J. Adv. Sci. Edu. Res. **2020: 1: 1-11,** ISSN: 2583-0155 (ONLINE)
Published: 25.12.2020 (http://jaser.rkmvccrahara.org/)

ECOLOGY : PAST AND PRESENT

Swami Kamalasthananda*
Ramakrishna Mission Vivekananda Centenary College,
Rahara, Kolkata-700 118, West Bengal, India

Abstract: All ancient civilizations have some ecological view and live for nature which sustained these civilizations with time. As per modern scholars ecology is the total process of the life cycle of different organisms i.e. abiotic and biotic, the inflow and outflow of the matter in the environment. Ecology term is further defined through 'Deep Ecology' and 'Human Ecology'. Ecological imbalance and disaster were reported in ancient books and scriptures. These are now relevant due to the present day disaster and related pandemic. Ecology is always great concern of human beings for the healthy living in this planet.

Keywords: Abiotic, Biotic, Deep ecology, Human ecology, Disaster, Global Impact.

Introduction:

Ecology and environment are the chief concern of the people in the ancient time. If we go through the early civilizations of the world, we can get their idea regarding the ecology and environment.

Harappa Culture :

The Harappa Culture (2500-1550 BCE) starts before Vedic era. The people in that time are highly nature loving as found from seals, inscription, etc from the site. They are worshipper of Peepal tree (*Ficus Religiosa*). This tree is considered as giver of life. Gods were considered as the protectors of the tree. In some seal the Peepal tree has been protected by a Rhinoceros. In other seal it is saving the tree from evil spirit or demon. A few seals are depicting pictures where it is shown that the Cobra is spreading fangs over the tree for saving the tree from any unwanted attack. In some seal group of trees or whole forest has been worshipped. People at that time understand that their food or any other livelihood solely depends upon the tree or environmental products. Their feeling of interdependence indicates their feeling that any harm caused to the tree or plant could have dangerous consequences for human beings.

Vedic period:

Vedic period is generally 1500-500 BCE according to A.L. Basham. The literature in Vedic period gives the idea of five basic elements which are the components of the environment. The concept of *Pañcamahābhūtas* is not present in the Veda but it is understood in Upanisads and its later philosophical texts. However, few basic ideas of *bhutas* as gross elements may be traced in Rigveda. It is believed in Rigveda that after death the spirit coming out from the body goes to earth, fire, water, and other components of the environment. Vedic people believed that man has certain relation with the gross elements which are responsible for the formation of body and after death these elements go to the respective sources. It may be observed that the Vedic people believed in some kind of union with different elements (*bhutas*) after death, and that the different components of the gross (earthly) body united with the corresponding subtle elements, the *tanmatras* of the Upanisads. It is also mentioned in the Rigveda that the fine constituent of the *bhutas* occurs in the *Rigveda* in the form of five defined natural elements in the environment. The words *prthivi* (earth), *ap* (water), *agni* (fire), *vayu*(air) and *akasa (*or *dyaus)*(sky) have been deified in the Rigveda.. A number of myths and legends have been woven around them to bring out their essential nature and characteristic features, that might have led the post-vedic thinkers to conceive and transform them into the five *bhutas* constituting the physical universe(Vatsyayan,1995). People in the ancient time do not consider themselves the supreme being but always

**For Correspondence.*
(email:rkmvccollege@rkmvccrahara.org)

think they are the part of whole creation. So they try to establish their relationship with the external universe. Concept of *rita* i.e. moral order is the interdependence between all beings which is extensively propounded in vedic texts. The universal relation with all beings leads to the harmony and existence. Vedic texts invoke this idea in many places. In Rigveda, it is stated that - May the sky and earth give us blessedness; may the atmosphere be a blessing to us. May herbs and forest tree be a blessings to us. May the victorious Lord of heaven bring us blessedness!(7.35.5).

शं नो द्यावापृथिवी पूर्वहूतौ शमन्तरिक्षं दृशये नो अस्तु ।
शं न ओषधीर्वनिनो भवन्तु शं नो रजष्पतिरस्तु जिष्णु ॥ Rigveda 7.35.5.

Egyptian civilization:

In Egyptian civilization (3100-2686 BCE) the nature and its various functions are conceived as different deities. Here Sun God is most powerful because all are controlled and governed by sun. Its regular motion maintain the periodic nature of all natural phenomenon. Their calculation of the year is on the basis of solar system. Their concept of God is not so any terrible or fearful aspect but some sort of friendly feelings are present in relation to human beings(Hughes, 1975). The ecological idea and environmental settings of dynastic Egypt is based on four points a) The changing climate of the Egypt, b) The short-term and long-term flood of Nile floods, c) The former topography of Nile Valley, d) the role of environmental factor for modifying the landscapes of delta and the Faiyum (Butzer,1976).

Mesopotamia Civilization:

The people in the Mesopotamia (2900- 2350 BCE) believed nature is a sort of obstacle or chaos and this chaos is to be overcome by constant struggle with the external environment. So the people are very much concern about the astronomy and the planetary motion. " Nature herself was represented in the Mesopotamia mythology as chaotic monster and their patron gods that chaos could be overcome and order established. The order of haven was quite apparent to the Mesopotamian, who developed both astrology and astronomy to an intensified degree and noticed that the motions of the moon, and the sun, stars and the planets were constant and predictable"(Jena, 2002).

Persian civilization:

The people in the Persian civilization is very much aware of the importance of earth, fire and water. So they worship them with great reverence. The rituals related to Persian religion is greatly involved to free them from pollute things and dirt. Cleanliness is the great concern for the Persian mind. Water is kept in a state of purity so that no such thing i.e. urine, any excreted body etc. could not mix with the water. The worst of pollution is presence of any decayed body of animal or human. So it is the bounded duty or rite for everyone to remove the decayed body and perform necessary action to clean the spot. Earth and water are sacred object to Persian eye. So they do not like to burry any dead body due to the fact that after decomposition it will spread pollution in the Earth. Similarly fire is also the object of respect. So they put the dead body on the top of a mountain to be eaten by unclean animals like wolves and vultures. Persian habitation is localized in a region which is full of desert and rocky mountain. So the land is not fertile for cultivation of crops or food grains. They believe that through agriculture the nature of the earth surface can be changed. So agricultural activity is a great object of veneration to Earth (Hughes, 1975).

Greek Civilization:

Greek (500-336 BCE) people are very much nature loving. In the writings of the Greek thinkers we find the description of the plants and animals in different story forms. Herodotus in his writings describes the different relationship between prey and predators. His observation is that prey animals are timid and fleshy to appease the hunger of the predator. Prey animals are multiplied large in number in a given time compare to the predators which are less number. It is the balancing factor for the prey and predator life-cycle in this earth. His observation is the

present day basic foundation for ecological principle. Another prominent Greek writer Aristotle describes the relation between the whole natural world and human beings. All things in the natural world have a specific purpose and after fulfilling the purpose they have an end. So beauty and goodness are all related to the point for satisfying the purpose of human beings. Human beings love all animals and plants because they serve the wellbeing of humankind (Hughes, 1975).

Roman Civilization:

Roman (753 BCE to 27 BCE) believed the cosmic order of the nature. Everything in this world has own purpose to fulfill which is also interconnected. Plants are serving the cause of animal, animals are for the cause of human and human are striving for the perfection. Roman generally believed that whole world is meant for the humankind. All these are ideas are reflected in the literatures, arts, architecture and philosophy.

Arabic Islamic People:

The concern of Arabic Islamic (750-1258 CE) people are found in mathematics, alchemy, physics, and geography. Abu 'Uthman 'Amr ibn Bahr, who is known to history by an unflattering nickname, al-Jahiz (goggle-eyed). He wrote stories of350 different kinds of animals. Al-Jahiz's animal stories remained immensely popular and influenced later writers. 'Abd al-Latif was born in Baghdad and became an outstanding physician. He lived in Cairo and collected information on Nile crocodiles and different kinds of lizards. His description on the nature based upon both his own observations and previous data found in the different writings. He assumed that crocodile eggs would produce either crocodiles or snakes , depending on whether the place of hatchlings took place whether in water or in the sand. Zakariya-al-Qazwini was educated in Damascus and then served as a jurist in Iraq(Ahmad,1975). The first of his two works, *Wonders of the Creation*, is on cosmography. Drawing upon both Greek and Arabic language sources, this work showed vast knowledge but has little originality or critical thinking. He discussed, for example, not only plants and animals, but also angels, without making clear that knowledge of the former comes from observations. (Some of his accounts were translated into German by E. Wiedemann , and extracts from that were translated into English by Bodenheimer. His other work, on geography, was entitled *Wonders of the Lands* in the first version and Monuments of the Lands and Histories of the Peoples in the second version. It is a dictionary of towns and countries that gave some indication of latitude and longitude, and also discussed the influence of locations on the people, plants, and animals. Several aspects of zoology were widely discussed in Arabic-language medical literature. The common assumption that Islamic civilization forbade dissection of human cadavers or even animals is incorrect, although there were few significant discoveries made during such investigations. There are several indications that Arabic-language medical authors enriched the understanding of parasites, gained when the medical encyclopedia by Paul of Aegina had been translated into Arabic. Al-Razi was a leading medical author who discovered that a skin disease previously ascribed to an injured nerve was actually due to parasitic Guinea worms. Byzantine tradition in accepting the spontaneous generation of parasites (Kruk, 1990).

Ecology- Present time:

Form the term *Oikologie* (the study of home with its surroundings) the modem Ecology is derived. Ernest Haeckel has defined ecology as the science treating the reciprocal relation of organism and external world (Agarwal, 1992).

According to E.P. Odum ecology is the study of the structure and function of ecosystems or broadly of nature (Odum, 1957).

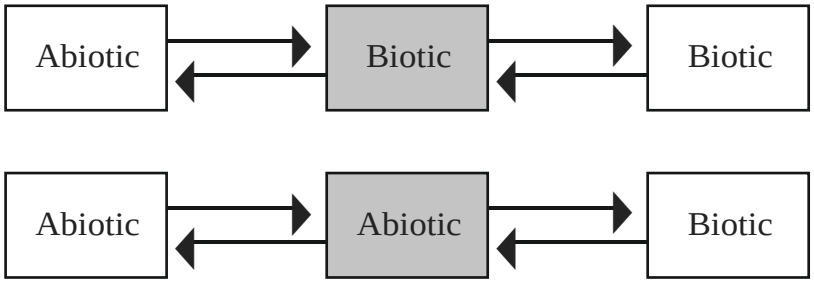
Clarke has treated ecology as the study of inter-relations of plants and animals with their environment which may include the influence of other plants and animals present as well as those of the physical feature (Clarke, George L. 1967).

Macfadyen defined ecology as science which concern itself with the inter-relationships of living organism, plants and animals, and their environment. Woodbury has regarded ecology as the science, which investigates organisms in relation to their environment: a philosophy in which the world oflife is interpreted in terms ofnatural processes (Jena, 2002).

Allect Etal has considered ecology as the science of interrelationship between living organisms and their both physical and biotic environment, especially inter-species and intra-species relations (Begon/Harpar/townsent, 1987).

A clear definition of ecology was put forward by Andrewarth (1961CE): Ecology is the scientific study of the distribution and abundance of organisms. According to Charles J. Krebs (1972 CE) ecology is the scientific study of interactions that determine the distribution and abundance of organisms. Smith has defined it as a multidisciplinary science which deals with organism and its place to live and focuses on the ecosystem (Rana, 2009).

From this above definition of the modem ecologist in the world it is clear that ecology is science of interrelationship between the living object present on the earth and the environment present surrounding the earth. This relationship is complex in nature and we can not predict its dynamics easily. It is because of the fact that we do not understand the life and its presence in the living matter. So life, living matter and the surrounding environment i.e. triad relation and interrelation make the proper meaning of the term ecology. Moreover in a living body having presence of life and where only matter exists, none can predict it clearly. So the term biotic indicates the body physically separated from the rest of the outer environment. In respect of the one biotic organism the outer environment again is divided into two categories i.e. a) abiotic, b) biotic. Similarly in respect of one abiotic matter the outer environment exists in two forms - abiotic and biotic. The following is the schematic diagram which gives the two types of interactions.



All the interactions present in the environment and all the definition and explanation put up by the eminent ecologist give some directions of thinking in present context.

1) Ecology is the interrelationship science between biotic organism and abiotic organism.
2) Ecology is the science of intra-relationship between same species i.e. interactions among the same group members. Depending upon the external situation different climates are present in the environment. So, same species exhibits different physiological and ecological behavior.
3) Ecology is the science of inter-relationship between different species. Living world is broadly classified as plant and animal. Plants as well as animals have different species. So interactions may be between different plants species or different animal species or between animal species and plant species.
4) Ecology is the expression of life process in the environment through integrated relationship between abiotic and biotic elements.
5) Ecology is the total process of the life cycle of different organisms and transformation of material objects including the inflow and outflow of the matter in the environment.

Deep Ecology:

Modem times the term Deep Ecology is a movement for

environmental protection and preservation. In 1972 CE Norwegian philosopher Ame Naess coined this term Deep ecology. Deep Ecology indicated to think deeply the inner question regarding human beings and nature. It has two basic principles- firstly it gives the scientific outlook of interconnectedness between human beings and other non-human objects in the nature, secondly it helps for self-realization of human beings i.e. human beings do not identify themselves with their self rather identify with outer other beings like plants, animals, etc. present in the nature. Michael E. Zimmerman, Professor of Philosophy at Tulane University, New Orleans, rightly told in this aspect - "Deep ecology is founded on two basic principles: one is a scientific insight into the interrelatedness of all systems of life on Earth, together with the idea that anthropocentrism - human-centeredness - is a misguided way of seeing things. Deep ecologists say that an eco centric attitude is more consistent with the truth about the nature oflife on Earth. Instead of regarding humans as something completely unique or chosen by God, they see us as integral threads in the fabric of life. They believe we need to develop a less dominating and aggressive posture towards the Earth if we and the planet are to survive. The second component of deep ecology is what Amie Naess calls the need for human self-realization. Instead of identifying with our egos or our immediate families, we would learn to identify with trees and animals and plants, indeed the whole ecosphere. This would involve a pretty radical change of consciousness, but it would make our behavior more consistent with what science tells us is necessary for the well-being of life on Earth. We just wouldn't do certain things that damage the planet,just as you wouldn't cut off your own finger".

So Deep Ecology indicates the closer connectedness of human beings with all living beings on the earth and a deeply felt spiritual interconnectedness with other beings on the earth with moral and ethical grounds for preservation. Sometimes someone found some connection with other religions with the world.

Deep ecologist considers their perspectives to *"ecocentrism" or "biocentrism"* which means to consider the whole earth as focus for consideration or whole life-system on the earth. Simultaneously they reject the *anthropocentrism* idea of the environmental movement. Anthropocentric idea gives prime importance to the human beings as human beings are considered more valued animals on the earth. So all living world simply exist due fulfill the need of the human beings. But deep ecologists argue that all have equal right to in on the earth and all have equal importance as all are interconnected for perpetuate life flow on the earth. According to Michael E. Zimmerman - Many deep ecologists call their perspective alternatively "ecocentrism" or "biocentrism" (to convey, respectively, an ecosystem-centered or life-centered value system). As importantly, they believe humans have so degraded the biosphere that its life-sustaining systems are breaking down. They trace this tragic situation to anthropocentrism (human-centeredness), which values nature exclusively in terms of its usefulness to humans. Anthropocentrism, in tum, is viewed as grounded in Western religion and philosophy, which many deep ecologists believe must be rejected (or a deep ecological transformation of consciousness within them must occur) if humans are to learn to live sustainable on the earth (Zimmerman and Taylor, 2005).

Naess and Sessions formulated an eight-point platform for the Deep ecology. Ame Naess's Apron Diagram structure narrated clearly the role of the Buddhist, Christian and Philosophical approach of understanding for explaining the Deep Ecology. The eight points of Deep Ecology is as follows:

1. The well-being and flourishing of human and nonhuman life on Earth have value in themselves (synonyms: intrinsic value, inherent worth). These values are independent of the usefulness of the non-human world for human purposes.
2. Richness and diversity of life forms contribute to the realization of these values and are also values in themselves.
3. Humans have no right to reduce this richness and diversity except to satisfy vital needs.
4. The flourishing of human life and cultures is compatible with a substantially smaller human

population. The flourishing of non-human life requires a smaller human population.

5. Present human interference with the non-human world is excessive, and the situation is rapidly worsenmg.
6. Policies must therefore be changed. These policies affect basic economic , technological , and ideological structures. The resulting state of affairs will be deeply different from the present.
7. The ideological change will be mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between bigness and greatness.
8. Those who subscribe to the foregoing points have an obligation directly or indirectly to try to implement the necessary changes (Naess, 1986.).

The apron diagram developed by Naess is depicted below and the role of the Deep ecology in the waist portion to balance the all portion present in the above and below portion of the apron discussed vividly in the diagram -- For example (Naess 1986, p. 24), in the diagram Buddhist, secular philosophical, and Christian first principles (the bust) converge in the eight-point platform (the waist), which then justifies an array ofactivisms (the skirt [see Figure 1]). Buddhist metaphysics might channel through the waist of deep ecological principles calling for environmental action to reduce consumption; secular metaphysics might channel through the waist of Deep Ecology calling for action to reduce human population growth; or Christian metaphysics might channel through the waist of Deep Ecology to call for action to preserve biodiversity (Keller, 2008).

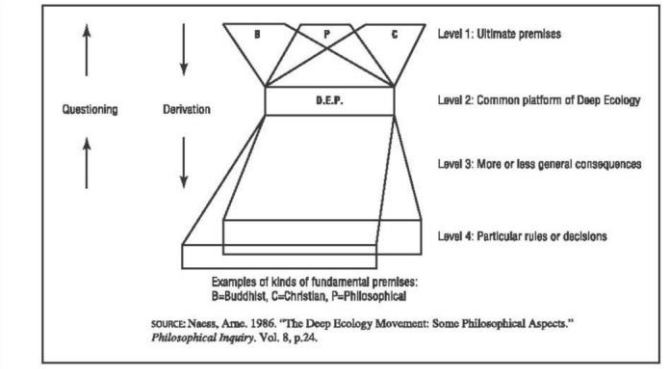


Figure 1. Arne Naess's Apron Diagram. CENGAGE LEARNING, GALE.

Diagram-I: Deep Ecology Apron Diagram

Human ecology:

Human ecology is the study of the interactions of human beings with their environments, or the study of the distribution and interaction of humans. This definition is based directly with the definitions of biological ecology. Ecology is generally defined as the study of interactions of living organisms with their environments and each other. So study of human ecology is based on two perspectives. According to Robert Foley - Human ecology is an approach to the study of human behavior marked by two commitments.

A) First, human ecologists think that humans should be studied living systems operating in complex environments. The human sciences are interlinked into several social science, humanistic, and human biological disciplines. Ecologists are used to thinking that systemic nature of individual organisms and populations of organisms mean that we typically have to understand how diverse parts of the system operate together to produce behavior. The traditional human science disciplines make people separate from the environment and natural phenomenon; human ecologists try to put human beings back together.

B) Second, human ecologists think that humans go through very similar ecological and evolutionary processes as any other species.

The basic ideas for the concept of human ecology is grounded into the biological science to understand the nature of human being. Just like other animal species, human being is also a species of special character. So the nature of human beings should be studied through scientific parameter.

Human ecology depends upon the population biology concept. Like other species human beings are growing in number. So the Darwin concept like other concepts plays an important role to shape the human ecology. Man is present in society. Without man no society is formed. Here the interaction of human beings with the society plays a significant role to shape the ecological idea. This is known as the socio-ecology or community ecology. In society many groups are present in a constant flux of cooperation, communication and interaction. So more strong and trained group extracts more resource from the society and resulting deprives the less privileged groups in quantum and quotient.

Human ecology is a complex subject. So its nature and dynamics should not flow the normal dynamics of the behavior followed by the animal kingdom. The biological, social and behavioral phenomena cannot predict human ecological pattern either singly or collectively. As human beings are complex their ecological relation cannot be explained by simple way.

So the human ecology is a sort of study of all different fields explored in human knowledge domain and also beyond human knowledge. There are different knowledge field in human society. All have a specific contribution to highlight a specific potion of human understanding. So for understanding the human ecology all fields of subjects have cooperative role.

Many disciplines contribute to human ecology because our behavior is complex and diverse. Individuals who have taken the ecological/evolutionary approach to humans include biologists, anthropologists, psychologists, sociologists, demographers, historians, geographers, geophysicists, and economists. The justification for having so many disciplines is the complexity and diversity of human behavior. We are affected by the laws of physics, by our biological capabilities, and by the skills and knowledge available to us. We are diverse in the sense that human behavior is very different in different places and at different times, even when environments are very similar. The various simple societies of the past were as different in their adaptations as most animal species (compare the Kung of the Kalahari Desert with the Eskimo), not even to mention the differences between simpler and more complex societies. Complexity and diversity obviously offer a severe challenge to understanding humans. A complex web of causal processes and historical constraints influence the least thing we do. No one person can hope to understand all of them in any detail (Foley, 1987).

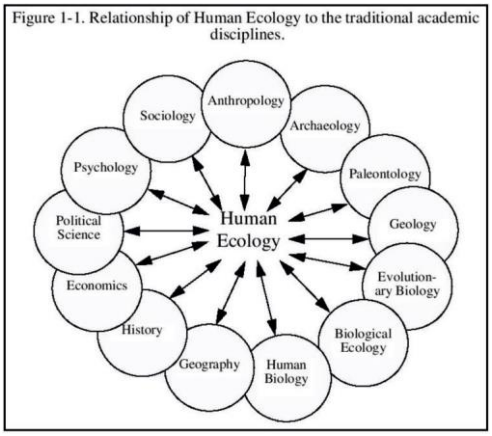


Diagram-2: Human Ecology relates with other discipline

Ecological Imbalance and Disaster-Ancient time:

Prabhasa-khai;ida, traditionally considered as a part of Skanda-purar;ia contains interesting information about natural disasters, which should have affected the northwestern part of India in the remote past. The narration is mythological format but the narrated events should have actually taken place and the memory passed on from generation to generation in the form folklore. All are mentioned in Prabhasa-khar;ida have been found in Mahabharata and to some extent Rig Veda. The observation fire in *Krittika* is found in the text of Rig Veda, Satapatha Brahamana, Mahabhatrata and Prabhasa-khar;ida. From the of the event in Mahabharata, it is found that this should have been an observation os brightening of a star. Prabhasa-khar;ida refers this event but also depict the ground opening caused due to impact of falling objects. Perhaps these were meteorite impacts, which caused considerable direct destruction and in addition generated sea waves. Mahabharata supports the story of impact and in one place goes to the extent of informing that a metallic object landed on earth. The implication is that this was the sword (Vel or Sakti) of Kartikeya. All the texts are unanimous that subsequently there was a severe famine leading to prolonged misery in the society. The place of occurrence of the impact and related phenomenon should have been in the Kutch- Mt.Abu region (Iyengar, 2004).

Different types of disasters are known to the people in ancient time. They have developed some system to control this disaster and after situation caused by the disaster. The Kautilya's Arthasastra gives some ideas regarding systematic disaster management. This book gives some idea of the environmental problems which are known in only mid 20^{th} century.

The disaster as per Koutilya's manuscript is termed as *Tyasana* i.e. something which is caused by poor destiny. He has classified the *Tyasana* into two categories i.e. Daivam vyasna (Natural Disasters) and Manusam vyasana (Manmade Disasters).

Natural disaster : There are eight types of the natural disaster mentioned in the book - *Agni* (Fire), *Udaka* (Flood), *Vyadhi* (Epidemics /Diseases), *Durbhiksha* (Famine), *Musaka* (Rats), *Vyala* (Beasts /Wild animals), *Sarpa* (Snakes) and *Raksamsi* (demons/evil spirits).The *Raksamsi* or evil spirit / demons has no such physical implication in present day. But form ancient time to today common people have a belief in certain facts which have no immediate explanation. He may also want to mean some activities of over selfish and greedy people, whose exploitation of the nature may cause the serious problems to the larger humanity. People have no control in natural disaster but according to Koutilya, these can be managed by us through the knowledge of science and proper planning.

Manmade Disasters: It is due to the misfortune cause by the human involvement and wrong policies. Kautilya explains manmade disasters into two categories namely war and agitation. Other manmade disasters like terrorism, riots and nuclear disasters etc were not exist at that time and came with the passage of time. According to Kautilya there are two types of agitation namely internal agitation and external agitation, which results into four types threats to any nation are; Internal threat supported externally, Internal threat supported internally, External threat supported internally and External threat supported externally. There are three types of Manusam Disasters namely Suddhapatti (threat from treasonable and enemy), Amisra (threat by allies of treasonable and non-treasonable), Paramisra (threat when allies and enemies come together) (Sharma, 2017).

The Red Cross and Red Crescent societies define disaster management as the organisation and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies , in particular preparedness, response and recovery in order to lessen the impact of disasters(Crompton. ed, 2016). Koutilya has given similar type of definition. He emphasized about the ecological balance, preservation of biodiversity and friendly living practice with nature. He has discussed all types of disaster in details and various indigenous method of preventive practice and remedies. All these are very much relevant in present day situation.

Ecological Imbalance and Global Impact - Present situation:

The ecological imbalance is due to the natural factors and human factors arising out of socio-economic purpose. The balance in ecosystem is important factor life and its multifarious growth and development. Ecological balance is multidimensional issue and very intricate. The balance is interconnect in respect of different species of habitants as well as with the species and the external different components of the ecosystem. The ecological imbalance is associated with the industrialisation, irrational waste of natural resources, deforestation, water pollution. This imbalance leads to natural disaster. It creates a long term problem in humankind in respect of demographic crisis, hunger, lack of natural resources and destruction of the environment. Some of the environmental issues like Ozone layer depletion, greenhouse gas and pollution are important concern for human beings as well as other living species. Over the past 150 years, deforestation has contributed an estimated 30 percent of the atmospheric build-up of CO2 (Kataria, 2015). UNEP Report of 2012 discusses about certain glaring effect of climate change. Between 1906 and 2006, Africa's glaciers lost 82% ofland area; over last 25 years, 25 % of global land area has seen productivity hit due to soil carbon loss and the Japan tsunami produced 6.15 million tons of debris in one city, equal to 103 years of normal waste. To mitigate the effect of climate change in 1972 in Stockholm United Nations Conference on the Human Environment took place. The conference had the effect of initiating worldwide participation, by urging governments all over the world to consider that the environment must be protected in order to operationalise the right to life (Kataria, 2015). The development of the International environment law has come up to protect the environment from over exploitation and increasing pollution. In 1970 the organization for Economic Cooperation and Development (OECD) was established. After the U.N. Conference on Human Environment in Stockholm, the provisions of environment protection were added in the Constitution. Through the 42nd amendment. Article 48-A of the Constitution provides, "The state shall endeavour to protect and improve the environment and to safeguard forests and wildlife of the country". Article 51(A) (g) provides: "it shall be duty of every citizen of India to protect and improve natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures." (Kataria, 2015).

The causes and consequences of ecological imbalance was studied by Dr. Ramamohana Reddy Appannagari, taking 120 second year degree college students who are studying science and civilization in Ananthapuramu district of Andhra Pradesh. Specific cause of imbalance were considered as changing hydrology, large scale use of fertilizers, large scale ue of pesticides, change of earth's surface, acid rain, green house effect, forest fire, overgrazing, clearance of forest, loss of genetic resources, mining activ itie s, industrialization, urbanization. Survey results gives the idea that major cause of environmental pollution is industrialization (95%), motorization (57.5%), deforestation (59%) & urbanization (38%).It is considered that developed countries emit 80% poisonous gas from factories, cars and waste generated from the resources. The sample study regarding the ecological imbalance indicates that 59.17 % students opines for developed countries, 24.17 % students opines for developing countries (Reddy, 2016).

The recent Covid-19 pandemic has given the tremendous blow in human civilization all over the world. Such type of situation could not arise in human history last 100 years. Many speculations has come up for the probable cause of the virus. But some study gives us once again opportunity to think the environment pollution and its impact in the present dreaded situation. Researche in US suggest that air pollution has significantly worse the Covid-19 outbreak and cause more death than if pollution-free environment. According to the researchers of Xiao Wu and Rachel Nethery at the Harvard University T.H. Chan School of Public Health it is revealed that fine particulate matter PM2.5 has a great effect in Us, an increase of just 1 microgram per cubic meter corresponds to 15% increase of Covid-19 death. Study reveals that the part of New York State has annual PM2.5 levels consistently above this safe threshold. This may the cause

of the highest outbreak of Covid-19 case in this city. "The evidence we have is pretty clear that people who have been living in places that are more polluted over time, that they are more likely to die from coronavirus," says Aaron Bernstein, the director of the Center for Climate, Health, and Global Environment at Harvard University (Gerretsen, 2020).

Conclusion:

Ecological study which was present in ancient times has taken shape in different newer dimension to satisfy the different understanding of the attitude towards environment and more specifically the nature. But above all in all period of history of human development man always is trying to preserve and protect the environment in his own way.

The study of the past and present regarding the ecological concept gives the indication of gradual development of the subject matter.

In past time several civilization have come in existence on the earth. Their attitude towards the environment is almost same and difference is only mode of application. Every civilization gives nature and their components a high value and standard than anything else. Their attitude towards environment makes the environmental components like water, air, fire, etc. as the part and parcel of life and religion of human being. This indicates that they feel some sort of interconnectedness with environment. Moreover their feeling proves that they never consider that the supreme right of human beings in the nature, rather consider as one of the sentient being in the whole biotic world. In modem science ecology is evolved to study the interactions of the living organism with the non-living materials. This study is also placed human being as one of the component in biotic world. The 'Deep Ecology' and 'Human Ecology' proclaim the interconnectedness of human being with whole environment and identification oneself with other components of the environment. First factor helps to develop the feeling of oneness with environment and second one develops the feeling that environment and its components have higher value than anything or individual. This study gives the idea that the nature or environment consciousness is same in all age or era whether it is past or present. People in every age are widely conversant with different factors of environment and its importance in the field of development and propagation ofliving process.

- But with advancement of science and technology, urbanization etc. total global environment has to some extent changed. Many species of flora and fauna had already extinct from the earth permanently. Pollution and population become headache day-by-day to the human civilization. In every country many acts and regulations are adopted to ward off the incoming danger related to environment or earth. In India Government has introduces Wildlife Protection Act in the year1972 CE.National parks, wildlife sanctuaries, conservation reserves and community reserves are formed in different parts of the land. Protection to habitat and wildlife within premises of such protected areas is the prime concern of these efforts. Environment protection act 1986 CE was passed by the Central Government in the year 1986 CE. Besides these several rules, acts and regulation are framed time to time by the Govt. of India for protection and preservation of the environment. Some are given below
- :Air (Prevention and Control of Pollution) Act, 1981 CE
- Biological Diversity Act, 2002 CE
- Forest Conservation Act, 1980 CE
- IndianForestAct, 1927 CE
- National Green TribunalAct, 2010 CE
- Protection of Plant Varieties and Farmers' Rights Act of2001 CE
- PublicLiabilityinsuranceAct, 1991 CE
- The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition ofForest Rights) Act, 2006 CE
- Water (Prevention and Control of Pollution), 1974 CE
- Wild Life (Protection)AmendmentAct, 2002 CE
- NoisePollutionAct, 1974CE

Acknowledgement:

The author is thankful to all resourceful scholars whose insightful facts made this endeavor successful.

References

- Agarwal, S.K. 1992, *Fundamentals of Ecology:* 1.
- Ahmad, S. M 1975. *Zakariya al-Qazwini. Dictionary of Scientific Biography* 11: 230- 233.
- Begon/Harpar/townsen t. 1987, *Ecology, Individuals, Populations:* .x..
- Butzer, Karl W.1976. *Early Hadraulic Civilization in Egypt:* 26.
- Clarke, George L. 1967, *Elements of Ecology*..
- Crompton, Simon, ed. 2016. The role of physical therapists in disaster management: WCPT report: 17. (Accessed on 02-12-2020 in https://world.physio/sites/defau lt/files/2020-06/Disaster-Management-Report-201603.pdf)
- Foley, Robert. 1987. *Evolutionary Human Ecology* (ebook), Available from: http://www.des.ucdavis.e du/faculty/Richerson/BooksO nline /He1-95.pdf [accessed on 04-11-2015]
- Gerretsen, Isabelle , 2020, https://www.bbc.com/future/article/20200427-how-air-po llution-exacerbates-covid-19.
- Hughes, J.D. 1975. *Ecology in ancient Civilizations:37-38.*
- Iyengar, R.N. 2004. Profile of a Natural Disaster in Ancient Sanskrit Literature, Ind. J. of History of Science : 11-49.
- Jena, Niranjan. 2002. *Ecological Awareness reflected in the atharvaveda:* pl 5.
- Kataria, Poonam. 2015. Ecological Imbalance and Global Concerns- A Perspective, International Journal of Multidisciplinary Research and Development 2(10):.418-420.
- Keller, R. David. 2008. "Deep Ecology", *Encyclopedia of Environmental Ethics and Philosophy* 2(7): 208.
- Kruk, R. 1990, A frothy bubble: spontaneous generation in the medieval Islamic tradition. *Journal of Semetic Studies* 35: 265-282. *See* Kruk, R .1999a, Takwin [on generation], Tawallud [on spontaneous generation]. Second edition. Encyclopaedia oflslam 1:147-148, 378-379. *See;* Kruk, R. 1999b. On animals: excerpts of Aristotle and Ibn Sina in Marwazi's Taba'i'al-Hayawan: 96-125 in C. Steel, G. Guldentops, and P. Beullens, editors. Aristotle's animals in the Middle Ages and Renaissance. Leuven University Press, Leuven, Belgium.
- Naess, Ame.1986. 'The Deep Ecology Movement: Some Philosophical Aspects.' *Philosophical Inquiry* 8:10- 31.
- Odum, E.P. 1957, *Fundamentals of Ecology.*
- Rana, S.V.S. 2009, *Essentials of Ecology and Environmental Science:* 1.
- Reddy Appannagari , Ramamohana. 2016. Ecological Imbalances Causes and Consequences, Golden Research Thoughts 6: (6)
- Sharma, Pallvi. 2017, Relevance of Kautilyan Thought on Disaster Management, International Journal of Social Science and Economic Research 02(11): 5343-5351.
- Vatsyayan, Kapila, ed. 1995. *Prakriti: The integral Vision.* Vol-2 : 7.
- Zimmerman, Michael, and Taylor, Bron. 2005. 'Deep Ecology' *The Encyclopedia of Religion and Nature:* 2.