




Rooting climate change in the Islamic perspective

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ABSTRACT

Climate change is shaking global systems and causing havoc in many countries and communities and this has been confirmed by both sciences and religious narratives. Increased human activities have disrupted the natural flow of materials and energy in relation to the transportation, industrial production, deforestation and waste disposal. The world's efforts to minimize greenhouse gas emissions (GHGs) using policies, legal systems, institutional arrangements, and community engagement have been met with sustainability difficulties. This study looks at climate change and its causes and effects from an Islamic point of view using the documentary analysis method, with extensive examinations and linkages to the various Quranic verses, Hadiths, referencing published materials, reports, and databases for knowledge analysis to generate lessons for resilience building. The findings from this study indicate that the planet Earth has natural processes [*Taqdeer*] that regulate the natural world and the flow of energy and materials between all the systems, which can be interfered by unwanted human action. The fundamental teachings of Islam can mitigate climate change chaos through character reformation. Islam is the natural system of mercy, moderation, and prosperity that justly regulates and balances human life and the natural systems. It encourages humanity to behave in the cosmos in a dignified way as a vicegerent of God and prohibits a wastefully extractive, over-exploitive and misuse of the resources.

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1. Introduction

Climate change in IPCC usage refers to a change in the state of the climate that can be identified (e.g., using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It also refers to change that is directly or indirectly attributable to human activities, changes the composition of the global atmosphere and, in addition to natural climate variability, is observed over comparable periods. According to the United Nations Framework Call on Climate Change (UNFCCC) (UNFCCC, 2007),

outline the evidence for climate change: global warming, change in precipitation trend, melting ice cap, glaciers and snow, rise in sea temperature on the earth's surface. This has caused the sun's heat to rise in the atmosphere, which under normal conditions could be reflected into space (UNFCCC, 2007, p. 10). In the end, the generated heat leads to the greenhouse effect, which changes the earth's climate tremendously. The word "Islam" means "submission to the will of God." Followers of Islam are called Muslims. Muslims are monotheistic and worship one, all-knowing God, who in Arabic is known as Allah.



Followers of Islam aim to live a life of complete submission to Allah. The Quran (or Koran) is the major holy text of Islam. Islamic beliefs, traditions and values provide an effective and comprehensive solution to the current environmental challenges faced by the human race. Islam has a rich tradition of highlighting the importance of environmental protection and conservation of natural resources. According to Islamic law, the basic elements of nature – land, water, fire, forest, and light – belong to all living things, not just human beings. Environment and natural resources are special gifts of God Almighty to humanity in support of strengthening their faith, believes and sustenance so that they always remained believers, obedient, grateful and vicegerents. Generally speaking, humanity's health and wellbeing are directly connected to the environment they live in and this knowledge has been communicated. Humanity needs healthy food from the soil, clean air from the atmosphere, clean water from rivers, a healthy ocean for the blue economy, and rich forest for ecosystem goods and services, clean and healthy environment to live in. It is in this light that the Qur'an and Sunnah are a guiding light to promote sustainable development in Islamic countries as well as around the world. The Holy Qur'an has a number of specific references to ecology and also contains some important principles for environmental conservation. The first principle which guides Islamic teaching on environmental sustainability is the concept of trusteeship. Being a khalifa (or guardian), a man should take all necessary steps to ensure that the entrusted property is passed on to the next generation in as pure a form as possible. According to Islam each man is the custodian of nature, and must live with harmony with other creatures. It is the duty of all Muslims to respect, nurture and care for the environment. God Almighty (Subhanahu Wa Ta'ala) commands human beings to avoid doing mischief and wasting resources as these acts cause degradation of the environment. The privilege to exploit natural resources was given to the mankind on a guardianship basis, which implies the right to use another person's property on the promise that it will not be damaged or destroyed. Climate change debates and dialogues has preoccupied the world since the Rio Earth Summit of 1992. Although environmental and climate change can gradually naturally occur, increased human

activity has disrupted societal functioning and interfered with the natural flow of materials and energy. The use of fossil fuels for transportation and industrial production, as well as deforestation and waste dumpsites, are all regarded as major contributors to the global climate change problem. Today it is a catchphrase alongside poverty, environmental and security problems. It is a very ancient phenomenon that was observed on the surface of the earth when people made advances in the use of the earth's natural resources along with technological development. In other words, it results from the hands of man, as described throughout the Quran, that Corruption has appeared throughout the land and sea because of what the hands of people have earned so He may let them taste part of the consequence of what they have done that perhaps they will return [to righteousness] [30:41].

Islam like any other religion shape the moral characters of its followers, where commanding of good and positive action is always desired, preferred and promoted. This perspective has been supported by Watson and Kachore (2012) and Jenkins (2009). The Sheikhs and Imams are leaders in the Muslim communities. In addition, they have a good reputation with their followers, politicians, business people, researchers, and academics, where essential of good deeds and forbidding of evils are always emphasized in the mosques, public meetings and during communities' engagements. Such leadership engagement in Islam is part and parcel of playing the role of the true vicegerent of God. Hence, they are very credible leaders in the community with influence and power of decision making. Leadership recommended by Islam is based strictly on the teachings in al-Quran and al-Sunnah without deviating from their teachings. The Prophet (pbuh) stated that all people are leaders responsible for the people they lead in his Hadith: 'every one of you is a guardian and answerable with regard to his trust'. In Holy Quran, God Almighty says: "And We made them leaders, guiding by Our command; and We inspired them to do good works, and to observe the prayer, and to give out charity. They were devoted servants to Us" (Quran, 21:73). Through masjid and community, leadership and management are required to disseminate information on partnership goal under *Maaruf* philosophy to promote sustainable use of water, energy, social security and waste management with objective

of influencing the behaviors and attitudes of the believers. This phenomenon has the potential to drive social transformation to benefit resource use, efficiency and conservation. With improvement efforts and awareness, Muslims have potential to derive social change and transformation in the environmental education, environmental management, pollution reduction, and ecological restoration. All these measures would make the world a safe and green world free from greenhouse gases and its related public health consequences. Therefore, it is fundamentally important to point out that religions including Islam have a special voice in matters related to environmental degradation and climate change (Casanova, 1994; Reder, 2012; Schaefer, 2016; Wardekker et al., 2009). This paper will discuss the root of climate change and its implication from an Islamic perspective. The focus will be on the drivers of climate change and its effects. The next section will explore the energy flow between different natural systems.

1.1. How energy flow from atmosphere to the earth surface

The learned Muslim scholars have described the Quran verses that deals with the universe and related phenomenon as the Kawniyyah verses. Quraish Shihab quoting Thanthawi Jauhari, in his desert venture (Al-Jawahir fi Tafsir Al-Qur'an, Kairo, 1350 H, jilid I, h. 3), he mentioned that there are more than 750 verses that obviously elaborates about the planetary processes followed by exposure of the universe with its phenomena. Further, there are 42 "ocean" words in the al-Quran, with various topics and subtopics in regarding the ocean. The 'oceanic verses' not only reveals on how the prophet Musa AS split the ocean, or on the prophet Musa AS open the sea to let him and his exodus followers passed and escaped from Pharaoh, but also reveals about how we can discover fire or energy from the ocean deep. The ocean may sprout its water due to the impact exposed by the planetary and other phenomenon, including happenings on the orbiting sun and the opening of the sky. This implies special communication of energy flow from the atmosphere to the earth and the ocean. The term energy source refers to that available sustainably and unlimited energy provided by God. Accordingly, energy from the ocean is an eternal and in this era of climate change and

post Pandemic Covid-19, energy source is a problem that always attract many global attentions. The advantage of energy from the ocean is the broad abundance because the ocean covers 72% of the earth. In oil and gas sector, most oils and gases can be found in the sediment basin (Djamil, 2004). It is also true that the sun emits the sun's rays, which pass through the electromagnetic spectrum, which is made up of ultraviolet and infrared, which impacts the ocean lives over a long period. Scientists agree that 1/3 of solar radiation is reflected from the atmosphere and the earth's surface and 2/3 is absorbed by water (Romm 2016). This is the natural flow of energy from the sun to the earth surface and back to the atmosphere. Energy is a special gift from God, which humanity need to appreciate and use it is the most respectable way. It is one of the primary needs of human life and environmental systems; to warm the living body, to facilitate process of photosynthesis, to facilitate transportation, industrialisation and urbanization processes, and move both things and their selves from a far place easily and optimally; as the light source in the night. In other words, energy can make people advanced, remain happier and build a sustainable level of higher civilization. Presently there is an increasing trends and growing interest in many countries to explore renewable energy of wind from the oceans. Despite blessings associated with God-given free energy, human beings are interfering with the natural law of the earth due to the increasing greediness associated with overexploitation and high consumption patterns of the natural resources. Increasing land use and fossil fuel burnings have increased over time around the world. Unregulated human activities inspired by the secular materialistic culture and behaviour have resulted to unmanageable emissions of greenhouse gases into the atmosphere. The greenhouse gases of the environmental concern include carbon dioxide (CO₂), methane (CH₄), nitric oxide (N₂O) and fluorinated gases and water vapor. The rise in greenhouse gases traps the heat that should be radiated back to act like a partial blanket that keeps the earth warm (60 F). If the earth did not have an atmosphere to let solar energy pass through, there could be no life because the temperature of the earth's surface would drop to -180°C and the planet would be a giant ice sphere.

1.2. Drivers of climate change and Social Vulnerability

Mc Michael et al. (2017) in the last 20-30 million years. Epstein et al. (2011) claim that the air over the Antarctic Peninsula has warmed by 6 ° C (11F) over the past decade due to climate change. Today the greenhouse increases the surface temperature by 32 °C Mc Michael et al. (2017). Further, there are evidences pointing to the large areas in the Middle East, Australia, Europe and Asia experiencing frequent heatwaves, with potential to disrupt social functioning and health of the people. Many Muslim countries bear the brunt of climate change, where the effects of climate change vulnerability have been associated with rising temperatures, decreasing rainfall, increasing drought, flooding, food shortages, water scarcity, decline in biodiversity and increasing sea levels causing serious social, economic and political problems. Climate change vagaries in the world are often associated with millions of displaced people leading to the creation of climate refugees. Increasing global poverty, which is the dominant factor in many developing countries, is closely linked to the climate vulnerability. Although the poor people contribute less to the emission of the greenhouse gases, they suffer most due to the resource's scarcity, pollution problem, and inadequate coping mechanisms. Climate change always create uninhabitable environment. Various scientific studies points show that the earth is getting warmer and warmer as human development progresses in the sector of transportation, industrialization, infrastructure development, and urbanization with consequences of more fossil fuel burning and more carbon dioxide emissions. According to the future forecasting, it is estimated that by 2016 the world will have 1.32 billion cars and buses. How are fossil fuels used and how are greenhouse gases added daily? In addition, industrial production is also growing to meet the demand for goods and services for almost 7.6 billion people on earth. The manufacturing industry, automotive industry, construction industry; to mention only the few that intensely emit the halocarbon and black carbon that in turn change the climate of the precious earth. A small increase in sea surface temperature causes cyclone wind and rain, for example, cyclone Haiyan in 2013, terribly devastated the Philippines, where the cyclone was powered by

energy from equatorial water that was only warmed 1-2 degrees above normal (McMichael et al., 2017). Maslin (2014), argues that climate change encompasses sociology, economy, geopolitics, national, international, and health issue. Climate change potentially affects the social and environmental determinants of health always (clean air, clean drinking water, adequate food and safe shelter). It has been documented that due to the heat rise caused by climate change, the population exposed to it has increased worldwide. It was observed that between 2000 and 2016, the number of people exposed to heat increased by 125 million. In addition, 175 million additional people were exposed to the heat caused by climate change by 2015 alone. It is also estimated that between 2020 and 2030, climate change caused nearly 250,000 additional deaths from malaria, malnutrition, diarrhea and heat stress. It has been further augmented that excessive heat has psychological and aggravates mental health effects among the affected population.

1.3. Problem Statement

Many countries, communities, systems and resources have been affected negatively by climate change, but their cultural awareness of it and climate action are often staggeringly limited. Despite conveying many agreements, treaties, policies, laws and regulation on climate change, little has been achieved. Additionally, God Almighty gives humanity the natural system of mercy and guideline for their general welfare, but they have largely ignored it due to the advancement of technology, economic policy, social, political and cultural prosperity. Under ideal circumstances, the adherence to the various multilateral environmental agreement, treaties, policies and programmers', the world could have eliminated climate change vulnerability and problems in all aspects. However, the interesting question is, why can't the world stop greenhouse gases emission with all efforts put into place? Are the Muslim countries under the guidance of the Quran and Sunnah frameworks making efforts to mitigate climate change? There is general agreement that the causes of the climate change have been accelerated by unregulated increased human activities, disobedience to the natural laws of God, increased injustices, and killings of innocent lives. Despite more impacts and consequences of the climate change are being

felt in the Muslim world, inaction persists. They are not active in combatting climate change threat. Many Muslim countries are reluctant to impose Western concepts of environmentalism, or to bow to pressure from countries which have already gone through industrialization without having to address pollution or curb emissions. Environmental colonialism is not the answer (Prof. Ibrahim Ozdemir, Aljazeera, 12 Aug 2020). The world is yet to achieve global political agreement on how to reduce or eliminate the causes of climate change (Desonie, 2008). Climate change problem can be considered consequences of the human failure. Scientists have argued that there is a fundamental need to understand the role of religion to fully grasp the cultural dynamics of climate change (Hulme, 2016; Jenkins et al., 2018). Many narrate options to combat greenhouse gases emission, and this paper regards this as a failure of the world. Islam being the complete and perfect system of natural mercy for humanity, has rich philosophical attribute that put general welfare first before anything else. Islam has potential of solving human problems including climate change. Therefore, this paper explores how Islam explains the root cause of climate change and its effects on humanity and the possible safe way to mitigate.

2. Material and Methods

This study has employed extensive documentary analysis method. Various secondary sources have been used such as the Quran verses, Hadith of the Prophet (SAW), various published articles and reports, books, articles, UN reports, and internet sources cited in the text and references. This method was chosen because the topic is very important worldwide and attracts many researchers worldwide.

Since topic of climate change from Islamic perspective will excite many to discover some interventions derived from the fundamental faiths of Islam with objective of contributing lessons for resilience building.

3. Results and discussion

This section of the paper discusses the key analysis of the Quran and Sunnah knowledge coupled with other sources.

3.1. The Muslim Population

The Qur'an Chapter 12, verse 26, precisely communicates the environmental degradation associated with unregulated anthropological activities. ‘‘ But those who break the covenant of God Almighty after contracting it and sever that which God Almighty has ordered to be joined and spread corruption on earth, for them is the curse and they will have the worst home’’. From this verse, it implies that uncontrolled and unregulated human activities for sure, will break humanity relationship with God, create difficulties, and hence, human will suffer consequences of the degraded resources which will not be able to sustain quality of life desired. It can be argued that man is destroying his own home because he is greedy to earn more. Islam existed in the Middle East, North Africa, and parts of Central Asia in the 7th century. And today it has spread to all over the world. It is estimated that a quarter of the world's population are Muslim and is the second-largest global faith in terms of population after Christians. It is considered a rapidly growing religion on earth. It is estimated that by 2060, it will make up 31% of the world's population. And 20% of Muslims presently live in the Middle East and North Africa, 60% live in Asia. (Pew Research Center, 2017). Religious Muslims share the belief in God as revealed through the Prophet Muhammad and rely on two important sources of shariah: (1) the Qur'an, understood as God's revelation to the Prophet Muhammad, and (2) the Sunnah, the collection of hadith: accounts of the Prophet's practices. Mindful Muslims look to the Prophet as a role model, for solution to their individual and societal problems. As such, they try to align their actions not only with the Qur'an but also with the Sunnah by distilling and realigning norms for the worship of God and the organization of daily life from the two biblical sources. The five main duties of Islam, also known as the five pillars of Islam, are the creed (shahada), prayer (salat), the charity for the poor (zakat), fasting during Ramadan (sawm) and the pilgrimage to Mecca (hajj). All these pillars of Islam have the potential to regulate and control Muslim behavior's openly and secretly. Muslims come from a variety of ethnic and religious subgroups who live and understand Islam in different ways (Pew Research Center, 2016; Saniotis, 2012). The two most widespread branches of Islam are Sunnis and

Shiites. It has been estimated that 87-90% of Muslims are Sunnis and 10-13% are Shiites. Both of these branches commonly share the same principles of environmental conservation and management from an Islamic perspective, save certain minor differences.

3.2. Weather and Climate in the Modern Science and Glorious Quran

The earth is the unique planet that God Almighty has made available with abundant water, plants, minerals, air and other resources. Water exists in three forms (liquid, solid and gaseous) to facilitate and supports life, and has a good climate. It is sometimes called Goldilocks Planet because its climate is temperate to support life (Desonie, 2008). The earth has a natural flow of energy between the atmosphere and the earth's surface. It is greenhouse gases that make our planet hospitable. According to Desonie (2008), these gases let sunlight through and trap some heat that is reflected from the earth's surface. And create a temperate climate that allows enormous numbers and diversity of living organisms to multiply.

These gases let sunlight through but trap some of the heat that radiates back. Despite a hospitable climate as created by God Almighty and stated in Surat Luqman: "Do you not see that God Almighty has made what is in the heaven and earth subservient to you and made complete to you His favours outwardly and inwardly?" [31:20]. The Arabic word *sakhkhara* used in this verse has been translated as subjected by Al-Imam Ibn Kathir in his tafsir. This implies that all the things on and inside the earth together with its atmosphere have been created in the forms that enable human beings to use them for his benefit. But this opportunity to access, utilize, and manage these resources should be characterized with gratefulness, access benefits sharing, and commitment to its protection and conservation. But the question comes on how humanity is using these natural resources extravagantly or not? That's why in the Qur'an, 30:41 God reminds of the problem of human action. God Almighty Has Said: "Evil has appeared in Al-Barr and Al-Bahr because of what the hands of men have earned, that He may make them taste a part of that which they have done, so that they may return". The Qur'an use the term *Fassad* to describe all forces that degrade the environment. A good example of

such *fassad* is illegal waste dumping, overexploitation, deforestation, pollution problem, depletion of biodiversity, oil spills, and poor natural resource governance. The consequences of these actions will have potential of accelerating climate change. This also means that humanity have been given the permission to use every resource on and inside the earth, but without extravagance, if they use them extravagantly, the consequence will turn against us. This is because the honors of vicegerent have been abused and misused and as a result humanity is being subjected to the climate change vagaries God has blessed humanity with knowledge to enable them explore the earth in and out as stated in Quran "And to God Almighty belongs the dominion of Heaven and Earth, and God Almighty is over all things. Indeed, in the creation of the heavens and earth, and the alternation of the night and the day are signs for those of understanding." [3:189-190]. From these verses, it can be implied that humanity is gifted with knowledge that promotes meaningful thinking, new ideas, pondering over the creations and deepen understanding in order to increase appreciation, truth, faith and obedience, where greatness of God is properly revealed to humanity. God Almighty will grant man high ranks in this world and the Hereafter. God Almighty will exalt those who believe among you, and those who have been granted knowledge to high ranks." (Qur'an 58:11). Further, Knowledge is more important than wealth and property. No wonder, knowledge is among the important things which God Almighty directed Prophet Muhammad (PBUH) to pray that he will be granted more of it. God Almighty says in the Holy Qur'an: "And say: My Lord, increase me in knowledge." (Qur'an 20:114) Once, certain level of high knowledge is achieved, faith is boosted and positive actions are favored with the total submission to seek the pleasure of God, then it will take humanity to another level of piety. God Almighty makes it clear the functions of the atmosphere ceiling as stated in Surat Al-Anbiyya: "And We made the sky a protected ceiling, but they, from its signs, are turning away." [21:32]. From this verse, the protected ceiling may refer to the ozone layer protecting life forms from the Sun short and long wavelength radiation, safe, secure and strong heavens that have been ordered and perfected to sustain life forms. The ceiling can be translated into layers of the atmosphere. The

earth's atmosphere consists of nitrogen and oxygen. The concentration of water vapour (gaseous water (H₂O) varies with humidity. The atmosphere is made up of a tiny amount of carbon dioxide (CO₂) molecules. It makes up 36 out of 100,000 gas molecules but plays a role in the amount of climate change. Other components are methane (CH₄) and nitrous oxide (NO and N₂O), which each have an even smaller share in the atmosphere, but play a role

in climate change. Near the ground, ozone (O₃) carries out chemical reactions that mainly include car exhaust fumes and sunlight (Desonie, 2008). Afro-mentioned gases are so-called greenhouse gases (carbon dioxide, methane, nitrogen oxides and ozone), which trap heat in the atmosphere. They influence the world climate. An increase in these gases in one region changes the climate of the entire planet (Table 1 and Fig. 1).

Table 1. Composition of the Atmosphere

Gas	Symbol	Concentrate (%)
Nitrogen	N ₂	78.08
Oxygen	O ₂	20.95
Water Vapor	H ₂ O	0 to 4
Carbon dioxide	CO ₂	0.036
Methane	CH ₄	0.00017
Nitrous Oxides	NO, NO ₂	0.00003
Ozone	O ₃	0.000004
Particles (dust, soot)		0.000001
Chlorofluorocarbons (CFCs)		0.00000002

Source: Ahrens, C. Donald, Meteorology Today, Pacific Grove, Calif: Brooks/ Cole, 2000

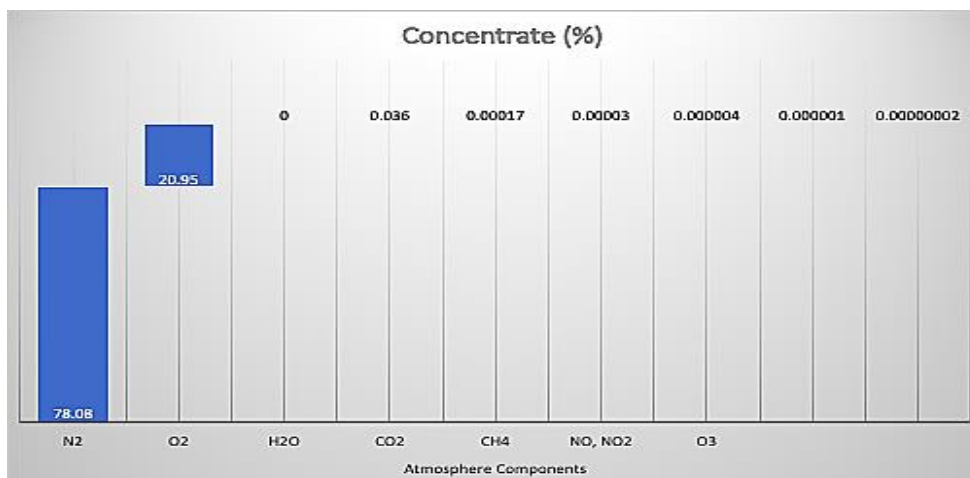


Fig. 1. Composition of the Atmosphere

The climate across the planet varies in terms of precipitation, temperature, precipitation, sunshine and humidity. The climate varies depending on the time, for example during the medieval warm period (1000 to 1300 AD), relatively high, during the Little Ice Age (1550 to 1850 AD) and comparatively cold. Despite this difference in average, the global temperature has varied with a range of 1.8^oF (1^o C) since the end of the Pleistocene Ice Ages about 10,000 years ago, when human civilization began (ibid). It has noticed a correlation between temperature increase and increase of greenhouse gases in the atmosphere.

Our planet is warm when greenhouse gases are high and cool when greenhouse gases are low. The temperature of the earth is increasing at an alarming rate. Its temperature has risen at a rate never seen over 2,000 years ago. Therefore, the protecting ceiling is extremely essential for regulating rainfall, wind movement and various air circulation. All these forms great blessings of God Almighty. However, humanity is turning away from the signs, evidences, and messages of God Almighty with ignorance. The rationale of understanding the earth is to take good care of its components. But human beings usually do not follow the guidelines. What the

World is experiencing results from humanity actions that are uncontrolled and unregulated. God prohibits any action that will disturb this protective ceiling of the earth. According to Desonie (2008), human activities such as uncontrolled and unregulated burning fossil fuels and forests. The Intergovernmental Panel on Climate Change (IPCC) had several scientific studies and findings on climate change. IPCC reports from 1990, 1995, 2001 and 2007 all identified human activities as causes of the temperature rise on Earth since the 1950s. A man is destroying his own house (Earth) which is forbidden in Islam. Surat Al-Room: "Devote thy self single-mindedly to the faith, and thus follow the nature designed by God, the nature according to which He has fashioned mankind; there is no altering the creation of God." [30:30]. It is this temperature rise making the planet inhospitable to humans and other living organisms. Why are people so concerned about the temperature rise? The animal and the plant will die and human will suffocate in all aspects of life. The changes in the water cycle, the ecological cycle, the energy cycle, the production cycle and the consumption cycle will prevail. According to Desonie (2008), human depends on many of these wild plants and animals for resources like food, building materials, and even the chemical compounds found in many medicines. Modern agriculture and human settlement patterns depend on very small climatic fluctuations, along with many other features of human civilization. A drastic climate change, even on a smaller scale than earlier in the earth's history, could destabilize human civilization. Muslim environmentalists rely on the Quran and the Sunnah to generate environmental principles from them and thus to create ecological interpretations of Islam and several Islamic environmental ethics (Abdelzaher et al., 2019). Although different authors tend to name different principles, the most important ones that scientists usually refer to are Tawhid and Khalifa (Abdelzaher et al., 2019). God Almighty granted people stewardship over creation. It is their responsibility to take care of nature. Caring for nature, therefore, means serving God. And so human beings must handle the natural resources wisely and that habit gets rewarded by God. The Quran is against overexploitation and the waste of natural resources. From this point of view, climate change seems to be a failure of the assigned

trusteeship (Hussain, 2007): It means despite great achievement humanity has attained, taking good care of natural resources which are worth more than what earning. In addition, the principle of Maslahah is not adhered to: the concept of public interest. This concept of Maslahah pursues a sustainable achievement of the well-being, welfare, advantages and benefits of living beings (Abdelzaher et al., 2019) and places the common good above the individual, and private interests. Concerning the threat of climate change, this principle means thinking and acting globally and caring for future generations (Hussain, 2007). The problem of climate change vagaries will increase if humanity ignores in service to the vulnerable groups in society. Skirbekk and Pedziwiatr (2018) have a survey in Muslim Countries (North Africa, Middle East United States, Asia, European Union and Post-Soviet. And key findings were; 48% state climate change causes problems to people, 32% believe the effect will start after the next 1025 years to come. As well research by Pew Research Center (2015) came with similar findings showing 51% of Muslims perceive climate change as a very serious problem respondents' results indicate It has been revealed that the majority of Muslims view climate change as a major societal challenge (Koehrsen, 2021J). Therefore, climate change can be linked to the increased fassad on the earth due to the unwanted human actions. Many human fassad on the planet Earth has interfered with natural processes [Taqdeer] that regulate the natural world and the flow of energy and materials between all the systems. There is need for humanity to recognize and respect this natural equilibrium because once this is disrupted, then, there are environmental and climate change chaos, with far reaching consequences for man. This implies that climate change can potentially impact the three cycles of life (carbo cycle, nitrogen cycle, and hydrological cycle) which are closely interlinked and perfectly ordered. These cycles of life together nurture the generation and regeneration of the ecosystem goods and services for humanity's sustenance.

3.3. Weather and Climate in the Modern Science and Glorious Quran: Its causes and effects

The earth; the third rock of our star (the sun), is a unique planet that God Almighty (the most glorified, the highest) decreed to have abundant

water that exists in three states (liquid, solid and gaseous) and Life has suitable climatic conditions. It is sometimes called the Goldilocks Planet because its climate is temperate to support life (Desonie, 2008). Its protected atmosphere, including the stratosphere, lies from its surface to an altitude of over 300 km; about 20 to 50 km above the surface, which is dominated by the ozone gas, which prevents some of the sun's harmful ultraviolet rays from reaching us. In the glorious Quran, God Almighty (the Glorified, Highest) alluded to the fact that He created the earth with its atmosphere to save our purpose in life. The following verse says:

Do you not see that God Almighty has made what is in heaven and earth subservient to you and made complete to you His favours outwardly and inwardly? (Qur'an, 31:20).

The Arabic word *sakhkhara* used in this verse was translated as subject [similar to submissive as translated above] by Al-Imam Ibn Kathir in his Tafsir Al-Quran Al-Adwim. This implies that all things on and in the earth, along with its atmosphere, were created in the forms that enable humanity to use them for their benefit; according to the appropriate level of science and technology that God Almighty (Most Glorified, Highest) has gifted and ordained to the humanity. These things include both natural and man-made resources. But as can be seen later in this paper, this permission to use natural and man-made resources should not come in the form of abuse such as extravagant. If it is abusive, or extravagant, or primary, then nature or even man-made life will turn against us with severe consequences. With the supernatural, God Almighty (the Glorified, the Highest) has shown humanity; through scientific studies that the earth has a natural flow of energy from the atmosphere to the earth's surface; and vice versa. This is the decree of the Highest, the All-Knowing. The earth's atmosphere is heated both from above by solar radiation (mostly in the visible part of the spectrum) and from below by infrared radiation from the earth's surface, which in turn is heated by solar radiation. The warmer the surface, the faster it emits infrared radiation. Some of this infrared radiation is absorbed in the atmosphere by carbon dioxide, water and, to a lesser extent, other greenhouse gases such as methane and nitrous oxide. This is the so-called greenhouse effect, which leads to global warming, the warming of the earth and its atmosphere.

However, the greenhouse effect itself is good; because it warms us by around 33° C and brings the Earth's atmospheric temperature to the livable range it is now. It has been reported that without the greenhouse effect, the earth would currently be at least 30 ° C (54 ° F) colder and uninhabitable to most living things, including humans (Seeds and Beckman, 2012; Fix, 2007; Pasachoff and Philippenko, 2007). But as we know, God Almighty (the Glorified, Highest) predestined all that He created (Qur'an, 54:49); in the sense that any elevation from a set point [either above or below a set point] to disturbance of nature, which consequently leads to some problems for mankind. Climatic disturbance has been documented those natural processes on earth have produced CO₂ for 4 billion years removed from the atmosphere and the carbon in the form of coal, limestone, oil and natural gas. Since the beginning of the industrial revolution in the late 18th century, people have been digging up many carbon-rich fuels, burning them to generate energy, and releasing CO₂ back into the atmosphere faster than it can be naturally removed, accelerating the greenhouse effect and consequently increasing global temperature (global warming) at an alarming rate (Seeds and Beckman, 2012; Chaisson and McMillan, 2011). Utilization of fossil fuels is not naturally bad but the problem is excessiveness of its use. A very different problem is the discovery of ozone (O₃), which forms the stratosphere; which prevents the tangentially lethal ultraviolet radiation from reaching us. This ability is important for the continuation of life on earth (Fix, 2007). But it is telling that this ozone is now thinning over Antarctica every Antarctic spring, a condition known as the ozone hole. The ozone hole star didn't begin until the mid-1980s, but its maximum size has been increasing almost every year since then. The ozone hole is caused by the interaction of sunlight in the cold upper atmosphere with certain gases that we produce near the ground. These gases include; the most dominant are chlorofluorocarbons (CFCs), which are used in air conditioning systems and refrigerators (Pasachoff and Filipenko, 2007). This act of mischief; which has now become a problem of concern, has been alluded to in the various verses of the glorious Qur'an. These verses include:

And cause not corruption upon the earth after its reformation. And invoke Him in fear and

aspiration. Indeed, the mercy of God is near to the doers of good (Qur'an, 7:56).

Corruption on earth, as mentioned in the verse above, is a very broad term that even includes all forms of wrongdoing that lead to the greenhouse effect and, consequently, global warming. Concerning the focus of this study, these abuses include the overuse of fossil fuels such as coal, oil, and gas to power automobiles and other modes of transportation, and power generation and industry.

Others are deforestation and increasingly intensive agriculture.

Corruption has appeared throughout the land and sea by [reason of] what the hands of people have earned so He [i.e., God] may let them taste part of [the consequence of] what they have done that perhaps they will return [to righteousness] (Qur'an, 30:41).

In the above verse, it was very clearly revealed that all forms of wrongdoing; Whether on human bodies or on man-made and natural resources have consequences that are directed against human concerning their health, economy or politics.

“And We made the sky a protected ceiling, but they, from its signs, are turning away.” [21:32]

What is revealed in the above verse is the fact that the entire atmosphere has been protected from the destroyers that may come from the surface of the earth or space. These are the signs that God Almighty (the Most Glorified, the Highest) has shown the researchers. About the focus of this study, Seeds & Beckman, 2021: 365, found that the lower atmosphere of the earth was protected from the deadly solar radiation by the ozone layer, which, as mentioned earlier, is in the stratosphere, approximately 20 to 50 km² the surface. This means that God Almighty (the Most Glorified, the Supreme) created our atmosphere and placed it in the systems that protect it from various destructions. All of this is for our survival. The above scientific studies have revealed that the vagaries of climate change are associated with the problems of high consumption, overexploitation, production, and inequitable distribution of resources, which can be religiously associated with the sinful behaviour of greed, and love of wealth. God Almighty will test humankind with the problems of delayed rain, prolonged drought, food shortages, water scarcity, conflicts, and extreme poverty. And this is where humans interrupt the natural flow of energy and directly

and indirectly change the earth's climate. Many deaths are encountered due to climate extreme events like malaria, Ebola, and COVID-19, which negatively impact people, the environment, and development infrastructure. This implies that humanity will be put to the test in terms of life, wealth, and religion. To excel in such a natural exam, the fundamental teachings of Islam and its belief systems provide a boost to cope with climate change chaos through faith and hard work aimed at strengthening adaptation and resilience. Islam is the natural system of mercy, moderation, and prosperity that justly regulates and balances the natural systems. It encourages humankind to behave in the cosmos in a dignified way as a vicegerent of God Almighty, where religious teaching has the potential to reduce climate change footprint. It strictly forbids humanity from wastefully extractive, over-exploitive and misuse of the resources. Islamic civilization and historical developments have demonstrated efforts by Muslims to protect the environment, water resources, and wildlife. The Muslim community's use of environmental education as a strategy to mitigate the impacts of climate change has also increased recently, where ecological restoration and conservation of species have been praised and undertaken.

From the foregoing above discussion and analysis, the transformation of the world to a safer climate can be achieved by changing the human character through religion towards the free emission of greenhouse gases. Through religion, the community can consciously produce fewer greenhouse gas emissions over time (Bergmann, 2009; Chaplin, 2016; Kanagy and Willits, 1993; Koehrsen, 2018; Koehrsen, Becci et al., 2020; Reuter, 2015; Shibley and Wiggins, 1997). In some societies, at small scale, religious environmental activists have declared that they are making public statements, planting trees and providing environmental education to protect our planet (Amri, 2014; DeHanas, 2009; Mohamad et al., 2012; Shibley and Wiggins, 1997). From this perspective, and through using the ‘principle general benefit of the society’ Islam can play a very important role in transforming the world into a greener society (Bergmann, 2009; Gottlieb, 2008; Holmes, 2006; Palmer, 2013). Islam is one of the worlds and has adherents all over the world. Because the world has failed to come up with a consensus solution to greenhouse gases emission. Islam through the teaching of the

Quran and Sunnah of the Prophet (SAW) provides a guideline for handling. The World must read this verse and work on it, ‘‘Corruption has appeared throughout the land and sea by [reason of] what the hands of people have earned so He [i.e., God] may let them taste part of [the consequence of] what they have done that perhaps they will return [to righteousness] (Qur’an, 30:41’’).

According to Islam, world is destroyed by humanity through various practices. Many literatures support this argument. It’s a man who interrupt the natural cycle of the earth. Many evidence exists for the effect of greenhouse emission. The world failed to stop greenhouse emission. And Islam if used adequately may end the matter through its principle of the public first. Therefore, the world must put the population’s welfare first before individual. This practice will reduce egoists and focus on our planet safety. This will mark accountability to 7.9 billion people as of today. Scientific studies have revealed that the vagaries of climate change are associated with the problems of high consumption, overexploitation, production, and inequitable distribution of resources, which can be religiously associated with the sinful behaviour of greed, and love of wealth. God will test humankind with the problems of delayed rain, prolonged drought, food shortages, water scarcity, conflicts, and extreme poverty.

4. Conclusion

Therefore, climate change is devastating the planet, affecting plants, wildlife and communities across the globe.

Muslim recognise the importance of climate action as a key tenant of the Muslim faith. The Qur’an and the Hadith are full of references to the earth and humanity responsibility as *khalifas* (guardians) of this planet and its creatures. That is why, in this article, we’ve pulled together some meaningful lessons which exemplify what a climate-conscious Muslim should take mitigation action such as water conservation, tree planting, respect and care for nature, and efficiency in resource use as indicated below: ‘‘The Earth is green and beautiful, and Allah has appointed you his stewards over it. The whole Earth has been created a place of worship, pure and clean. Whoever plants a tree and diligently looks after it until it matures and bears fruit is rewarded. If

a Muslim plant a tree or sowed a field and humans and beasts and birds eat from it, all of it is love on his part’’. From the rich pillars of Islam and articles of faith, Muslims has all the opportunity to perfect their moral characters such as truthfulness, trust, fulfilling promises, sincerity, love, generosity, moderation, cleanliness, good appearance, hygiene, modesty, mercy, unity, brotherhood, knowledge, uprightness, and among others to build resilience against climate change in the light of Quran and Sunnah. Morality in Islam is an excellent deterrent to climate change problem. Islam, stresses the importance of environment for the protection of the pure nature and the reform of the rebellious tendencies. If humanity embraces the Quran and Sunnah inspired characters, a clean society can be developed to smoothly achieved global sustainable development goals. It is recommended several measures be taken within the Muslim community to stop further greenhouse gas emissions, namely; Create a global slogan to preserve our planet and implement it worldwide Muslim public campaign to end production of more greenhouse gases through local radio, television, live show, conferences, seminars and magazines, Creation of a global slogan to preserve our planet and implement it globally, Integration of climate protection programme, by-laws international laws and policy into the government's strategic plan, which ensures our earth is safe, Creating social platform through which forums, groups and networks on climate change around the world will be discussed for the safety of our earth and the Muslim community must take part in a reforestation campaign in various places.

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