.

Another way to approach the role of social knowledge in Social Representations (SR) is to expand on the argument that what shapes social behaviour is shared social knowledge. Elcheroth et al. (2011) connects this by stressing two points: one, that "what matters is not our idiosyncratic experiences but our knowledge of things that are experienced at a collective level" (p736). Secondly, "experience impacts on our knowledge through the way we make sense of it in terms of shared bodies of knowledge which exist not only in our own minds but also in material culture: books, films, newspapers, museums and so on" (Elcheroth et al. 2011, 736).

It is possible to see individual representations being transformed into something that becomes socially accepted through the attainment of a common interpretation of shared experiences. Equally, new production of meaning or knowledge is born from the interactions between the object and subjects at all levels, including

individual, group, institution, or at a massive scale, for example, social media (Elcheroth et al. 2011). In the end, these collective thinking(s) or beliefs of those who stand within our communities and also those who stand against our communities determine a range of socially accepted or questioned positions.

From the foregoing, it is clear that the SR approach emphasizes communities and communication in the creation of knowledge. Communication is how knowledge is shared within communities, this can take various forms from direct communication (word of mouth, conferences, dialogues) to (mass-)mediated communication (internet/social media, traditional media: radio, television, newspaper and other forms of publication such as journals).

3.5 Anchoring and Objectification

Knowledge about climate change is not fixed, rather dynamic. This is why there are distinctions in how people and groups represent their understanding of climate change, what they say, how they say it and what effect it has within the social spaces they belong to.

Since all representations aim to "make something unfamiliar, or unfamiliarity itself, familiar" (Moscovici 1988:24), anchoring and objectifying are two basic socio-cognitive communicative mechanisms that help make sense of a potentially obscure and esoteric phenomenon, such as climate change.

Anchoring means that new ideas or phenomenon are related to a well-known phenomenon or context. "Anchoring makes the unknown known by bringing it into a well-known sphere so that we may compare and interpret it." On the other hand, according to Höijer (2011), objectifying makes the unknown known by transforming it into something concrete that we may perceive and touch and thus control" (p7).

Through anchoring, as Buijs et al. (2012) explains, emerging ideas are associated with existing concepts, ascribing meaning to new phenomena that have, for instance, emerged from scientific developments.

> *"Where no suitable SR is yet available for the new phenomenon, group members link it to the representations of objects they are already familiar with. In this process, elements from existing SRs come to the fore and are used to conventionalize the new object or situation. Unfamiliar objects are thus embedded into existing systems of classification" (*Buijs et al. 2012:1170*).*

Buijs et al. (2012) further develops Moscovici's (1988, 2001) idea explaining that objectification, the second of the two basic socio-cognitive communicative mechanisms, allows an abstract thing to become concrete through projecting abstract constructs as concrete images, which then come to stand for the new phenomenon.

> *"Unfamiliar objects lose their abstract character and are perceived as real entities. The description of unfamiliar objects as if they were tangible entities leads to the formation of a figurative nucleus consisting of a complex of images that captures the essence of the concept or idea"* (Buijs et al. 2012:1170).

While anchoring and objectification are used by environmental communication researchers and social scientists as analytical concepts in different ways, they are particularly useful to understand climate skepticism, because they were originally developed by Moscovici (1988) with public understanding of scientific concepts in mind.

4. Methodology

4.1 Data collection: Methods, Interviewees and Procedure

This research was approached such that it brings to the fore how Nigerians represent climate change. Working within the social representations (SR) framework, I sought answers to the following research questions: (i) How is climate change represented in Nigeria and through what representations does skepticism become visible? (ii) In what ways do these different representations relate to each other? (iii) What is the connection between sources of climate change knowledge and representation of skepticism?

The primary data explored in this research are obtained through semi-structured interviews with 17 interviewees. (Robson & McCartan 2016) suggests that semi-structured interviews provide a framework of topics and questions, while also allowing freedom to explore interesting topics which might come up unexpectedly p285). The starting point for identifying potential interviewees was by carrying out an online mapping of publicly shared views that were closely associated with climate skepticism. This was achieved by combing the internet for thoughts, articles, posts, and opinions published by Nigerian individuals and groups which leaned towards climate skepticism or, at least, presented strong alternative interpretations of climate change or how it is understood. Predominantly, the search was limited to LinkedIn, Twitter, and academic databases such as ScienceDirect, Google Scholar and ResearchGate. I used keywords such as 'climate skepticism', 'skeptical', 'denial', 'belief', and 'Nigeria'. This proved useful in identifying representations and some of their associated reactive themes. However, many authors of these skepticism-based articles and posts were not responsive to interview requests, though a few of these authors expressed their skepticism views using parody accounts or without any clear identity associated with them. Considering how topical climate change is and the hegemonic scientific position, I understand (which I later affirmed during some interviews) that there is a high risk of being challenged or cyberbullied for publicly sharing skeptical views about climate change. To me, this was a pointer to why only a few among many people

with publicly shared skeptical views about climate change would feel comfortable to grant interviews – even with confidentiality assured.

As a complement, I deployed a 'reversed snowballing' method. By this, I mean that I had to rely on a local organization, the International Climate Change Development Initiative, a prominent environmental advocacy Lagos-based organization with a presence across Nigeria. The organization introduced me to a pool of people who challenged their climate advocacy work. I found this group of people relevant for the study because they had continuously and critically made a case for positioning Nigeria's environmental approach against complying with international climate agreements. The organization facilitated contact with these individuals and helped me to gain their trust as I reached out through emails and direct WhatsApp messages. I also made it clear that the interviews did not aim to find out whose knowledge about climate change was right or wrong; rather, to get a clear picture of climate knowledge and how it is being represented in Nigeria.

In the end, my interviewees were a mix of some people with publicly shared skeptical views who responded to my interview request, a pool of people who challenged the local organization's work and a few others who were recommended or 'snowballed' from primary interviewees. For the data analysis, I narrowed my selection as I strived for diversity based on gender, geographical location, age, level of education and settlement. I noticed that some religious beliefs and political opinions were prominently reoccurring during the interviews, however, these were not considered during the selection of interview candidates. In the 14 in-person and 3 online interviews (via Zoom) which took a semi-structured format, I used open-ended questions which helped me obtain insights on their respective climate change representations as Nigerians.

After a brief introduction about the project and handing over a copy of the participant's information sheet, consent was granted with the consent sheet signed and confidentiality assured. Interviews took place in the interviewees' preferred locations and I was deliberate about helping them feel relaxed and think of the interview as an honest chat with friends. During the interviews, following (Robson & McCartan 2016) advice for conducting interviews, as the interviewer, I ensured not to talk as much, instead allowed the interviewees to express themselves (p.287).

Four guiding questions and three referenced quotations (as shown in Appendix 1) charted the direction of the interview. These four open-ended questions were presented such that it was possible for interviewees to (re)think through their responses, (re)construct their understanding and (re)frame their representation of climate change in Nigeria. The questions were steered towards (i) general thoughts about, and association with, climate change; (ii) interaction with people who held

differing representations of climate change; and (iii) climate change knowledge sources. I did not mention 'skepticism' or 'skeptical' in my questions; this meant their skeptical representations emerged during the interviews. On the other hand, the quotations were excerpts of publicly shared and widely circulated representations of climate change in Nigeria that had reacted (or could be seen to react) to strong elements of skepticism.

The interview questions served as a guide; however, the conversations followed a natural interactive format, with as little interruption from myself, except when clarification was needed. This not so frequent interruption, follows Robson & McCartan (2016) recommendation, to obtain a clear understanding of what is meant. This allowed me to take short notes, to be aware of areas needing more explanation, to map contrast in their positions, to link their representation to their knowledge about the environment, and to deduce meanings from the unsaid. My short notes were mainly descriptive as (Robson & McCartan 2016) suggests and post-interview additional notes were taken upon further reflection within the shortest possible time (Robson & McCartan 2016:330).

The interviews were recorded using mobile phones and transcribed by hand. Drawing from indirect responses during the interviews, I have, in Table 1 below, presented the interviewees and their profiles. The interviews were conducted over seven weeks across four Nigerian states (Ogun, Oyo, Lagos, and Abuja) and took an average of 30 minutes per interview. Table 1 provides a profile overview of the interviewees.

Overview of interviewees				
Gender	Male (8)		Female (9)	
Education	Uneducated (2)	Basic Education (3)	University (8)	Post-Uni (4)
Age bracket	18 – 30 (9)	31 – 60 (4)	Above 61 (4)	
Location	Ogun (3)	Oyo (2)	Lagos (5)	Abuja (7)
Climate change is real	Yes (14)[1]		No (3)	
Would you say Nigeria is affected by climate change? [2]	Yes (17)		No (0)	
Are you skeptical about climate change?	Yes (12)		No (5)	
Should climate change be a priority for Nigeria?	Yes (6)		No (11)	

Table 1. Overview of the 17 interviewees

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[1] As mentioned earlier, the grouping of the Yes/No options were drawn from interviewees responses and not posed as a direct question.

[2] Some were not initially familiar with the term "climate change" and needed an explanation.

4.2   Data analysis

Social representations (SR) theory was used as a conceptual framework for analysing the interviews because it proved useful in making sense of the diversity of different people's understanding of climate change. Each interview was audio recorded and transcribed as soon as possible after the chat. There was no need to collect detailed field notes as I could rely on the transcripts, short notes in my field diary and my recollection of the interaction with each interviewee. These formed the basis for thematic coding and analysing data relevant such that is answers to my research questions and useful to map different representations of climate change that involve elements of skepticism. This thematic coding as described by Robson & McCartan (2016) is the process where codes emerge from the data, or associated with desired theory or research questions. (p461)

With social representations (SR) as my main conceptual framework, I was able to identify four different skeptical representations of climate change. Based on how their responses fitted into the 5 questions below (see also Section 3.2), I used different colours to code and later categorized the interviewees' representations into 4 skeptical groups: Disengaged, Economic, Antagonizing, and Denialist. I further made connections between these four representations that emerged and the three types of social representations: hegemonic, emancipated and polemic. Using some of their quotations, in the result (Section 5.0), I reproduced some prominent arguments in how they represented their climate change views. The organizing questions were: (i) what is climate change seen to be? (ii) how is it evident or proven? (iii) who is seen as responsible? (iv) what must be done about it and by whom? and (v) how soon should something be done? – if there is a need to do something in the first place.

4.3   Limitations of the research

Given the limited time available to carry out this research, I was constrained to depend primarily on the data generated during the one-off interviews with the interviewees. There was no opportunity to conduct a follow-up interview even when the need arose. Insights obtained may have been more extensive if I had more time, possibly allowing for an ethnographic exploration, to facilitate focus group discussions, or to attend dialogues or events where these individuals and their associated groups could have expressed their opposing views and engaged with each other. More time and broader interaction would have provided new findings, also making it possible to compare types of knowledge or explore with more in-

depth people's conceptualisation and expression of climate skepticism. It was nearly impossible to re-engage with the research interviewees after the initial interview, hence I lost the possibility of having broader perspectives in cases where my interviewees had a rethink about their representation of climate change after the initial interview.

Another limitation is that data collected during this research were only obtained in four states out of 36 Nigerian states; this does not make a good representation of Nigeria. How climate change is represented across Nigeria varies, especially given Nigeria's large geographical landmass of 923,768 km², a massive population of over 200 million people, extreme variance in level of education and exposure to international issues per region. As a consequence, my research might have missed out on other social representations of climate change with skeptical representation, which might have been possible to capture with a broader sampling within Nigeria.

4.4   Positionality and Ethics

Rosen (2023) stressing Robson & McCartan (2016), emphasized the role of ethics and highlighting the author's positionality as a fundamental criterion for determining a good research. Reflecting on the data collection stage, being a Nigerian gave me some leverage which other non-Nigerian researchers might not have. Another advantage was my understanding of the cultural and language dynamics, this gave me an edge in breaking down climate change for those who did not have a prior understanding of it and to reframe my question in a more relatable context. Access to a local organization and help from the organization's local staff helped to facilitate many of the interviews and for the interviewees to find me trustworthy.

While I approached each interview as a student, I am aware of my personality as someone active and vocal in Nigeria's environmental space. This might have influenced how I was perceived by some of my interviewees. The responses of some interviewees changed during the interviews, partly influenced by how I framed some follow-up questions. In some cases, reflecting on their early responses, climate change emerged as a close-up, relatable issue with real impact rather than being a distant concept. This presented some interviewees with newer perspectives about climate change which were different from their initial or primary expressions of skepticism.

It is worth mentioning that my eventual use of social representations (SR) as my main conceptual framework evolved from an initial exploration of discourse analysis. However, the rarity of established climate skepticism discourses in Nigeria made social representations a more relevant theory.

5. Results

5.1 Social representations of climate change with elements of skepticism: a categorization based on interviewees' representations
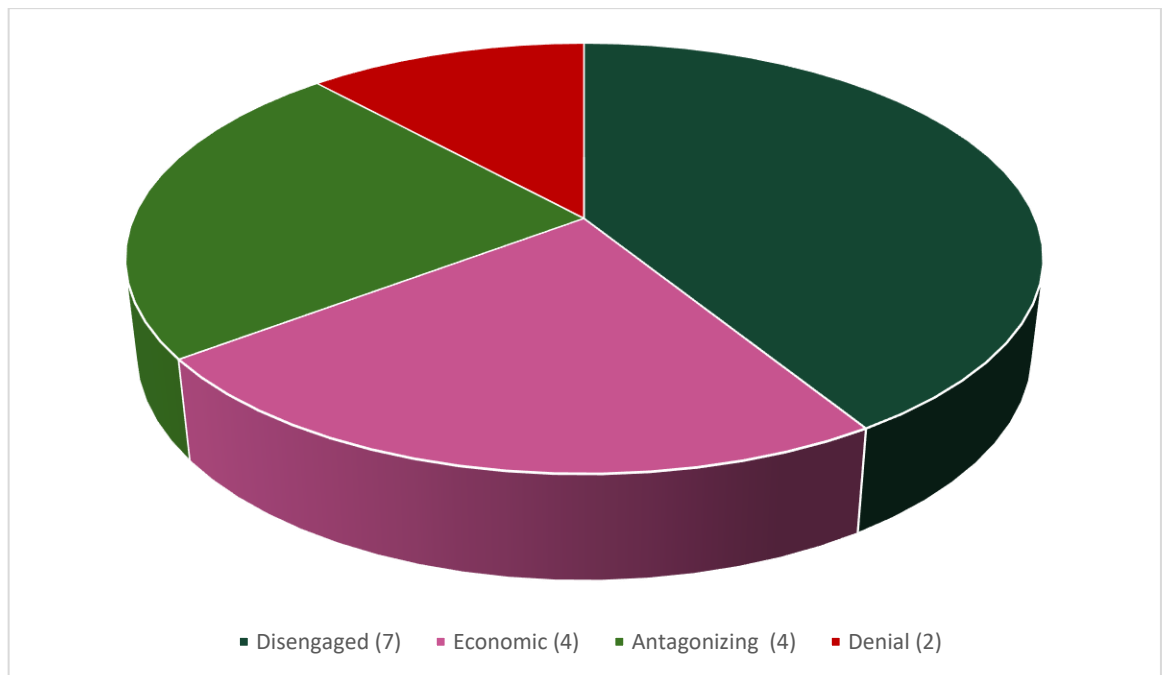
Figure 2. Distribution of interviewees (n=17) based on their social representations of climate change with key elements of skepticism

I identified four different representations of climate change that were characterised by skepticism in different ways, stretching from one extreme of those who did not engage at all with the subject of climate change even though they knew about it (disengaged), to the other extreme of those who knew sufficiently about climate change but deliberately denied all scientific claims (denialist). In between the two

extremes were two others (economic and antagonizing) depending on how they presented their skepticism about climate change in Nigeria.

	Disengaged	Economic	Antagonizing	Denialist
(i) What is climate change seen to be?	It is the impact that a warming world is having upon us, made obvious through physical indicators.	It is the impact that a warming world is having upon us, made obvious through physical indicators.	It is a political construct and exaggeration of the truth about our environment by the Western powers.	It is a false portrayal of the environment ambitiously promoted by certain people for certain reasons. It is nothing to concern ourselves with.
(ii) how is it evident or proven?	Eclipse of the sun, ice drops, acid rain, polar bears, heat waves.	Erratic weather patterns, extreme variation in rainfall and sunshine, new diseases, heatwaves, flooding, low food productivity.	Erratic weather patterns, extreme variation in rainfall and sunshine, new diseases, heatwaves, flooding, low food productivity. *(but it is a natural occurrence)*	Erratic weather patterns, extreme variation in rainfall and sunshine, new diseases, heatwaves, flooding, low food productivity. *(but this does not prove that climate change exists)*
(iii) who is seen as responsible?	I don't know but I don't think I contribute to this. It is an 'act of God'.	We are all responsible. Though some (wealthier) people/countries are more responsible.	We cannot allocate responsibility to individuals, rather to politicians and scientists throwing around figures and making predictions.	There is no one to be blame. It is a natural turn of events and we are not responsible.
(iv) what must be done about it and by who?	I don't know what is to be done but the government must do something**.**	Those (developed countries) who have contributed the most must make huge sacrifice, take the lead and show by example efforts to address climate change.	We must put forward the correct information about climate change and not rely on what is promoted by certain interest groups.	No efforts on our part as human will make a difference as it is being portrayed.
(v) how soon should something be done – if there is a need to do something in the first place?	I hope that there is something that can be done about climate change and it would be nice if something is done as soon as possible	Nigeria is poor and we still need more time to develop, using the resources we have – oil and gas, coal, etc. While climate change is a problem, it is not our priority.	The earth has been warming for a long time and it will recalibrate itself. The campaign to do something now is more political than of necessity to humanity.	The call that something can be (and must be quickly) done only gets people agitated.

Table 2. Overview of social representation of climate change with skeptical elements identified from the data collected (showing 4 emerging representations mapped against 5 structural questions, Section 3.2)

Out of the 17 interviewees, a significant number (7) of the interviewees expressed their representations in a 'Disengaged' way. Those whose representations were Economic (4) and Antagonizing (4) made equal number among my interviewees, leaving those with Denial representation as the smallest (2).

Using the 5 structural questions framed (see Section 1.1), I grouped interviewees according to their representation of climate change and how they engaged with the subject (Figure 2).

Table 2 gives an overview of how the 4 representations that emerged (Disengaged, Economic, Antagonizing, and Denial) understood climate change along the lines of the five structural questions: (i) What is climate change seen to be? (ii) how is it evident or proven? (iii) who is seen as responsible? (iv) what must be done about it and by whom? (v) how soon should something be done – if there is a need to do something in the first place? While these structural questions were not asked verbatim, the answers could be easily drawn out from how participants expressed themselves during the interviews (see interview questions in Appendix 1).

The four representations can be further described as follows:

Disengaged: This category made up the largest portion of my interviewees. Within this category were those who were not interested and remained disengaged with the topic of climate change. While some of them were not familiar with the term 'climate change', with some explanation (anchoring and/or objectifying) they could express their thoughts. Others were aware but deliberately unconcerned about climate change in Nigeria. They express a conscious disinterest in obtaining climate knowledge and refused to participate in climate change conversations:

> *"Since climate change does not affect my source of income and daily living, why should I concern myself with it." (F:18-30:Uni)* [3]

Economic: The second group were those who expressed their engagement with climate change from a dominantly economic perspective. They were informed about climate change, however, the priority they assigned to economic advancement in Nigeria superseded any environmental recommendation or abstract scientific concerns about the future:

> *"If we (Nigeria) must choose between environmental benefits and national development or economic growth, we should choose the latter." (M:18-30:Uni)*

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[3] Gender: (M) Male and (F) Female. Age is grouped into: 18 – 30, 31 – 60, and 61+. Education level is coded as High for High School, Uni for University Graduates and Post-Uni for second degree holders.

Antagonizing: The third representation included those who contested the scientific concept of climate change and strongly defended their alternative representations of climate change. Some within this category of interviewees showed a willingness to have discussions with others whose knowledge and representation of climate change contradicted theirs, but not with the aim of accepting how others (non-skeptics) represented climate change:

> *"I believe there is climate change but it is exaggerated and it (climate change) is not as serious as they paint it"* (M:31 – 60:Post-Uni)

> *"We acknowledge climate change is a global problem and we want to act but the judgy, finger-pointing attitude of the West or global north is not what we need… They do not have a moral compass to tell us what to do."* (F:31-60:Post-Uni)

Denialist: This fourth representation went a step further from the antagonizing representation. While the antagonizing representation recognized the scientific position on climate change (though believes it to be exaggerated), the denialist representation rejected all scientific arguments of climate change, questioned human contribution to destroying or repairing the planet and challenged the call for climate action in Nigeria:

> *"The changes we see in our environment today are natural, there is nothing scientific about climate change. If we bring the emission of the entire African continent to zero today, we will still experience what we are experiencing."* (M:61+:Post-Uni)

Interviewees expressing a denialist representation did not take their position because they were unaware of, or blind to, the indicators of climate change, rather, their positions were maintained based on how they dissociated these acknowledged indicators from the concept of climate change.

5.2 Social representations of climate change with elements of skepticism: Hegemonic, emancipatory and polemic representations
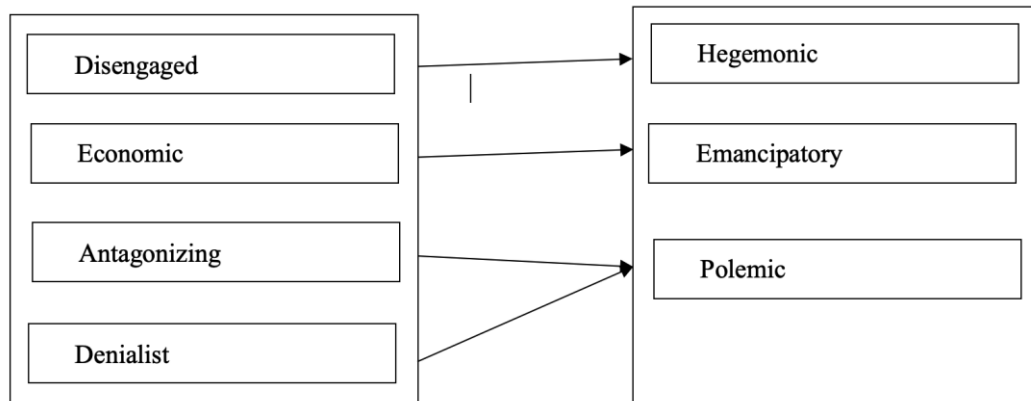

Figure 3. Association of SR types with emerging representations of climate skepticism

To answer one of my three research questions concerned with how climate skepticism is constructed in Nigeria and through what representations skepticism becomes visible (see Section 1.2), I connected the four representations that emerged (Disengaged, Economic, Antagonizing and Denialist) with the three types of social representations (Hegemonic, Emancipatory and Polemic). As detailed in Section 3.3, hegemonic representation is shared, structured in macro units and with coercive views; an emancipated representation is a sub-group or outgrowth of the macro representation with minor amendments; and, a polemic representation contests or challenges the position of the macro unit and is considered mutually exclusive from other representations.

5.2.1 Hegemonic SR - visible among Disengaged representations

The disengaged expressed a shared representation that climate change exists in Nigeria. They acknowledged this through the physical indicators ranging from significant increases in temperature to variable rainfall; rise in sea level and flooding; drought and desertification and land degradation. With this, we see a hegemonic type of representation among the disengaged.

> *"Nobody can say climate change is not real in Nigeria. The impacts are everywhere and affecting all of us. Though I do not know what to do about it, but it would be nice if something is done about it as soon as possible."* (M:61+:Uni)

5.2.2 Emancipatory SR - visible among Economic representations

The emancipatory SR emerges when there is a deviation from the hegemonic (commonly shared/agreed) SR. From my findings, though interviewees with the emancipatory SR agreed with the hegemonic SR that climate change is a problem requiring global response, however, they deviate in maintaining that actions to address climate change must not come in the way of what they consider a greater need - economic growth and the advancement of development.

> *"Climate change is not about keeping the environment clean, net zero and going green anymore, it is an avenue to subject the global south to penury, by not allowing them to use their resources (fossil fuel) under the connotation that it degrades the environment." (M:18 – 30:Uni)*

Interviewees expressing this emancipatory SR linked to economic representations argued that Nigeria is not a major emitter of GHG, hence shouldn't jeopardize the need to use natural resources to boost the economy. They shift the responsibility to countries that are main GHG contributors and other developed countries that have thrived by using fossil fuel in the past. Some of the economic representations of interviewees within this emancipatory SR were expressed in the following ways:

> *"Climate change does not affect Nigeria alone. It is a global problem requiring a global response. However, we must recognize that Nigeria is a poor country that needs to develop, so taking urgent actions to address climate change should not constrain us or limit our development and economic growth as a country." (M:61+:Post-Uni)*

> *"We cannot go cap-in-hand to other countries or the World Bank begging for money to develop our country, so we must use what we have – that includes fossil fuel, to grow our industries and advance economically." (M:18 – 30:Uni)*

5.2.3 Polemic SR - visible among Antagonizing and Denialist representations

A fundamental characteristic of the polemic SR is how they challenge hegemonic representation, oftentimes maintaining opposite and usually extreme views. As I discovered during this research some of those whose representation about climate change is polemic began with a genuine curiosity to understand climate change. It is not surprising that the type of knowledge they were exposed to and the community with which they shared this new finding shaped what eventually led to their polemic SR.

> *"I used to think that not eating meat, turning off light bulbs or stop flying airplanes will fix the climate change problem, but that is all rubbish. In Nigeria, we barely have access to electricity to start with…" (M:18-30:High)*

> *How can those who have polluted the environment for hundreds of years tell us about climate change. It is not in our interest to buy their idea of climate change. (F:18-30:Uni)*

It was clear that interviewees with antagonizing and denialist representations easily associated themselves with polemic SR. However, the degree of being polemic varied based on a number of other themes they raised, such as their understanding of global climate injustice to political outlook, religious beliefs, sense of patriotism and the contradictions in scientific findings about the human impact on the environment.

> *"Even scientists have not been able to agree among themselves the cause of climate change and what difference our human action or inaction will result in." (M:18-30: Uni)*

I could infer from my interviews that despite the increased conversations about climate change globally, the polemic SR was becoming more prominent across Nigeria.

> *"I am still skeptical about the importance of we (Nigeria) really focusing on climate change, I believe there are more priorities… for example, climate change is a minimal issue for us compared to insecurity.*

While both antagonizing and denialist representations could be seen as polemic, the latter appeared more extreme in their expression.

> *"As much as I get the opportunity, I will do everything contrary to what these climate change people say…" (F:18-30:Uni)*

5.3 Social representations of climate change with elements of skepticism: the role of climate change knowledge

Social representations are built on a number of things such as knowledge, culture and emotions. My analysis gives insights into how social representations and knowledge hang together.

First, it might be worth mentioning that skepticism is not ignorance as some of my interviewees suggest:

"I have seen very smart people tell me that they don't believe in climate change and they could articulate their points. There are others who argue based on limited knowledge or from a place of sentiments and beliefs without empirical evidence." (M:18 – 30: Uni)

Nonetheless, interviewees acknowledged that generally in Nigeria, knowledge of climate change was poor and there was little effort in place to integrate climate education into formal structures:

"The first time I heard about climate change was when I was in the university… The lecturer talked about polar bears and melting ice but I have never seen snow in my life so I could not understand what he was saying." (F:18-30:Uni)

The curriculum of Nigeria's educational system is heavily influenced by western, particularly British structures and content. This informs why when climate change is introduced to students, it is presented using foreign examples like melting ice, polar bear, amazon forest, hurricane, etc. Interviewees suggested that knowledge about climate change was poor because they could not associate climate change to their local context, such as food insecurity, flood, irregular weather patterns, drought and desert encroachment:

"You only get my attention when you can associate climate change with food, jobs, security and other things that I am concerned about." (M:18-30:High)

As inferred earlier (Section 3.4), how people represent skepticism about climate change corresponds to the type of knowledge they are exposed to. In this light, my interviewees could be seen to fall into two groups: first, those who deliberately fended off climate change knowledge, second, those who have not had the opportunity to gain climate change knowledge. Both groups expressed that exposure to new climate-related knowledge will impact their representations of climate change and the degree of skepticism they hold:

"A friend recently gave me a book about climate change which I have not read. I don't think I want to read it because it might change my understanding of climate change." (M:18-30:Uni)

"Skepticism about climate change in Nigeria is on the rise because of poor knowledge. If we had more climate education from foundational stage, we would have less people who are skeptical about climate change". (F:61+:Uni)

Another shared knowledge inferred from most of my interviewees (all representation, except denialists) was the acknowledgement that climate change is a global subject requiring interconnected efforts or responses.

"If we (Nigeria) do the right thing, it favours them and if we do the wrong thing, it affects them also which is why they must support us." (M:61+:Uni)

5.3.1 Sources of knowledge and their relationships with the four emerging representations

One of my interview questions was centred on how each interviewee's knowledge about climate change has improved over the years. This was an entry point to knowing specifically about the various sources of knowledge and to what degree my interviewees relied on each source to shape their climate change knowledge.

Informed by the responses from my interviewees, I noted two extremes in terms of knowledge about climate change in Nigeria:

"How do you expect me to talk about climate change when I do not know about it myself." (F: 18-30:Uni)

"Despite all the information out there, I think it is only very few ignorant people that will remain skeptical about climate change and the adverse effects." (M: 61+:Post-Uni)

Reflecting on the data obtained during the interview, I broadly categorized the sources of knowledge into four types: Word of Mouth, Traditional Media, Internet and Academic. The results from the analysis reflected a pattern in how sources of knowledge shaped people's representations of climate change and what form of representation their skepticism took.
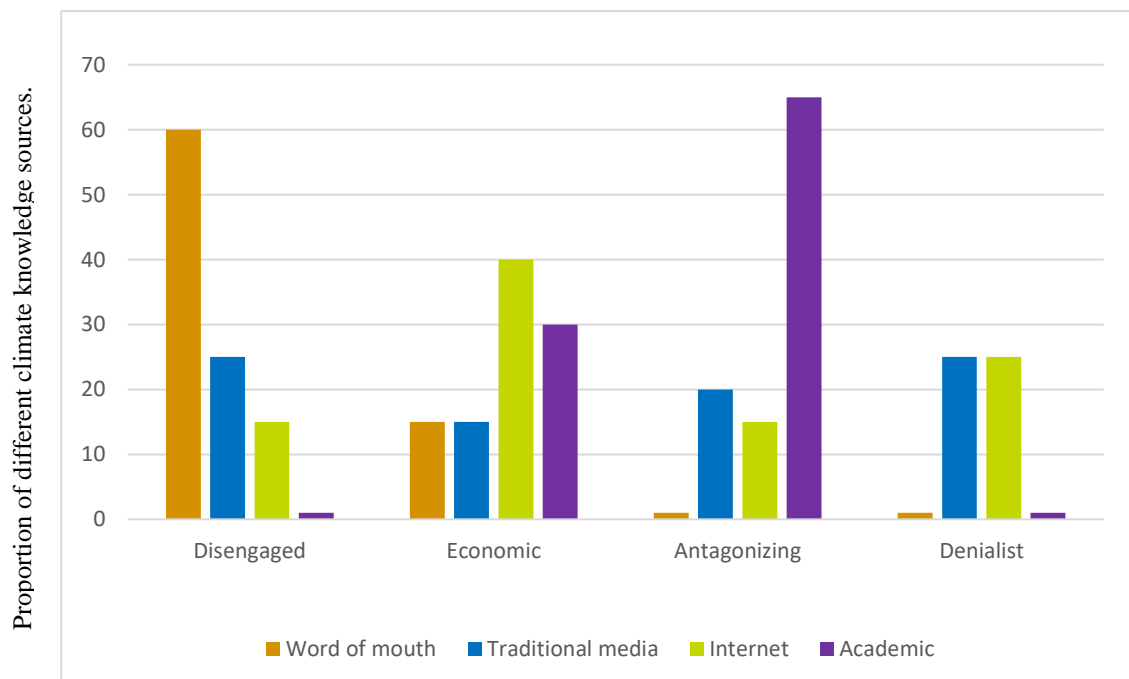
Figure 4. Interviewees' preferred sources of climate knowledge according to the four representations

Word of Mouth: For most of the interviewees, this was the initial point of entry to acquire knowledge about climate change. This includes street talks, hearsay, informal meetings and indigenous gatherings.

> *"Most of the things I know about climate change today is from what people around me say. I have not been taught in class and I have not read any book or publication about it." (F:18-30:High)*

Many of the interviewees holding a disengaged representation acknowledge word of mouth as their primary source of obtaining climate change knowledge. By contrast, interviewees with the antagonizing representation did not rely on word of mouth to obtain climate change knowledge.

Academic: This source of knowledge includes materials from scientific or educational institutions, books, journals, think tank papers or mail out, publications and library materials. This was a major source of climate-related information for those with an antagonizing representation and for some of those with an economic representation.

> *"I know a lot about climate change and that is because of the nature of my work. As a lawyer and energy consultant, I have to read widely and stay abreast of new developments relating to climate change." (M:61+:Post-Uni)*

Internet: All four representations that emerged acknowledged that they obtained climate-related information from the internet, albeit to varying degrees. This included, for example, websites, social media such as YouTube, Facebook, Instagram, X (Twitter), WhatsApp, and Quora. Those who emerged with economic representation engaged the most with the internet as a major source of information that informed how they understood climate change. This was closely followed by those with a denialist representation. The disengaged expressed that there was never a need to seek climate change information from the internet and it rarely featured on their social feeds because they do not follow "climate change people or pages." (F:18-30:Uni)

> *"I see a lot of posts online that people connect with climate change… sometimes it is about the president's delegation to COP* or other conferences. Recently, it associated with flooding in major city, drying up of Lake Chad or forest fire in other parts of the world." (M:18-30:Uni)[4]*

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[4] * COP stands for Conference of Parties, the United Nations annual climate change meeting.

However, interviewees were aware that internet-based knowledge of climate change did not necessarily translate to correct information as there are a lot of motivated opinions, assumptions and out-of-context information about climate change.

> *"Yes, I follow different opinions or post about climate change online but I don't really trust them." (M:18-30:Uni)*

Traditional media: This included television and radio, both local and international, as well as newspapers which was the least named information provider about climate change, even though interviewees believed that newspapers provided local context and relevant examples highlighting positive climate actions that were taking place in Nigeria. Interviewees expressed a denial representation seemed to depend more on traditional media compared to other representations. Many interviewees expressed their views about how different media had their priorities, hence, a few interviewees expressed distrust in the type of climate change information that news channels, radio programs or TV commentaries offered.

5.3.2 Use of anchoring and objectification to represent elements of skepticism and articulate climate change understanding in Nigeria

All my interviewees acknowledged, though in different ways, that Nigeria was experiencing climate change, however, most of them struggled to put into words what climate change itself was. To convey what they thought climate change represented, interviewees had to make the unfamiliar become familiar, through anchoring and objectification (see Section 3.5).

> *"I know what climate change is but I still think it is a foreign concept that is hard to understand." (F:61+:Uni)*

Comparing Africa's energy consumption with other parts of the world, a particular interviewee used anchoring to argue for his skeptical representation of climate change:

> *"Africa's contribution to global emissions is minimal and insignificant, it is like a drop in the ocean... Total electricity used by all 48 sub-Saharan African countries except South Africa, over one billion people, is less than that used by Spain, home to just 47m." (M:18 – 30:Uni)*

Beyond the physical indicators, two interviewees associated climate change itself with international conferences and meetings, describing climate change as a global trend that Nigeria is a part of.

> *"Nigeria just like to be a part of things happening globally… we have to follow the trend." (M: 18-30:Uni)*

Repeatedly my interviewees expressed confidence that promoting climate education might improve how we anchor or objectify climate change. This led them to pointing out how contextual climate education was missing in Nigeria's education space and that this was a major influence to their knowledge and representations of climate change.

> *"I remembered reading a book about climate change, it had pictures of polar bears and ice. Then they wrote imagined a world without polar bears. I closed my eyes and tried to imagine, but I couldn't because I had never lived in places that had ice, nor seen polar bears" (M:18-30:Uni)*

It was confusing that climate change could not be presented to them in their local context and that the impacts were not linked to social issues considered of greater priority, such as food insecurity, flooding, heat-related diseases and drought. This was also linked to the reluctance of some interviewees to share knowledge about climate change.

Another insight about the role of anchoring and objectification that emerged from six of my interviewees was in their articulation that climate change merged be presented and linked to more topical issues of national priorities.

> *"Many people are shouting, fix security, increase food production, resolve unemployment before bringing up climate change. What they don't know is that climate change is connected with these issues. Consider the farmer-herdsmen security crisis, it is a battle for resources because of the drying up of the Lake Chad" (M:61+:Post-Uni).*

6. Discussion and conclusion

This research emerged from the initial intention of identifying how climate change is understood and represented across Nigeria by Nigerians. The reoccurring element of skepticism in how climate change was represented informed the eventual focus of this thesis. This research does not classify interviewees' representations into 'right' or 'wrong'; rather, it brings to the fore how the acknowledgement of the different representations can help improve our communication about the environment to mixed audiences.

Climate change skepticism "rests upon dissentive voices within the scientific community" (Vulpe 2020:3), however, the different representations of climate change expressed outside the scientific community can serve as a basis to deconstruct climate skepticism and improve our communication of climate change.

Relying on the concept of social representations (SR), my analysis suggests that people express skepticism in their engagement with climate change in different ways. According to Marková (2008), the theory of social representation is "concerned with how individuals, groups, and communities collectively make sense of socially relevant or problematic issues, ideas, and practices" (p483).

Putting into perspective that Marková's definition of SR was built upon Moscovici's (2000) description of SR as "networks of ideas, metaphors, and images, more or less loosely tied together that are socially developed and shared over time" (p153), using social representation theory proved very useful as a conceptual framework for this research. However, at the initial stage, I had considered discourse analysis as the main theory hoping to find sufficient published materials on climate change skepticism in Nigeria. The rarity of established discourses around climate change reflecting skepticism originating from Nigeria was a challenge that became more significant after commencement. This informed the switch to obtaining first-hand data through qualitative interviews and the selection of SR as a more relevant theory. In addition, interviews as a data collection approach also gave me the freedom to be specific with the profile of interviewees with awareness of gender, location, educational level, place of residence and age range.

Of significance is how this research contributes to our understanding of the world through the constitutive function of environmental communication. By looking at communication from a constitutive perspective, I explore how my interviewees' representations of climate change help the public to shape, orient and negotiate meaning, values and relationships with skepticism in Nigeria (Pezzullo and Cox 2018).

Based on the interviews conducted and the interpretation of the data, four representations emerged: disengaged, economic, antagonizing, and denialist (detailed in Section 5.1). By extension, the understanding the four representations and their relationship with each other can provide unique insights that can improve how other practitioners – including scientists and politicians communicate about the environment.

An interesting interplay between the scientific representation of climate change, for example as expressed by the Intergovernmental Panel on Climate Change (IPCC), and how Nigerians represented climate change. Some of my interviewees premised their skepticism on historical emissions and the need for infrastructural development. Others expressed their skepticism referring to Africa being a minimal contributor to climate change (responsible for barely 4% of total GHG emissions) but greatly impacted and with poor adaptive capacity (AfDB 2011).

One key finding from this research that I want the reader to keep in mind is that skepticism sometimes emerges implicitly in people's representation of climate change. The acknowledgement of climate change itself does not mean a complete absence of skepticism in how such individual presents their knowledge about climate change. Similarly, as presented in Section 2.2, skepticism can take different forms. We can map the four representations (disengaged, economic, antagonizing and denialist) onto Capstick and Pidgeon's (2014) two major forms of climate change skepticism: epistemic and response skepticism. Some interviewees, for example, those with antagonizing and denialist representations questioned the expertise, thereby expressing epistemic skepticism. Other interviewees with economic and disengaged representations questioned the recommendation or the need to climate actions, fitting into the response skepticism.

In connection with Rahmstorf (2004), interviewees' representations of climate change had intersections with the three dimensions of climate change skepticism: trend, attribution and impact. For example, we can associate those with denialist representation with trend skepticism, which is about denying altogether that there is a problem. Antagonizing representations were more connected with attribution skepticism, which is about denying that climate change is caused by humans to a large extent. Impact skepticism, which is about doubting that the future negative

effects of climate change will be as powerful as many researchers claim can be hinged on disengaged and economic representations.

Despite the outcomes of the research which I consider tangible, I have reflected on two factors that may have impacted the quality of this research. The first is that many of my interviewees did not thoroughly think through the subject (climate change) prior to the interviews. In addition to what was hinted earlier, they do not regularly engage with climate change in itself. This might have influenced how they represented climate change. The second factor is similarly connected with the limited time and resources available, which restricted my interviewees, meaning I could not reach certain people.

Given how the challenges associated with the climate change vary across Nigeria's culture, education level, social and geographical areas, as Haider (2019) alludes, here are four categories that I think might have offered broader perspectives to the research: (i) government representatives (whose representation might carry unique economic and more political dimensions); (ii) representatives of people in rural area and with low-income (where economic, social and literacy disadvantage might have influenced their representation); (iii) people in the South-South region of Nigeria experiencing oil spillage and open gas flaring (two prime climate change mitigation challenges within the sub-region Nigeria); and (iv) people in the North-East whose experiences with climate-induced insecurity, low farm production and desertification are unique compared to Nigerians in other region. Haider (2019) reports that vulnerability analysis demonstrates that states in the north experience higher degrees of vulnerability to climate change than those in the south.

Despite their representations of climate change in ways that reacted to skepticism, my further reflection on my interviewees' responses obtained during the research, brought up some relevant Nigeria-specific recommendation regarding climate skepticism, knowledge, and climate change engagement in Nigeria. These recommendations can be further developed and might improve climate knowledge and steer climate engagement with less influence of skeptical views.

It is important to *"catch them young with proper information"* as one of my interviewees put it. The use of stories, songs, rhyme can invite kid to know about climate change in their early years.

"We don't need fear mongering when we talk about climate change" (M:18 – 30: Uni). Nigeria is currently experiencing the impacts of climate change in many ways, hence, we shouldn't speak of climate change like something that will happen in the future. Nonetheless, in speaking about climate change in Nigeria, we should be careful about signposting the negatives. Sharing climate change adaptation

successes, as Van Rensburg & Head (2017) suggests can contribute to decreasing skeptical reactions to climate change.

Another recommendation, which stood out is the argument for Nigerians who are knowledgeable about climate change to take in lead in sharing climate education. *"It will remain a strong argument or sentiment that climate change is a white man's agenda, if all we know about climate change is coming from them and their representatives in Nigeria."* (F:61+:Post-Uni)

How this research detangles climate change knowledge and climate skepticism in Nigeria can serve as a pointer towards getting people with different representations to work together towards addressing the climate crisis. This also holds potential for how we approach other polarization-prone topics.

Understanding climate skepticism in Nigeria may help us to understand climate change skepticism in many other parts of the world, which remains under-researched. With an understanding of how people are more receptive to communication about the environment when it is context-specific, as the research suggest, I hope that future research can build upon the findings that emerged from this research.

Recognizing that not much has been done with regarding to SR and climate skepticism in Nigeria, I present this research as a contributory effort to the broader theory of social representations and environmental communication field – to improve what we know about our world.

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Popular science summary

Introduction

People think about and make sense of climate change in different ways, and these variations are influenced by a number of factors such as knowledge, culture, or other forms of identities. However, some of these ideas, or representations, of climate change include elements of skepticism; and accepting the existence of climate change does not mean people care or actively engage with the issue. Therefore, it is important that we understand how people's skeptical ideas about climate change influence broader climate change knowledge and engagement, and vice versa. Nigeria, an oil-dependent country with a developing economy and multiple climate-related impacts presents unique opportunities to examine different climate change representations.

Aim and research questions

My research highlights climate skepticism in Nigeria, and it explores links between knowledge and climate change representations. I address the following three research questions: (i) How is climate change represented in Nigeria and through what representations does skepticism become visible? (ii) In what ways do these different representations relate to each other? (iii) What is the connection between sources of climate change knowledge and representation of skepticism?

Method and Findings

Using semi-structured interviews, I spoke to 17 people whose representations of climate change included skeptical views. Most of these interviewees were identified and contacted based on their publicly shared views about climate change, a few others were based on recommendation of a primary source. In my analysis, I found four representations of climate skepticism: Disengaged, Economic, Antagonizing, and Denialist.

People expressing a representation that I classified as 'disengaged' had typically heard about climate change but were not interested and remained deliberately unconcerned. Seven out of 17 held this representation, saying things such as: "Since climate change does not affect my daily life, why should I concern myself with it?"

Secondly, the people I categorised as having an 'economic' representation, four out of 17 interviewees, tended to be very informed about climate change and admitted that the impacts are increasingly visible. Still, they maintained that

economic and development interests should come before caring for the environment, expressing thoughts such as: "We cannot shut down our oil and coal reserves because of climate change and become financially dependent on other countries."

The third representation, the antagonizing one, expressed by four out of 17 interviewees, challenged scientific claims through thoughts such as "Yes, climate change is real, and we should talk about it, but I think it is exaggerated." They asked questions such as: "Whose moral right is it to tell others how to use their resources?"

Lastly, two out of 17 interviewees aligned with the denialist representation putting forward arguments that the changes we witness were natural and not influenced by human action. They expressed thought such as "Becoming a vegan will not make the climate better."

Sources of knowledge and influence on types of representations.

These representations of climate change related to different sources of knowledge that people relied on to form their views. My research suggests that in Nigeria, disengaged representations tended to be informed by word of mouth; the economic representations depended on information from the internet; the antagonizing representations were influenced by academic materials (journal, publication, policy briefs), and the denialist representation relied on traditional media and internet.

Four representations in the context of Environmental Communication

Previous studies distinguished between epistemic and response skepticism. With epistemic skepticism questioning the knowledge about climate change while response skepticism questions the need for climate action. In my material, I found that the antagonizing representation was a type of epistemic skepticism, on the other hand, the antagonizing and denialist representation found their place within the response skepticism.

Relevance of this study and conclusion

Firstly, knowing what informs people's representations can help us as environmental communication practitioners to know how to approach the subject of climate change.

Secondly, this type of understanding is a starting point towards getting people with different representations to work together towards addressing the climate crisis. This also holds for other topics with tendencies for polarization.

Lastly, understanding climate skepticism in Nigeria may help us to understand climate change skepticism in many other parts of the world, which remains under-researched.

Acknowledgements

Appendix 1

1a   As a Nigerian, what comes to mind when you think of climate change?

1b.   What makes you think that?

1c.   Have you always thought this way? (of course, they won't always have thought this way, but it might be a good way to get them to speak about how their views on CC change together with other views)

1d.   Might you think differently if your (refer to their worldview/association) was otherwise?

2.   Have you come across people who have views on the subject of climate change in Nigeria that are different from yours? How do you make sense of their contrary positions or arguments?

3.   What mainly informs your knowledge (or influences your views) about climate change in Nigeria?

4.   What comes to mind if you hear the following sentences?

        "Nigeria has no business with climate change!" Tope Fasua
        "They ban coal, and we follow. They say firewood is not for fetching. They say we need to plant more trees and they are not giving us money. We need to open our eyes and tell the West, "If you don't guarantee our finances and work with us to stop this, we are not going to comply with your climate change." President Tinubu
        "In Nigeria, climate change is no longer a threat but a reality." Adenike Oladosu

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