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SCIENCE, CULTURE AND RELIGION IN WASTAGE MINIMIZATION FOR CLIMATE CHANGE ADAPTATION

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ABSTRACT

Zero waste has become a new parlance recently among the environmentalists and green scene seekers for recycling, reuse and reevaluation of the wastages that originate from the daily life of modern societies. Although in nature this parlance is at its convenience, but in towns and especially mega cities its validation is questionable. Although there are many programs, procedures, plans and strategic management studies, zero waste concepts remain as a theoretical goal that should be approached as much as possible. Among the effective subjects are cultural, traditional, ethical, belief, safety and religious virtues, which help to restrict extravagancy, wastage, self-sufficiency at marginal levels and friendly interactions with natural resources. This paper explains the natural, human and environmental cooperation on the belief, faith and religion bases. Prior to "zero waste" achievement, it is necessary to abide with "zero extravagancy" application in the society. For this purpose, not only scientific and technological means are enough, but they must be supported by culture, belief and religious abidance.

KEYWORDS: Climate Change, Faith, Global Warming, God, Religion, Science, Technology, Waste.

1. INTRODUCTION

UNEP [1] publication helps explore the nexus between environment, religion and culture, giving some examples, in order to arrive at a more comprehensive and sophisticated understanding and appreciation of how culture and religion can contribute to the protection and preservation of the natural environment. Hulme [2] concurs that "... our beliefs about the divine, about the spiritual and the transcendent, and about our role in the world as moral agents, shape our sense of duty and responsibility to care for others and for Nature. (p. 161)." According to Creator's commands, human beings ought to be moderate in their spending without wastage, preserving the given gift to human beings. One should remember always that the property is given to everyone so that s/he spends them not in an extravagant or thrift, but in a moderate manner, which should be in balance and not render harmful effects on the environment. In general, climate change vulnerability can be considered in three groups as physical (infrastructure, settlement in risky areas), organizational (lack to access to responsible authorities, lack to leadership), and sociological (awareness, beliefs, customs). Community vulnerability is closely dependent on these factors. Tucker and Grim [3] stated that it is important to note that "sustainable life" may not correspond to "sustainable development" may not correspond to "sustainable development" as this latter term is increasingly used to promote growth economics with little regard for inherent limitations on ecological systems. As a result, the wastage minimization is not cared for the reduction of greenhouse gas (GHG) emissions into the atmosphere, which causes to global warming and consequent climate change and variability impacts.

The empirical or social scientific researches started to evaluate the climate change impacts from the religious points of view [4]. In recent years faith and religion based conductive researches and discussions have started to appear in the literature concerning the climate change. Many groups have actively engaged with global climate agencies and civil society organizations on anthropogenic climate change. It is hoped that as for the mitigation and adaptation against climate change religious groups are expected to take more share for GHG emission reductions by preaching good mood and behavior deeds. Any analysis of religious engagement with human-induced climate change must take into account of such ambivalence. Moving from environment, in general, to climate change, the

planetary scale of human induced climate change can seem incomprehensible to millennium-old traditions with belief systems that are based on the far-reaching characteristics of deity and the corresponding puniness of mere humans [5].

The climate change has also cooperation with human individual and interfaith [6-11]. Besides their prominence as social and political agents, there are other reasons to think it useful to examine religious groups regarding climate change [12].

Observers have suggested several key reasons why the world's religions, once engaged, could be an important part of the societal response to climate change [13-17]. First, religions conceptions may be able to encourage a response to climate change via their influence on believers' worldviews or cosmologies and the moral duties that they promote. Second, religions can engage a broad audience, many of whom accept and respect their moral authority and leadership. Third, religions have significant institutional and economic resources at their disposal. Finally, religions have the potential to provide connectivity (e.g., in the form of social capital) that fosters achievement of collective goals. Each of these characteristics could be applied to the issue of climate change. In sum, religions are assumed to be important influences on adherents' attitudes and subsequent behavior as well as being powerful social actors.

Anthropogenic effects on the climate change have also the cultural dimensions even to the extent of religious aspects. It is by now well-known that the climate change is entangled with humans and their cultural, social, traditional and religious affairs. It is also entangled with all the ways in which religion attends human ways of being. Indigenous peoples show reflection to the climate change by means of cultural, traditional and religious concepts.

Hulme [2] stated that "the idea of climate exists as much in the human mind and in the matrices of cultural practices as it exists as an independent and objective physical category," then understanding it should include investigating how religious patterns of mind and formations of practice interpret climate change. Among such investigations are the deeds to understand the climate change aspects by religious people, institutions, and non-governmental organizations (NGOs). Arguing for improved public understanding of the religious heterogeneity through which climate change is experienced and politicized, he writes: "Science is never enough to resolve problems that are cultural in origin" [18-19].

During the Conference of the Parties (COP) meeting in 2015 different authorities announced

formal statements. For instance, at an Islamic Conference on Climate Change, the "Islamic Declaration on Climate Change," declared that each human has the role of caretaker of Earth. Unfortunately, ignorance or moral virtues and religious rules lead to damage and destabilization. The declaration about the deceleration of oil production, and hence, the target was oil-producing countries without any call for oil user rich and developed countries.

There are substantial confessional documents within Islam religion concerning environmental issues [20], but few works are concerned directly with climate change. Ali (2016) suggested reflection on Muslim norms for supporting energy shifts principles in fossil-fuel-exporting Islamic countries. There are also useful ethnographic studies on Islamic climate thought and practice contexts, including northern Kenya [21], Ghana [22], Indonesia [23], and Mali [24].

Believers in Abrahamic religions think that divine force, God, has superpower and controls the cosmos, but humankind is not so powerful, and therefore, to keep the environment from further greenhouse gases (GHG) emission loads, they must try and restrict anthropogenic climate change.

There are different extravagant aspects such as in terms of food, dress and drink all of which lead to satiety, illness, and consequently, in activity along the path of daily life. At times of need it is advised to rational all available exploitable sources without any wastage remnants. Today many refer to this as "zero waste [25]. Religions orders moderation, modesty and balance, because the universe is created in balance and for its sustainability the creatures are ordered to keep the balance with avoidance of extravagancy and waste minimization and if possible zero-waste. It is the duty of human to keep the delicate balance in the universe by abiding with the equilibrium states of the atmosphere, lithological, biologic and especially hydro-spherical balances. In modern societal life, zero-wastage is supported with all means, but extravagancy is not touched upon, and on the contrary, consumption without limit is encouraged by different advertisements, public meetings, and symposiums thinking that the industry and economic activities are essential and fundamental ingredients in any development program. Such a development remains healthy if there are limits for its expansion, which indicates the first step as avoidance of extravagant life aspects. All human socio-economic, cultural and religious activities are related to environment, which may be as house, villages, towns and cities. In old good days,

the parlance was that if each one cleans the front of his asses (house) this will lead to clean environment in the sense of neighborhoodship.

The industrial revolution towards the end of the eighteen century, especially with the use of coal, apart from the neighborhood, the air over these areas became polluted due to the GHG emissions. Many years air pollution remained as one of the top topics in the academic, industrial and company circles. Fossil (especially coal and fuel oil) energy sources usage alleviated the air pollution problem to a significant extent, but since almost 30-40 years the replacement of oil usages in the factories, industrial establishments and household with the natural gas reduced air pollution to possible minimum level without many problems. Since almost three decades, a new nuisance started to appear and still at the top of environmental agenda that this time not only the neighborhood and air, but atmosphere accumulated all the GHG remnants from human activities, and therefore, anthropogenic origin pollution took place creeping in the form of global warming, GHG emissions effect and more significantly climate change impacts. Although various methodological quantitative techniques exist in the literature, oral information sources related to cultural, traditional, and religious concepts and their applications in daily life are rarely mentioned. This point is the main focus of this study.

The main purpose of this paper is to emphasize on the minimization of wastage instead of zero-waste as a fashion slogan, which may not be satisfied absolutely. It is mentioned that in zero-waste action the human is not limited with extravagancy style of life but encouraged to consume to the maximum as the human self-wishes, which is a dangerous direction. Instead, less extravagant style of life should be supported with various restrictions on economy, culture, social life and preservation of environment.

It is also advised in this paper that any society should also be administrated or managed according to materialistic rules such as ethical principles, which can be punished by a human authority, but equally the religious, cultural and spiritual aspects must also be spread throughout any society according to their spiritual believes to get the most of extravagancy restriction and in this manner the theoretical zero-waste end product may be approached in the best possible manner for reduction of climate change impacts.

2. NATURAL BEHAVIORS

Tropospheric emissions may originate from

anthropogenic activities as a result of GHG emissions originating from fossil energy sources (coal, fuel and natural gas) usage in industrial, agricultural, waste, transportation, domestic and urban sectors. Natural environment cannot cope with self-purification processes to digest these emissions, which seem as a local problem depending on three distinctive geographical factors. First, the wealth of human beings defines the distribution of housing, industry, commercial centers and motor vehicle transportation between these centers. The second agent is the natural phenomena in the atmosphere and

hydrosphere, which control the local and temporal climatic weather and quality variations, because of which the emissions into these spheres are either scattered in various directions or carried away by winds. The interaction between the emissions and the spheres may well be modified by local relief factors (geomorphology). Finally, atmosphere, hydrosphere and lithosphere are in natural harmonious balance and measures for the sustenance of biosphere, which provides survival and sustenance of living creatures (Figure 1).

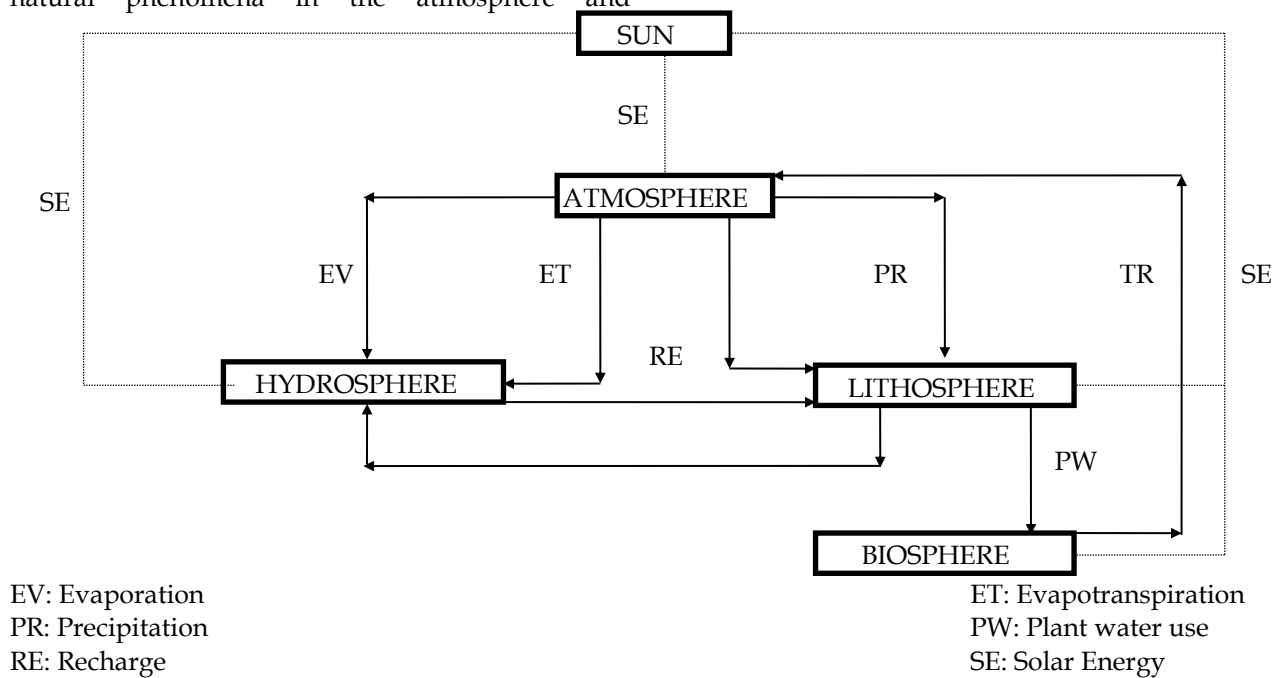


Figure 1: Various Spheres and Their Environments.

The equilibrium between these spheres is based on their harmony with the anthropogenic activities at the center of the socio-economical, environmental and ecological domains. Unlimited and uncontrolled technological developments affect the environment leading to various human health problems and global warming coupled with climate change impacts. Accordingly, measures should be taken for reducing risks concerning emissions and possible ecological imbalances. All these spheres and interactions among them are in balance harmoniously, but anthropogenic activities bother the natural balance.

Even though the natural circulation within and among the spheres provides scavenging effects, continuous and long-term emission loading on atmosphere have already given signals for undesirable and dangerous expectations in the future, which might increase, if necessary,

precautions are not taken. For this purpose, more researches are necessary to appreciate the natural events in the atmosphere; emissions in the lower troposphere and transboundary between the troposphere and hydro-lithosphere; energy, agricultural, transportation and industrial emission generations and their movements; effects of acid rain; waste water leakage into the surface, and especially, the groundwater resources.

It seems that success in these areas necessitates the following items and their harmonious combinations for mitigation and adaptation purposes.

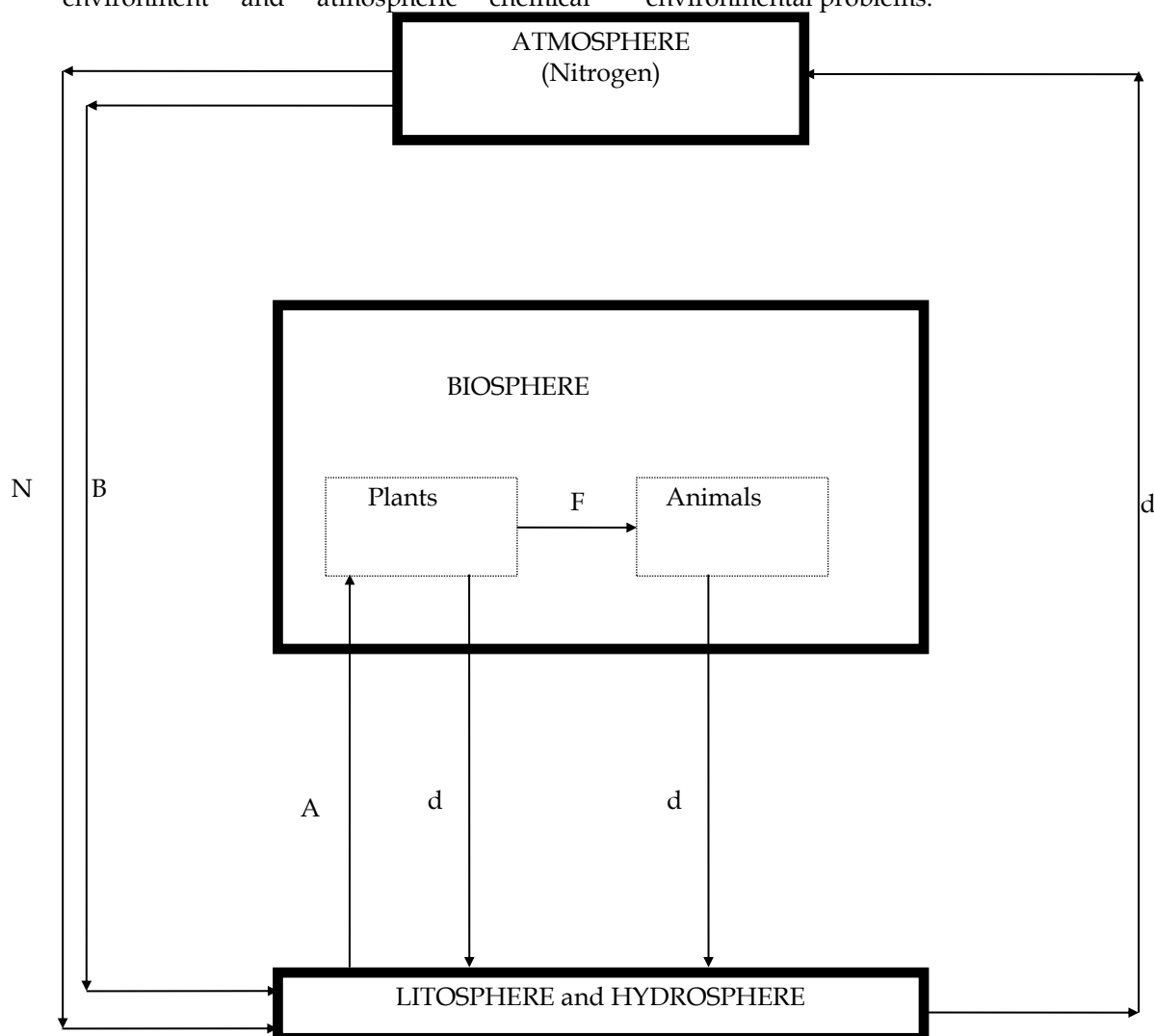
- 1) At first glance, sound scientific basic researches and their practically proper applications,
- 2) More extensive climatological, meteorological, hydrological and hydrogeological observation networks should be established for spatial and

temporal monitoring of the uncontrollable variables,

- 3) There should be ever greater cooperation in detecting and predicting climate change impacts,
- 4) Assessment of consequential environmental and socio-economic impacts by shareholders,
- 5) Identification of dangerous GHG emission levels from each activity such as the energy, agriculture, industrial, transportation and waste sectors,
- 6) It should be emphasized at each stage that from scientific and technological points of views, almost every effort has been done for keeping ecological balance through combat, mitigation and adaptation means to stop environment and atmospheric chemical

composition degradations.

In emission free atmosphere naturally available gases, namely, nitrogen (N), oxygen (O) and carbon dioxide (CO₂) are replenished through many-year duration cycles due to the natural phenomena that take place between various spheres in a balanced manner. Figure 2 shows the interaction between the atmosphere, biosphere, lithosphere and hydrosphere for nitrogen cycle that is the main agent in the atmosphere, and it completes its renewal process about once every 100 million years. Fertilizer production and other human activities have more than doubled the global rate of nitrogen fixation since preindustrial times. The resulting imbalance is contributing to ecosystem disruption, ozone depletion, greenhouse effects and other environmental problems.



Legend:

- N: Nitrogen compounds produced by atmosphere electrical storms
- B: Bacteria
- A: Assimilation
- d: Death

F: Feeding

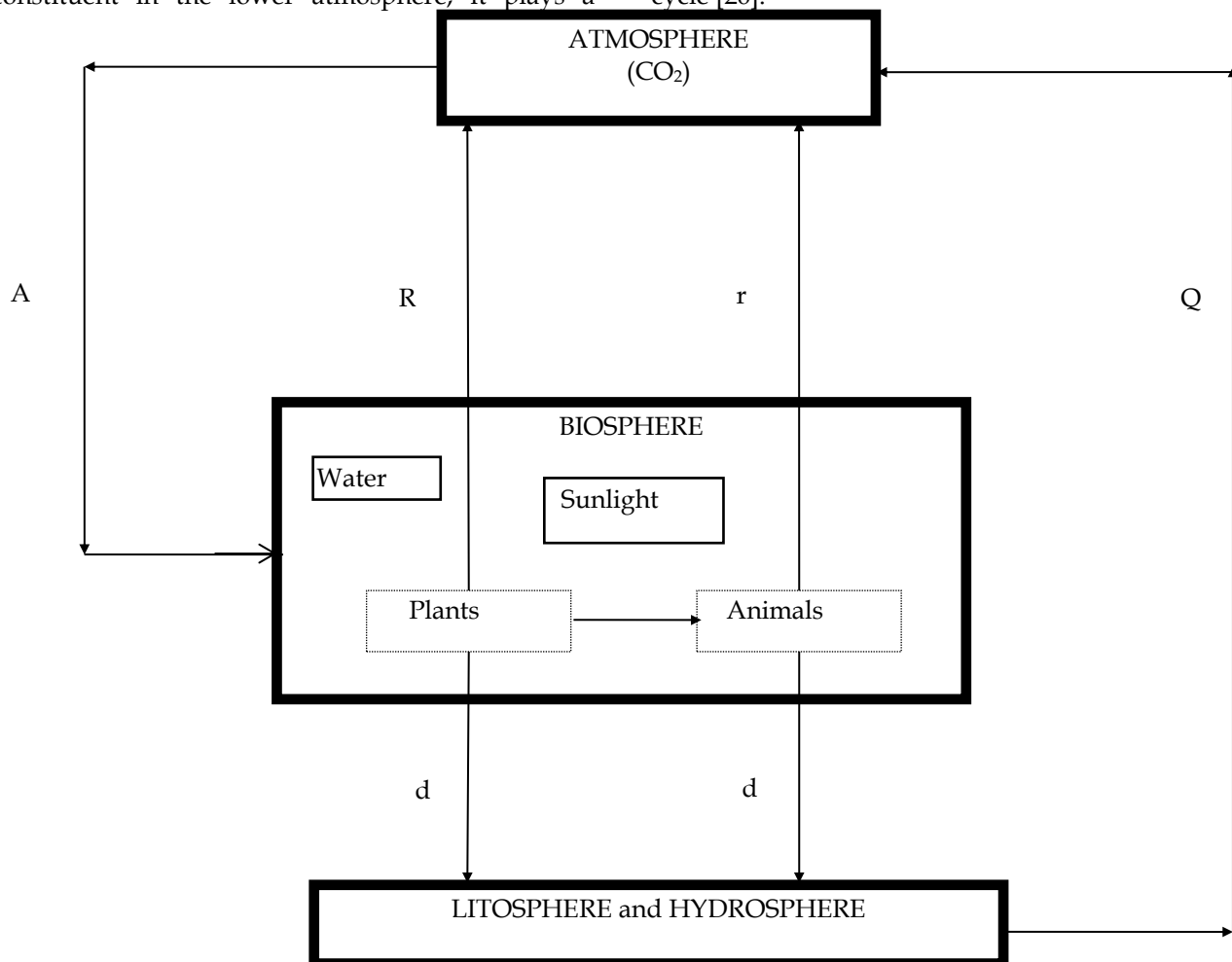
D: Decomposition of organic matter

Figure 2: Natural Nitrogen Cycle.

Nitrogen is the dominant element in the troposphere, but it is among rare elements both in the hydrosphere and lithosphere. It is a major constituent not only in the atmosphere, but also within the animals and plants as principal element in proteins, and the basic structural compounds of all living organisms. Certain microscopic bacteria convert the tremendous nitrogen supply of the atmospheric nitrogen into water soluble nitrate atom groups, which can then be used by plants and animals for the protein production. The nitrogen reenters the troposphere as dead animals and plants are decomposed by other nitrogen-releasing bacteria.

Although carbon dioxide (CO_2) is the minor constituent in the lower atmosphere, it plays a

fundamental role in the atmospheric heat balance, and it is a major controlling factor in the earth's patterns of weather, climate, global warming and climate change. The CO_2 cycle is shown schematically in Figure 3. Green plants directly use atmospheric CO_2 to synthesize more complex carbon compounds, which are the basic food for animals. The carbon is ultimately and naturally returned into the atmosphere as a waste product of animal and plant respiration or decomposition just as free oxygen is contributed by green plant photosynthesis. The natural cycling of carbon dioxide through living organisms is only 35 years for the relatively small quantity in the atmosphere to pass once through this cycle [26].



Legend:

A: Assimilation by photosynthesis

d: Death

O: Oxidation of dead organic matter

r: Released by photosynthesis

R: Respiration

Figure 3: Natural Carbon Dioxide Cycle.

Foreign materials release into the atmosphere temporarily and locally changes its composition as the result of GHG emissions due to anthropogenic activities. The most significant man-made atmospheric additions (carbon monoxide, sulfur oxides, hydrocarbons and liquid and solid particles) are gases and aerosol particles that are toxic to animal and plant life when concentrated by local weather conditions such as inversion layer development, orographic boundaries and low-pressure areas. The principal pollution sources of toxic materials are

automotive exhausts and sulfur-rich coal and petroleum burned for power generation and heating purposes. Fortunately, most toxic pollutant emissions are removed rather quickly from the atmosphere by natural weather processes depending on the meteorological conditions, which do not have long-term effects. Burning coal and oil for energy generation led to significant CO₂ level rise during almost the last 100 years in an accumulative manner (Figure 4). It is obvious that especially after 1980 the average global temperature starts to rise.

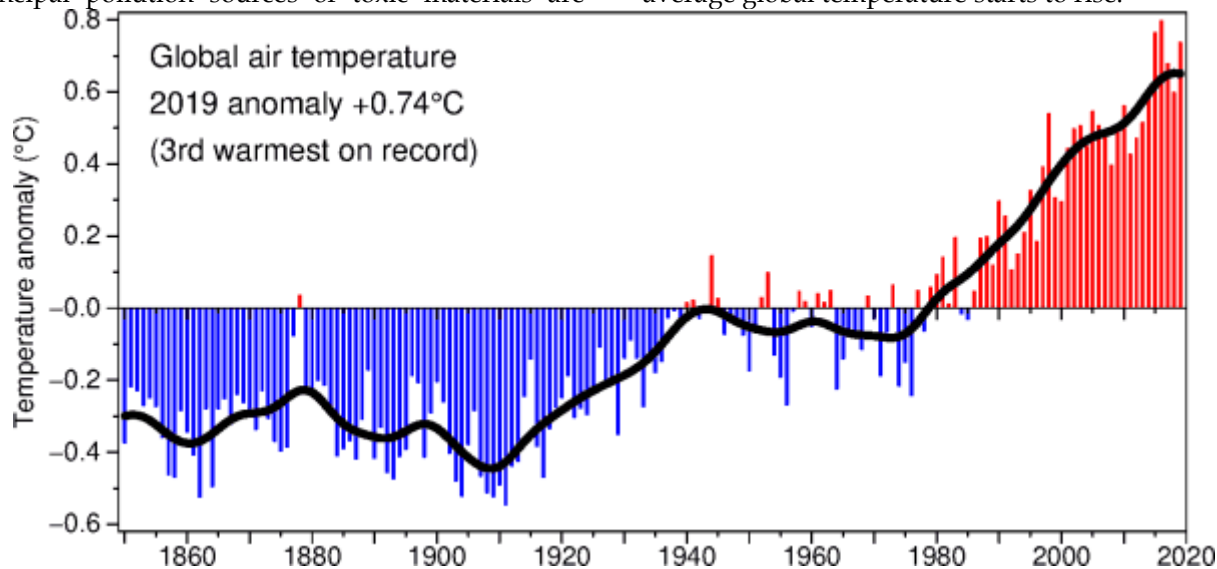


Figure 4: Global Air Temperature Change (<http://www.cru.uea.ac.uk/>).

Since CO₂ has one of the large gas molecules that traps long-wave radiation to warm the lower atmosphere leading to the so called “greenhouse effect”, atmospheric scientists and meteorologists alike suggest that increase in the CO₂ causes to a general warming of the earth’s climates. Recent studies have indicated that CO₂ climate change does not yet pose a serious threat to the balance of atmospheric processes currently, but if the necessary precautions are not taken from now on to combat against the climate change, it may reach to dangerous limits. It is, therefore, necessary to combat against the global warming and climate change impacts through mitigation and adaptation measures. However, worries about CO₂ effect on the climate gave rise to further detailed studies and investigations to focus attention on the complex interactions between man’s activities, environment, ecosystems and the

atmosphere, and thus, may prevent still more serious problems from arising in the future. A major question is whether the scientific approaches in their inhuman consequences towards environment with the lack of moral and faith are enough to restore the balance for sustainable ecology and clean environment?

As it is obvious from Figure 5, the Earth is under the combined effects of several unique features, properties, and their characteristics processes. On the other hand, for sustainability of living things, the Earth system is largely decomposed into the four major sub-systems like hydrosphere (water), atmosphere (air), lithosphere (land) and biosphere (creatures). All diversities take place on and around the Earth as the four interactive and interlocking behaviors among these systems. They can further be categorized into two broad classes as physical (non-living) and biological (living) things.

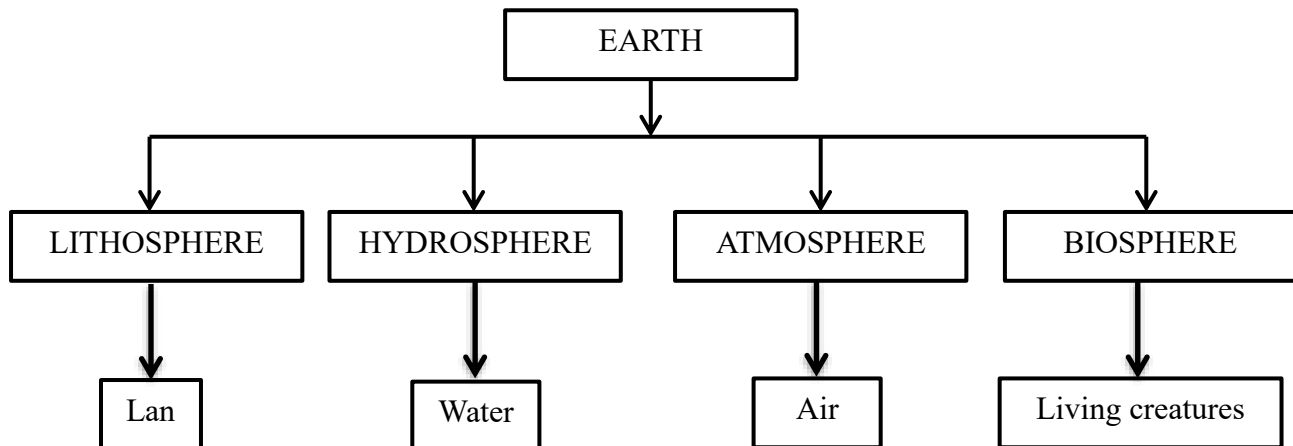


Figure 5: Earth Systems.

Since 3-4 decades, the human beings started extravagant and superficial life style by enjoying excess in almost all the commodities that place on them great value, and hence, consumption is fueled without control, whereas at the down of the drain “zero-waste” deeds are encouraged. In doing so, most often self-dependence, sufficiency or self-show off implications give the other individuals more concern about wealth, prestige and other non-scientific and non-religious deeds.

3. NATURE COUPLED HUMAN BEHAVIOR

There is a consensus among evolutionists today that man first appeared in Africa approximately four million years ago. Others counter this theory saying, “... when shall we speak of man as man”? The timeline they give is approximately one million years and to fully understand one million years is still a difficult task. However, another even better way to understand time and man is to study it in terms of generations [27]. Human beings are under the continuous influences of internal and external motivations through worldly social life and these motivations mold his/her life with alternative happiness and sorrow (depression) periods depending on time and circumstances. In general, as a part of this universe, human is integrated into spatiotemporal operations and changes in the forms of improvements or deteriorations that appear in the process of flowing material and spiritual media. To examine his/her integration with these motivations, it is illuminating to separate the external part as the external environment, which consists of material, extraterrestrial and terrestrial types in addition to the internal environment of spiritual existence and reflection. It is possible to divide further the terrestrial environment into various sub-environments as the socio-environment concerning relationships among individuals, institutions,

foundations, government and state in general; bio-environment that concentrates on the human interaction with other creatures and plant life; geo-environment concerning the lithosphere and landscape and all types of natural sources that are at the service of creatures at their habitat on the earth; hydro-environment with water resources, their occurrence, distribution and continuous movement in the universe, and especially, in the lower layers of the atmosphere.

Since the early periods of human existence on earth, all these environments had impacts on daily human life and survival, but as the time passed away with the wisdom and intellectual ability granted to human beings by God, they started to obtain their fundamental needs such as food, shelter and clothing by exploiting natural sources in the nearby environments at reasonable rates. These initial requirements were very innocent, because they were essentials for survival and sustainability. Although at micro scales the destruction of the environment was started, but it took many centuries for the human beings to realize destruction of their nearby environment by killing many animals; polluting the air and water sources, especially after the invent of fire and its extensive use; through wars inflicting losses on human wealth; forest devastations and many others. At the beginning, human as a warrior against nature consciously and unconsciously continued the destruction at times seemingly for useful activities, but later especially the scales and extents of environmental destruction were at an unprecedented level alarming each country to ponder about the possible increasing future trends and their irreversible damages. Recently, human beings realized that exploitation of nature at the present rate threatens their very existence on the earth. Consequently, many national and international scientific, social, political, and NGOs

started to take actions at full ranges and scales over the world.
against environmental and ecological degradation all

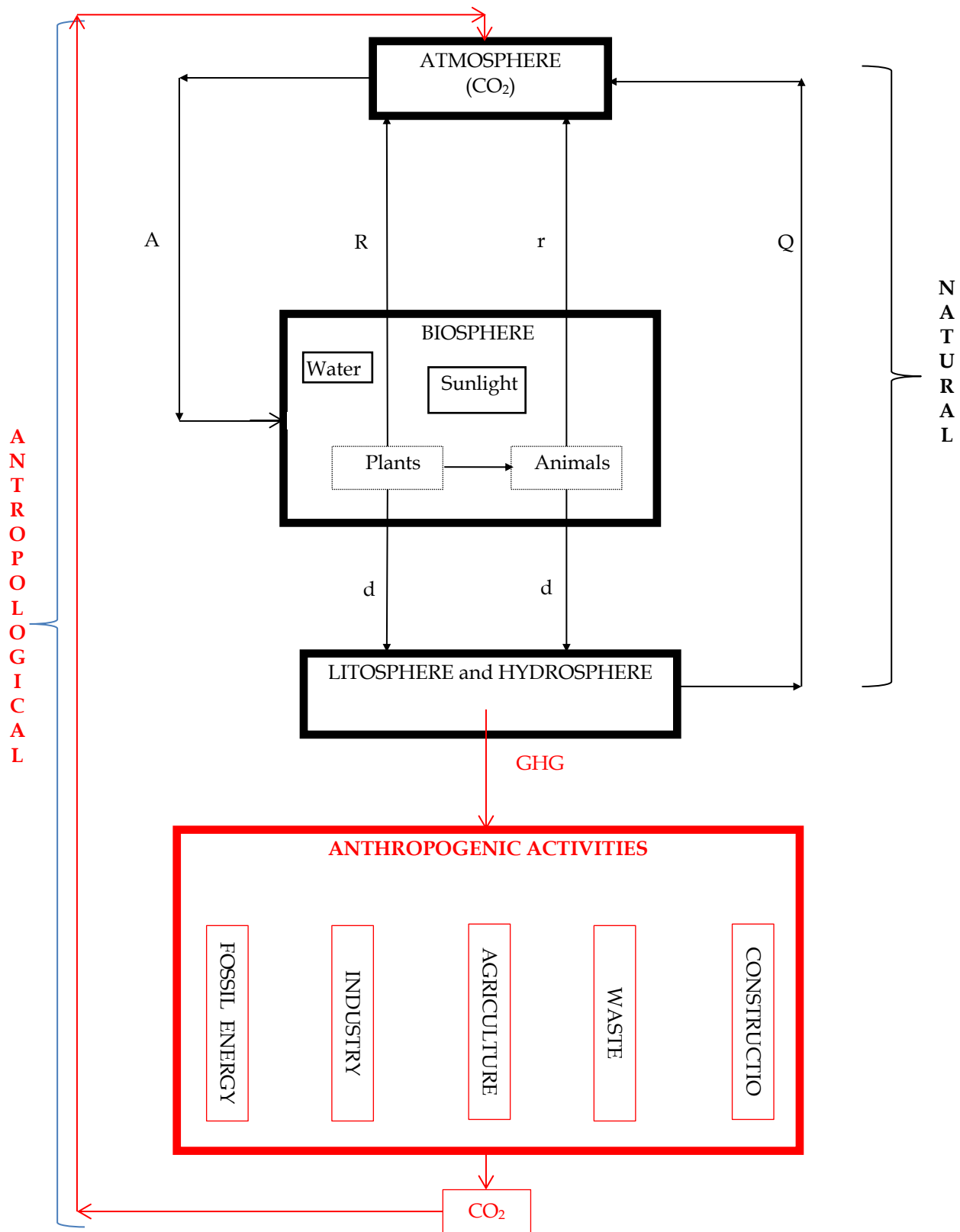


Figure 6: Natural and Artificial CO₂ Cycles.

For instance, the natural CO₂ cycle in Figure 3 had additional anthropogenically artificial CO₂ cycle as in Figure 6, which causes steadily increasing GHG emissions into the lower atmosphere. The source of movement in this and in all the previous figure systems is unlimited solar energy, which reaches the Earth through solar irradiation paths. The natural paths of incoming high energy irradiation waves and after the reflection from the earth surface as low irradiation waves continue their cyclic movement freely in the natural system. However, as a result of GHG emission accumulation anthropologic system, reflective low irradiation waves cannot escape from the lower atmosphere as they were in the natural cycle system, which is the main reason for global warming that causes to climate change impacts.

The accumulation of additive CO₂ concentration due to the anthropogenic system initiators are human origin activities including mainly the energy, industry, agriculture, waste and construction sectors. In order to reduce the CO₂ emissions human beings should fight over over-consumption for future sustainability. Even though there are waste incineration plants and their promotion by municipalities and countries, the result is not sustainable.

Unfortunately, materialistic deteriorations in the nearby atmo-, hydro-, bio- and geo-environments coupled with extravagance and luxurious standards of life gave ways to additional comfortability provided by the unprecedented technological developments abasing respects and regards in the traditional, social, cultural and religious lives. Consequently, demoralization in the society in addition to hollow ambitions and feelings without beneficial purposes started to flourish everywhere beyond limits. Parallel to this materialistic destruction in the environment, moral and ethical values also deteriorated with positivistic scientific evaluations void of faith. In the meantime, social ethical illnesses spread out in societies at the expense of innocent, sincere faiths and beliefs, which are undeniable elements towards better standards of life. At times, human beings found themselves at amidst of chaos and irreversible social, economic and especially environmental unrest and deteriorations.

Later it is understood that even the most advanced scientific techniques and technologies are insufficient to restore the genuine original aspects of the environment as they used to be naturally in the past. Furthermore, a new concept as "natural conservation without technological restoration and aid" started to spread within the social, scientific and administrative circles.

From the beginning of the scientific thought, human beings are integrated with nature both as subject and object ends to harmonize their mutual consciousness. As the environment is rendered into an unhealthy surrounding with pollution in its genuine properties so will the human beings be affected from these pollutions and they will tend to lose their ambition, eagerness, and finally, thrust in the scientific and technological achievements for preservation of the ecological life and environment. Besides, recent scientific findings regard the human being not as a distinct part of nature, but a part of nature active in its change especially related to environmental issues. Hence, social, religious, cultural, moral and faith affairs should be considered as prerequisites in an effective environment and ecological sustenance and control.

Educators, engineers, planners, designers, administrators and managers must consider in their nature interactive designs not only materialistic, but equally human internal, spiritual, moral, ethical, social and esthetical ingredients. This is the only way to minimize the side or after effects that might lead to social and physiological instabilities as well as degradations in the ecology and environment.

Moreover, in developing countries and transitional societies from the rural to urban areas, the town planning might not conform with human settlement standards so far as the infra and super structures are concerned, and furthermore, the children cannot find proper play grounds for the development of their mental abilities. In fact, in underdeveloped suburban areas, youngsters and old generation cannot feel that they are within natural environment for mutual interactions, but all they can see are the blue sky only at episodes of none pollution during day time and in the night, stars which are only a small fraction of the whole nature. In big metropolitan areas during holiday periods, there are big migrations to resort areas, where individuals feel themselves in natural environment and then apart from the television screen, they feel and inhale the gifts available in the nature, and subsequently, contemplate upon metaphysical and cosmic environments of which they might not have stimulus in their dwelling places. Because of unprecedented technological and scientific advancements, especially those who live in big mega poles, become seekers for natural environments and within their internal worlds, they start to question the pollution of water, noise, air, ethics, atmosphere and even the mutual relationships. Only then one can realize that the scientific and technological achievements are not the magical solution keys for every human problem.

Unfortunately, environmental deterioration including the pollution sources of any kind had impacts on many cultural and social lives of many nations and due to such a situation even poets and real artists do not emerge as they used to be in the past. This is to a certain extent as a result of environmental destruction, which brings to one's mind the question of "is the environmental degradation reversible or not?" In fact, technological advancements, especially after the industrial revolution at the turn to the eighteenth century, started to throw all the garbage, wastages and pollutants into unprotected natural environments in an inconsiderable manner, and consequently, an unexpected pollution started in many environmental issues including short and long distances, in addition to short- and long-term periods. Now again, similar scientific and technological achievements are expected to provide remedial solutions in order to reverse the environmental ecological pollution, global warming and climate change impacts. However, so far it is understood that this is not an effective way, because once something is polluted or altered from its original or natural form, then it is not possible to revert the process to reach the original standards as in the first place. Therefore, recently supportive aids are sought from ethical and religious foundations to protect the nature. The greatest support is expected from the great religions of the world, which have been interactive with each other on the Asian, Africa and European continents for many centuries. Consequently, the issues of tolerance, mutual understanding and cooperation between various religions, covering different cultures, are becoming daily topics in an increasing rate recently.

It must not be forgotten that majority of the environmental and ecological degradation originate from the internal and inert ambitions of the human beings. Especially, their desire to have higher standards of life; economically to earn more; to become more dominant on nature, environments and their subunits such as ecologies of many types; and to open the ways of luxurious, extravagant and wasteful life styles more than ever. Today, the amount of bread thrown out in advanced societies is enough for starving societies in some parts of Africa and Asia. In fact, there is a direct relationship between the increase of wastage and pollution production with the well-being increment of the society. On the other hand, such ambitious feelings and desires trigger the production, because the more the production the more the wastage. In this manner, there appears a vicious circle, whereby the more

production leads to more exploitation without enough recycling, but wastage and the more the wastage, the more is the waste production. It is not a steady vicious circle, but inflates and enlarges with time, which implies spatially the coverage of more land-scape, and hence, destruction of the ecological and environmental facilities. Not only has this, but also in such an enlarging vicious circle, the population becomes more eager to exploit more than actual basic needs. Added to this, also the world population is increasing, and finally, there are many factors that cause the enlargement of this vicious circle. There remains the question of how to break the expansion of such a vicious circle at least to control at a rate that the natural environment and ecological facilities can cope with this enlargement? One of the key answers to this question is the human faith and ethical behaviors along with firm beliefs.

Still a better stage in the consciousness is obtained by admitting and then approving by very heart God's angels, books (original forms of Torah, Bible and Qur'an); prophets (including Adam, Moses, Jesus and Mohammad, peace be upon them); the day of judgment and all the good and bad deeds. If these imprints exist in one's heart, then s/he is said to be believer. If one arrives at the stage of believer then s/he is not only connected with God, but also with all other dependents. This stage also teaches one the purpose of his/her existence in this world and what their duties are towards other creatures including the nature. This second stage brings one closer to the Creator with more responsibilities towards other individuals and the environment of any kind for the preservation and improvement of intact order in the nature.

Christianity, Islam and Judaism have faith affairs, ritual practices, and duly mutual interactions with other creatures and nature, which are means like planting seeds, but the fruits and every benefit from such plantations are expected not in this world only, but in the hereafter as rewards from God. The treatments should be based on tenderness, mutual understanding, tolerance, agreement, good feelings and deeds about other creatures, cultures, religions, beliefs and nature.

4. RELIGIOUS AFFAIRS

One very common and widely extensive non-scientific, but spiritual world of human beings is their beliefs and faiths according to certain set of rules. The people believe in different religions, and especially the ones that are Abrahamic origin command that although wastage is legal, but there are many commands for its restriction. Religions are not for

eternal life only, but their basic requirement is to earn hereafter life with deeds in this world. Unfortunately, although ethical rules are fixed in many aspects of life by human beings, commands of Creator have not been taken into consideration through moral rules. There is no indication in any ethical rule as for the restriction of consumption unless there are material dangers, but who cares for moral conducts. In other words, materialistic life style is for consumption triggering mechanisms, and in a society, the more one spends on even unnecessary basic needs, s/he is the more respected or envied individual. There are many holy commands in different religions about extravagant consumptions.

On the other hand, God order us not to live in an extravagant style of life, but protection of the environment, so that other creatures (plants, animals, sects) may also lead a prosperous life without internal disturbances. Presently, is it possible to think about any person to have “zero-sin”? The answer is no and how could “zero-waste” be achieved without limitations on the consumptive materials? It is, therefore, necessary to lead for “zero-extravagancy” prior to or simultaneously “zero-waste”. For the success of “zero-waste”, everybody should ask the question directed to own self: “Why do I waste my time and material obsessively with more consumption than I need”? In this way, dangerous class distinction between rich and poor can also be narrowed. For example, in Islam, there is a verse in the Quran that says “Allah (God) does not love those who waste.”

4.1. Human Faith

There are scales, measures and equilibrium properties, which are engraved in the natural events by God, and if these limits are approached or transgressed then there are many dangers not only

for the human kind, but for all the living creatures. Within these limits the natural events can renew themselves, but if the balance is not cared for by anthropogenic activities, then the natural events may take other directions of either losing renewability property completely or renewal after numerous years. For instance, CO₂, oxygen and nitrate cycles are basic ingredients for sustaining environmental balance in the lower atmosphere, which is the most essential sphere for living creatures (see Section 2).

Almost 70% of the earth's surface is covered by water bodies, which are referred to collectively hydrosphere [28]. Although there is not extensive human activity in the hydrosphere itself, the intensive activities on lands threatens biological richness of oceans, and especially, in the beginning the coastal areas along which about 60% of the world population live [29]. Although legislative measures are taken, but their applications cannot be achieved due to lacks in reliable data, planning, management, international coordination, technology transfer and inadequate funds. The hydrosphere is polluted by sewage, agricultural chemicals, litter, plastics, radioactive substances, fertilizers, oil spills and hydrocarbons. Land born pollution gets into the major hydrosphere through rivers and atmosphere. The hydrosphere is vulnerable to climate and atmospheric composition change due to GHG emissions supports climate change impacts. Foreign materials that man releases into the atmosphere at least temporarily and locally change its composition.

All scientific and religious affairs are related to God's creations, and accordingly, they interact with each other as opposed to the common idea that religion is against the science (see Figure 7). To preserve what God has created, it is necessary to keep an optimum beneficial combination and proportion between religion and science.

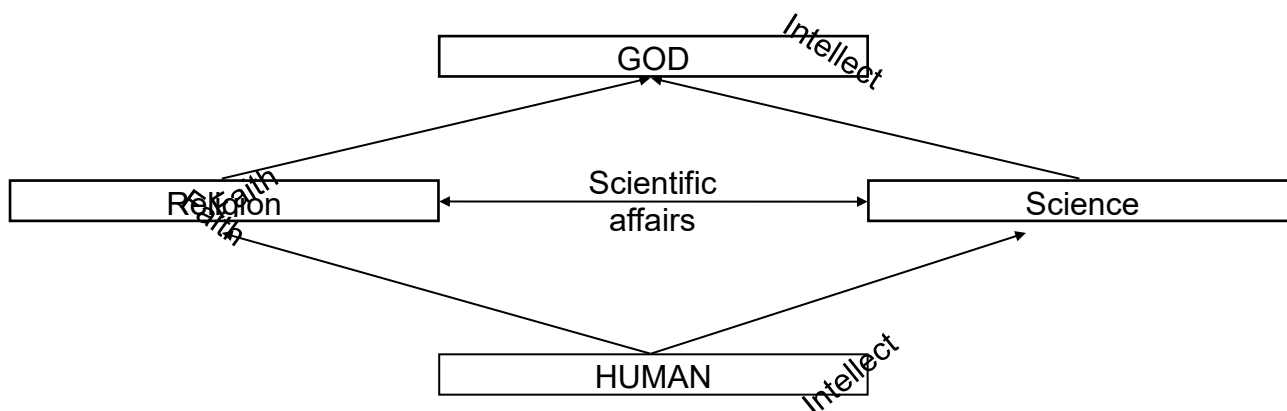


Figure 7: Religion and Science.

Except during the transition period of scientific activities to the West from the previous civilizations,

sciences and religion did not fight, they both had their right places which flourished philosophical and scientific involvements alike, in fact, since science is a humanly generated activity, because in its very basis there are human desires, ambitions and spiritual feelings, ethics, moral and behaviors. Consequently, the control of science is equivalent with the control of human-self, and since self is an unmaterialistic commodity, its control is possible only by moral and belief-based affairs such as faith and religion.

5. ENVIRONMENTAL FACTORS AND HUMAN

The term “environmental refugees” is becoming recognized officially in many parts of the world [30]. United Nations Environmental Protection unit defined environmental refugees as “people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption - either natural or human induced - that jeopardized their existence and/or seriously affected their quality of life”. For instance, the climate change might cause human migration because of the following reasons.

- (i) Diminishing agricultural productivity,
- (ii) Sea level rise subjected coastal areas,
- (iii) Droughts, wind storms and floods,
- (iv) Exacerbation of environmental problems including resource depletion, thereby increasing future conflict factors.

Continuous and environmental accumulation degrade actions in many forms such as soil erosion, land use and land change, air and water pollution, GHG emissions into atmosphere, stratospheric layer pollution, deforestation, desertification, water shortages and pollution, etc., are widely spread and often associated with both population growth and migration. The environmental degradation impacts are enormous and mediated through social, economic and political structures.

So far environmental problems are caused by the industrial, technological and scientific developments, which are all regarded as the improvement indicators of a society, but their consequent undesirable effects are on the social events down to the physiological existence of human individuals. The consequences are not on the materialistic world only, but rather on the spiritual and metaphysical worlds. Metaphysical pollutions cannot be alleviated by materialistic scientific remedies. Their curing requires ethical, emotional, spiritual and physiological prescriptions that would involve trust, believe and on the top of all these, the

faith. These principles pave the ways into the human nature of exploring what are the means to convince everyone from preventing various types of environmental and ecological pollutions that lead to natural imbalances. The role of religious principles and codes, even though they might be regarded as dogmas, are necessary prerequisites to reduce wastage, social inter support between different cultures, societies, communities, groups and individuals. There are other affairs directly concerning the ecological protection and preservation of natural life on the earth. For instance, somebody may cheat others and steal, but most of the world populations are refrained from these affairs, because they are abiding with religious or at least social ethical codes. However, at the very basis of these ethical behaviors, there are traces of religious and theological principles. In the world, although it is known that alcohol drinking is dangerous to society and harmful to health except for some medical curing, there are extra alcohol consumption in many parts of the world. However, according to some religious code alcohol drinking is forbidden and consequently in many countries the consumption is rather relatively less than many others.

If the scientific achievements are sought for the happiness of the humanity, one should then refrain himself to advance techniques that are harmful for the other individuals directly or to his surrounding indirectly endangering ecological balance and environmental order.

6. CONCLUSIONS

The climate change and religious engagement have rather weak relationship, which can be fortified in the future. There are some partial roles that the religions can play role in the climate change adaptation works, such as reduction of extravagant style of modern life that is mainly focused on the consumption almost without individual's limit. The types of faiths in any society may support consumption rates partially by consideration of religious believes. Traditions along with the religious virtues can limit land use and land change (LULC) ambitions with a place-attentive spirituality towards the climate change impact reduction affairs.

Human induced climate change impacts might be avoided to a certain extent by case studies through various methodologies with religious engagement theory. The local faith communities must be understood about the climate change behaviors. Even though in small scale the role of the religious faith's role for greenhouse gas (GHG) emission

reduction awareness must be explained for the individual's response in the society. It is highly recommended that more close religious' advices and training programs must be initiated and continued for the GHG emission reduction by promoting mitigation or adaptation activities. For instance, the climate change capacity and adjustable justice are the two most important avenues for interfaith

- (i) In the preservation of environmental surrounding not only the materialistically oriented targets, but at the very basis faith, belief and religious orientations must also be considered,
- (ii) The scientific and technological achievements faith, ethics and religious virtues can be considered for the protection of the environment,
- (iii) In the long run, it has been observed as for the environment, different religious thoughts are becoming asymptotically convergent to each other and from now on more effort is necessary for the achievement of such togetherness,
- (iv) Modern times without faith have almost every material for the comfort and extravagant life, but it is not without surprise to observe that within the same societies moral and ethical values are devoid of faith, and consequently, depressions, stresses and suicide rates increase. On the other hand, in the traditional societies although materialistic well beings are not abundant, but internal peace prevails. It is therefore necessary to combine the qualities of both societies for the sake of better future environmental protection and deceleration of

collaboration. The religious faiths provide intermingling relationship among the human, nature, and divine triple.

After all what have been explained in the sections of this article, it is possible to derive out the following perspectives, and further research needs for better protection and conservation of the environment.

- global warming and climate change impacts. One of the criteria to mitigate and adapt against climate change is to fight against over-consumption.
- (v) Rather than scientific and technological developments to control the nature, they should be controlled for the common interest of human safeguard through faith virtues. Ways towards to this end should be sought through gatherings, symposiums, conferences and critical discussions among different cultures and religions,
- (vi) Education circles in different universities and even secondary schools should include in their curriculum ethical, moral and religious faith principles with the purpose of fulfilling their duties to the humanity, in general,
- (vii) The life of human beings on the earth should be coupled with the balance and order in the universe and nature as created by God. For this purpose, the human beings should think not only on their daily and worldly deeds, but on the long term and even about the hereafter expectations with the future generations' right to sustain live on this planet.

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