



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

INTERNATIONAL JOURNAL
OF CURRENT RESEARCH

International Journal of Current Research
Vol. 15, Issue, 03, pp.24075-24078, March, 2023
DOI: <https://doi.org/10.24941/ijcr.45012.03.2023>

RESEARCH ARTICLE

FORMATION OF EARTH, NEGATIVE ENVIRONMENTAL IMPACTS ON EARTH AND PROJECTION OF EXTINCTION OF LIFE ON EARTH

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ARTICLE INFO

Article History:

Received 17th December, 2022
Received in revised form
19th January, 2023
Accepted 05th February, 2023
Published online 30th March, 2023

Key words:

Modern Human, Environmental Degradation, Pollution, Mass Extinction, "Must do" Projects, UNEP.

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Citation: Eng. George M.B. Kaggiah, PhD. 2023. "Formation of earth, negative environmental impacts on earth and projection of extinction of life on earth". International Journal of Current Research, 15, (03), 24075-24078.

ABSTRACT

Religious scholars date creation at 4,003BC implying that modern human to have been on earth for 6,025 years while according to research scientists the modern human is about 40,000 years old. Science finds that the universe is 14 billion years old, and the earth was formed 4.55 billion years ago. Life has existed on earth for about 600 million years with the human being arising just 6 million years ago. Majority of the authors reviewed, agree that "modern humans" evolved in Africa, from the *homo erectus*, in a process that took over 1.9 million years, and was concluded 45,000 to 35,000 years ago. The "modern humans" then migrated to all parts of the world reaching other continents at various times and arriving in the Americas about 15,000 years ago. The first civilizations were established between 4000 and 3000BC in Mesopotamia, Ancient Egypt, Ancient India and Ancient China forming the Old World. Since the modern humans started implementing social, economic and strategic security projects, some of the projects have had significant impacts on the ecosystems and the environment of the areas in which they were implemented and beyond. Environmental degradation was first recognized and made legally actionable in 1750BC in Mesopotamia (Old Babylon) by King Hammurabi who was the 6th King of the Babylonian dynasty which ruled from 1894BC to 1595 B.C. and enacted 382 laws which were the first in history after the 10 commandments given to Moses by God at about 1378BC or 3400 years ago. This paper explores the history of the earth and major environmental impacts and projects the probable cause(s) of extinction of life which include activities on man.

INTRODUCTION

Of the four billion species estimated to have evolved on the Earth over the last 3.5 billion years, some 99% are gone (Barnosky, A.D. et al, 2011). The earth is 6,026 years old since Creation which has been established at 4,004BC by Biblical scholars who attribute the determination to James Ussher, Archbishop of Armagh Church of Ireland and Primate of Ireland from 1625 to 1656. Ussher's chronologies appeared in 1650AD. (Steven Ball, 2003), Octave Levenspiel (2008, p313), and (Kerry Inman, 2019). Scientific radiometric age dating has offered yet another method of dating from the Creation, and the BB theory for determining the age of the earth. Radiometric dating has been used to measure the age of the earth progressively with Lord Kelvin publishing the first measurement in 1865, at about 100 million years, Lord Rayleigh in 1905 measured the age of earth at about 1 billion years and then in 1953, Dr. Clair Patterson having sampled meteorites formed at the same time as the earth, established the now widely accepted age of earth at about 4.55 billion years ago. (Kamel Ben Salem, 2011, p2). Dr. Clair Patterson's finding is confirmed by Octave Levenspiel (2008, p313), who records that "in his relativity theory, Albert Einstein suggested that the universe was created 15-16 billion years ago." Einstein's determination is considered magical as he had no measurement tools as were developed by Miss Henrietta Leavitt and Edwin Hubble which eventually facilitated a more accurate measurement age of the

universe as 14 billion years having originated from an "ever expanding" matter the size of a grape fruit after the Big Bang. Sampling of rocks at several locations and regions on earth and subjecting them to radiometric dating using various different isotopes has been in progress and rocks, found in the Isua formation in Greenland were dated 3.8 billion years old (Steven Ball, 2003, p12). This age is however, much younger than the widely accepted age of planet earth as 4.55 billion years. The genesis and the date life started on earth and particularly the advent of man is important in understanding man's impact on earth. Religion dates creation of the universe and life in its complete and present form, at 6,023 years ago as determined by Archbishop James Ussher 1650AD. (Steven Ball, 2003). Science has two groups of thought with one group positing that the date of life is not clear while another dates life at 3- 4.4 billion years ago. Cleaves, H.J. (2020, p10) finds that "Darwin left the notion of life's origins unexplained and only obliquely addressed it" and he concludes that "it remains unknown when the archaeal and bacterial phyla differentiated, or how much time might have elapsed between the origins of life" (Cleaves, H.J., 2020, p18)". The other group of Scientists agree that life in its various forms, started on earth 3.0-4.4 billion years ago. Jeffrey L. Bada (2004) proposes 4.4 - 4.0 billion years ago, Stephen J. Mojzsis (2015) proposes that life on earth started over 4 billion years ago, Barnosky, A.D. et al, (2011) finds that life started 3.5 billion years ago, Dale Kaiser (2001, p103) states that the oldest fossils of ancient life, of multicellular organisms discovered is 3,500 million years old, while The National Academies;

Report in Brief (2008,p3) provides a window of time in which it was possible for life to start and to be sustainable in their conclusion that ; *“Global climate conditions have been favorable for life and relatively stable for the past 10,000 years and suitable for life for over 3 billion years”*

Scientists find that Africa was the origin of modern man who evolved from homo erectus, now extinct, lived in Africa, and in 1.9 million years he evolved into the modern human about 45,000-35,000 years ago. Fossils of homo erectus, was first found by Eugene Duboise in 1891 (Smithsonian Museum), (Pat Shipman and Paul Storm, 2002,p114). The modern humans migrated from Africa to various areas of the World at basically the same time, approximately 45,000 to 35,000 years ago. Ted Goebel, et al(2008) confirmed that modern man developed in Africa (in a period of 1.9million years) and then migrated to all parts of the world reaching other continents at various times and arrived in the Americas last, about 15,000 years ago. The National Geographic *Key components of civilization*, records that the first civilizations were established between 4000 and 3000BC in Mesopotamia and Ancient Egypt, 2500BC; Ancient India; and 1500BC in Ancient China. The four civilizations are referred to as the Old World. Civilization was established in Central America in 1200BC and the oldest writing started in Mesopotamia in the Sumerian language. This article is in agreement with Steven Ball (2003) findings that Biblical creation and civilization is 6026 years old. Bridgette Byrd O'Connor(2019), observes that Humans, having discovered and use fire, started impacting on the environment as they migrated from Africa, as they would at times set fire to the forests to drive away animals. This tread of impacting on the environment continued as the modern man became more and more advanced and sophisticated ashe started implementing social, economic and strategic security projects.

Literature reviewed indicate that environmental degradation was first recognized and made legally actionable 3,770years ago, in 1750BC in Mesopotamia (Old Babylon), by King Hammurabi who was the 6thKing of the Babylonian dynasty which ruled from 1894BC to 1595 B.C. He enacted a code of 282 laws which were among the first three codes of conduct in history. Environmental issues were particularly addressed in law numbers 53, 56, and 59 here below as translated by translated by L. W. king translation (1915) from three pieces of marble recovered at Susa archeological excavations between 1901 and 1902 (Harper, R., 1904).

53. If anyone be too lazy to keep his dam in proper condition, and does not so keep it; if then the dam break and all the fields be flooded, then shall he in whose dam the break occurred be sold for money, and the money shall replace the corn which he has caused to be ruined.

56. If a man let in the water, and the water overflow the plantation of his neighbor, he shall pay ten gur of corn for every ten gan of land.

59. If any man, without the knowledge of the owner of a garden, fell a tree in a garden he shall pay half a mina in money.

ENVIRONMENTAL IMPACT EVENTS PRIOR TO HUMAN INTERVENTIONS

In the 4.55 billion years that the earth has been in existence it has been impacted upon by natural phenomena, from within itself such as volcanic activities or geological movement of plates in its form. Other environmental impacts on earth were caused by its interaction with the universe. Literature reveals that during the pre-historic age, without intervention of man, for over 600million years, life existed and all living things obeyed the laws of nature. Early civilization Age brought about religion and rationalization. Negative environmental impacts were attributed to “anger of the gods”; for example, flooding of the Nile in Egypt was considered a gift from god-Amon Re while destructive feedback as of wind-blown dust and sand were attributed to anger of god-Seth.(Mossbah M. Kolkas and C.E. Nehru, 1995). Philosophers then emerged and the Greeks and the Romans philosophers such as Thales of Miletus(626BC-548BC), Xenophane, Aristotle, Hippocrates, Cicero and Strabo of Amaseia (62BC to 24BC) recognized the power of nature and tried to explain the natural

phenomena. Some of the philosophers then became environmental advocates and agitated for public awareness of the negative aspects of human activities to the environment by degradation and pollution. Literature reviewed, reveal some of the known and recorded impacts on the earth since its formation 4.55 billion years ago can besplit into two categories; the pre-human and post-human age to enable analysis and discussion of the environmental impact resulting from natural activities and those resultant from man’s activities on earth.

Significant Environmental Impacts on Earth before Modern Human: Life has existed on earth for about 600 million years. The major impacts on earth discussed below have been measured based on geological formation and the evidence of life found in excavations or other modes of undisturbed exposure.

“In 1997, Hallam and Wignall defined a mass extinction as “an extinction of a significant proportion of the world’s biota in a geologically insignificant period of time.” (Grzegorz Racki 2019). To date, there has been five (5No.) extinctions events which are here below briefly described, (Heather Scoville, 2017)

The First Major Mass Extinction: The Ordovician Mass Extinction: This mass extinction occurs some 440 million years ago and it is estimated that 85% extinction occurred and the cause was subcontinental drift and subsequent climate change.

The Second Major Mass Extinction: The Devonian Mass Extinction: The Devonian Mass Extinction is dated at about 375Million years ago, when 80% of all living species became extinct. The suspected cause of the mass extinction was lack of oxygen in the oceans, quick cooling of air temperatures, possibly as a result of volcanic eruptions and/or meteor strikes

The Third Major Mass Extinction - The Permian Mass Extinction: This major extinction occurred about 250Million years ago and it is estimated that 96% of all species living at the time became extinct. The causes are unknown but suspected to have been possibly asteroid strikes, volcanic activity, climate change, and/or microbes.

The Fourth Major Mass Extinction - The Triassic-Jurassic Mass Extinction: During the Mesozoic Era, at about 200 Million years ago, the Triassic-Jurassic Extinction (also referred to as the fourth extinction) 65% of all existing life was eliminated. It is suspected that the cause was a major volcanic activity with basalt flooding, global climate change, and changing pH and sea levels of the oceans.

The Fifth Major Mass Extinction - The K-T Mass Extinction: The K-T Mass Extinction occurred about 66million years ago, when a 10km-15km dia. meteor hit the Yucatan Peninsula in Mexico and formed the 180km dia. Chicxulub crater driving 75% of all living species on earth to extinction and well known for the extinction of all the non-avian dinosaurs. (Heather Scoville, 2017)Grzegorz Racki (2019), confirms the extinction events in the *Big5 Mass Extinctions* GEO2: 12028

Environmental Impacts on earth inhabited by Modern Human: Collapse and disappearance of civilizations has been attributed to natural disasters, environmental degradation, and direct action on man. Natural disasters such as Tsunamis, Earthquakes, volcanic action, droughts and wars have destroyed civilizations as listed below.

The Eruption of Mt. Thera 1627-1600 BC

Described as the Minoan eruption of Thera volcano in Santorini, the volcanic action destroyed the Minoan Empire in ancient Greece, and its effects spread Worldwide and were felt in Greenland, Ireland, California and China (Walter L. Friedrich, et al, 2006)

Other civilizations have been affected by nature

- The Indus civilization declined as monsoons became increasingly irregular and unpredictable making farming unmanageable.
- Failure to understand and adapt to the host environment by human beings has been associated with collapse of the Viking settlement in Greenland, as the soils and the environment could not support farming and other life supporting techniques of the day.

Year 535-536AD The Worst Year in Existence

In 535-536 A.D, at a time when the Roman empire was collapsing, the weather in the entire globe changed, resulting in wide spread crop failure, and starvation. Volcanic activity has been found the cause of the fog and darkness that caused temperatures to drop. The Bubonic Plague followed the cold years in 541BD and killed up to 100million people.

Other similar events have been recorded such as

- I.The Eldgar Larva Flood 939AD,
 - II.Year of the Fog 1257/8 AD
 - III.Laki Fissure 1783AD
- (Mardon, A., et al, 2021).

The Destruction of the Mayan Empire: The Mayan Empire was destroyed by a long term drought of a period of 150 to 200 years between 760AD to 930AD. It was the most devastating drought the Maya had experienced in 1500 years and the worst experienced in the previous 7000years (Gill, R. B., et al, 2007).

Extinction of The Aztec Empire 1150AD to 1519 AD: The Aztec Empire 1150AD to 1519 AD reached a population of nearly one million. Michael E. Smith (2005) found that the huge population drained swamps, built raised fields (Chinappas) which they put under irrigation and carried out other activities which put heavy stress on the environment of Central Mexico. However, the extinction of the Aztec has not been attributed to results of environment degradation they had caused, but to the action of fellow man, according to Michael E. Smith (2006, p6).

“The Aztec civilization was brought to an abrupt end by Hernando Cortés and his invading army between 1519 and 1521. The primary cause of the Aztec defeat was the introduction of smallpox from Spain; millions of Aztecs died during the final months of resistance in 1521 and for the first five decades of the Spanish Colonial period”

The Black Death: The Bubonic Plague in 1348 killed 30% – 60% of Europe's population reducing the world's population from an estimated 450 million to between 350 and 375 million in 1400. This has been seen as having created a series of religious, social and economic upheavals, which had profound effects on the course of European history. It took 150 years for Europe's population to recover.

Relocation of people from Europe and Africa to the “New found lands”: Christopher Columbus arrived in Americas in 1492AD and literally changed the world. Willem Janszoon reached then Australia in 1606AD and Lt. James Cook dropped anchor in New Zealand in 1769. Captain Cook then landed in Australia on April 29,1770 and was the second European to land in Australia. The discovery of the Americas and Australia and New Zealand resulted in an emigration of settlers from Europe to the new lands. The settlements were followed by opening up huge areas for plantations which required labour and from 1650 slave trade increased as the main enterprise for Europeans. (Holger Weiss, 2018). Some aspects of the general reorganization of the host societies in the new lands and on the settlers and the impact of this readjustment are captured in the United Nations (2009), under the title *“State of the World’s Indigenous Peoples”*

The Prague in London (1665-1666): The National Archives Education Services records that the great plague of 1665-1666 in London was the worst outbreak in England since the Black Death of

1348. The City lost 15% of its population and experienced a death rate of 7,165 in one week. A total of 68,596 deaths were recorded in London but the true number was probably over 100,000 as it had spread beyond the city (National Archives).

The Fire of London in 1666: On September 2, 1666 London caught fire which lasted for 5days.The Royal Navy under the command of Admiral Penn helped by blowing up all the buildings along the path of the fire to create “fire breaks” and stop the spread of the fire.London lost 10 Million pounds to the fire at a time when the city’s annual revenue was 12,000pounds. The city was rebuilt with better planning by the King’s architect, Christopher Wren, who was influenced by the Italian planning and built a beautiful new City which took 30 years to complete.(The London Fire Brigade Museum).

The year 1816 Volcanic action of Mt Tambora in Indonesia: The year 1816 had a severe climatic anomaly that caused the global temperature to drop and it was referred to as the “Year without Summer” just as in year 536AD, volcanic ash had veiled the sun as a result of the volcanic eruption of Mt Tambora in Indonesia as it spewed tons of Sulphur dioxide, rocks and dust into the atmosphere and nearby islands. The eruption resulted in tsunamis which destroyed landscapes and habitat. Rivers were contaminated and grasslands and forests were burnt down. 11,000 people were killed immediately by the eruption while a few thousands died as result of the residual effects of the eruption. (Austin Mardon, et al., 2021, p47)

The first and the Second World Wars (1914-1918) and (1939-1945): Nadège Mougel, (2011), records that the First World war resulted in 20 million deaths and 21 million wounded while the second world War resulted in estimated 39Million deaths in Europe alone (Iris Kesternich, et al, 2012). In his farewell speech of January 17, 1961, the 34th President of the United states Dwight Eisenhower, described the 20th Century as the century that had witnessed four wars all of which he described as holocausts. (*Public papers of the Presidents*, p1036).

2019 to 2022 COVID 19: COVID 19 virus (the Corona virus) which originated from Wuhan in China and spread throughout the World infecting 757, 264,511 and killing a total of between 2019 and February 2023 as reported to WHO (**WHO Coronavirus (COVID-19) Dashboard**)

DISCUSSING PAST AND FUTUREEXTINCTION ENVIRONMENTAL EVENTS

A critical review of the historical catastrophes that have visited our planet earth, as highlighted in sections 2.1, 2.3 and 2.4 above, it is clear that a significant negative impacts has been recorded, the magnitude of some of which has been so severe as to cause mass extinction event. Five such extinction events have occurred at intervals of 160million, 65million, 125million, 50million, and 135 million years apart. The fifth mass extinction event occurred some 66million years ago. Modern Man came to be 45,000years to 35, 000years ago, while the last mass extinction event occurred 66Million years ago and, therefore, all the five mass extinction events recorded can only be linked to nature but not man. Observing that since the formation of life 600million years ago there has been five mass environmental extinction events and the intervals between the five mass extinction events, it would be correct to conclude that:

- events with similar impact on earth had been occurring and perhaps at similar intervals since the formation of earth 4.55billion years ago, but scientists cannot at this time identify them as the means of identification has been “relatively high concentration of fossils in a short span of time as measured by geological change”
- b)other mass extinction events will occur, and that
- c)the Sixth mass extinction event is due anytime now, by observing that intervals of 50million and 65million years between mass environmental extinction events have been recorded in the past and that currently an interval of 66million years has occurred. The longest interval was 160million years, measured between the

time of formation of life on earth and the first environmental mass extinction event 440million years ago. It is evidently clear that the activities of man since he learnt to make fire, cultivate, make tools and machines, use coal and fossil fuels, make war and infrastructure projects (for an estimated maximum time of over the past 45,000 years) he has been responsible for fast and vast environmental degradation and pollution of earth and space).

Horace Bushnell (1868, p169), concludes that *“Not all the winds, and storms, and earthquakes, and seas, and seasons of the world, have done so much to revolutionize the earth as Man, has done since the day he came forth upon it, and received dominion over it.”*

George Marsh (1864) stated that: *“The earth is fast becoming an unfit home for its noblest inhabitant, and another era of equal human crime and human improvidence, and of like duration with that through which traces of that crime and that improvidence extend, would reduce it to such a condition of impoverished productiveness, of shattered surface, of climatic excess, as to threaten the depravation, barbarism, and perhaps even extinction of the species”.*

Professor Anthony D. Barnosky (2014) agree with George Marsh (1864) and Horace Bushnell (1868), and are proponents of the Sixth Mass Extinction, which they predict is now due and attributable to the capacity of manfor environmental degradation. They aver that at manifest mans’ environmental degradation capacity, the earths carrying capacity of man should not exceed a population 3.5Billion which was reached in 1970. They belief that the World is way beyond its safe life with the current 8.0Billion people. Prof. Anthony D Bamosky (2014) predicts that *“human beings will be the first species in the planet's history to bring on a mass extinction of life on Earth”* as he reasons that *“ Adding today's human-caused climate change -- and especially the accelerated changes projected under business-as-usual scenarios -- into the milieu of extinction drivers is like adding a match to gasoline”*...and he recommends that *“..there is an even bigger reason to forge global climate agreements”*.

Elizabeth Kolbert, (2014) finds that the tropics are host to megadiverse ecosystems with many specialised species. The multitude of these ecosystems tend to be self-reinforcing but Man tends to continuously interfere with these ecosystems whose replacement, seasonality or generations are slow and therefore they are vulnerable to probable extinction. WWF Living Planet Report (2004, p4) states that from 1970 to 2000, populations of species living in tropical grassland ecosystems fell by about 80 per cent. It was further projected that the earth shall be home to 9 billion people by 2050 when global Carbon emissions from Fossil fuels shall reach 12 Billion tonnes. Katarina Zimmer (2022) agrees with the proponents of the 6th extinction and in agreement with Elizabeth Kolbert, (2014), suggests that Today’s extinction rates of various species are very high, but scientists are yet to concur whether we are in the middle of a mass extinction event. Katarina Zimmer (2022) concludes by stating that *“When it comes to Biodiversity loss, human influence could even be on the scale of a comet”*

The two schools of thought of the proponents of the sixth extinction event are in agreement that the sixth extinction is now due; their difference is that one of the groups projects the cause of the event to nature while the other attributes the cause to the ongoing vicious environmental degradation capacity of man. Some scholars of the latter group, believe we are in a “happening now” mass extinction event. The literature reviewed reveals that no mass extinction as defined by *Hallam and Wignallin 1997*, has been caused by man to date. However, several scholars are of the view that man is capable of causing a mass extinction event. The literature available leads the author to the conclusion that the sixth mass extinction event is due and it will be caused by either:

- a natural environmental event
- a “planned short-term” environmental event caused by man or

- unplanned “gradual cumulative” environmental degradation caused activities of man, triggering environmental event which could be sudden or gradual

STRATEGIES FORSURVIVING THE SIXTH MASS EXTINCTION EVENT: Based on the three probable causes of the looming sixth environmental mass extinction event, the human beings are already devising the best ways to survive the extinction event. To be practical, one has to narrow down on the “most likely” cause of the extinction event and focus on how to survive it.

An Extinction Event caused by Nature: All the known five Extinction events that have impacted earth have been caused by Natural events which have originated from natural activities within the earth itself or the universe around the earth.

Natural Mass Extinction Event with Origins in Earth: The earth has had volcanic activity from within and earth crust movements which may also trigger volcanic action, tsunamis, volcanic ash shrouding sunlight, earthquakes, hurricanes, storms, thunder, floods, fires and microbial activities all of which have resulted in mass extinction events.

Natural Mass Extinction Event with Origins from the Universe: The earth has been a target of several asteroid and meteorite strikes including the one estimated to have hit the Yucatan Peninsula in Mexico, formed the 180km dia. Chicxulub crater and causing the Fifth Mass extinction event on earth. (Heather Scoville, 2017). Man understands the threats in 4.1.1 and 4.1.2 and also understands that these events cannot be stopped from happening and man can become extinct from these events.However, some developed nations are finding ways of preventing total extinction of the human race. It is difficult to save the whole world but they are exploring several ways of avoiding or mitigating the extinction event. Some of the options being studied and experimented upon are:

- disabling comets and meteors before they strike earth
- Temporarily leaving the earth during the duration of the event,
- Replicating “Noah’s Arc” in storing humans and other species “future team” on earth and/or in space, for resettlement at the opportune time.
- Permanently relocating to a planet approximating the environment of the earth.

Man-driven Mass Extinction Environmental Event: Man has not caused any mass extinction event but he has been recognized as a danger to the earth in due to his insatiable capacity to cause environmental degradation in pursuit of economic growth and strategic supremacy. Katarina Zimmer (2022) concludes by stating that *“When it comes to Biodiversity loss, human influence could even be on the scale of a comet”* President Dwight Eisenhower (1961) observed that as a result of man’s activities, the 20th Century witnessed four wars, all of which he described as holocausts (James C.Hagerty,1961).Scholars agree that man is impacting the environment negatively and predict that the sixth environmental mass extinction which is due, may be triggered by the on-going activities on man.

The world is aware of the threat posed to the world by the economic development of all the nations and have the nations, through the UN, established the United Nations Environmental Programed (UNEP) in 1972. The UNEPis the global authority for the environment with programs focusing on climate, nature, pollution, sustainable development and more. In the 1990s ENEP had impacted the environmental and social-economic Impact space and most countries had established a regulatory body, equipped with appropriate legal framework, to monitor development and production activities to contain environmental degradation and pollution by the existing and proposed projects by requiring ESIA’s and EA’s to be conducted at designated periods at inception, implementation, operation, and demobilization of all projects.

The requirements for Environmental and Social Economic Impact Assessment (ESIA) with associated Environmental and Social-economic Management Plans (ESMP). Resettlement Action Plan (RAP) for new projects and Environmental Impact Audit (EIA) prepared by competent experts for all existing Projects has improved monitoring, detection and enforcement of laws against environmental degradation, pollution and has significantly reduced environmental degradation and pollution particularly in the developing countries. In the developed countries, plant and factories which are the backbone of national economies; but cause severe environmental degradation and pollution, have been in existence for a long time. The environmental safeguards and mitigation measures applicable, focus on reduction of the current level of negative environmental impacts being caused by operating development projects. (Austin Mardon, *et al*, 2021). The approach by UNEP shall ensure that man is encouraged to reduce environmental degradation and pollution to avoid man being the driver of the sixth environmental extinction Event.

In the processes of providing for safeguards and mitigation for environmental degradation and pollution, international negotiations and preparation of environment related agreements, the view of Olympio Barbati (2004) must be used for measuring deviations and therefore the degree of corrective measures the countries ought to make. Olympio Barbati (2004) holds that the nature of environmental conflicts in developing nations differs considerably from those in industrialized nations. This view holds that development and associated environmental degradation and pollution occurred and continues as many machines and factories continue to operate in developed countries and most environmental conflicts are over how to minimize further resource destruction and reduce current levels of environmental degradation, but in the developing countries, economic, social and political structures have not yet been widely affected by environmental changes brought about by industrialization. Developing countries seek to achieve the Sustainable Development Goals (SDG) particularly those relating to reduction of poverty, food security and improvement of the Health of their populations. The developing countries and developed countries, therefore, stand at the two extremities of cause of negative environmental degradation and pollution as well as the proportionate benefits accrued from industrialization and development.

CONCLUSION

Literature reviewed, leads to the conclusion that the probability of an environmental mass extinction event occurring on earth is a certainty. The probability of such an event being caused by the interaction of earth with the Universe and completely independent of the activities of modern man is more certain considering that five such previous events have already occurred in the absence of man on earth. However, leading scholars on the subject concur that since modern human entered the arena, he has proved to be an unequalled and an effective catalyst in hastening the sixth environmental mass extinction event. To emphasize Man's catalytic prowess, he has been compared "to a match thrown into gasoline" (Anthony D. Bromsky, 2014), human influence could even be on the scale of a comet" (Katarina Zimmer, 2022) man has been responsible for four holocausts in a short space of 50 years. (President Dwight Eisenhower, 1961). George Marsh (1864) stated that: "...another era of equal human crime and human improvidence... would reduce the earth to such a condition... as to threaten ... perhaps even extinction of the species" while Anthony D. Barnosky (2014) has been more unforgiving and finds that "human beings will be the first species in history to bring on a mass extinction of life on Earth."

RECOMMENDATION

World Leaders should continue in their search for a fair and all-inclusive agreement, to improve on the Kyoto Protocol which they successfully concluded in Japan in 1997, with the important objective of operationalizing the United Nations Framework for Convention on Climate Change.

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