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# IMPACT OF CLIMATE CHANGE ON ECOSYSTEM AND BIODIVERSITY

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## ABSTRACT

Climate change is a serious problem not only for the nation, it is a global problem. The whole world is facing Impacts of the climate change India also facing the same. Due to some reasons level of green house gases increasing day by day and which is causing ozone depletion and climate change. To protect the climate so many International conventions were organized, participants had implemented international conventions in their municipal laws. UNFCCC is the most important international convention for the protection of climate. Participants are trying their level best to reduce emission of carbon-di oxide or other greenhouse gases up to limit, which is fixed by international conventions signed by the participant countries. However, climate change is going on and world is cladding the adverse impacts of climate special impact can be seen properly on the Ecosystem and biodiversity. After implementation laws and policy it was clear in front of every country that only sustainable development is the way to protect both environment and development.

**Keywords:** Climate change, Green house gases, Environment, Sustainable Development

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**Introduction:** Greek word kilima-atos denotes about an angle between location of a place on the earth's surface and the sun. Latin word climate means the ambiance especially it is used for indicating social ambiance. In Britain through modern English it is known as climate, which means General weather conditions of a region. If due to abnormal climate environment of world will face serious environmental problem e.g. scarcity of fresh drinking water, increase in temperature, insufficiency of pollution free air, deficiency of land with crops growing capacity. Climate may affect not only the whole environment but also the normal life of common people. After industrial revolution, carbon-di-oxide and greenhouse gases have been increasing day by day at disheartening level. Mankind is going to suffer serious and dangerous impacts of climate change. The people of the whole world, we all are collectively responsible for environmental degradation including climate change. People often take environmental degradation problem as a less serious problem due to lack of awareness of about it in society and its impact on our future. Developed, developing and under developed nations all are collectively responsible for environmental degradation including climate change. At present, the whole world is facing serious environmental issues like climate change, global warming etc. Due to various human activities emission of carbon-di-oxide at highest level, which is crossing the limit of carbon emission fixed by international conventions in the atmosphere, causes air pollution. Green house gases (carbon-di-oxide, methane, nitrous oxide, hydrochlorofluorocarbon carbon hydro flour carbon gas, and ozone) emit infrared radiation, which is not harmful. Presence of these gases protects the earth from harmful radiations. However, if the green house gases increased in the atmosphere then the whole world will face global warming.

**Concept of Environment and Climate Change:** Environment means surroundings. According to section 2(a) of Environment Protection Act, 1986 environment includes water, air, land, and their inter-relationship among water, air land and human beings, other living creatures, plants, various organism, microorganisms and property<sup>3</sup>. All the living creatures are the product of the concern environment. Environment has an absolute contribution in the process of personality development of a person<sup>4</sup>. Inhabitants of living creatures depend upon environment. Environment is divided by two kinds of surroundings of living beings or things, I) physical and ii) biological. Physical environment includes water, air, and land. Biological

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<sup>3</sup> The ENVIRONMENT(PROTECTION)ACT,1986

<sup>4</sup> ENVIRONMENTAL LAWS;Dr.J.J.R. Upadhyay;central law agency ;P-3

environment includes animals, plants, other living beings, organism, and micro-organism. The three main elements of environment are lithosphere, atmosphere, and hydrosphere. Lithosphere is the solid layer portion of the earth. Which is composed of several minerals? Hydrosphere includes all kinds of water entities found on the earth. Atmosphere is a gaseous layer that surrounds the whole planet. The amount of oxygen in Earth's atmosphere is necessary for life. In addition to traces of 0.0005% hydrogen, helium and noble gases, it is mostly composed of 78.08% nitrogen, 20.95% oxygen, 0.93% argon and 0.035% carbon dioxide. 25% of variable amount of water vapor is present. 0.04% of green house gases are required for a perfect atmosphere<sup>5</sup>.

Abiotic component includes all the non-living things, which are able to affect the living beings of the environment for example climatic condition, condition water, air soil. Minerals in soil the abiotic components related to each other with energy flows energy absorbed by the plants first.

Climate is the abiotic component of environment as well as ecosystem. Climate is average weather pattern of long period of time (approximate 30 years). according to Cambridge dictionary climate means the general weather conditions usually found in a particular place.

After industrial revolution, carbon-di-oxide and greenhouse gases have increased day by day at disheartening level. Mankind's are solely and collectively responsible for environmental degradation and climate change.

"Climate system" means the totality of atmosphere, hydrosphere, biosphere and geosphere and their interactions<sup>6</sup>.

According to Article(2) of United Nations Framework Conventions on Climate Change,1992 "Climate Change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of global atmosphere and which is in addition to natural climate variability observed through comparable period".<sup>7</sup>

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<sup>5</sup> <https://www.studyiq.com/articles/components-of-environment/> (retrieved on 11.10 a.m on 25.06.2023)

<sup>6</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE,1992; ARTICLE1(3)

<sup>7</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE,1992; ARTICLE1(2)

<sup>7</sup> <https://www.un.org/en/climatechange/science/causes-effects-climate-change>. (retrieved on 29.06.2023 at 7.40p.m.)

**Major reasons of Climate Change:** climate change indicates slowly incensement of temperature in the atmosphere. Due to rising temperature total weather pattern will be changed. It will do through long period. After long time people can feel change in weather pattern. There are two types of cause for climate change 1) human activities; 2) natural causes.

### 1) Human activities

**a) Deforestation:** Deforestation is purposely created by human being for various constructions either for domestic reason or for industrial reasons. Due to alarming rate of deforestation there is a huge change in weather pattern can be seen. Forests are able absorb carbon-di- oxide. Deforestation increases carbon di oxide in the environment. According to UN report at present 1.2 million hectores (approximately) of forest destroyed each year<sup>8</sup>. deforestation is a cause of green house gas emission.

**b) Manufacturing industry of food or any other things necessary for modern life style:** Various manufacturing industries are contributing to the process of environment pollution by the emission of poisonous gases. Industries are producing food, electronic goods (refrigerator, Air Conditioner), cement, plastics, cloths etc.

**c) Generating electricity power:** generation of electricity done through the process of burning fossil fuels, coal and oil natural gases. These emissions of carbon di-oxide, nitrous oxide, which cause serious problem like global warming. Very little amount of electricity generated from solar energy, wind energy and water energy. Maximum electricity generated by burning fossil fuels coal, oil, natural gas causes greenhouse effect.

**d) Excessive use of transportation:** Maximum transportations are running on fossil fuel such as Cars, buses, trucks, ships etc. This excessive use of transportation produces greenhouse gases.

**e) Population growth:** Population growth indicates more exploitation of coal, fossil fuels, natural gas, minerals, excessive use of transportation and water. Population is dynamic. According to UN report on 2023 population is 8.1 billion. As per current rate by 2050 it will

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<sup>8</sup> <https://www.un.org/en/climatechange/science/causes-effects-climate-change>

increase to 9.7 billion. This Population growth is a major cause of greenhouse gas emission and climate change. More population indicates more consumption of foods.

## 2) Natural Causes:

**i) Volcanic eruption:** Volcanic eruption is one of the natural causes for climate change. At time of lava eruption with hot gases and volcano, lava flows at the time of eruption, Emission of Dangerous gases at time of eruption. Hot ash releases at the time of eruption. Hot ashes can cause wildfires. Thousands of wild life and trees are destroyed by this. Volcanic eruption can cause harm to the climate also by emission dangerous gases like carbon-di-oxide, sulfur-di-oxide<sup>9</sup>.

**ii) Tectonic Shifts:** Tectonic Shifts can affect the climate. Sometimes plate tectonics are responsible for volcanic eruption. If chains of mountains are affected by tectonics then the air circulation of the earth will be affected and it will cause climate change.

**iii) Fluctuation of Solar Radiations:** Fluctuation of Solar radiation contributes to the risen temperature of the earth surface. Green house gases of the atmosphere are able to absorb ultra-violate ray and other dangerous radiations. But recently due to high air pollution ozone holes can be seen. As Because of ozone depletion in layer of stratosphere, stratosphere is unable to protect the earth from U-V-rays. Ultra violate ray directly reflected in the earth surface and causing global warming and climate change.

**iv) Change on orbit of Earth:** Earth's Orbital changes may cause climate change for some times. For example at the time of ellipse earth moves closer to sun then after that moves far away from sun. When earth moves closer to sun climate of the earth became warmer. When earth moves far away from the sun then the climate of the earth become cooler than before. This how orbital changes causes climate change.

**Climate Change and Its Responsibility Narratives and Solidarity Narratives:** All of us the total humankind has a moral responsibility towards climate. Article 4 of United Nations Framework Convention on Climate change, 1992 provides the principle of commitments that

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<sup>9</sup> <https://www.who.int/health-topics/volcanic-eruptions?gclid=CjwKCAjw-vmkBhBMEiwAlrMeF2scTIRJklgU4qdFXS99jJyyLbyQa0g2gtc> (retrieved on 30.06.2023 at 8.04 p.m.)

all the signatory parties to the convention must take some common and different responsibilities as nation towards regional climate.

According to (a) of Article 4 of UNFCCC, 1992 all the parties must be published periodically updates of their nation's developments and all the party nations must make them available to the conference of parties. Parties must mention about anthropogenic emissions by various sources and removals by sinks of all greenhouse gases which are not under control by Montréal protocol. nations must use modern techniques and methodologies to control carbon emission was<sup>10</sup>.Rio Declaration on Environment and Development,1992 provides under Principle, 16- "National authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, Principles, bear the cost of pollution, with due regard to the public interest and without distorting International business and investment".<sup>11</sup>

**Polluter pays principles:** According to research it was demanded that polluter should compensate. But polluter pays principle has also a negative impact on climate. Climate change cannot be stopped by compensation. Once climate was deteriorated it cannot be repaired. The whole world will face climate change and degradation of environment.

Therefore, polluter pays, narrative is not suitable in case of climate change.

**Solidarity narrative:** The whole world is not a community. Responsibilities not distributed equally. Climate change mitigation is a matter of solidarity. Each country should take responsibility to save the climate. Already developed nations they had caused a huge damage in the climate. However, at present the developing countries must reduce the emission greenhouse gases. In the first stage, the developing nations and the population of that nation will suffer most. However, negative consequences of climate change will make suffer the whole world. Climate change is not a problem of any one nation. Climate change is a global problem. There is a need of new form of global solidarity. There is need of pro-socially behavior. Low- carbon behavior is also known as pro- Environmental behavior. Developing nations will reduce carbon emission due to that developing nations will suffer most due to climate change and by economically. According various research reports, developed countries are more

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<sup>10</sup> United NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE,1992,p-4

<sup>11</sup> RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT,1992, Principle,16.

responsible for climate change.<sup>12</sup> Now they have to co-operate with developing nations who are practicing low-carbon behavior. According John Rawls had rejected the extension of his theory of justice as fairness beyond a national context. Emery does not apply to international politics, cosmopolitan thinkers like Beitz and Pogge<sup>13</sup>.

**International conventions on Climate Change:** After facing challenges of climate change international community know, they are able to understand that high rate of global warming and climate change one day it will be responsible for destruction of humankind of the world with the total destruction of nature. After realization of probable adverse effect of climate change in upcoming future. The International community specially the developed countries has decided to organize various conventions on climate change to protect the climate, conventions are spreading awareness among all the countries including developing and under developed countries.

**Convention for the Protection of the Ozone Layer, 1985:** 22 March on 1985 Vienna Convention for the Protection of the Ozone Layer organized under United Nations Environment Programme. The main objective of Vienna Convention is as follows:

- i) Spreading awareness about the harmful impact of radiation caused due to depletion ozone layer. U.V Rays is coming to the earth surface and gives adverse affect on human health and the environment.

According to the United Nations Declaration on human Environment. All the participants of the convention have to act according to the provisions of this convention.

- iii) Participants shall act as per the provisions of the convention but after considering the particular requirements of developing countries.

- iv) Prior to creating any project relating to development precautionary measures must be taken for the protection of ozone layer

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<sup>12</sup> <https://onlinelibrary.wiley.com/doi/full/10.1111/socf.12885> (retrieved on 9th July, 2023 at 11.05 a.m.)

<sup>13</sup> CLIMATE CHANGE, LAW, POLICY AND GOVERNANCE; PROF(dr.) Usha Tandon; Eastern Book Company;p-6.

v) Spreading awareness among the participant countries that human activities are the one of the major cause of ozone hole. To protection of Ozone layer there is need of international co-operation.

vi) There is need of more scientific research and observations; exchange of collected information from scientific research has done by member states. That information must be exchanged among the participant countries for the scientific knowledge, which can to protect ozone layer<sup>14</sup>.

According to Article 2 of this convention main obligation of the parties are to take necessary actions per the provisions of this convention. For the protection of ozone layer, participants must co-operate with each other which denotes exchange of scientific and systematic observation research collection of information and scientific knowledge among participants of the concern convention.

Article 3 of Vienna Convention for the Protection of Ozone layer, 1985 deals with scientific research and observation must be initiated by international body's research and experiment on:

- a) Physical and chemical experiments which can affect ozone layer.
- b) Human activities which are responsible for ozone layer depletion the activities should be done in a modified manner, this experiments of modified manners of human activities are how much fruitful for protection of ozone layer.
- c) Research on climatic effects caused due to ozone layer depletion. Regular modifications of ozone layer effects of UV radiations on human health and environment of earth surface.
- d) By mutual understanding among the participants of the convention must modify or to stop themselves use harmful substances, reduce practice processes of human activity, which may cause harm to ozone layer<sup>15</sup>.

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<sup>14</sup> Documents in International Environmental Law;Phippe Sands and Palo Galizzi;Cambridge University Press;p-69

<sup>15</sup> Documents in International Environmental Law;Phippe Sands and Palo Galizzi; Cambridge University Press;p-67



- e) In the place of harmful substance, non-harmful substances must be used. If the practice causes harm to ozone layer then methods of practice must be changed, if and process causes harm to ozone layer then the technology used for process must be modified.

According to Article 4 of this Vienna convention if participants should arrange and encourage each other and co-operate each other in legal scientific and technical field.

Article 5 of Vienna convention provides provision on protection for ozone layer deals with transmission of information each parties whoever done research on the problem ozone depletion, for protection of ozone layer which are their observations and collection of scientific research should be transmit through secretariat or conference among the participants of the convention.

According to Article 8 of Vienna convention. Participants of the convention as per their current needs through a meeting or conference can adopt protocols<sup>16</sup>.

**Montreal Protocol Substance that Deplete the Ozone Layer, 1987:** Montreal Protocol completed on 16<sup>th</sup> September 1987. After Vienna convention, 1985 for the protection of ozone layer Montreal Protocol was adopted on 1987. Montreal Protocol had imposed specific legal obligations and limitation on productions of substances which are responsible for ozone depletion. Ozone depleting substances (ODS). ODS are used in case of production of refrigerator, air conditioner, fire extinguisher, use of aerosols through cosmetics e.g. hairspray, deodorant sprays, other foaming sprays, inhaler, anesthetic preparations, disinfectants used in health centers<sup>17</sup>. Productions of these substances will be done but in a calculative way and within a limit. Second meeting attended by the parties in 1990 1<sup>st</sup> adjustment and amendment has done by this meeting. It is popularly known as London adjustment and amendments. Parties to the Vienna convention for the protection of the ozone layer. Their obligations under the convention to take appropriate steps and necessary actions for the protection of ozone layer. To fulfill this aim and for recognizing the world- wide concept of emission of harmful substances which causes either ozone depletion or modifications in ozone layer. For spreading awareness worldwide about the emission of harmful substance the Montreal protocol. Article 1 (4) defines Controlled substance means substances listed in Annex to this protocol Annex A

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<sup>16</sup> Documents in International Environmental Law; Phippe Sands and Palo Galizzi; Cambridge University Press; p-70

<sup>17</sup> <https://www.google.com/search?q=montreal+protocol+1987> (retrieved on 19th July 2023 at 7.55 p.m.)

Group I CFC-11, CFC-12, CFC-13, CFC-14, CFC-15, Annex Group-II CF<sub>2</sub>BrCl (halon 1211), CF<sub>3</sub>Br (halon 1301), C<sub>3</sub>F<sub>4</sub>Br<sub>2</sub> (2402), these are known as controlled substances<sup>18</sup>.

Each signatory party to the protocol must ensure that for the period of 12 months 12 commencing on the 1<sup>st</sup> day of 7<sup>th</sup> month following the date of entry into force of this protocol. After each period of 12 months it will be calculated that level of substances mentioned under group-I OF Annex-A must not exceed the level consumption than previous year. If any party to the protocol produce any substances listed under Annex-A must ensure that this production not exceeding the calculative level of consumption than the previous year<sup>19</sup>.

Calculation of Controlled Levels: “For the purposes of Articles 2, and 5, each Party shall, for each group of substances in Annex A, determine its calculated levels of:

a) Production by:

- (i) multiplying its annual production of each controlled substance by the ozone depleting potential specified in respect of it in Annex A,
- (ii) Adding together, for each such group, resulting figures.

b) Imports and exports, respectively, by following, *mutatis mutandis*, the procedure set out in subparagraph (a); and

(c) Consumption by adding together its calculated levels of production and imports and subtracting its calculated level of exports as determined in accordance with subparagraphs (a) and (b). However, beginning on 1 January 1993, any export of controlled substances to non-Parties shall not be subtracted in calculating the consumption level of the exporting Party”<sup>20</sup>.

1. Within one year of the protocol into force, each signatory party to the protocol must ban the trade of controlled substances with any state who is not a party to this protocol

<sup>18</sup> Montreal Protocol, 1987 Article 1, Annex-A

<sup>19</sup> Montreal Protocol, 1987 Article-2(1)

<sup>20</sup> <https://ozone.unep.org/treaties/montreal-protocol/articles/article-3-calculation-control> (retrieved on 25.07.23 at 7.30p.m. , Montreal Protocol, 1987 Article-3

2. From 1 January 1993, no party is performing under paragraph 1 of article 5 may export any controlled substance to any state who is not party to this protocol<sup>21</sup>.

**Special situation of developing countries:** In case of a party to protocol if is a developing nation, whose annual calculated level of consumption of controlled substance is less than 0.3 kilograms on per capita basis on the date of entry into force of this protocol. Within ten years after the protocol entry into force, the developing nations due to meet their basic domestic needs entitled to delay in consumption of controlled substances that delay will be considered and compliance by the developed nations<sup>22</sup>.

According to Article 7(1) of Montreal protocol, 1987 each party shall submit to the secretariat, within three months about statistical data on production of controlled substances<sup>23</sup>.

**Research and exchange of information:** State parties should cooperate with each other but must consistent with their domestic laws rules regulations practice. Each developing nations must done their research through modern technologies under competent international authorities must exchange information of research about formula of reduction of emission of controlled substance, formula of recovery of ozone layer and following information:

- a) Regarding best modern technologies to improve recycling the ozone layer, emission, reduction, and destruction of ozone controlled substances.
- b) Must exchange information about alternative methods or techniques of reduction of controlled substances.
- c) Parties must exchange information regarding costs, benefits. Losses or strategies of reduction or emission technologies of controlled substances<sup>24</sup>

#### **UNITED NATION FRAMEWORK CONVENTION ON CLIMATE CHANGE, 1992:**

All the parties to this convention had admitted the fact the changes which ever seen in the earth's climate it has adverse effects are a common serious concern of humankind. Due to human activities increasing greenhouse gases in the atmosphere. UNFCCC established on

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<sup>21</sup> Montreal Protocol, 1987 Article-3

<sup>22</sup> Montreal Protocol, 1987 Article-5

<sup>23</sup> Montreal Protocol, 1987 Article-7

<sup>24</sup> Montreal Protocol, 1987 Article-9

International Environmental treaty to conflict dangerous harmful human activities with climate system. UNCED also popularly Known as Earth Summit was held on 1992 in Rio-de-Janerio (Brazil) UNFCC signed by 154 country parties.

Article 1 of UNFCC deals with some definitions these are as follows<sup>25</sup>.

Article 1.3. defines Climate System. “Climate System means the totality of atmosphere, hydrosphere, biosphere, geosphere, and their interactions.

Article 1:

Defines Climate Change”. “Climate Change means change of climate which is attributed directly or indirectly to human activity that alters the composition of global atmosphere and which is addition to natural climate variability observed over comparable time periods.”

“Adverse effects of climate change indicates changes in physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare”<sup>26</sup>

Objective of UNFCC: All the parties must have the same objectives through this convention. 1<sup>st</sup> objective is to stabilize greenhouse gases in the atmosphere. To control level of green house gases in atmosphere which can cause anthropogenic interference with atmosphere and climatic natural system To prevent interer ere with natural climate system there is need of strong rules regulation laws which can be followed by each signatory parties to this convention to save the climate of the earth.

UNFCC must ensure that Climate change must not effect production food and will not causes harm to ecosystem. Through this convention, it will also be ensured that economy of the party countries will not be adversely affected due to climate change<sup>27</sup>.

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<sup>25</sup> UNFCC.1992Article -1

<sup>26</sup> UNFCC,1992 Article 1.1.

<sup>27</sup> UNFCC.1992, Article-2

**Principles of UNFCC:** There are some principles of this convention:

1. Parties to this convention must protect the climate system for the future generations of humankind. Each and every party has some responsibilities to protect the environment specially the climate system but according to their capabilities. In this case the developed countries will the path and will lead all the developing nations.
2. The vulnerable developing countries those who are facing adverse effects of climate change and also bearing the uneven burn of this convention, these parties must be given consideration.
3. All the parties should take precautionary measures to prevent and reducing the causes and adverse effects of climate change. Whatever the techniques and measure are adopted by polices for the global benefit that should be under lower possible costs. Every party has their different socio-economic contexts which cover all relevant sources, green house gases reservoir, comparing other economic factors, climate change must be beard by each and every party co-operatively. unitedly all the nations must try to fix the problem of climate change. cooperatively.<sup>28</sup>

**COMMITMENTS:** There are some commitments among the parties of this convention to the each other. These are as follows:

- i) Parties must develop update and publish about their research results make available to the conference.
- ii) If any of the party has formulated any formula to protect the ozone layer. Then this formula must be implemented by the party must be shared the formula among the parties.
- iii) Cooperate with each other in the development process of research and application of research result,
- iv) Parties should promote among themselves that how to manage environment and development sustainably and conservation of essential elements of ecosystem and

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<sup>28</sup> UNFCC 1992, Article-3

atmosphere.

v) Cooperate with each other in case of adjustments with the impact of climate change. Participants Must cooperates with each other in development of plans and measures for the survival with the impacts of climate change<sup>29</sup>.

Each must done their research related to climate change and protection of ozone layer individually if necessary then with the cooperation of other parties. Their scientific observations of scientific experiments and research results must be shared with each other through conferences<sup>30</sup>.

**Education, Training and Public Awareness:** To achieve goal of protection of ozone layer and to protect the climate there is need to take of some following steps:

a) For the protection of climate there is need to develop national education system and proper implementation of education. For implementation of environmental education in national level, public awareness is an essential part of the nation.

b) Assure Public access to information about climate and about the effects of climate change.

c) People of a nation must participate in climate change programmers and people should discuss among themselves about harmful effects of climate change<sup>31</sup>.

Parties to this convention must cooperate with each other in the international level to promote the cause and effects of climate change on the humankind. There is need of proper training to fight with harmful effects of climate change. There is also need of proper knowledge about modern techniques to stop the causes of climate change and reduction of emission of gases, which can cause harm to the ozone layer. To spread the education training among public and spread the awareness parties should use existing bodies:

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<sup>29</sup> UNFCC,1992, Article-4

<sup>30</sup> UNFCC,1992, Article-5

<sup>31</sup> UNFCC,1992,Article-6(a)

1. For development modern techniques and exchange of information and education among themselves and expand public awareness about causes and effects of climate change.
2. Considering development and implementation of education and training there is should be arrangement of programmers to make national institutions strong. Parties can cooperate with each other by sending their experts to other party country to train their national experts to fight with causes and effects of climate change and give training how to use modern techniques for reduction of emission of harmful gaze this cooperation must be provided by develop countries to the developing nations<sup>32</sup>.

**CONFERENCE OF THE PARTIES:** After some periodical gap, parties must arrange conference to meet and discuss with each other and supreme body of this convention will make a review about implementation of convention in the national laws of the parties to convention conference of the parties necessary:

- a) For periodically examine the obligations of the parties under this convention. Institutional arrangements of the parties for proper implementation of the convention. To achieve the goal sets out by convention for gained of parties how much experience they have gained at the time of implementation of rules finalized by this convention and the experience of evolution of scientific research and technological knowledge.
- b) To promote and to expedite the exchange information about the measure taken by parties to fix the problem of climate change.
- c) Establish the guidelines of this convention in case of solve the issue of climate change.
- d) The parties to this convention this publication must acquire and should be considered by the member countries must publish regular reports about implementation of convention in national laws of party countries.

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<sup>32</sup> UNFCCC, 1992 Article-6

- e) Review reports of the main body must to submit by its subsidiary bodies to the party country to provide guidance to them about the faults of implementation of convention.
- f) Through conference it will be discussed how to exercise not only rules under convention but also exercise other function, which are, required to achieve the objectives of UNFCC<sup>33</sup>.

**Kyoto protocol, 1997 to the UNFCC:** Kyoto protocol is the international treaty, which is the extension of UNFCC, 1992. Kyoto protocol was adopted on 11<sup>th</sup> December 1997. This treaty was effective from 16<sup>th</sup> February 2005. At present 192 party countries had signed the treaty of Kyoto protocol Government of India had decided to sign the treaty of Kyoto protocol in 2002. Kyoto protocol has total 28 articles, Annex A and Annex B. To achieve the objectives set out by the UNFCC KYOTO Protocol was adopted by the parties to the convention on 11<sup>th</sup> December 1997 in Kyoto Japan.

According to this protocol, “Conference of the parties indicates conference of the parties to convention (UNFCC).

This Protocol introduced Intergovernmental panel on climate change denotes that Intergovernmental panel on Climate Change established in 1988 jointly by world Meteorological organization and United Nations Environment Programme.

According to this protocol Montreal protocol was adopted for controlling substances which deplete the Ozone layer”<sup>34</sup>.

Parties mentioned in Annex I of UNFCC, 1992 for achieving their goal of quantified emission limitation and reduction mentioned under article 3 of UNFCC, FOR Application of Sustainable development

“For implementation of principles of sustainable development there is need to take new policies and other measures in conformity with national situations and laws such as:

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<sup>33</sup> UNFCC,1992 Article-7

<sup>34</sup> Kyoto PROTOCOL,1997 Article-1



- i) Improvement in energy abilities in relevant sectors of national economy of concern party country.
- ii) advancement and protection of descend and reservoirs of green house gases which are not controlled substance by Montreal Protocol, consider their commitments under International Environmental agreements through various international conferences based on environment which may relates to implementation of principles of sustainable development, afforestation policies and practice of forest management in concern party nation.
- iii) Application of Sustainable development on agricultural process in the situation of climate change.
- iv) To achieve the limitation of reduction of greenhouse gases fixed by convention exemption from tax and duty and subsidies should be provided to all greenhouse gases emitting sectors.
- v) Uplift and motivate reforms related to reduction process of emission of greenhouse gases by the concern sectors, which are trying to achieve the aim set out by the convention.
- vi) Measurement of limitation of emission of greenhouse gases by the relevant sectors of the member country of the convention.
- vii) Annex A of Kyoto protocol includes Methane(CH<sub>4</sub>) under green house gases. To limitation and reduction of methane through waste management, productions, transport, and giving out of energy<sup>35</sup>.

Parties mentioned under Annex I individually or jointly make sure that their limitation of reduction of anthropogenic carbon dioxide and other green house gases including methane emission must not exceed their specified amount. Reducing overall emission of greenhouse gases in the party nation by at least 5 percent below 1990s level in the commitment period 2008-2012<sup>36</sup>.

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<sup>35</sup> KYOTO PROTOCOL, 1997 Article-2

<sup>36</sup> KYOTO PROTOCOL, 1997 Article 3.1

“Each and every party come under Annex I of the Convention by year of 2005 have taken proven steps for advancement of process of reduction of emission of green house gases which was commitment under this protocol<sup>37</sup>.”

“The signatory parties under Annex I of UNFCCC to fulfill their commitments individually or jointly achieve the goal of reduction of emission of green house gases including methane which are listed under Annex A of Kyoto Protocol that the green house gases listed under Kyoto protocol amount of gases must not exceed the calculative limit about their quantity provided under Article 3 of Kyoto protocol. In case of failure to achieve the amount of reduction of emission of green house gases, then the other party countries are also responsible for the failure of one nation”.

No party can start the reduction of emission of green house gases prior to the start of commitment period. National system of a country for estimation of anthropogenic emissions by sources and removals by sinks of all green house gases including methane. Guidelines and instructions given by methodologies for a national system must be decided by parties in conference and meeting of the parties to the protocol at its first session. All green house gases not controlled by the Montreal protocol e.g. methane gas add by Kyoto protocol and some others gases which accepted as harmful for climate by Intergovernmental panel on Climate Change<sup>38</sup>.

To meet the commitments of parties comes under Annex I may transfer or acquire information between each other for reduction of emission by use special methods and applying special projects which can help to achieve the specific reduction of emission units. One party can adopt formula of another party which can give of result of reduction emission of green house gases. For anthropogenic emission and removal of sinks of greenhouse, gases in any sector of economy provided that

a) one party may apply the project of another party for good result. Subject to approval of the parties.

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<sup>37</sup> KYOTO PROTOCOL, 1997, Article 3.2

<sup>37</sup> KYOTO PROTOCOL, 1997, Article-4

<sup>38</sup> KYOTO PROTOCOL, 1997, Article-5

b) Before adoption of projects from other party, that part must have taken so many steps for reduction of emission of greenhouse gases in addition to that steps of project can be adopted which provides reduction of emission by sources and for first removal of sinks of green house gases project can be adopted.

c) It does not obtain any reduction of emission units it is not obedience with its obligations provided by Article 5 and 7 of UNFCC”<sup>39</sup>.

1. “To improve the environment as a whole including climate there is need to clean development mechanism is hereby defined.

2. The object of the clean development mechanism is to assist the non party countries to provide contribution is the process of Protection of Climate from emission of green house gases.

Clean development authority of a party nation must be guided by conference of the parties to the protocol. Parties to the protocol guided by supervised by an executive board of clean development authority.

Reduction of emission of green house gases through application of various projects must be certified by operative bodies which are designated by conference of parties to this protocol on the basis of:

- a) Discretionary participation of must be approved by each party in associated with.
- b) Actual, measurable and long term benefits related to the alleviation of climate change
- c) Some processes of Reduction of emission in would be done without certified projects”<sup>40</sup>.

“After three years from the date on which this protocol has enter into force any party of this protocol at any time a party to this protocol may withdraw themselves from this protocol by giving notification to the Depositary.

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<sup>39</sup> KYOTO PROTOCOL, 1997, Article-6

<sup>40</sup> KYOTO PR; 1997, ARTICLE-12

Such withdrawal will be affected after completion of year of submission of notification to the depositary by the member of parties who want to withdraw itself from this protocol.

The party who already withdrawn the membership of the country from from the protocol this parties of KYOTO PROTOCOL;1997, Article rties shall be considered as having withdrawn from this protocol<sup>41</sup>.

Real text of this protocol has been published in various languages e.g. Arabic, Chinese, English, French. Russian and Spanish these all are authentic, shall be deposited with the secretary of the united nation.

Witness are undersigned, being duly authorized to that effect. The parties have affixed their signature to the protocol on the dates indicated by authority embellished under protocol<sup>42</sup>.

Annex A of the Kyoto Protocol mentioned the green house gases

- i) Carbon dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), Nitrous Oxide (N<sub>2</sub>O), Hydro fluorocarbon (HFC<sub>s</sub>), Per fluorocarbons(PFC<sub>s</sub>), SULPhur hexafluoride(SF<sub>6</sub>)<sup>43</sup>.

**Paris Agreement, 2015 Under UNFCC:** Parties of UNFCC to meet the objectives of UNFCC Parties signed an agreement on 2015 in Paris.

According article1 convention means UNFCC, 1992.

This Paris Agreement signed for implementation of convention including the objective to strengthen the global response about controlling climate change through implementation of principles of sustainable development.

**Impact of Climate Change on Ecosystem:** An ecosystem is a system of consisting of biotic and aibiotic modules which are functioning together in a particular area of environment<sup>44</sup>. An ecosystem includes living plants and animals in any area together with non-living elements like soil, water, air comprise ecosystem of the environment of the particular area<sup>45</sup>.Millennium

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<sup>41</sup> Article-27

<sup>42</sup> KYOTO PROTOCOL;1997, Article-28

<sup>43</sup> KYOTO PROTOCOL-1997, ANNEX-A

<sup>44</sup> <https://www.biologyonline.com/dictionary/ecosystem> (retrieved on 24. 08.2023 at 7.45 p.m.)

<sup>45</sup> CLIMATE CHANGE AND ENVIRONMENT; Dr. Vasudevan Rajram, Keith Olson and Lynn Tiede; Notion press;p-88

Ecosystem Assessment (MEA) predicts that only a too little changes of climate has serious and significant impact on ecosystem.

**Impact on Marine and coastal Ecosystem:** two- third of the earth is covered by water. That means 70% of the earth is oceans consist of distinctive ecosystem such as coral, reefs and mangroves. Due to climate, change and raising temperature glaciers and sea ices are melting and it leads to sea level rise and due to rise of sea level, which increases coastal erosion, flooding, higher storm surges, sea saltiness access. Incensement of temperature in sea surface causes acidification and coral bleaching<sup>46</sup> that means colorful corals turn into white. Marine ecosystems are generous in the Arabian sea and Bay of Bengal. The various islands in Arabian Sea and Bay of Bengal have their different and rich ecosystem. Islands of Bay of Bengal like Andaman, Nicobar, a Lakshadweep an islands of Arabian Sea have their unique flora and fauna in their different ecosystems. These islands fascinate lots of tourists and giving a large profit in tourism business. Coral reefs, marine life includes sharks and other larger and big animals found under water of ocean, which is surrounded to the islands<sup>47</sup>.

**Impact On Himalayan Ecosystem:** Global per decade average rising temperature is 0.7°C (approximately). Temperature is increasing annually 0.9°C in Himalayan region. Due to this climate, change mosquitoes can get clear images of things and humans in Lasha and Tibet cities situate 3490 meters above sea level. Mosquitoes are spreading diseases like malaria, dengue that can causes deaths also. Existence of various insects is possible to spread by mosquito's infectious diseases to the specific areas where low temperature exists previously by nature to protect people from various infectious diseases but due the climate change and rising temperature, these areas are full of threats of spreading infectious diseases<sup>48</sup>.

**Impact on Agriculture:** Climate Change can Affect food availability and globally, nationally and locally. Climate change can cause disorder in case of food availability, depletion to access to food and can cause derogation of quality of food. Climate change can generate disturbance in rainfall patterns, rising temperature can give rise to the pests diseases disturbing the natural crop cycle and influence the plant growth and production of crops. Extreme weather is

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<sup>46</sup> <http://ijbi.org.in> (retrieve on 25.08.2023 at 8.28 p.m.)

<sup>47</sup> Climate Change and Environment; Dr. Vasudevan RajaRam, Keith Olson and Lynn Tiede; Notionpress; p-98-99

<sup>48</sup> International Journal of Biological innovation; EISSN25821032; Impact of climate change on Biodiversity: An Overview; sadguru prakash, Seema Srivastava; p-63

responsible for premature death of plants and destruction of crops. Rising temperature contributes to spoilage and contamination<sup>49</sup>.

**Impact on Island:** Maximum of island is full of natural resources and affluent biodiversity. Natural resources have a significant economic importance. Some of the islands are struggling to overcome poverty as because the natural resources of island devastate due to climate change. Shortage of coral reefs and fish stocks<sup>50</sup>.due rising level of seawater Stalinization of revivers and lack. Fishes who lived in river's fresh water they are died due raising saltiness of the fresh water. islands are suffering for fresh drinking water as sea level is rising and Stalinization of fresh water. Due to climate change, more than 23% of island species are becoming endangered. Due to the climate, change biodiversity of Island affected than tourism is also affected it causes economic loss<sup>51</sup>.

**Impact on Forest Ecosystem:** According to Global Forest Resources Assessment 2020 31% of the land, area of earth surface is covered by forest<sup>52</sup>.forest is the habitat for two /three of the terrestrial species Due to deforestation rich biodiversity of forests converted into weaker than before greenhouse effect causes migration of tree species to high altitude attack of pests increases day by day due to climate change<sup>53</sup> Extreme weather and wild fires kills plants and animals both many animals and plants are going to the way of extinction. Deforestation is the one of reasons of climate change. Climate change is responsible for extreme weather, which is responsible for extinction of plant and species of forest. Forest is an essential element of environment in India forest of state of Jharkhand in India had a rich biodiversity. However, due to deforestation caused by human activity. Rise of deforestation is the reason of greenhouse effect and climate change at present these are the serious global problem, India is not out of these problems like deforestation, rising temperature, extinction of plant and animal species. Forest of Jharkhand is on threat. Risk is rising day by day<sup>54</sup>.

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<sup>49</sup> [climatechange.chicago.gov/climate-impacts/climate-impacts-agriculture-](https://climatechange.chicago.gov/climate-impacts/climate-impacts-agriculture-) (retrieve on 27.08.2023 at 4.00 p.m.)

<sup>50</sup> [oogle.com/search?q=impact+of+climate+change+on+island&oq=impact+of+climate+change+on+island](https://www.google.com/search?q=impact+of+climate+change+on+island&oq=impact+of+climate+change+on+island) ((retrieved on 27.08.2023 at 7.55 p.m.)

<sup>51</sup> International Journal of Biological innovation; EISSN25821032; Impact of climate change on Biodiversity: An Overview; sadguru prakash, Seema Srivastava;p-63

<sup>52</sup> <https://www.google.com/search?q=one+third+of+the+earth+surface+is+forest> (retrieved on 28.08.2023 at 10.20 a.m.)

<sup>53</sup> International Journal of Biological innovation; EISSN 25821032; Impact of climate change on Biodiversity: An Overview; sadguru prakash, Seema Srivastava;p-63

<sup>54</sup> <https://www.researchgate.net/figure/Grid-based-forest> (retrieved on 28.08.2023 at 11.15 a.m.)

**Impact on Inland Water Ecosystem:** Due to climate and global warming ecosystem of inland water is badly affected. Inland water's biodiversity is destroyed due to climate change. Climate change is a threat for inland ecosystem of the all the countries, India are not an exception to it. Proximately 28 million people in India are economically dependent on fishing occupation. An Impact of climate change in inland water in India noticeable by various geographical conditions affects the ecosystem of inland water loss of various species and changes and problem caused to breeding period and reproduction system Fishes are badly affected. Life cycle and behavior of fishes changed which effects the fishing profession of fisherman and economy of the country as well<sup>55</sup>.

**Impact of Climate change On Biodiversity:** Biodiversity is the diversification of life on the earth. Diversity of species, different species of different ecosystems. Biodiversity is an essential part of environment. Protection of environment is possible only when the conservation of biodiversity will be done completely. "Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems<sup>56</sup>". Biodiversity is the most significant basic of survival of mankind. Biological Diversity mentions to changeability of various living organisms among all organisms situated within that ecosystem<sup>57</sup>.

**Genetic Diversity:** Genetic diversity includes different genetically characteristics of various plants and animal species<sup>58</sup>. It is the differences in the genus among the individual species. Genetic diversity also refers to the genetic chromosomal variation. Genetic differences make difference from one species to another<sup>59</sup>. Every different genetics variations have their own different characteristics. Examples in case of animals there are so many different breeds of Dogs and cats<sup>60</sup>. Examples in case of "plants there are diversification of rose flowers, different wheat grains, approximately there are more 50,000 varieties of rice grain. And in case of fruit approximately 1000 of variations seen among mango species in India"<sup>61</sup>.

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<sup>55</sup> <https://www.google.com/search?q=impact+of+climate+chang+in+inland+water++of+india> (retrieved on 29.08.2023 at 8.20 p.m.)

<sup>56</sup> Convention On Biodiversity.1992, Article-2

<sup>57</sup> Climate Change and Environment;Dr.Vasudevan RajaRam,Keith Olson and Lynn Tiede;Notionpress;p-81

<sup>58</sup> [https://en.wikipedia.org/wiki/Genetic\\_diversity](https://en.wikipedia.org/wiki/Genetic_diversity) ( retrieved on 1. 09.2023 at 8.00 p.m.)

<sup>59</sup> Climate Change and Environment;Dr.Vasudevan RajaRam,Keith Olson and Lynn Tiede;Notionpress;p-81

<sup>60</sup> Climate Change and Environment;Dr.Vasudevan RajaRam,Keith Olson and Lynn Tiede;Notionpress;p-81

<sup>61</sup> Ibid

**Community Diversity:** Community diversity presents the survival of various types of alive things including animals, plants and other organisms in specific area of ecosystem of that environment<sup>62</sup>.

**Ecological Diversity:** Ecological diversity comprises with terrestrial and aquatic both ecosystems. “Terrestrial ecosystem we can find in India in forest, Grasslands, Desert, Mountains.

**Tropical forest:** most of the landmass of India covered by tropical forest except high altitude. Tropical green forest can be seen in India across the western Ghats, Andaman and Nicobar islands, upper portion of Assam and eastern lower slopes of Himalayas.

**Tropical Deciduous Forest:** In India this type of forests is found in Kerala, Madhya Pradesh and Maharashtra, west Bengal, Gujarat and Rajasthan.

**Tropical Dry Forests:** Tropical Dry forest can be seen only in Northern hills and some parts of south India. The leaves of the trees of this forest appear in occurrence of winter and becoming profuse green again after winter is over<sup>63</sup>.

**Deserts Diversity:** Deserts are formation of land due to geographic reasons. Rare vegetation evaporation rates, slow process of land degradation are the characteristic of deserts. 7<sup>th</sup> largest desert of the world is situated in India. Thar Desert and Kutch in Gujarat is also known as white desert covered with salt with 50°c temperature in summer season and just opposite freezing during winters. Spiti valley is known’s cold desert with extreme temperature freezing and very less rainfall. In habitats for wildlife very rare<sup>64</sup>

**Grassland Diversity:** Indian grassland is found village grazing (Gouchar) grounds. Proximately 24% of the lands of India covered by grasslands, which includes natural grazing lands, woodlands, tramp formations in the elevated aerial area of Himalayas<sup>65</sup>. This type of lands situated in India in dry region of Western Ghats. Grasslands in India have productive

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<sup>62</sup> <https://www.google.com/search?q=community+diversity> (retrieved on 2.09.2023 at 8.00p.m.)

<sup>63</sup> Climate Change and Environment;Dr. Vasudevan RajaRam, Keith Olson and Lynn Tiede;Notionpress;p-92-93

<sup>64</sup> Change and ENVIRONMENT;Dr. Vasudevan RajaRam, Keith Olson and Lynn Tiede;Notionpress;p-96

<sup>65</sup> Climate Change and ENVIRONMENT;Dr. Vasudevan RajaRam, Keith Olson and Lynn Tiede;Notionpress;p-95



growing ecosystems, which have played a necessary role in herbage of India<sup>66</sup>.

**Species Diversity:** Species Diversity deals with different forms of species of plants animals in a specific ecosystem, and related affluences of those species<sup>67</sup>. The species per ecosystem. While the number of each individual species represents uniformity of species. Different ecosystems are having different species. For example, Tropical areas have appreciable species richness, as the environment is favorable for a large number of species.

Only slight changes in pattern of climate have a serious significant impact on biodiversity.

Climate change especially effects the habitats of various species are destroyed and it is a threat for the survival of species. “Due to increased temperature in India barberries plants, jasmine plants are shifted towards higher altitude to Nainital. According to the report on climate change normal life cycles of the plants disrobed due to climate change. as an impact of climate change droughts and floods causes harm to the indigenous plants are destroyed the pests after flood or droughts. Climate change leads to the extinction of some species of animals, e.g. golden toad and harlequin frog; polar bears are also in danger in the North Atlantic, and whales are going extinguished. Under ocean ex ratio of sea, turtles are disturbed due to high temperature, more female turtles are reproduced. Due to climate change other animals are also in danger of extinction frogs, toads, other amphibians. Tigers, elephants are also affected due to climate change. Due to climate change various disease causes to animals like fungus, antibiotic resistant infections, viral fever of animals”<sup>68</sup>. Climate change is also responsible for the behavioural changes of various species of animals of either terrestrial or aquatic. “Out of 195 countries only 17 countries contain 70 % of its biodiversity. In India, it has approximately 91, 000 species of animals and 45,000 of plant species are found in Indian bio-geographic region. Among animal species, 12.6% are mammals, 4.5% are birds, 55% are amphibians, 45% are reptiles, and 34% are plant verities, which are medicinal plants. India is known as mega diverse”<sup>69</sup>. Though so many species of animal are extinct such as Asiatic Cheetah, pink-headed ducks, Asian straight-tusked elephant, Northern white rhino approximately 25% animal species

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<sup>66</sup> <https://pscnotes.in/grasslands-in-india-and-its-types> (retrieved on 3.09.2023 at 7.50p.m.)

<sup>67</sup> <https://byjus.com/neet/why-is-species-diversity> ( retrieved on 04.09.2023 at 7.25 p.m.)

<sup>68</sup> International Journal of Biological innovation; EISSN25821032; Impact of climate change on Biodiversity: An Overview; sadguru prakash, Seema Srivastava; p-61-62.

<sup>69</sup> Climate Change and ENVIRONMENT; Dr. Vasudevan RajaRam, Keith Olson and Lynn Tiede; Notionpress-82

and 77% plant species are already extinct from India<sup>70</sup>. Wild life protection 1972 provides various protectoral provisions to save the wild life species. Forest conservation Act.1980, Plant varieties and Farmer Rights', Act, 2001.

**Impact of Climate Change on Environment:** Climate Change has impacts on environment as a whole. Climate change also has socio economic impacts. Impacts of climate change on environment are as follows:

Global warming: Due to green house effect, temperature is raising day by day. It is not a problem of any one or few countries. It is problem of whole world it is known as global warming. "The average global temperature has increased from 0.6 on 1800s to 1.4-5.8<sup>0</sup>c by the year of 2001"<sup>71</sup>. Global warming affects both terrestrial aquatic life of animals and plants.

**Climate change and Human Rights:** Third generation rights are those, which are recognized lately. OHCHR has an aim on Paris agreement which will be held on 2030 to establish human rights deployed proceed towards action against climate change climate adversely affect the human rights. Due to increasing temperature ocean ice glacier melting is responsible for flood and increasing temperature is causing drought which causes severe damage for agriculture which causes shortage of crops and food and increasing sea level also causes death of many fish species. Due to affected fish species, fishing occupation is also adversely affected. Climate change is accountable for changes in natural season cycle right to food and right to environment is violated due to climate change<sup>72</sup>. Relation between climate change and human rights is recognized by International bodies through policies taken by them. Various resolutions passed by International bodies and International conventions and treaties signed by various country parties of the world. Climate change is a global issue greenhouse gases because ozone depletion and as a resulting global warming adversely affects the whole world. At the time of making the concept about the interrelation between climate change and human rights international bodies had found that some basic human rights are effected due to climate change, these are Right to life, right to food, right to housing, right to health, right to live in a pollution free environment, right to self-determination. Natural calamities like flood, drought, heavy rainfall, changes in

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<sup>70</sup> <https://blog.finology.in/Legal-news/extinct-endangered-species> (retrieved on 6.09.2023 at 10.30 a.m.)

<sup>71</sup> International Journal of Biological innovation; EISSN25821032; Impact of climate change on Biodiversity: An Overview; sadguru prakash, Seema Srivastava-62

<sup>72</sup> International Journal of Biological innovation; EISSN25821032; Impact of climate change on Biodiversity: An Overview, p-63

season cycle pattern another disasters are the result of climate change. According to the world bank, if these climate changes continue for years, then the technological development of countries will stop, and side by side economic development of countries will be at risk<sup>73</sup>.

**Indian laws which helps to protect from climate change and effects of climate change:**

There are some enactments which are indirectly or directly related to climate. These are Air (Prevention and Control of Pollution) Act,1974, Environment protection Act,1986, Water (Prevention and Control of Pollution) Act,1981, National Green Tribunal Act, 2010.

Air (prevention and Control of Pollution) Act, 1981 protects the climate: This Act provides a unique feature that states government can regulate the standard of emission of carbon and other air pollutants. The main objects of this Act are as follows:

1. To control the presence of restricted gases in air of industrialized area beyond certain limits.
2. United Nations Conference on Human Environment and Development was held in Stockholm on 1972 in which India was participated there the decision was taken all the natural resources should be preserved and quality of air should not be decreased.
3. harmful gases like carbon –di-oxide, carbon-monoxide, nitrogen oxides, methane, this are responsible for Ozone depletion. Ozone depletion is the cause of global warming and climate change.

3 Enactment of this Act was a step taken from government of India to control the air pollution and protect the climate. Air (Prevention and Control of Pollution) Act, 1981 was unfenced under Article 253 of Constitution of India which provides permission to implement international laws or agreements and treaties in national laws.

“Air pollution means presence in the atoms atmosphere any air pollutant<sup>74</sup>.

“Air pollutant means any solid liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings,

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<sup>73</sup> CLIMATE CHANGE, Law Policy and Governance; Justice A.K. Sikri, Usha Tandon; Mohan Parasaran, Sidharth Luthar; Eastern Book Company;edition-2016,p-208-209

<sup>74</sup> Section2(b) AIR(PREVENTION AND CONTROLL OF POLLUTION),ACT.1981

other creatures, plants, and environment”<sup>75</sup>.

To supervise the total process of controlling air pollution sec of this Act provides Central Pollution Control Board and sec 4 of this Act provides State Pollution Control Board to control the air pollution of state.

Environment Protection Act, 1986 permits the government to involve the public in participation in the process of environment protection. Government should spread the awareness among public about environment pollution. Government should fix the standard of discharge emission of pollutants from various sources in elements of environment like air water soil<sup>76</sup>.The main objects of EPA,1986 are as follows:

1. Protection of Environment is a burning issue for the whole world. India is also concern about environment pollution.
2. Though there are several laws relates to protect the different elements of environment. But it was realized that there is need of a general legislation for the protection of environment as a whole.
3. To provide protection towards the entire environment.

“Environment includes water, air and land and their inter-relationship which exists among and between water, air and land and human beings, other living creatures, plants, micro – organisms”<sup>77</sup>.

Water (Prevention and Control of Pollution) Act, 1974. Water and climate change are inevitably linked. Climate change affects the water of world in composite ways. 70% of the world is water, if water molecules are heated due to rising temperature heated molecules can interchange their position in freely in the air which is known as evaporation. This evaporation of water in atmosphere can causes humidity in the air storms, heavy rainfall these are carried by air of particular. if pullulated water consists of sulfur di-oxide, nitrogen oxide and other

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<sup>75</sup> AIR(PREVENTION AND CONTROLL OF POLLUTION),ACT.1981; Section 2(a)

<sup>76</sup> <https://www.google.com/search?q=how+Environment+protection+act+helps> (retrieved on13.09.2023 at 7.35p.m.)

<sup>77</sup> THE ENVIRONMENT PROTECTION ACT, 1986 SECTION 2(a)

chemicals evaporated with water then acid rain will fall down to the earth surface<sup>78</sup>. Not only acid rain fog acidic dust can cause harm to the living creatures and plants of the earth.

In India for the protection of water Water (Prevention and Control of Pollution) Act, Parliament of India enacted 1974. The main objects of the acts are as follows<sup>79</sup>:

1. To make the water pollutant free.
2. Save the living creature from disease, which comes from the use of polluted water?
3. Water is one of the essential elements of environment. Saving the environment water must be pollution free
4. Solve the climate related issues presence of evaporated water must be pollutant free in the atmosphere.

“Pollution means such Contamination of water or such alteration of physical, chemical or biological properties of water or discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water(weather directly or indirectly)as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate use, or to the life and health of animals or plants or of aquatic organisms”<sup>80</sup>.

To supervise the control of water pollution of the country section 3 of this Act deals with the constitution of Central Board and section 16 provides function of central board. Section 4 of water ACT provides provision for establishment of state board and section 17 provides function of state board to prevent and control water pollution of every state<sup>81</sup>.Green Tribunal act, 2010 provides establishment green tribunal specially deal with cases relating the environment protection. Rio Declaration which is known as united Nations conference on Environment and Development, 1972 where India was participant there was clause to establishment of national green tribunal for speedy disposal of environment protection related ligations. National Green

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<sup>78</sup> <https://www.epa.gov/acidrain/what-acid> (retrieved on 14 September 2023 at 7.50 p.m.)

<sup>79</sup> WATER(PREVENTION and CONTROLLED OF POLLUTION)ACT,1974

<sup>80</sup> WATER(PREVENTION and CONTROLLED OF POLLUTION)ACT,1974,Section2(e)

<sup>81</sup> ENVIRONMENTAL LAWS; JUSTICE M.R MALLICK;BARE ACT;PROFESIONAL’S P-49,50,57-58.

Tribunal ACT was enacted in 1995 by Parliament of India only to apply strict liability. But to provide protection to total environmental issues National Green Tribunal Act, 2010 was enacted for the effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal right relating to environment and giving relief and compensation for causing damage to any element (air water land climate.) of environment. The main objects of the Act are as follows:

1. Right to healthy and pollution free environment is a fundamental right under article 21 of constitution of India. To protect this right one of the main object of this Act.
2. For implementation of United Nations Conference on Environment and Development in national laws.
3. To pay compensation for causing any environmental damages.
4. To decrease the huge load of environment related litigations pending before higher court.

Environment includes water, air, and land and inters relationship, which exists among and between air, water, land, plants, and living creatures including human being and other organisms”<sup>82</sup>.

Hazardous substance, means any substance means manufacture, processing, treatment, package, storage, transportation, use collection, destruction, conversion, offering for sale, transferor the like of such hazardous substance”<sup>83</sup>.

Central Government by notification can establish green tribunal, which shall consist of-

- a) A full time chairperson;
- b) Not less than ten subject to maximum twenty full time judicial members,
- c) Not less than ten but subject to maximum of twenty full time experts Member,

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<sup>82</sup> Section 2(c) of NATIONAL GREEN TRIBUNAL ACT, 2010

<sup>83</sup> NATIONAL GREEN TRIBUNAL ACT, 2010, Sec-2(f)

as the central government may from time to time by notification<sup>84</sup>.

“The chairperson of the Tribunal may, if necessary, invite any one or more person having specialized knowledge and experience in a particular case before the tribunal to assist the tribunal in that particular case”<sup>85</sup>.

### **JUDICIAL RECIPROCATION TO CLIMATE CHANGE IN INDIA:**

India judiciary very much aware about environment protection issues. According to Justice Bhagwati when science and technologies are developing for the development of the country by producing goods and services. To improve the quality of life in the country development of science and use of technology is must but it will cause harm to the environment. If there is use of science and technology they must be side effect of hazards and risk of environmental damage because it is not possible to completely remove all the hazard and risk of environment pollution from use of technology and science for the development of the country<sup>86</sup>. Justice Bhagwati suggested to the Government of India for embellishment of environment courts. It was observed that environment pollution related cases including air, water land pollution, ecological destruction, demolition of natural resources increasing day by day. Higher courts are over loaded for speedy disposal environment related case to protect the environment environment related cases should be quickly disposed. For the protection of environment, there is a need of separate environment court<sup>87</sup>.

**In Bombay Dyeing and Mfg Co.Ltd v. Bombay Environmental Action group(2006) 3 SCC434:** It was held that there are some major threats to environment e.g. ozone depletion, global warming, climate change, degradation of natural resources, water pollution, endangered biodiversity, for the protection of these abovementioned issues are need to solve. Protection of environment should be priority of state<sup>88</sup>.

**Karnataka industrial Area Development Board vs. kenchappa, (2006) 6 SCC 371,** It was held that the appellant must have done a research about the adverse effect of industry before

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<sup>84</sup> Section 3(1) GREEN TRIBUNAL ACT, 2010

<sup>85</sup> Section (2) GREEN TRIBUNAL ACT, 2010

<sup>86</sup> Reflections of Justice Bhagawati; Ram Kishore Choudhary. Tapash Gan Choudhary; Eastern Law House; p-25

<sup>87</sup> Reflections of Justice Bhagawati; Ram Kishore Choudhary. Tapash Gan Choudhary; Eastern Law House; p-26

<sup>88</sup> CLIMATE CHANGE , LAW POLICY AND GOVERNANCE, Forwarded by Justice A.K. Sikri, Usha Tandon; Mohan Parasaran, Sidharth Luthar; Eastern book Company; p-21

acquiring the land for industry. Supreme Court has established significance of sustainable development for the protection environment and improvement development<sup>89</sup>.

**In Maharashtra v. Suraj, pal (2015)1/Bom CR (Cri) 576:** It was held that to control Carbon emission is exceptionally important for reduction of pollution from environment. Emission of carbon-di-oxide and other poisonous gases from the atmosphere it helps to constitute a healthy forest for the survival of animals and their habitats, without proper habitate animals cannot survive. Increasing green house gases in the atmosphere causes incensement of temperature, Climate change which is the main reason of destruction of habituates of animals due to lack of habituates some species of animals are already extinct form environment. Court observed that control of emission of carbon –di –oxide and other green house is must to protect the environment<sup>90</sup>.To protect the climate National action plan on climate change was adopted for first time on 30 the June 2008 by government of India. to enhance the protection of climate new National Action Plan on Climate change on1<sup>st</sup> December 2021.

**NATIONAL ACTION PLAN ON CLIMATE CHANGE:** When the plan of 2008 was adopted then India came under the odd 10 countries of the world that have combined policies to tackle the problem of climate change. To solve that problem separate studies on various field like agriculture, water resources, other natural resources, eco-system, coastal zones, infrastructure e of energy and health these were the initial part of communication of India to authority of UNFCC.

**Principles of NAPCC:** Principles of NAPCC are as follows:”

- i) provide Protection to the poor through application of inclusive and sustainable development strategy, which are responsive to climate change.
- ii) To achieve ecological sustainability, poverty alleviation, national growth.
- iii) Efficient and low cost but effective strategies for end- use and management of sustainable development.

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<sup>89</sup> CLIMATE CHANGE, LAW POLICY AND GOVERNANCE, Forwarded by Justice A.K. Sikri, Usha Tandon; Mohan Parasaran, Sidharth Luthar; Eastern book Company;p-21

<sup>90</sup> CLIMATE CHANGE , LAW POLICY AND GOVERNANCE, Forwarded by Justice A.K. Sikri, Usha Tandon; Mohan Parasaran, Sidharth Luthar; Eastern book Company;p-XIII



- iv) Large-scale and rapid deployment of suitable technologies for adaptation of mitigation.
- v) New Innovative market, regulatories and voluntary etchings for implementation of sustainable development,
- vi) Proper Implementation through unique linkages with civil society, LOCAL Government units, and partnership between public and private sectors to establish principles of sustainable development”<sup>91</sup>

**MISSIONS TAKEN UNDER NATIONAL ACTION PLAN:** “Government of India has taken some missions under NAPCC to protect the Environment of the country in including protection of climate. There are eight missions ware taken by government of India. These are as follows:

1. National Mission on Sustainable habitat,
2. National Water Mission.
3. National Solar Mission.
4. National Mission for maintaining sustainability in the Himalayan Ecosystem.
5. National Mission for Enhanced Energy Efficiency.
6. National Mission for Sustainable Agriculture.
7. National Mission on Strategic Scientific Knowledge for Climate Change.
8. National Mission for Green India”<sup>92</sup>

To expand activities in different sectors to control the pollution and climate change Central government had added new three missions to tackle Impacts of Climate Change in India these are:

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<sup>91</sup> NAPCC, 2008

<sup>92</sup> NAPCC, 2008

- a) National Mission for COSTAL System
- b) National Mission for Human Health
- c) National Mission for Sustainable transport<sup>93</sup>.

**India's Intended Nationally Determined Contribution:** India had set forth its intended Nationally Determined contribution to the United Nations frame work convention on october 2015. "According to INDIC now, India promises to reduce emission power of its GDP by 2030, from the level of 2005 to achieve 50 percent increasing electric power inaugurate measurements from non-fossil based fuel energy methods by 2030.

**Salient features of INDC:**

- i) To adopt climate friendly methods for economic development.
- ii) To establish sustainable process of living, conservation of nature with machining traditions and moderations.
- iii) To reduce carbon emission of its GDP 45% to 50% by the year of 2023 from the level of 2005.
- iv) Take steps to adopt impacts of climate change by expanding development process in a sustainable way in the sectors of badly affected areas to climate change, particularly soil and agriculture, water resources, Himalayan region, coastal regions, health and disaster management.
- v) Proper implementation of funds given by developed nations to taking necessary measures to fight against climate change and to use the funds given by developed nations to implement principles of sustainable development<sup>94</sup>.

**Conclusion:** From the above discussion it was observed that deforestation, various goods manufacturing industries, use of transport, growing populations and increment of green house

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<sup>93</sup><https://www.google.com/search?q=GOVT+SET+ON+2021+THREE+MISSIONS++TO+TACKLE+IMPACT+OF+CLIMATE+CHANGE> ( retrieved on 21.09.2023 at 8.10 p.m.)

<sup>94</sup> <https://vikaspedia.in/energy/environment/climate-change/india%E2%80%99s-intended-nationally-determined-contribution> ( retrieved on 22.09.2023 at 8.10 p.m.)

gases in the atmosphere, these are the reasons climate change. At present climate change is a global issue for which whole world is suffering. Though to protect the environment and the climate as well various conventions, protocols and agreements organized by UN many nations had participated and became signatory party and they had tried to implement international laws in their national laws. India under article 253 of the constitution had implemented so many international environmental in national laws. However, after implementation of various laws environment pollution is not totally under control from experiments of implementation it is proved that to be a developed nation developing nations cannot stop developmental activities and for development environment cannot be destroyed. Therefore, to maintain both development and environment including climate there is a need to maintain sustainability means sustainable development, spreading awareness among people and strict implementation of laws in the country these can be a solution for the problem like climate change.