

LEGAL ASPECTS OF CLIMATE CHANGE-RETHINKING THE DILAPIDATED SUBLUNARY WORLD

Kanimozhi Thaninayagam & Sri Kabishna.S

Law Graduates from School of Excellence in Law, TNDALU, Chennai

Abstract

With the glaciers truncating in the globe and the ice lakes cracking up, the effects of climate change on the environment have already been evidently witnessed. The two stirring subjects that are often seen to be scrupulously related are economic development and climate change. Global Warming is real and it is eventuating indeed most assuredly having the activities by human beings as its root cause, this is indeed debated as the dominant cause of climate change as maintained by a mind-boggling scientific consensus. With the technology coming up mapping the carbon(Carbon Mapping) is emerging as well as the most welcoming phenomenon that needs to be elucidated and understood. It is most compelling for the scientists as well to know where the carbon is absolutely stored. It is a constitutional imperative to safeguard our environment and in that line, the Indian Constitution through its sundry articles provides for preserving our nature and the environment including forests and wildlife. The first part of the paper seeks to offer a general perspective on the dimension of climate change in a nicety and its effects on the earth as a whole. The paper does not endeavor to elucidate the whole technical aspects in relation to climate change but focuses on a few scientific concepts here and there. The paper also ventures to shed light on the constitutional perspectives in preserving nature and the legal perspectives in relation to climate change.

KEYWORDS: *Climate Change, Global Warming, Constitutional Perspectives, Carbon Mapping*

I. Introduction- Climate Change in a big picture:

“Only when the utmost tree is trimmed down, the utmost fish devoured and the utmost stream contaminated you will comprehend that one cannot consume all the money in the world”¹.

The indelible and the deep-rooted variation of temperature and quintessential weather patterns is known as Climate Change. Earth’s climate has been altered notably as deforestation has bolstered up. From glaciers melting at a get a wiggle on rate to the sea levels rising at sundry regions in the globe, the impacts of climate change have become very evident without any obscurity. Climate and weather should

not be mistaken as one as both are not synonymous because climate is something that is measured for a longer period of time whereas weather shows differences either from year to year or from a day to day basis². What causes the weather patterns to be less foreseeable today is climate change. Climate within its compass includes areas of temperature(seasonal), wind patterns, etc. From finding the climate change issue in the spotlight due to the prospectively obstreperous impact of heat-trapping emissions to undergoing life-threatening impacts contemporarily climate change has definitely become an appalling menace all around the world. It is noteworthy that throughout history the climate of the earth has never

¹Alanis Obomsawin'(2019)Wiki Quote < https://en.wikiquote.org/wiki/Alanis_Obomsawin > accessed 9 Jan 2020

²'Climate Change' NATIONAL GEOGRAPHIC < <https://www.nationalgeographic.org/encyclopedia/climate-change/> >accessed 10 Jan 2020

been the same, it kept changing continuously. When climate change is elucidated it is not just the global warming alone but the side effects of the warming as well that should be included. The responsibility solely falls on human beings as the scientists have estimated that it is our activity that has largely contributed to the global climate change. One such example of human activity would be the Amazon Forest fire that broke out due to increasing deforestation. The ensuing driver of climate on earth is the energy from the sun. Climate change in the simplest terms means modifications that occur in the weather pattern, ice sheets and several other landforms, etc. Thus these Ice sheets, land surfaces, and oceans are seen to be the few key factors that play a significant role in influencing the climate. To put it in a wider sense climate can be understood when one statistically elucidates the state of the climate system. Thus Climate Change occurs when there is a release of Carbon dioxide and other greenhouse gases into the atmosphere primarily due to the human activities of fossil fuels. It is to be highlighted that the current warming of the global temperature is highly the result of the burning of fossil fuels by humans. The most peculiar factor in determining the climate is the flow of radiation³. undoubtedly we are all living in an expounding moment since climate change has already become a defining issue of our time. The Intergovernmental Panel on Climate Change (IPCC)⁴ has clearly elucidated in its report on the irreversible losses that the world would witness. What could be the most possible strategy for mitigating climate change than planting billions of trees that would ultimately remove carbon that is found in excess from the atmosphere? It is not just about the possibility when it comes to this idea but the very necessity that

should be taken into consideration before taking into account the efforts and the cost efficiency of this concept. The effects of global reforestation on the earth's surface might as well spark a robust debate among the science community⁵. The impacts of climate change are truly numerous such as impacts on the oceans, forests, polar regions, freshwater systems, species, etc. Coming to the effects of climate change on the polar regions, keeping in mind that both the north and the south extremities of the earth are pivotal for synchronizing the climate of our planet, they are seen to be more pregnable. According to a report, in the next few years, there will be a lack of summer sea ice cover⁶ in the arctic. Oceans are often described as the indispensable carbon sinks as they play a pivotal role in engrossing the carbon dioxide thereby forestalling it from reaching the upper atmosphere. Sadly oceans have turned to be more acidic by the result of increased concentration of carbon dioxide which is not usual. The effects of climate change do not just stop with the oceans and forests, it has its very severe impacts on the freshwater system as well in the forms of drought and flooding, etc. Climate change also leaves its impacts on the forests and its species with forests being the best regulator of the world's climate. It is reported that climate change is one of the prime causes of the decline in the tiger number as well as it affects the well-disguised snow leopards which are considered to be the globe's most elusive cats. Not to forget that the existence of snow leopards are very crucial for maintaining the ecological balance. Every Individual has to genuinely admit that we as humans are facing the biggest environmental dare today which our species has never seen before. The world is certainly on the verge of a global transmutation. Not

³What is climate change' Australian Academy Of Science<<https://www.science.org.au/learning/general-audience/science-climate-change/1-what-is-climate-change>>accessed 12 Jan 2020

⁴The Effects Of Climate Change' WWF <<https://www.wwf.org.uk/learn/effects-of/climate-change>>accessed 12 Jan 2020

⁵ Alan Buis, 'Examining the viability of planting trees to help mitigate Climate Change' (2019) GLOBAL CLIMATE CHANGE<<https://climate.nasa.gov/news/2927/examining-the-viability-of-planting-trees-to-help-mitigate-climate-change/>>accessed 12 Jan 2020

⁶The Effects Of Climate Change' WWF <<https://www.wwf.org.uk/learn/effects-of/climate-change>>accessed 9 Jan 2020

to forget that seventeen Developmental goals have been set up by the International community via the United Nations whose ensuing target is to invigorate a more assured and buoyant world by the year 2030. Eradicating poverty, hunger in all its forms, fortifying gender equality, food security, upgrading agriculture, etc are some of the Sustainable Developmental Goals that we can look into. In that line foreseeably India's national developmental goals are seen to be reflected in the Sustainable Developmental goals, thus India has played an imperative role in shaping the Sustainable Developmental Goals(SDGs). To support the above statement few of India's programs one such being the world's largest financial inclusion program Pradhan Mantri Dhan Yan Yojana, could be highlighted. India has been constructively committed to attaining the SDGs even before they were officially formed into crystals⁷. Thus this urgent threat of climate change could be highlighted as one issue that would aptly define the silhouettes of this century more efficaciously than any other⁸.

II. Climate Change and the law-exploring their correlation:

Given the boundless intricacy of this environmental challenge legal pursuit around this has witnessed nimble scrutiny of unconventional controlling approaches. It is well known that the primary correlation between climate change and the law started with the famous Intergovernmental treaty for addressing this menace of climate change called the United Nations Framework Convention On Climate Change (UNFCCC)⁹. The parties to the convention attend meetings on a regular basis and adopt decisions

⁷ 'On The Implementation Of Sustainable Developmental Goals'(2017) VOLUNTARY NATIONAL REVIEW REPORT <<https://sustainabledevelopment.un.org/content/documents/15836India.pdf> > accessed 9 Jan 2020

⁸ Makenna Schumacher, 'The Issue Of Global Climate Change,Facing The Future'(2018) <<https://www.facingthefuture.org/blogs/news/the-issue-of-global-climate-change> >accessed 7 Jan 2020

⁹ Erkki Hollo Kati Kulovesi and Michael mehling(eds), *Climate Change and the Law* (Springer Netherlands 2013)

as such. Following this espousal, the world has truly witnessed a conspicuous evolution in legal reactions to the climate change¹⁰. In today's scenario, what has evolved into a highly specialized area of Legal expertise and International Law is the International Climate Regime itself. In order to mitigate greenhouse gas emissions, there is an urgent need for wide legal instruments which include within its ambit the regulations, standards, taxes, etc. Legal approaches to climate change are highly significant as the increase in warming and the effects of such warming are already foreseeable all over the continent. The legislative response to climate change(both its causes and impacts) at all the stages of regulation has moved apart from a divided muster of remote measures and initiatives on discrete aspects of global warming which includes sundry policies in managing the ultimatum for energy, in proselytizing research on sustainable alternatives, etc¹¹. Climate policy unflinchingly targets and affects the most tactful areas of society enthralling change in all the realms of climate behavior.

III. Constitutional perspectives in preserving the environment- a comparative approach:

Ecological adversities are continuously seen to be faced by nations around the globe. Every nation almost comes up with a legal regime as a reaction to ensure environmental safeguards. These mechanisms come in dissimilar shapes, for example, certain countries have the notion of protecting environmental protection within their constitution whereas certain countries regulate the same to the statutory level. The Constitution Of The United States Of America is very much pre-ecological as it does not have any straightforward or inferred mention regarding the environmental concerns. Though there is a lack of this

¹⁰ 'Introduction to the UNFCC and Kyoto Protocol' IISD Reporting Services <https://enb.iisd.org/process/climate_atm-fcccintro.html>accessed 8 Jan 2020

¹¹ Erkki Hollo Kati Kulovesi and Michael mehling(eds), *Climate Change and the Law* (Springer Netherlands 2013)

perturb about environmental protection in the US Constitution the federal statutes providing for environmental protection are up to the constitutional level essentially¹². Coming to India, there were no straightforward provisions in India at the starting as far as safeguarding the environment is concerned. In a developing country like India, there has always been a brawl against pollution. With the Environment (Protection) Act 1986, sundry programs have been launched by the Government Of India to educate people as to how significant it is to protect the very planet which we live in. It is well known that many acts such as The Wildlife Act(1972), Air Act(1981) and Water act(1974) have been introduced after the significant Stockholm Conference. The legislation could be traced from the history when public nuisance was elucidated under section 268 of the Indian Penal Code. Not to forget that it is a constitutional directive to safeguard the Environment that we live in. Under the Directive principles of state policy as well as under the fundamental duties there are certain precise provisions that deal with the protection of the environment. What triggered the Indian Government to enact the 42nd constitutional amendment was the increasing consciousness and the outcome of the Stockholm conference. It was after this amendment that the straightforward provisions on safeguarding the environment were introduced thereby. Thereafter article 48-A has been added by the 42nd constitutional amendment to the directive principles of state policy. Article 48-A of the Indian Constitution (which is a directive principle of state policy) provides a directive thereby casting a duty upon every state to preserve the environment and to safeguard the wildlife. Few articles that aim at providing direct provision to the conservation of environment are Article 48-A, Article

253, Article 21, Article 14, Article 51(A), Article 19(1)(g), Article 51. The rock bottom for environmental jurisprudence in India begins with Article 21(provides for the right to life), Article 51A(g)(casts a duty upon every Individual to safeguard the environment) and Article 48-A of the Indian Constitution¹³. Whereas in South Africa, there is an explicit mention of the environmental right in its constitution under section 24. Two actual things become indisputably obvious when one shatters down the environmental law regime first thing is the execution and the next is the role of the judiciary in enforcing the same.

IV. Climate change and the criminal justice administration:

Not so much debated is the certitude that environmental damages often make more complicity in the criminal administration more plausibly, to begin with¹⁴. One of the leading issues that people living in the United States Of America find it in point of fact is to get a grip on the issue of climate change. Climate change is not very instantaneous like that of a tornado rather it is snowballing and moderate. It was brought to light by the academic researchers that climate change will certainly have an intense impact on crime. It is to be noted that shuffling social changes will occur patently when the earth warms and the climate changes. Considering countries such as India and Bangladesh it is certain that the coastal regions of these will have a menace to food supply on account of the rising sea levels¹⁵. Sifting into what will have criminal insinuations in the society will give a broad answer covering the biosecurity, production of food

¹² Kyle burns J.D Candidate, 'Constitutions & the environment: Comparative approaches to Environmental protection and the struggle to translate rights into Enforcement' (2017) VERMONT JOURNAL OF ENVIRONMENTAL LAW < <http://vjel.vermontlaw.edu/constitutions-environment-comparative-approaches-environmental-protection-struggle-translate-rights-enforcement/> > accessed 9 Jan 2020

¹³ 'Article 48A in the Constitution Of India'(2019) AccelerateSD < <https://www.accelerateds.org/post/article-48a-in-the-constitution-of-india> > accessed 13 Jan 2020

¹⁴ Sarah Lustbader, 'Climate Movement Could Radically Transform Criminal System'(2019) THE APPEAL < <https://theappeal.org/climate-movement-could-radically-transform-criminal-system/> > accessed 10 Jan 2020

¹⁵ Dr. Gary Potter, 'Climate Change and Crime'(2014) EKU < <https://plsonline.eku.edu/insidelook/climate-change-and-crime> > accessed 10 Jan 2020

and its distribution, land usage etc. In several parts of the world, there is already well-regulated violence happening over the water rights which is patently evident from crucial rivers like the Nile drying up. There are probabilities that human beings would reach a range of asking whether or not the ecological genocide forms a segment of corporate crime. It is many a time discerned that the people in the criminal system of U.S frequently carry the burden of this climate change. For example Debacle in removing the prisoners before the paramount storms if any, the uttermost heat the prisoners often undergo during summers etc¹⁶. What gave the embodiment and substance to the disquietudes regarding the climate change is the 2014 version of quadrennial defence review by the Department Of Defence (DOD). According to the Department Of Defence, Climate Change could be elucidated at its best as a goad of crime and conflict which eventually intimidates the national security. So what poses a peril on national security is the growing scientific consensus on the forecasted outcomes of climate change. Conditions such as Environmental Degradation and poverty may capacitate increased terrorist activity in the world contributing to other forms of violence as well. According to an estimate as far as the United States Of America is concerned climate change over the next assorted years might cause auxiliary murders, rape, aggravated assaults, robbery, vehicle theft etc. People surviving near the oil drilling areas in Ecuador and the strikers who are recuperating from the hurricane that was witnessed in Bermuda have wrestled with more instantaneous and perceptible environmental harm than those living in the wealthier areas but they all have united together by a simple understanding that the climate change is eventually going to harm every Creature on the earth. Thus climate change is

competent in driving conditions that could slowly lead to crime.

V. International legal instruments to combat climate change :

Greenhouse gas emissions exacerbating the global warming day by day. It is a global issue, we cannot find redemption until we act together. The main reason for the success of the Montreal Protocol to the Vienna convention is because of international cooperation and widespread adoption. It's a 1987 protocol on substances that deplete the ozone layer which is a global agreement to protect the stratospheric ozone layer by phasing out the production and consumption of ozone-depleting substances i.e chlorofluorocarbons and halons¹⁷. It is one of the first treaties to achieve universal ratification by all the countries. It is signed by the 197 member countries. Montreal protocol is successful in phasing out the CFCs but as an alternative to the chlorofluorocarbons, hydrofluorocarbons were used in the manufacturing of air conditioners, refrigerators and it is also used as a propellant in Industrial aerosols. The hydrofluorocarbons(HFCs) do not deplete the ozone layer but it is a very powerful greenhouse gas. Their global warming potential is very high ranging from (100-3000) to that of carbon dioxide. HFCs can persist in the environment up to 100 years because of their high stability¹⁸ which means even though we take immediate measures to mitigate the current impacts of global warming, we will suffer up to 100years due to current emissions. In order to control the emission of hydrofluorocarbons (HFCs), the Montreal protocol amended with the Kigali agreement. which is entered into force in jan1,2019. India is also a part of the Kigali agreement,

¹⁶ Sarah Lustbader, 'Climate Movement Could Radically Transform Criminal System'(2019) THE APPEAL <<https://theappeal.org/climate-movement-could-radically-transform-criminal-system/>> accessed 11 Jan 2020

¹⁷ Guus J.M.Velders, Stephen O.Andersen, Daniel, David W. Fahey, and Mack McFarland, 'The importance of the Montreal Protocol in protecting climate' (2007)PNAS < <https://doi.org/10.1073/pnas.0610328104> > accessed 11 Jan 2020
¹⁸'Hydrflouocarbons(HFCs)'SEPA<<https://apps.sepa.org.uk/sripa/Pages/SubstanceInformation.aspx?pid=121>>accessed 10 Jan 2020

it would be tough for India to stick on to an agreement along with the Paris pact as it has adopted the policy of “MAKE IN INDIA”¹⁹. But it is expected that the global stock of air conditioner in buildings will grow to 5.6 billion by 2050 which amounts to 10 new units sold every second for the next 30 years²⁰. It is also one of the reasons for the current impacts of global warming. In order to stabilize the dangerous GHGs emissions which is not controlled by the Montreal protocol in 1987 and to return to the 1990 levels of anthropogenic carbon emissions by 2020²¹, which is one of the main objectives of the United Nations framework convention on climate change (UNFCCC). The UNFCCC was opened for signature in 1992 earth summit for the world countries. UNFCCC has 197 parties as of December 2015, it enjoys the broad legitimacy, largely due to its universal membership. There is no enforcement mechanisms but the framework for negotiating specific international treaty (protocols) that may set binding limits on greenhouse gas(GHG). From 1994 the yearly conferences were held between the member countries in order to take major decisions with regard to the mitigation of climate change impacts. It is considered as the formal meeting of UNFCCC which is said to be a conference of Parties(COP)²². In(COP3) the Kyoto Protocol was adopted in 1997 but the ratification process delayed its enforcement and it entered into force on 16th February 2005. One of the key aspects of the Kyoto protocol is carbon emission trading in which the

carbon credits are traded between the countries and industries to emit greenhouse gases (GHGs) beyond the prescribed limit. It was the first international market to benefit environmental protection²³. But it laid legal obligations to the Annex B countries, which are the developed countries. The major drawback of the Kyoto protocol was the U.S was not willing to support the Kyoto protocol and it had no interest in implementing it. As it is one of the top emitter in the world not being the part of protocol which made it hard to attain its objectives but still Russian federation ratified its protocol giving new hope that it can be implemented even without the U.S. Later there was another hurdle faced by the Kyoto protocol, while ratifying this protocol China was a developing country and it was part of Non-Annex countries, under this protocol the legal obligations are binding only on the developing countries. But when this protocol entered into force china was one of the top emitters of greenhouse gas (GHG) in the world. In 2011 Canada officially renounces the Kyoto protocol by stating the above two drawbacks and it is said that there was a need for a new pact to address the emissions. Followed by the Kyoto Protocol, the Bali road map was adopted in the Bali action plan (COP13) which was held in 2007. One of the main purpose of this conference is to discuss about the next commitment period of Kyoto protocol and its objectives. One of the key outcomes of the Bali conference is the acceptance of the IPCCs 4th assessment report, then launch of the adaptation fund i.e a financial resource to fund the developing countries to implement the Adaptation projects which are prone to worst climate change impacts and source of fund will be from clean development mechanism undertaken by the Kyoto protocol. , then the decision of transfer of technologies from developed countries to developing countries because of the poor research capabilities of

¹⁹Xiaopu Sun and Tad Ferris, ‘The Kigali Amendments and China’s Critical Roles in Evolving the Montreal Protocol’ (2018) ABA <https://www.americanbar.org/groups/environment_energy_resources/publications/natural_resources_environment/2018-19/fall/the-kigali-amendments-and-chinas-critical-roles-evolving-montreal-protocol/> accessed 11 Jan 2020

²⁰ ‘Hydrofluorocarbons(HFC)’CLIMATE AND CLEAN AIR COALITION <<https://www.ccacoalition.org/fr/slcp/hydrofluorocarbons-hfc>>accessed 11Jan 2020

²¹ Michael Oppenheimer and Annie Petsonk, ‘Article 2 of the UNFCCC: Historical Origins, Recent Interpretations (2005) ResearchGate <https://www.researchgate.net/publication/226529568_Article_2_of_the_UNFCCC_Historical_Origins_Recent_Interpretations> accessed 9 Jan 2020

²² Yun Gao,Xian Gao and Xiaohua Zhang, *Engineering*, vol 3 (ELSEVIER 2017) para 6

²³Paulo Moutinho and Stephan Schwartzman (eds), *Tropical Deforestation and Climate Change* (IPAM 2005)

the developing countries and another key aspect which was discussed in the Bali action plan is about the Reduction of emission from deforestation and forest degradation in developing countries (REDD), It was definition of REED debated in (COP²⁴) and also the established two subsidiary bodies, they are Ad hoc working group on long term cooperation action(AWG-LCA) and Ad hoc working group on further commitments of Annex I Parties under the Kyoto Protocol (AWG-KP). Followed by the Bali conference (COP15) was organized in Copenhagen in 2009. As the developed countries wanted the developing countries to accept the legally binding obligations because countries like India and China being the top emitter in the world enjoy the benefit and it was outside the Kyoto protocol with no legal obligations.

This led to the breaking down of negotiations. The summit concluded between 5 countries (Brazil, South Africa, India china and the U.S). Key elements of the Copenhagen accord are International greenhouse gas emissions limits must be implemented in order to hold the increase in global temperature under 2 degrees Celsius, developed countries agreed to set targets for their reductions in GHG emissions by 2020 but it has no real targets to achieve in emission reduction. Moreover, the accord is not legally binding but it was a voluntary accord. Based on the summary of the report of the standing committee on finance of UNFCCC, it is stated that total specific finance flows from Annex II parties only a 38 billion Us dollars fund was raised in the year 2016 which is not even close to 100 billion US dollars per year target²⁵ of the Green climate fund (GCF). The second commitment

period was negotiated and agreed in 2012 (Doha amendment) but it has not entered in force²⁶. But the Paris agreement was independent of the Kyoto protocol. The Paris agreement is formally known as the conference of parties (COP21). Its main target is to keep the increase in global average temperature below 2 degrees Celsius above pre-industrial levels by the 21st century and the major countries have agreed to it. Developed countries intended to extend their commitment period of generating USD 100 billion dollars per year from 2020 to 2025. On 3rd September U.S and China jointly ratified the agreement. This provided a big boost to the Paris agreement. Paris agreement was entered into force in 2016 ,it was signed by 197 countries and ratified by 187 as of November 2019. Unlike the Kyoto Protocol, developing countries will take emission reduction targets where such targets are mandatory. When the Paris agreement becomes operation in 2020 these targets will be called “Nationally Determined Contributions” (NDCs). Though many of the goals of the Paris agreement is welcoming, still another hurdle is yet to be faced by the Paris agreement which is the united states of America notified on 4th November 2019 that the secretary-general of its decision to withdraw from the agreement which shall take effect on the 4th November 2020 in accordance with article 28(1) and (2) of the agreement²⁷. As the Paris agreement is going to face the biggest blow in 2020, there is a chance that other countries may withdraw from the pact. Because the U.S is one of the top emitters of greenhouse gases is not under the limitation, even though if other countries tried to mitigate the climate change impacts, the U.S emissions of greenhouse gases will contribute to global warming in a larger extent. There is an

²⁴ Peter Christoff, 'The Bali road map: Climate change, COP 13 and beyond'(2008) Research Gate <https://www.researchgate.net/publication/233047589_The_Bali_roadmap_Climate_change_COP_13_and_beyond>accessed >9 Jan 2020

²⁵ 'Climate Summit for Enhanced Action:A Financial Perspective from India'(2019) <<file:///C:/Users/lenovo/Downloads/paris%20agreement%20impact%20s.pdf>>accessed 11 Jan 2020

²⁶ Dominick A.Dellalala and Michael I. Goldstein (eds), *Encyclopedia of the Anthropocene* (Elsevier 2018)

²⁷ 'Paris agreement' (2015)United Nations Treaty Collection(UTC) <https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mt_dsg_no=XXVII-7-d&chapter=27&clang=en#4 >accessed 10 Jan 2021

important provision in Article 5 of Paris agreement, under which it asks countries to take necessary actions to conserve and enhance sinks and reservoirs of GHG including the forests. It also encourages countries to take the necessary actions to implement and support through result-based payments²⁸. The United Nations framework convention on climate change has provided a policy framework to incentivize developing countries to halt deforestation and forest degradation to promote the sustainable management of forests. The main reason for the framing of regulations for the conservation of Forests is Deforestation, forest degradation and another process of land-use change that contributes more to anthropogenic CO₂ emissions and they also accounted for 12% of emissions from 2000 to 2009 according to the latest 5th assessment report of IPCC. The provisions for REED+ are prescribed under Article 5 of the Paris pact and its provisions are not legally binding on the member countries. As far as India is concerned, it had implemented a Himalayan program which is jointly carried out by the Indian council of forest research and education (ICFRE) and the International center for integrated mountain development (IMOD) has been extended till July 2020. Initially, the Himalayan program was carried out in January 2016 in Mizoram. This project was supported by the Environment, nature conservation and nuclear safety ministry of Germany. REED+ provides the financial value for the carbon stored in the forest . It provides incentives. The developing country would receive results-based payments. More than 300 REED+ initiatives have taken place since 2006. The union environment ministry has transferred Rs.47,436 Crores for afforestation in 27 states.

VI. Carbon mapping- “A Boom”

²⁸ ‘Implementing article 5 of paris agreement and achieving climate neutrality through forests from COFO24 TO COP24’(2018) FAO
<<http://www.fao.org/redd/news/detail/en/c/1146132/>>accessed 11 Jan 2020

In order to help the initiative of the United Nations framework convention on climate change (UNFCCC) program REED+ effectively, Carbon mapping came as a boom. Carbon mapping helps in predicting an actual amount of carbon dioxide sequestered in the Forests and tropical vegetation with the help of the satellite and the light detection and ranging system(LIDAR). This high resolution mapping method helps in implementing REED+ in tropical regions around the world. It's a four-step process which involves mapping of vegetation through satellite and then they develop the maps of 3D vegetation structure LIDAR system from fixed airborne observatory than converting the structural data into carbon density using a network of field plots on the ground and then they integrate both the data to form a high-resolution map. Generally, the Basal area(BA), height(H) and wood density (WD) are the important factors in describing the amount of CO₂ sequestered in aboveground in all the forest. It is said that the vegetation found in geologically younger and more fertile surface tend to sequester 25% more carbon than the less fertile areas. It said to provide accurate measure of CO₂ sequestered in the tropical regions. It adds a boost to the REED+ initiative of Reduction emissions from deforestation and forest degradation, through carbon mapping we can easily predict the amount of carbon stored in the forest and we can preserve them from deforestation and it will help in carbon offsets²⁹.

SUGGESTIONS :

Kyoto protocol must be entered into force for the second commitment period with the necessary changes in order to mitigate current climate change impacts. As far as carbon trading is concerned, the carbon credits should not be exchanged in the carbon

²⁹ Gregory p. Asner ,Joseph Mascaro, Helene c. Muller-Landau ‘A universal airborne LiDAR approach for tropical forest carbon mapping’ (2011) SpringerLink
<<https://link.springer.com/article/10.1007/s00442-011-2165-z#citeas>> accessed 9 Jan 2020

market. The International authority should be established to provide the carbon credits to the industries and to the various countries that are in need of it. The price of carbon credit should not be money. In return for carbon credits, they should undertake the clean development mechanism (CDM) not only in the developed countries but also in developing countries. Carbon emissions limit must be kept very low, Only those who are violating the limitation provisions must compensate with the clean development mechanism measures. The biggest backlog in developing countries with regard to carbon mapping is they are not aware of it. More conferences should be conducted in developing countries to create awareness among people.

VII. Conclusion

United nations taking enormous measures to combat the impacts of climate change under UNFCCC through protocols and agreements. Out of it, the Montreal protocol is still one of the most successful protocols through which effective measures were taken and now the ozone layer is regaining its old self. International cooperation is important to mitigate any type of global issue. Every protocol should lay legal obligations on the member countries to undertake effective measures in order to keep the global average temperature to well below 2 degrees Celsius above pre-industrial levels. Because 2 degree Celsius will have a serious consequences like longer droughts ,more intense heat waves which can cause big disruption to the world food supply . At 2 degrees Celsius sea levels may rise to several feet and flood many coastal areas and potentially cause large migration of people from countries like India, Bangladesh, and Vietnam. Even if the countries act according to their voluntary pledges, there is already enough CO₂ in the atmosphere to warm the planet to 2 degrees Celsius. So we have to take more mitigation measures and should adopt more protocols to combat

the upcoming climate change impacts. . It can be concluded that in order to live in a society which is free from inequality and crime, the environmental issues should be intercepted properly which will eventually and gingerly intercept the roots of the crime and inequality in the society.