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Avinash Kumar

Avinash Kumar has completed his Ph.D. in International Investment Law from the Dept. of Law & Governance, Central University of South Bihar. His research work is on "International Investment Agreement and State's right to regulate Foreign Investment." He qualified UGC-NET and has been selected for the prestigious ICSSR Doctoral Fellowship.He is an alumnus of the Faculty of Law, University of Delhi. Formerly he has been elected as Students Union President of Law Centre-1, University of Delhi.Moreover, he completed his LL.M. from the University of Delhi (2014-16), dissertation on "Cross-border Merger & Acquisition"; LL.B. from the University of Delhi (2011-14), and B.A. (Hons.) from Maharaja Agrasen College, University of Delhi. He has also obtained P.G. Diploma in IPR from the Indian Society of International Law, New Delhi.He has qualified UGC – NET examination and has been awarded ICSSR – Doctoral Fellowship. He has published six-plus articles and presented 9 plus papers in national and international seminars/conferences. He participated in several workshops on research methodology and teaching and learning.

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FROM KYOTO TO PARIS: THE JOURNEY OF GLOBAL CARBON MARKETS

AUTHORED BY- MOULI SINGHAL

INTRODUCTION

Climate Change is perhaps one of the most pressing problems faced by humankind, and it has urged every nation to tackle this utmost issue. With the international community in 1960s starting off a string of conventions and conferences each one trying to create specific mechanism processions-set-in-motion that would limit environmental loss. But this has delivered a variety of results depending on the technological landscape, financial environment and quality governance/transparency/accountability spectrum.

A number of these mechanisms to tackle climate change have stemmed from the Kyoto Protocol and beyond - including carbon markets emission reductions. The aim of carbon markets is to reduce emissions by creating an economic incentive for industries and power companies (known as " covered entities")... The principle behind it is to impose an upper limit on emissions, which are tradable so that entities will theoretically reduce them through economic instruments. Carbon dioxide, methane and chlorofluorocarbons are common gases that cause environmental damage to a greater extent due to which these markets often target them.

While carbon markets are theoretically attractive, their practical effectiveness has been a matter of heated dispute. Carbon markets have failed to reduce global emissions, say critics who argue that they simply offer a new market for trading and finance. This is because the market mechanism that relies on supply and demand principles might be imperfect due to technological capabilities disparity as well financial means of countries contributing. In addition, issues of governance and transparency as well as accountability of carbon markets are highly problematic.

Our research paper aims to perform a thorough evaluation of the efficacy and evolution process in carbon markets from Kyoto Protocol era up until Paris Agreement. This paper aims to examine the trajectory of carbon markets in order to discuss what is being achieved and where we are coming up short with this mitigation tool. This analysis has two important aspects - one

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highlighting the presence and effectiveness of carbon trading in different countries with levels of development and geographical characteristics. This sort of comparative approach is necessary in order to really appreciate the diverse configurations that shape how carbon markets work.

In the early stages, the Kyoto Protocol established the framework for carbon markets, introducing mechanisms such as the Clean Development Mechanism (CDM) and Joint Implementation (JI). These initiatives aimed to foster cooperation between developed and developing countries, facilitating the transfer of technology and financial resources to support emission reduction projects. However, the implementation of these mechanisms revealed significant challenges, including the complexity of regulatory frameworks, difficulties in verifying emission reductions, and the inequitable distribution of benefits.

The Paris Agreement marked a significant shift in the approach to carbon markets, emphasizing nationally determined contributions (NDCs) and promoting more flexible mechanisms for achieving emission reductions. The introduction of Article 6 of the Paris Agreement sought to address some of the shortcomings of the Kyoto Protocol by enhancing transparency, promoting sustainable development, and ensuring environmental integrity. Nevertheless, the effectiveness of these provisions remains contingent on robust implementation and the resolution of lingering issues related to market manipulation and the equitable distribution of resources.

This research endeavours to provide a holistic view of carbon markets, assessing their role as a tool for environmental improvement versus their function as a commercial enterprise. By critically examining the effectiveness of carbon markets in different national contexts, this paper aims to contribute to the ongoing discourse on climate change mitigation strategies. Through this analysis, the research will underscore the importance of addressing governance, transparency, and accountability to enhance the efficacy of carbon markets in achieving meaningful environmental outcomes.

In conclusion, while carbon markets represent a novel approach to addressing climate change, their effectiveness is far from unequivocal. This research will explore the multifaceted nature of carbon markets, providing insights into their potential and limitations. By doing so, it aims to inform policymakers, stakeholders, and the broader public about the complexities and challenges associated with market-based mechanisms for environmental protection.

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LITERATURE REVIEW

This literature review is a comprehensive survey of existing scholarly works written on carbon trading and carbon markets and their position in the contemporary scenario. The research summarizes and synthesizes the status of carbon trading as presented by the below-mentioned scholarly works.

1. The paper titled **Governance of Fragmented Compliance and Voluntary Carbon Markets Under the Paris Agreement by Ahohan (*et al*) published in *Politics and Governance in 2022*** talks about how the regulation of carbon markets is a complex task due to fragmentation of international compliances. The failure of Kyoto protocol in setting up a standard regime in 2009 is highlighted and robust measures witnessing the dynamism in carbon markets are suggested to maintain a trust in carbon markets for a beneficial position both for environment and for trade and commerce.[1]
2. This paper titled **Assessment and challenges of carbon markets by Pigeolat (*et al*) published in Revista de Direito Internacional in 2019** provides an overview of the functioning of carbon markets and it's trading along with the issues that this market is facing such as transparency, non-compliance and double accounting of same reduction. The paper has advised the use of blockchain for the reporting and monitoring purposes thereby contributing towards effectiveness and efficiency of the market system.[2]
3. The paper titled **The European Union Emissions Trading System reduced CO2 emissions despite low prices by Bayer (*et al*) published in Proceedings of the National Academy of Sciences in 2020** presents an approach that low carbon prices can also reduce carbon emissions. This will be a favourable proposition as it shows that demand for carbon permits is decreasing even if carbon is available at a lower price. The source of this study is the European Union Emissions Trading System.[3]
4. The paper titled **Evaluation on the effectiveness of energy policies- Evidence from the carbon reductions in 25 countries by Kiss T (*et al*) published in Renewable and Sustainable Energy Reviews in 2021** gives an insight into carbon emissions of different countries where there is a regulatory carbon market, a voluntary carbon market and a hybrid of both. The paper concludes by presenting that in most countries regardless of

[1] Ahohen, H.-M., Kessler, J., Michaelowa, A., Espelage, A., & Hoch, S. (2022). Governance of Fragmented Compliance and Voluntary Carbon Markets Under the Paris Agreement. Politics and Governance, 235-245. https://doi.org/10.17645/pag..v10i1.4759 (Last Accessed: 02 July 2024).
[2] Pigeolet, L., & Waeyenberge, A. V. (2019). Assessment and challenges of carbon markets. Revista de Direito Internacional, 73-88 doi: 10.5102/rdi.v16i2.6265 (Last Accessed: 02 July 2024).
[3] Bayer, P., & Aklin, M. (2020). The European Union Emissions Trading System reduced CO2 emissions despite low prices. Proceedings of the National Academy of Sciences , 8804-8812 https://doi.org/10.1073/pnas.1918128117 (Last Accessed: 02 July 2024).

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increase in GDP the emissions did increase and that combination of hybrid ETS + carbon tax policies is a policy measure which can bring in effectiveness to the working of carbon markets worldwide.[4]

RESEARCH OBJECTIVES: -

1. To scrutinize trade in carbon posterior to Kyoto Protocol and Paris Agreement fixating on operational frameworks and adherence to indispensable compliances.
2. To ascertain the effectiveness of carbon markets by comparatively analysing the European Union's regulatory carbon markets with the developing countries' voluntary markets post both Kyoto Protocol and Paris Agreement.

RESEARCH QUESTIONS: -

1. What has been the major takeaway from Kyoto Protocol and Paris Agreement regarding carbon markets and its trading?
2. Whether regulatory carbon markets have been able to achieve the goal of clean development effectively or is voluntary carbon markets a better option?

ANALYSIS/ MAIN BODY: -

This section of the project will deal with what has been proposed in the Kyoto Protocol and Paris Agreement. Secondly, the statistics of developed European countries is compared with developing countries. Thirdly, to know if carbon markets truly are a way to decarbonized and clean world or has it changed to just any other commodity for trading to generate economic wealth. The research methodology used for all these pointers is doctrinal and data has been derived from journals, papers, statues, rules, regulations, conventions and various secondary data database like Statista.

Carbon trading under Kyoto Protocol and Paris Agreement: -

An attempt has been made internationally since the 1960s to combat the robust problem of climate change. Climate change as we generally understand is increase in the temperature of environment making it warmer due to the heat in the environment thereby affecting its different components such as the icy glaciers of Antarctica and the ozone layer- the ultimate protection from ultraviolet rays of sun. Conventions, conferences and treaties are one of the sources of international

[4] Kiss, T., & Popovics, S. (2021). Evaluation on the effectiveness of energy policies – Evidence from the carbon reductions in 25 countries. Renewable and Sustainable Energy Reviews https://doi.org/10.1016/j.rser.2021.111348 (Last Accessed: 02 July 2024).

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customary law which has helped many countries to reduce their not much needed contribution to climate change.

The countries are from the starting divided into three types namely the **developed** and industrialized who have used the resources to their full potential when it was their time of development and now present the concern of climate change and depletion and degradation of resources and environment, second the **developing** countries whose biggest concern from past many years since the concern for environment took birth is to balance both development and environmental friendly practices such as the Global South which is on their way to attain maximum development are now asked to adopt practices so as to protect resources wherein these resources are the only way for them to develop and third the **least developing** countries who are not even properly on the track of development. The maximum quantum of unfairness is faced by the third-world countries or the least developed countries since they never got their chance to use these resources for fulfilling their development plans and in order to maintain their status internationally as that of a compliant nation will have to abide by the goals and ambitions of such environment concerned developed countries who are already developed. The conventions and protocols have addressed this dilemma and a higher burden is imposed on developed countries and lower burden on developing which still isn't enough for eradication of unfairness.

The Kyoto Protocol and the Paris Agreement have both been pivotal in shaping international climate policy and carbon markets. The major takeaway from the Kyoto Protocol is the establishment of a structured and formal carbon trading system through mechanisms such as the Clean Development Mechanism (CDM) and Joint Implementation (JI). These mechanisms were designed to provide economic incentives for emission reduction projects, particularly in developing countries, by allowing developed countries to earn emission reduction credits. However, the implementation of these mechanisms highlighted several challenges, including the complexity of regulatory frameworks, difficulties in monitoring and verifying emission reductions, and the uneven distribution of benefits across participating countries.

The Paris Agreement, building on the foundation laid by the Kyoto Protocol, introduced a more flexible and inclusive approach to carbon markets. It emphasized nationally determined contributions (NDCs), allowing countries to set their own targets and pathways for emission reductions. A key component of the Paris Agreement is Article 6, which aims to enhance international cooperation through market and non-market mechanisms, promoting sustainable

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development and ensuring environmental integrity. The Paris Agreement also sought to address some of the criticisms of the Kyoto Protocol by improving transparency and accountability, and by fostering a more equitable distribution of resources and benefits. Despite these advancements, the effectiveness of the Paris Agreement's carbon market provisions largely depends on robust implementation, stringent oversight, and the resolution of ongoing issues related to market manipulation and the verification of emission reductions.

Kyoto Protocol of 1992 and the **Paris Agreement of 2015** intend to operationalize the principles agreed in the United Nations Framework Convention on Climate Change regarding the increase in emissions from greenhouse gases and the increase in temperature by 1-2% every year.

- **Article 3**[5] of Kyoto Protocol specifically states for the countries mentioned in its **Annex B** that their total greenhouse gas emissions as given in **Annex A** especially of carbon generating elements should not exceed what has been given in that Annex B.
- Interestingly, it should be noted that the Annex B countries do not include developing countries in it but only developed countries**.**
- **Article 17, 12 and 6** provide for the setting up of an exchange for carbon trading. The countries of Annex B have to abide by the level mentioned in the Annex and generate carbon credits which can be traded to those who have failed to meet their target by exceeding the amount of carbon released through their activities.

The overseeing is done by the Board of **Clean Development Mission** where the trading is done and a certificate is generated for the same with a joint implementation.

Several shortcomings of Kyoto Protocol came on the front such as the protocol defines the **cap-and-trade system of carbon for only developed countries**, where according to the official statistics the Annex B countries made less than one-third of total emissions that were made in 2008. This means that developed countries were somehow able to manage their emissions, it was the developing and underdeveloped countries which due to inadequate financial support generated such emissions. These challenges were reflected and rectified in the **Paris Accords** wherein common but differentiated responsibility of countries was held. Even though the signatories may be mix of developed, developing and underdeveloped, they still have a common responsibility towards each other to the extent of development status they hold.

[5] *Kyoto Protocol to the United Nation Framework Convention on Climate Change*, opened for signature 16 March 1998, UNFCCC (entered into force 16 February 2005) art. 3.

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- **Article 6**[6] of Paris Agreement provides the establishment of voluntary cooperation between or among countries to curb the problem of climate change. The agreement applies even to those who have not officially signed the Paris Agreement.
- The Article enables the countries/ companies to transfer their carbon credits that they have earned by reducing their emissions to countries/ companies who have gone beyond the cap imposed on them.
- The Paris Agreement is based on cooperative nature and does not have a legal backing/ compliance as that of Kyoto. Due to this, the countries/ companies have been taking advantage of the fact that they don't need to reduce their emissions, they just need enough credits to justify their activities and continue the path of development.

Developed European Countries v. Developing Countries

The conflict of developed and developing countries has been prevailing ever since the Stockholm Conference to the Rio Summit and onwards. The argument seems fair in a manner that why should developed countries get to voice out the concern for environment now when it was their activities which caused the deterioration in the first place. The debate of superiority establishment of Global North over Global South seems just to be a hunger of power for the developed countries so they can stop the development process of budding economies in The Global South.

European Union the biggest of all has a regulated carbon market and a developing country like India has still not legislated the carbon trading. Following is some data relevant to the point at hand:

- The annual carbon emissions worldwide have increased from 35 billion metric tonnes in 2012 to 38 billion metric tonnes in 2021-2023.
- On an individual basis the countries of European Union when studied, has Germany as the heaviest CO_2 emitting country with **860 mmt** emission and with Latvia being the least one having **3-4 mmt** in **2022**.[7]

[6] *Paris Agreement to the United Nation Framework Convention on Climate Change,* opened for signature 22 April 2016, UNFCCC (entered into force 4 November 2016) art. 6.
[7] Bayer, P., & Aklin, M. (2020). The European Union Emissions Trading System reduced CO2 emissions despite low prices. *Proceedings of the National Academy of Sciences* , 8804-8812 https://doi.org/10.1073/pnas.1918128117 (Last Accessed: 02 July 2024).

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- Similarly, the emission of developing countries in year 2022 where India is emitting **2400 tonnes**, China emitting **8000 tonnes** and South Korea emitting the lowest of all **below 1000 tonnes**.[8]

An observation from the above-mentioned data can be drawn that the countries which have a regulatory market are generating low carbon emissions like the countries of European Union while countries which have voluntary carbon markets generate higher carbon emissions.

Decarbonization or Corporate Social Responsibility?

The effectiveness of the market can be seen in the countries who were signatories to Kyoto protocol since it has a legal backing in form of penalties and punishments while for the voluntary carbon market countries, they trade in carbon like it's a commodity on a stock exchange. They do not even try to reduce their emissions by adopting decarbonizing instruments rather they just carry out emissions and if they fall short of carbon, they buy credits from a company or country which has reduced its emissions and generated carbon credit.

Moreover, developing countries like **India** do not even have a regulatory carbon market. The companies here have found out a new measure to emit greenhouse gases and then to show that their act is environment-friendly, they start planting trees which they show as their **Corporate Social Responsibility** activities. Every company is bound to undertake the CSR as per the Companies Act, 2013 and the companies in India have adopted the saying of ***"kill two birds with one stone"*** that is fulfilling Corporate Social Responsibility obligations and generating carbon credits by planting trees which they trade with high emission countries hence, generating revenue. The companies do not even try to install decarbonizing instruments. The cost of installing such instruments is higher than the cost of carbon credits and they too last for a **minimum of 5 to maximum 30 years** which fails the entire objective of carbon markets as analysed by the **Centre for Science and Environment.** One of the very famous examples existing worldwide is of Tesla which sold carbon credits to car manufacturers for $518 million in 2021 first quarter itself. If this is not trade then pray tell what is and it needs to be regulated strictly now to avoid any more environmental harm. Money may be an important factor for business but no business would survive if all the resources deplete completely. Replenishment of resources is a time-consuming process and very uncertain, so its high time that we the people take the issue at hand seriously and

[8] Kiss, T., & Popovics, S. (2021). Evaluation on the effectiveness of energy policies – Evidence from the carbon reductions in 25 countries. *Renewable and Sustainable Energy Reviews* https://doi.org/10.1016/j.rser.2021.111348 (Last Accessed: 02 July 2024).

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devise robust mechanisms to avoid the binding exploitation.

SUGGESTIONS AND CONCLUSION: -

There have been challenges in the current scenario of how the carbon markets are regulated which has also impacted its efficiency and effectiveness. Following are the suggestions for those who deal with carbon markets: -

- The companies and countries dealing in carbon markets should pay close attention to the quality of carbon that they use. Only high-quality carbon is capable of reducing emissions.
- The preservation of carbon credits is also a technical task and its leakage should be looked into.
- Proper auditing and reporting of carbon is demanded so as to maintain a balance and to provide an opportunity for developing and underdeveloped countries instead of its concentration in only rich nations.
- Carbon absorbing instruments should be installed first to reduce the emissions and if these instruments are also not able to control the emission only then and after proper reporting should a company or a country buy carbon credits.
- The trading of carbon should be regulated by stock exchanges like in India by **SEBI, National Stock Exchange** and **Reserve Bank of India**.
- The companies should publish data on their emission reduction and what all absorbing instruments have they installed should be published on their website.
- More and more use of renewable energy resources like solar panels and windmills should be used to achieve the targets of net-zero emission.

The carbon markets were established and set up for combating the climate change threat not to generate monetary benefits out of it. Climate change is a serious problem and not having awareness of it is a more serious issue. The environmental consciousness should be embedded in minds of people and a sense of responsibility should be instilled in them to make them vigilant about the environment harming activities.

India is now on a path of achieving net-zero emissions but the first and foremost way to do that is to establish standards in form of legislations to give a legal backing to the same. The government should ensure proper governance and corrective steps by Judiciary should be taken. Mitigation of the climate change is urgent now. The principles such as precautionary and polluter pays should be made stringent and more focus should be on environmental safety. Balancing environmental safety with development has been done but the result was not as balancing so its time to take urgent actions to prevent harm.