2021-2022

DEPARTMENT OF ECONOMICS
DAULAT RAM COLLEGE
UNIVERSITY OF DELHI

9TH EDITION

OPTIMA

MAGAZINE

TOWARDS EXCELLENCE

THE ECONOMICS OF CLIMATE CHANGE

REPORTS ON DEPARTMENTAL EVENTS

Brief about what all major events which were undertaken by Éclat: The Economics Association

IN CONVERSATION WITH SHRI RAMESH K. PANDEY

Shri Ramesh K. Pandey answers some questions posed by the team centered around the theme for this issue.

EDITORIALS AND PERSPECTIVES

Compilation of articles written on the theme by our editors, guest writers and in-house writers of Optima.

SIGNIFICANCE OF THE THEME: THE ECONOMICS OF CLIMATE CHANGE

The Economists of the 21st Century have to triumph over several crises, climate change being one of them. The COVID - 19 pandemic and worsening environmental conditions have highlighted the fragilities in our economic system. It is as clear as day that the economy is embedded within our natural systems. As Economics enthusiasts, students, and practitioners, the various aspects of the climate crisis need to be addressed rationally, timely, and justly. Over the years, economics has developed as a discipline that deals with household resources, then that of a nation-state and now that of the planet. We believe that many yet diverse minds can facilitate the transition to a habitable planet.

As students from the Global South, we must have a platform to express free, diverse and meticulous perspectives on this global crisis. Optima - The Annual Economic Outlook of Daulat Ram College, University of Delhi has provided an academic platform to budding economists, policymakers and leaders to articulate a well-researched standpoint on the theme, "Economics of Climate Change." The ambit of the magazine is diverse and encompasses pieces on capitalism, neoliberal economics, agriculture, politics, energy and healthcare, amongst others. We sincerely hope that this plethora of knowledge takes us closer to a world where humanity thrives within the limits of the planet.

ACKNOWLEDGEMENT

The success of Optima 2021-2022 has its foundation in the determination and industrious efforts of many individuals; thus, we take this opportunity to sincerely appreciate and acknowledge their consistent efforts.

To begin with, we extend profound gratitude to our mentor, Dr. Savita Roy, Principal, Daulat Ram College for her constant motivation and assistance at every stage. Simultaneously, we are also immensely grateful to our faculty advisor, Ms. Saanchi Bhutani and our Teacher Incharge, Dr. Pooja Sharma for their insightful comments, constructive criticism, and valuable guidance. Most importantly, our special thanks of gratitude to the contributing authors and writers for their diligence and hard work in terms of the time dedicated and the research they undertook to articulate all articles published.

We would like to extend our deep appreciation and indebtedness to the Faculty Members and Optima Editorial Board's endless support, kind and understanding spirit during the publishing of The Optima magazine. Lastly, we express our deepest sense of gratitude to everyone who lent their hand in bringing Optima to this echelon.

FROM THE DESK OF THE PRINCIPAL

I am extremely happy to pen down lines for the Ninth and Special Edition of Optima, the Annual Economic Outlook of Daulat Ram College.

We live in a constantly changing world. The only thing that is constant is the change itself. In this context, the discipline of economics acquires even greater significance. The theme chosen by the Editorial Board this year, "The Economics of Climate Change", shows how how important it is for young minds to deliberate upon the constant changes that we see around us.

Optima provides an opportunity to young budding Economists to analyse everyday events taking place at the global level and provide their take on such happenings. These young, energetic and talented minds are the think tanks of solutions for problems facing the whole world today.

Continuous effort and struggle are the only ways to grow. The pages that follow in the most recent edition of Optima bear witness to this expansion. Students and teachers put forth a lot of effort to make this publication the best it can be. The Economics Department is a beehive of young, aspiring economists in our country. Children have an insatiable need to discover new things. I hope they will continue to contribute, share, and act in the best interests of their classmates and faculty members.

At last, I wish great success ahead to all budding economists. Congratulations to the Department and to the Editorial Board for bringing out the present edition of Optima. May the magazine reach greater heights in the years to come.

Best Wishes,
Dr. Savita Roy
Principal

TEACHER INCHARGE'S MESSAGE

Optima is a phenomenal platform to encourage students of Economics honors to express their knowledge and learning in the form of a write-up. It not only motivates the students to apply and connect their learning to the current events happening around them but also enhances their creativity from the prism of multidisciplinary connectivity of Economics. Optima provides the freedom of expression, breaking the inhibitions of research papers, which creates boundaries for creativity. It is their first step or experience of original thinking and exposure to share the knowledge in a comprehensive manner where both teachers and students express their ideas in their chosen way. I congratulate the entire team of Optima for achieving another milestone and wish them great success in this journey of learning.

Dr. Pooja Sharma
Teacher Incharge,
Department of Economics

CONVENOR'S MESSAGE

Good things remain good only because they are rare. I am glad to know that the Department of Economics is bringing out their annual magazine “Optima” for this academic session (2021-2022).

The efforts taken by the team to bring about innovative content are significant. Present issue brings the students and teachers of various disciplines on a common platform to share and display their ideas and creative talents. I wish all the students who have been involved in bringing out the magazine for their greater success and career ahead.

Saachi Bhutani Bhagat
Convenor, Éclat, Economics Association,
Department of Economics

MENTORS' VISTA

I congratulate the team for bringing out the 9th edition of Optima, 2021-22. I am very happy to see the topic chosen by them for this year as Climate change is a phenomenon that affects everyone on the planet-from the richest to the poorest. Today development has become a holistic term which encompasses environmental sustainability. It would be interesting to see inputs from the young minds on this very crucial issue. Good job! Team Optima.

Ritu Khanna
Associate Professor

Optima symbolizes the genesis of intellectual prowess, genius and tireless hard work of both students and faculty of the Dept. Of Economics. It provides a platform, wherein, teachers and students can share their views on topical economic issues. I congratulate the editorial board in bringing out this issue and wish to see many more editions of Optima in the near future .

Dr. Malini Sharma
Associate Professor

Congratulations to team Optima on yet another issue of the magazine. It is always a delight to read such a comprehensive and interesting collection of articles and facts on latest Economic issues which encourages a spirit of inquisitiveness not only amongst the students but also the faculty. Keep up the good work!

Sumeet Goyal
Assistant Professor

MENTORS' VISTA

A new edition of Optima is a matter of joy for it documents the thoughts of students, teachers and others at the Economics Department of DRC in continuum since its inception. This new edition is reflective of our collective quest to engrave our presence on the wheels of time so that if nothing happens we can look back in future and know how we were thinking and expressing when times were changing & epochs were formed! I congratulate the faculty advisor and the editorial team for their sincerity and labor and hope this edition proves worthy in its own right.

Nitish Kashyap
Assistant Professor

I congratulate the students of the editorial team for bringing out yet another edition of the magazine. I am eagerly looking forward to reading the views and opinions expressed by the contributors.

Shikha Singh
Assistant Professor

What we can learn from our peer group cannot be learnt from anyone else. Optima is the outcome of a collective teamwork of the same peer group. The compilation of the magazine was a challenging task, requiring determination and hardwork. I congratulate the editorial team for executing the tedious task in producing this publication and also, the students who contributed with their stories, and articles. Hope to see many more countless editions of Optima.
Best of luck to all contributors !

Ashok Kumar
Assistant Professor

MENTORS' VISTA

Good things remain good only because they are always scarce. I am glad to pen for this wonderful magazine as an appreciation of the commendable efforts put forth by the team for its grand beginning. The efforts taken to bring about innovative content is appreciable. Content on the various opportunities available in the world and alerts on various student level competitions shall be included henceforth. Wish you all a grand operation throughout the year.

Aisha Ahmed
Assistant Professor

Every edition of Optima has successfully served as a perfect platform for the faculty members and the students, to put forward their creative ideas and further advance their academic understanding of Economics. I congratulate the editorial team for the latest edition and wish new heights to this amazing endeavor.

Priyanka Yadav
Assistant Professor

Congratulations to team Optima on yet another issue of the magazine. It is always a delight to read such a comprehensive and interesting collection of articles and facts on latest Economic issues which encourages a spirit of inquisitiveness not only amongst the students but also the faculty. Keep up the good work!

Dr. Rita Rani
Sr. Assistant Professor

SENIOR'S SHARE

Optima is a magazine and an academic endeavor which is extremely close to my heart, having been associated with it throughout my undergraduate studies at the Economics department at Daulat Ram College. The past couple of years have entailed rapid changes in the way the world functions as well as in the field of economics. I feel immense pride in penning this note today, as I commend the manner in which Optima has metamorphosed into a relevant and dynamic work of academic output through this time – a candid representation of students' reflections on contemporary issues, as well as a collection of pertinent insights emerging from their investigations. The magazine is an excellent melting pot of opinions, observations, and analyses which aptly amalgamates the vibrant thoughts of budding economists. This particular edition of the publication is of particular interest and importance, considering its emphasis on the economics of climate change. The contributions made by faculty members, guest contributors, and other dignitaries further enrich its pages. I am hopeful that these will go on to encourage us students to pursue ideas with curiosity and objectivity. Particularly, I am confident that it will bring a plethora of critical ideas accessible to its readership. I extend my best wishes and heartiest congratulations to the entire team of writers, editors, and designers who have worked relentlessly to produce Optima, in all its glory, this academic year, and wish them the very best for their future endeavors.

Bhavya Pandey
Advisory Board Member

SENIOR'S SHARE

It gives me immense pleasure to write this note for the ninth edition of The Annual Economic Outlook, Optima of The Economics Department, Daulat Ram College. This issue sheds light on the economics of climate change, which poses the biggest long-term risk to the global economy. It has proven to be an excellent forum for the exchange of ideas and has aided students in honing their acumen. I am confident that not only students who actively participated in this project, but also those who merely read it, would benefit greatly from this collection of ideas. I hope it gives readers new insights as well as the power, strength, and most importantly, inspiration to continue exploring new ideas. It is the result of many students; arduous efforts to compile the greatest articles on various economic subjects. I congratulate the editing team on reaching this milestone and commend them for their dedication and foresight.

Shristy Goyal
Advisory Board Member

So far, the 21st century has been a revolution, beckoning a way of life fundamentally distinct from anything that has come before. In many ways, we are much better off than we have ever been as a race. Now is the time to step up and direct academic front-liners into developing innovative, equitable and sustainable social/ market practices for the future. Which is why I am proud to have been a part of Optima, watching the next generation of students at the helm of designing its newest edition 'The Economics of Climate Change'. Even with the pandemic forcing remote communication, they have put forth fascinating ideas, curated with precise vision. I congratulate every contributing member for the roll-out of an excellent edition and the very best ahead.

Treesha Lall
Advisory Board Member

EDITOR - IN - CHIEF SPEAKS

"To that which troubles our nights and the next generation's tomorrow,
To that which might be the reason for the future's sorrow,
To that *change* that threatens us and our habitat as a whole,
To that revolution which will combat *Climate Change* from its very soul"

For me and my team at Optima, reading is like breathing in, writing is like breathing out. This made us think that when we have a chance to head and execute the realm of economic research and writing at Daulat Ram College via its Annual Economic Outlook, Optima, how can we miss the actual changes around us which we take in while "breathing".

As conscious citizens of tomorrow, and the victims of climate change today, the entire team at Optima, decided to dedicate the 9th Edition of Optima to "The Economics of Climate Change". This edition would engage and inspire young minds to the issues that persist around the globe regarding Climate Change and also encourage them to find ways to combat the same by informing them about the existing and hopeful solutions to the problem.

This edition offers informative pieces about the practicality of Electric Vehicles, the intertwining economics of 5G and Climate Change, how the global economy is transforming to achieve net-zero emissions and many more pertinent topics which revolve around our theme.

From starting the Optima Blog this year to now releasing the Annual Outlook, Optima developed beyond its appearance as just another economic magazine to a platform that embodied the ethos of unrestricted free thought for both editors and writers. There is a widespread belief that in order to be able to express oneself on forums like this, one must be exceedingly articulate, but one thing that I learnt with the entire process of Optima was that, start with your opinions and perspectives, articulation will come along. Perhaps that's what makes each written item a reflection of the person who created it, their views, opinions, and efforts, and we are grateful to have learnt so much from our Optima writers.

I am thankful to a lot of people for helping us to bring out the best in this volume and setting higher standards. Above all, I would thank our department members and the faculty for their commitment, guidance and hard work.

From those tiring deadlines and numerous edits to those task tracking spreadsheets and checkboxes, from those layout PDFs and to almost a million emails, we at Team Optima, finally wish all of you Happy Reading!

Best,
Abhivyakti Mishra,
Editor - In - Chief
2021-2022

CO - EDITORS' SPEAK

"We write to taste life twice, in the moment and in retrospect."

-Anaïs Nin

Optima is a platform for people to follow their passions and obsessions, regarding the wide field of economics and the art of writing. The moment you sit down and start writing is when your thoughts and imagination flow freely, and you enter a whole new world of creativity and originality. Optima seeks to be a medium for you to explore this passion in an academic environment, on a regular basis through its blog which we have made an effort to revive and rejuvenate.

There is a world of possibilities that lies just beyond us, within reach for those who dare to dream. I believe those who read and write have already taken a step on this journey of exploration and achievements. The 2021-22 session has been full of vigor and zest. Many valuable lessons have been learned, and the writers' skills have evolved over time. Personally, having the opportunity to serve as the co-editor for the 2021-22 session has been an amazing opportunity. We tried our best to make Optima a medium of self-expression and research, with the only objectives being to learn and to grow.

In this platform, people can express their own opinions while learning from mistakes and the experiences of others, while critically analyzing the happenings of the world. Each written piece is a portrayal of the person behind it, their thoughts, opinions, and efforts, and we are thankful to have also learned a lot from our little group of writers at Optima.

With each edition, Optima explores different fields of economics that have relevance in current times, to help readers explore that issue from the basics. The current issue of the Annual Economic Outlook explores the current scenarios and debates surrounding climate change and its associated risks to this world. The writers have tried to explore all concerning matters, from hazardous consequences of climate risks to possible solutions.

Bringing together the magazine has been a tiresome but rewarding journey, with the editorial board and our designers working day in and out to bring to you a rich and enlightening array of articles. This has been a riveting journey made possible thanks to the efforts of Team Optima, its writers and countless others, and I hope you have a convivial reading experience.

Happy Reading!
Anshruta Thakur
Co-Editor
2021-22

CO - EDITORS' SPEAK

Optima has proven to be an integral wing of the Economics Society of Daulat Ram College, paving the way for academic writing to come through and find its voice. On a personal note, it was this very platform that allowed me to explore and express my opinions, an ability I would have hesitated to show had I not been appointed the Co-Editor for the year 2021-22.

This year has been a particularly eventful one for Optima, with a number of new additions. We were able to find ourselves a wonderful team of enthusiastic writers who sought to delve into research-based writing and analysis, and wrote extensively for the Optima blog and the magazine. Our team grew beyond three editors and head of design to accommodate two more assistant editors and a graphic designer along with our web editor to manage Optima. Training sessions were conducted to equip the writers with adequate skills to put forward their piece in the best way possible.

True to our aim, we managed to get the online Optima Blog up and running that saw weekly articles being penned by our writers, concerning various economic issues. Policy Analysis, Sides with Optima, Opinion Pieces and Commentary, all forms of academic writing found its way onto this medium. Ideating and finalizing the theme for the Annual Economic Outlook and encouraging articles on the same was a gargantuan task that saw a number of hours of tireless editing and formatting to make sure the magazine was beyond perfection. Needless to say it was all worth it.

There is not a single moment where we look back and think we could have done it better. For the editors and writers alike, Optima grew beyond its impression of just another economic journal to a platform that encompassed the spirit of unhindered free thought. The coming editions and editorial boards of Optima can only take it forward to become more inclusive and more accessible. There is a general perception that one needs to be extremely articulate in order to be able to voice their thoughts on platforms such as this one. I urge young scholars of the economics department to do away with such inhibitions and contribute to this cause. Besides conducting training sessions, the editorial team was available at any time to address doubts and concerns in a befitting manner.

Being the Co-Editor of Optima was the most fulfilling experience of my second year and I wish a very best to the future editors.

Onward and Upward!
Best wishes,
Riya Mariam Varghese
Co-Editor
2021-2022

HEAD OF DESIGN SPEAKS

"None of us, including me, ever do great things. But we can all do small things, with great love, and together we can do something wonderful."

-Mother Teresa

Optima is not just the Annual Economic Outlook of the Department of Economics at Daulat Ram College; it is the pinnacle of the members of this department's vast intellect, brilliance, relentless labour, and dedication. It is the fruit of love for the subject and hard work put into creating something that appeals to students and teachers alike. The publication offers an avenue for undergraduate students to partake in academic writing, dialogues, discussions, and a healthy flow of ideas beyond the classroom.

I'm extremely grateful for this opportunity to serve as the Head of Design, as it allows me to combine creativity with research. As a child, art and crafts appealed to me, and as I grew up, so did researching and writing. Thus, the position allows me to have the best of both worlds, with the added advantage of getting to learn so much from the environment that surrounds me.

With a lot of love and pride, we present to you the 9th version of Optima, centered around the theme of Economics of Climate Change, a field of study which is extremely crucial in current times. As economics students, we must recognize that, as Waangari Mathai correctly stated, "the environment and the economy are both two sides of the same coin. If we cannot sustain the environment, we cannot sustain ourselves." This issue brings forward to our readers some critical areas of environmental economics, urging everyone to do small things, with great love, as a reminder to save our planet.

Climate Change transcends boundaries and requires a call to action from each individual, as this is not a road to be traveled alone; it requires a collaborative effort, much like the one put in to bring Optima to its readers. The editorial board wishes to congratulate each contributor and faculty member on their commitment to creating something that is of worth to society. I hope that as each year passes, students continue to pursue this legacy forward as well as embrace the ethos of academic writing.

Happy Reading!
Navya Maheshwari,
Head of Design,
2021-2022

IN THE WORDS OF THE EXTENDED EDITORIAL BOARD

TANISHA GULATI
Web Editor

AAYUUSHI BOSE
Assistant Editor

ISHIKA SINGH
Assistant Editor

SUHANI ARORA
ASSISTANT GRAPHIC DESIGNER

Martin Luther rightly said, “If you want to change the world, pick up your pen and start writing”.

Academic writing serves as **a tool of communication that conveys acquired knowledge in a specific field of study**. Optima- the annual magazine of the economics department of the prestigious Daulat Ram College, is an epitome and a deep sea of knowledge brimming with the creative and intellectual opinions and writings of the young economists.

It is a really enthralling platform for the students, who are the future light bearers and policymakers of our country, to express their views and opinions on various economic aspects. We consider ourselves fortunate to get this golden opportunity to showcase our skills, express and acquire more new creative ideas and adroitness.

Optima is an amalgamation of the creativity and knowledge one accumulates as they grapple with the ubiquity of economics. In this year’s issue, you will find articles that delve deep into the interdisciplinary field of environmental economics. With the intent to inform and inspire, our eclectic writers have gone beyond binaries, to establish and analyze links between the unexpected and adventitious factors that have contributed to the climate crisis. In a world plagued with a myriad of evils, through Optima, we aspire to educate and sow the seeds of change.

The journey from ideation to the publication of Optima has not only been enlightening but also enriching. It has made us embrace our biggest strength - unity. Moreover, it has provided us a sense of team building and free expression that enables us to bring our readers authentic, diverse, and edifying content. Team Optima hopes that this issue lends a hand towards the collective climate movement to have a more habitable planet.

Happy Reading!
Regards,

Tanisha Gulati
Web Editor
2021-2022

Suhani Arora
Assistant Graphic Designer
2021-2022

Aayuushi Bose & Ishika Singh
Assistant Editors
2021-2022

FACULTY INSIGHTS

SOURCE: GRIST

WHAT AN IDEA, SIR JI-
ONE SUN ONE WORLD ONE GRID

BY RITU KHANNA, ASSOCIATE PROFESSOR, DEPARTMENT OF ECONOMICS

In view of the increasing demand and consumption of fossil fuels, according to some studies, the World will run out of fossil fuels in the next 100 years or so. This along with the global warming phenomenon which has had disastrous consequences on the climate, has spurred the World to move towards decarbonisation and explore and develop new and non-conventional sources of energy. These sources include harnessing solar power, wind energy, geo-thermal energy, biomass etc. Decarbonisation by definition means reducing the use of carbon-intensive fossil fuels. According to a report by the International Energy Agency (IEA) and the International Renewable Energy Agency (IRENA), 81% of the world's power in 2017 was generated by fossil fuels. But by 2050, that will need to come down to 39% to meet the 66% two degrees Celsius scenario. But, this doesn't mean all fossil fuels will be treated equally. Coal will be the most extensively reduced, while other fossil fuels will be less affected. Oil use in 2050 is expected to stand at 45% of today's levels, but will likely still feature in the energy landscape due its use in industries like petrochemicals. Gas will also remain a key part of the energy makeup. Renewables like biomass will likely play an increasing role here. Overall, renewable energy sources will need to increase substantially in the future making up two thirds of the primary energy supply. Reaching this figure will be no easy feat – it will mean renewable growth rates doubling compared with today.

According to the Renewable Energy Capacity Statistics 2021 by IRENA, global renewable energy capacity additions in 2020 reflect unprecedented momentum for the energy transition. Despite the COVID-19 induced economic slowdown, the world added more than 260 gigawatts (GW) of renewables last year, exceeding expansion in 2019 by close to 50 per cent. Furthermore, around 80 per cent of all new electricity capacity was renewable, showing that it is increasingly the preferred source of new power generation globally. Solar

and wind in particular have shown remarkable growth, with 127 GW and 111 GW of new installations last year, respectively. Together, they now make up more than 50 per cent of total installed renewables capacity.

Solar energy has taken a central place in India's National Action Plan on Climate Change with National Solar Mission as one of the key Missions. National Institute of Solar Energy has assessed the Country's solar potential of about 748 GW. National Solar Mission (NSM) was launched on 11th January, 2010. NSM is a major initiative of the Government of India with active participation from States to promote ecological sustainable growth while addressing India's energy security challenges. It will also constitute a major contribution by India to the global effort to meet the challenges of climate change. The Mission's objective is to establish India as a global leader in solar energy by creating the policy conditions for solar technology diffusion across the country as quickly as possible. The Mission targets installing 100 GW grid-connected solar power plants by the year 2022. This is in line with India's Intended Nationally Determined Contributions (INDCs) target to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources and to reduce the emission intensity of its GDP by 33 to 35 percent from 2005 level by 2030.

Another agency working to encourage Solar energy usage is the International Solar Alliance (ISA). The ISA was launched by the Hon'ble Prime Minister of India and the former Hon'ble President of France on 30th November 2015, at the 21st session of United Nations Climate Change Conference of the Parties (COP-21) in Paris, France. Heads of about 120 nations affirmed their participation in the Alliance to dedicate efforts for promotion of solar energy. ISA is mandated to facilitate mobilization of USD 1 trillion in solar investments by 2030 for massive scale-up of solar energy deployment. The Strategic Plan of the ISA for 2021-2026 identifies three key global issues – Energy Access, Energy Security, and Energy Transition. National Institute of Solar Energy has assessed the Country's solar potential at 748 GW.

In 2018, our Prime Minister- Shri Narendra Modi announced One Sun One World One Grid (OSOWOG). This innovative idea to use the Sun as a battery- to use the permanence of the Sun to our advantage because the Sun never sets is a brilliant one. Using

this idea, different regions of the world can smooth out differences in their demand and supply of solar energy. For example, due to the time difference between Turkey and Singapore, there may be peak demand for power in Singapore while the Sun is still rising in Turkey. This deficit in Singapore can be smoothened by getting surplus solar power from surplus Turkey. This would require continuous cooperation amongst countries. The costs of solar energy have come down from being 5 times more expensive than coal energy to below that of coal energy today. India also has a partnership with the UK's Green Grids Initiative, a coalition to accelerate the deployment of solar infrastructure around the world. Recently the UK hosted the 26th United Nations climate change Conference of Parties (COP26) in Glasgow during November 2021 where 153 countries put forward new 2030 emissions targets. Over 90% of world GDP is now covered by net zero commitments. Though a lot of progress has been made, we need to keep moving ahead at a faster pace. In this scenario, cooperation among countries and a willingness and commitment to develop international grid connectivity are the crucial deciding factors.

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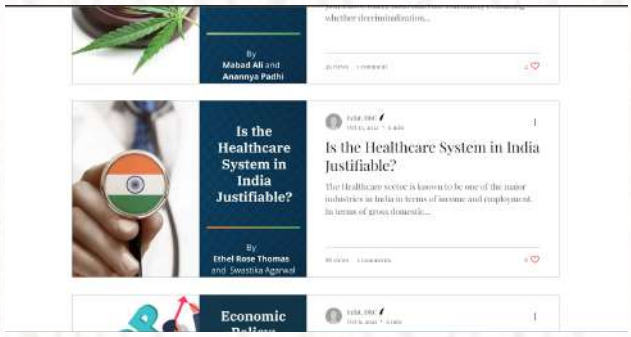


MUTASIR '21: SIXTH ANNUAL YOUTH CONFERENCE OF THE ECONOMICS ASSOCIATION OF DAULAT RAM COLLEGE

With an esteemed panel of distinguished speakers on stage we had Mr. Ajay Narayan Jha, former Finance Secretary of India, Prof. Lekha S. Chakraborty, Professor at the National Institute of Public Finance and Policy and Lord Meghnad Desai, Chairman of the Meghnad Desai Academy of Economics and recipient of the Padma Bhushan Award.

The online conference was opened by the President of Éclat, Vanshika Jaggi, and was hosted by two members of the association, Ayushi and Aditi. From the Economics Department Faculty, we had Ms. Pooja Sharma and Ms. Saachi Bhutani Bhagat who felicitated the three speakers. This conference also marked the launch of Éclat's very own newsletter, Éclonomy, which was introduced by the Research and Content Head, Vaishnavi Priya.

This was followed by the most revered event, that is, the speaker session. We had all three speakers grace us with their valuable insights on their respective sub topics which included the Current Fiscal Policy of India, Evaluation of the Economic Stimulus Package in the wake of Covid-19 and the Impact of Tapering in the Financial Markets. The sessions were followed by a questionnaire round which witnessed extremely engaging and intellectual exchange of ideas and thoughts. All the speakers patiently and amazingly answered the questions posed by the audience.

We ended the conference with a vote of thanks by our convener, Ms. Saachi Bhutani Bhagat. This marked the end of our conference which went extremely smoothly. This was the very first event hosted by the new student body of 2021-22 and the flawless execution has been appreciated by the speakers, faculty and audience alike.

DEPARTMENTAL FRESHERS': WELCOMING THE NEW MINDS

On 22 January 2022, an Online Freshers Party was conducted. The event started with a beautiful and exciting dance performance video by the Senior Year students. It was an event filled with back to back events and overflowing enthusiasm. The main events were Ms. Freshers and Ms. Best Dressed. The theme decided for the event had been “Dress Up As Your Favourite Character”. This had been considered as the first round for the event where participants submitted their entries via a google form.

The second and third round had been conducted in the online meet itself. The second round required each participant to introduce themselves in a unique and creative manner while in the third round they were asked a question by the teachers judging the event. Ms. Best Dressed was decided on the basis of collage submitted by students that included themselves dressed up beside a photo of their favourite character. This event made the whole event full of colours, joy and excitement. Creativity and avid interests of students shined through.

Punya Aggarwal was announced as Ms. Fresher for her stellar and refreshing answers and jovial personality, Vidhi Tripathi was awarded as Ms. Talented for her bewitching singing talents. In an interesting turn of events, three Ms. Best Dressed were decided. The winners were Ananya Vatsa, Bharathy JP and Faguni Awasthi.

The events were followed by heartfelt messages by teachers of the department present in the meet. They had also complimented all participants of events, senior year students for all their efforts and their superb dance performance.

Games and more fun events soon followed. Several interactive games like "Kaun Banega Scrollpati" and "Never Have I Ever" were organised. All the games were thoroughly enjoyed by all the students and the seniors conducted all games with such energy that all students felt comfortable and eager to participate. It was an event that was made unforgettable for all the freshers and conducted very smoothly with immense creativity and enthusiasm.

TAKING OPTIMA ONLINE: THE WEB BLOG

The beginning of a new session calls for experimenting in a newer theory, opening doors to a newer opportunity, and excelling in a newer achievement. This session demanded nothing less. Keeping up with the trends of Generation Z, one of our most latest achievements is the Optima Web Blog.

The Web Blog is an initiative by the Core Editorial Board of the Optima '21, with an aim to impart knowledge and awareness concerning the various economic happenings around the world, being availed in distinct, enthralling, and insightful themes at the Éclat's Website.

Under the constant guidance of our mentors and generous support from the Optima Writers, the Web Blog kick-started with the introduction of 'Sides with Optima'. The launch of this series was based on the notion that there are many sides to one topic, which we intended to explore with our writers who wrote about two perspectives on a single topic. A broad variety of projects came under discussion, ranging from The Healthcare to the Tax Waive off on the Telecom sector, through this initiative. Following the same lines, the Policy Analysis series 'OptimAnalyse' commenced. In this, our writers carefully analyzed various policies and dwell deep into their nuances.

With this, our Blog celebrated the astounding achievements and the several organizational successes of economics, along with constructive criticism. It takes the reader through an intellectual ride beginning from a common topic on to its deeper institutes and simultaneous effects on the economy of our country.

The blogs remain active on the internet. The Web Blog has helped Optima to be more accessible and inclusive. It covers topics related to the pandemic, the environment, and various other social, political, and inter-linking economic issues and aims to provide a platform for young minds to showcase their opinions and thoughts.

INTRODUCING ÉCLONOMY: THE QUARTERLY NEWSLETTER OF THE ECONOMICS ASSOCIATION OF DAULAT RAM COLLEGE

The 1st edition of our quarterly newsletter - Éclonomy was released during our Annual Youth Conference, Mutasir '21. Éclonomy is the combination of two words Éclat and Economy through which we present economic news through the lens of Éclat's members. The newsletter contained broad topics ranging from the Evergrande crisis to the Met Gala.

Here is a brief description of the articles that were presented in the newsletter. "The Evergrande Crisis" explained about the looming crisis in the world's second-largest property developer Evergrande group in China. Currently, the group is in a debt of $305 billion. If Evergrande defaults there will be some serious repercussions in the global market. Éclonomy has an extensively researched article on this mega financial news.

The next article "Effect of tapering on markets" covers the effect of tapering on the markets. Tapering is a step taken by central banks to slow down it's quantitative easing policy. In the aftermath of COVID-19 governments have been very generous in flushing the economy with money. This has volatile impacts in the stock and bond markets which is explained in this article.

We also put our foot forward into the world of "Crypto"- the hottest asset on the market. Questions concerning price volatility, acceptance as a legal tender and the future of this asset are answered in this article. The next article covered the "Economics of Met Gala", one of the grandest affairs of the fashion industry. This piece gives insight into why the Met Gala is organised, how it generates employment and what happens to the grandiose dresses after the show.

The last article "Job Opportunities after Economics Honors" gave students a glimpse of a few career opportunities they can explore after graduation. October's edition was revered by one and all. Éclonomy aims to continually put forth a well-researched and extensive understanding of world Economics.

INTERVIEW

SOURCE: GOOD HOUSEKEEPING

CONVERSATION:
"REBOOTING FORESTS AND NATURE-BASED SOLUTIONS FOR CLIMATE ACTION"

*An interview with Shri Ramesh K Pandey, IFS**

SHRI RAMESH K. PANDEY

Q1 : How are ecology and economy interrelated? Are they complementary?

Yes, the terms 'economics' and 'ecology' are closely related and correspond with each other closely. Etymologically, they have the same Greek root 'oikos' which loosely translates to 'house'. Essentially, both terms refer to the study of aspects that affect your everyday life and physical environment – things around you, your immediate surroundings, and your interactions with their different elements. In terms of their current connotations, the interactions of these two

**Shri Ramesh K Pandey is a 1996 batch Indian Forest Service officer of the Uttar Pradesh cadre who has worked, and trained, at the intersection of ecology and economics for more than two decades. Shri Pandey was awarded the United Nations Environment Programme's (UNEP) Asia Environmental Enforcement Award in 2019. The views expressed during this conversation are entirely personal, and carry excerpts from his previous publications which can be accessed here and here.*

concepts have become increasingly tangible. As the world realises that climate change is real, and has dire consequences in the form of natural disasters, rapid changes in the environment, and the degradation of geographical landscapes and features – a realisation has started to emerge that it is not only the per capita income that matters, but also the stability of the ecology, which is equally important, if not more. We talk about ecosystem services and climate finance and climate mitigation, but it is equally important to underline that this intersection of ecology and economics is most relevant for the developing countries. Climate change and its hazards are particularly threatening for the poor, and the challenging intersection of socio-economic and environmental concerns further asserts the interrelation of ecology and economics in our everyday lives. This interface has been evident for years, but it has just become more clear, perceptible, and quantifiable in recent years. This is the reason why environmental economics and the economics of climate change, even financial enquiries into clean development mechanisms, are increasingly being talked about with well-placed concern in the realm of economics.

Q2: How is India paving the way towards climate action in the global arena? What are some of its key targets?

The first and foremost consideration to flag here is an idea which India has been quite vocal in putting forward, which is that the Nationally Determined Contributions (NDCs) and the emissions targets which are being chased by countries trying to undertake climate action, have to be interpreted and considered in an equitable manner. What this means is that such concepts need to be crafted in a manner that factors in the context of developing countries vis a vis the developed nations, and takes into account the parity amongst the different developing trajectories of nations. The determination of the NDCs and targets has not considered the emissions made by developed countries in their industrialization phases, and expects countries like India to cut down on emissions at a nascent stage in our development pathway – even then, India has shown remarkable achievement in meeting its targets and is on the path to achieve those in the future as well. Put another way, there was a time when per capita income was considered the benchmark for 'development' in a country, but

soon it was realised that every unit of income carries a different meaning in different countries, and the concept of purchasing power parity (PPP) was introduced to compare nations using the same parameter. Similarly, the emissions trajectories and relative emissions of the nations also need to be accounted for, when we discuss targets and NDCs, especially keeping in mind the developing nations.

Secondly, India also occupies a central position in narratives on sustainable development and living standards at the global level. The Hon'ble Prime Minister of India has emphasised the principles of LIFE (Lifestyle for Environment) at the CoP 26 discussion on resilience, equity, and sustainability. This philosophy lays importance on making lifestyle choices to improve our planet and undertake environmental efforts for improving the global commons. Special attention has been given to the circular economy, climate-conscious consumption, and eco-friendly alternatives in this regard. On the energy front as well, India has given impetus to the One Sun, One World, One Grid idea through the International Solar Alliance. We have not limited ourselves to green growth initiatives in the industries or manufacturing sectors only, but have also leveraged our age-old principles of reduced consumption and responsible living, towards the overarching goal of sustainable development.

Thirdly, as I indicated earlier, the adoption of non-renewable energy sources is being taken up by India in an extremely proactive manner on the global level. Especially solar energy – it has been encouraged by our policies in an effort to usher in an energy revolution, both at the domestic and international level.

And lastly, I'd like to point towards the concept of nature-based solutions (NBS), for mitigating the climate change risk, and adaptation. Nature-based solutions are especially critical for developing nations which rely on natural resources to a great extent and generally entail initiatives such as restoring forests, grasslands, wetlands, coastal areas, and other critical ecosystems, since healthy ecosystems are further resilient against climate change, while also sequestering more carbon and providing other benefits like food and clean water – not only to mitigate climate change's effects, but also to improve people's lives. The value of these climate mitigation and adaptation measures in terms of propagating nature-based solutions, by developing nations, can also be used to offset their Nationally Determined

Contributions.

Q3: How does climate change impact forests and wetlands?

Wetland is an ecosystem that works like a sponge, which retains water, and also supports aquifers and the water table of an area. 80% of microorganisms and small insects get their life cycles completed in wetlands. Wetlands are one of the biggest sources of carbon-sinks. Between wetlands and forests, wetlands are comparatively impacted by climate change, to a greater extent. In the last two hundred years or so, 60% of the wetlands of the world have been degraded or depleted – water tables have gone down in cities, there is a loss of wetlands altogether due to depletion and encroachment, and the quality of water in them has drastically reduced due to rapid urbanisation and pollution. Pesticide use and usage for commercial crops has also impacted wetlands negatively in a few regions. However, there have been great strides which have been made so far, in order to preserve and conserve wetlands in the country. India has declared multiple Ramsar sites in the past few years, wetland rules have come into place, state wetland authorities have been designated, wetlands have been geo-referenced, their atlases have come up – overall, a vision has been crafted as to how to protect them, and involve local communities in keeping them healthy, and securing greater conservation action for them. Forests, on the other hand, are getting affected by climate change due to incidents of forest fires, advent of weeds, rapid changes in species, phenological changes, changes in weather cycles, and other related effects.

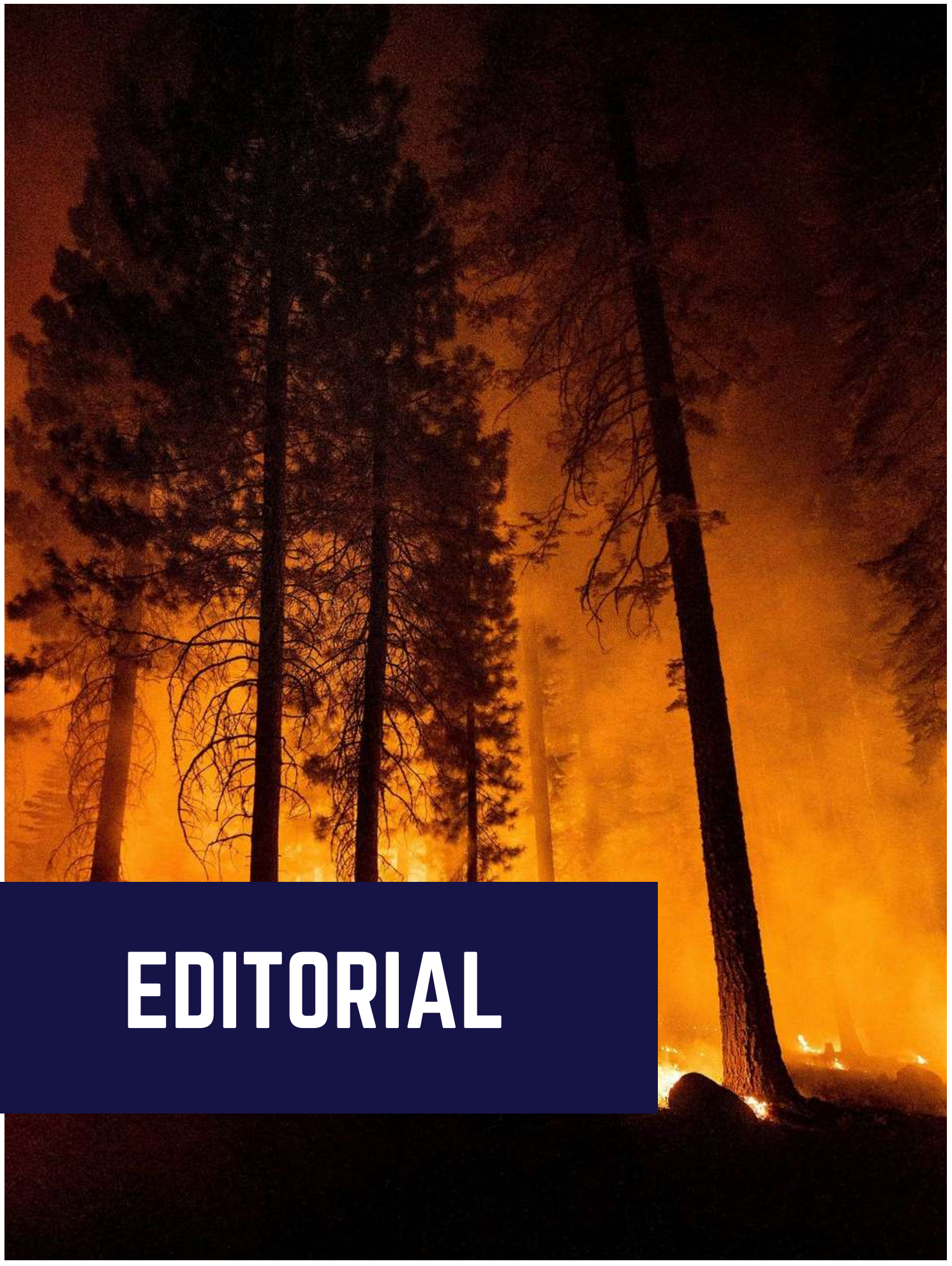
Q4: How can forests and tree cover be leveraged to further India's climate agenda?

India houses approximately one-sixth of the world's population, one-third of the livestock population of the world, and is characterised by largely human-dominated landscapes, and yet about 23% of our land area is under forests. Our forests are a huge natural resource and act as carbon sinks for the sequestration of carbon. Ecosystem stabilisation, protection of critical biodiversity, and providing food security and support to livelihoods are some of the other ways in which forests prove to be essential for our survival. India has leveraged this potential of forests by undertaking plantation, afforestation, and reforestation programmes to conserve and enhance the carbon sink.

Particularly, natural climate solutions, such as land preservation and timber harvest management have also emerged as viable options for avoiding greenhouse gas emissions and increasing the magnitude of the land carbon sink. In this context, targeting and ensuring forest productivity can further help in evaluating current forest inventory, planning bio-economy and sustainable forest management, and assessing current and future wood supply to ensure that growth, harvest, and usage can be accounted for, in the carbon cycles, and even contribute towards addressing NDCs and other climate commitments.

Q5: We have a huge portion of our population in their 20s, how do you think this youth can bring a change in reducing the environment degradation? What is your message to them?

At a time where the attention span is less, and social media is addictive – a key message I have for the youth is to simply spend time in nature. Not by going to safaris, chasing sightings in jungles, and posting about them on social media. Instead, just spending time, being patient, and slowing down with nature is important. They should be encouraged to take forest baths, observing the different phenomena in nature – flowering, fruiting, phenological changes in the various species, and hearing the chirping of birds. If you're unable to appreciate the beauty, the impact of nature, it is very difficult to understand its true importance. Then, they should get involved in protecting the natural resources, and taking initiatives in local plantations and maintenance of trees. Lastly, another thing I would like to highlight is that a sense of apparent antagonism towards animals is being found increasingly in the younger generations, near protected areas. It is important to understand that natural resources and wildlife are our natural heritage – as outlined in our Fundamental Duties – they are our common assets which need to be protected at all costs. Historically, we have had a philosophy of co-existence with our environment, which is slowly diminishing, and the youth needs to take a lead on communicating this message, advocating for the correct approaches, and preserving both – our resources and our communities.



EDITORIAL

SOURCE: THE WALL STREET JOURNAL

THE NEW DELHI TEMPERATURE CIRCUS: THE WORTH OF DEVELOPMENT?

ABHIVYAKTI MISHRA, EDITOR-IN-CHIEF

The Global Risks Report 2021 is the World Economic Forum's 16th annual assessment, and it looks back on a year marked by a global pandemic, economic slowdown, political unrest, and an ever-worsening climate problem. The research looks at how countries and corporations might respond to these threats. The COVID-19 pandemic has caused one of the major swings in terms of hazards between this year and the previous albeit unsurprisingly. Infectious illness risk has risen to the top of the priority list, from tenth place in 2020.

But one more thing that has been on top of the list is climate change. Despite COVID-19's unavoidable repercussions, climate-related challenges make up the majority of the 2021 risk list, which the World Economic Forum (WEF) characterises as "dangerous." It states Climate Change as “an existential threat to civilization”. Despite the fact that lockdowns and disruptions to international trade and travel resulted in a reduction in carbon emissions, there are concerns that once economies recover, emissions may skyrocket.

The past two years have shown the world what major havoc nature can create. But when you live in a city, which is beautiful in each and every sense, except for its climate, you are compelled to see and predict how accurate the report of WEF is.

New Delhi is the capital of one of the largest growing economies in the world, India. Since its independence, India has been trying to reach every milestone she could think of, but unfortunately, the capital city has become a living example of what climate change might do to a region. According to studies, urban centres around the world are seeing a progressive rise in temperature as well as an increase in the number of individuals exposed to dangerous heat levels. In the last five years, however, Delhi has experienced something unusual: a higher frequency of extreme weather occurrences and a decline in average temperature.

Despite the fact that the world continues to warm as a result of greenhouse gas emissions, Delhi is becoming cooler, with a discernible trend over the last five years, according to the mean temperature data. Changes in annual temperature and precipitation in cities are among the most visible indicators of climate change. The mean annual temperature of Delhi has decreased by 1.3 degrees Celsius (°C) in the last five years, according to statistics compiled by Meteoblue from the European Centre for Medium-Range Weather Forecasts (ECMWF) (2016-2020). Mumbai's average temperature increased by 0.4 degrees Celsius over this time. In other words, while Delhi is growing cooler, Mumbai is experiencing an unusually warm spell (Rai, 2021).

According to the data team of India Today, in 2019 and 2020, the national capital Delhi had a decline (-0.1°C) and a drop (-0.7°C) respectively. Other metros, on the other hand, have seen a different pattern. In 2019 and 2020, Mumbai (0.4°C and 0.7°C), Chennai (0.6°C and 0.5°C), and Kolkata (0.5°C and 0.2°C) became warmer. The anomaly shows how much warmer or colder the changes have been as compared to the 30-year norm (1980-2010) (Rai, 2021).

Under the worst emission scenario, the capital city might see a 5.3°C rise in mean temperature by the end of the century compared to the pre-industrial period. Even under the best emission release scenario, which is predicted to keep world average temperature increases to 1.5 degrees Celsius above pre-industrial levels, Delhi's average temperature is expected to rise by at least 2 degrees Celsius. This is regarded as the essential cut-off point for humanity's survival. In 2015, the Paris Agreement vowed to limit global mean temperature change below 2°C, preferably 1.5°C, compared to pre-industrial levels (Basu, 2021).

On one side we saw the deteriorating climate condition of Delhi, now let’s see its ongoing economic condition. According to the Delhi Economic Survey for 2019-20, the Capital has maintained its continuous income surplus of 6,261 crores in 2018-19, up from 4,913 crores in 2017-18. However, it noted that the Delhi government's budget deficit in 2018-19 (Provincial) was 1,489.38 crore, compared to 1,569.16 crores in 2017-18, or 0.19 per cent of Gross State Domestic Product (GSDP), compared to 0.23 per cent in 2017-18. The report also stated that the green cover of Delhi has increased from

roughly 20.22 per cent in 2015 to 21.88 per cent in 2019. The largest forest cover area is 84.63 square kilometres in South Delhi, while the lowest forest cover area is 3.75 square kilometres in East Delhi. (Goswami, 2020).

Delhi has been performing well in its economic status, and in spite of an increase in the green cover, Delhi is still at the risk of being adversely affected by climate change. To combat this, a new 10-year action plan was supposed to be executed by the end of 2021. In 2009, the Centre published the National Action Plan on Climate Change (NAPCC) and urged the states to develop their own plans. However, Delhi was the last state to submit a climate change strategy in 2019, making it the last state to do so (*Delhi to Implement Action Plan to Combat Climate Change by Year-End*, 2021). Since the action plan was only valid until 2020, the delay meant that it could not be implemented. States have now been requested to develop a new climate action plan that will include plans for adapting to and mitigating the climate problem in the coming decade (Pillai, 2021).

Climate change will also have an impact on the economy of the country.

According to the Overseas Development Institute, a London-based global think tank, India could lose 3 to 10% of its GDP yearly by 2100, and its poverty rate could grow by 3.5 per cent by 2040 as a result of climate change. The report titled Cost of Climate Changes in India, stated that India is already experiencing the consequences of a 1°C increase in its temperature. “Observing that India has made rapid progress in boosting incomes and living standards over the last three decades, but without rapid global action, climate change may reverse development gains of recent decades”, said the report.

India’s latest change of statement from phasing out of coal to phasing down of coal at COP26, has raised a lot of discussions around whether countries should continue their development even at the cost of climate? One needs to acknowledge that the consequences of climate change will be hazardous for everyone and might cost the economy we are trying to build. Instant response is required to be taken so that other cities do not fall prey to the changes that the capital of India has experienced. Development and climate peace need to go hand in hand, because what’s the worth of development, which is costing us our habitat?

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CLIMATE CHANGE: RISKS TO FINANCIAL STABILITY

ANSHRUTA THAKUR, CO-EDITOR

Economic growth has brought with it a side of positive and negative externalities, an example of the latter being climate change, owing to the emission of carbon dioxide and other greenhouse gases from the usage of fossil fuels. The various associated physical, societal, health and social costs are borne by the present and future generations alike. While the world seems to have woken up on paper, as witnessed by the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Paris Agreement, there are numerous inter-linked consequences to a worsening climate that the layman possibly has not imagined. One such consequence is the existing threat to the financial sector and its stability.

Climate change is a systemic risk that has far-reaching, implicit and explicit effects on the economy and its people and the financial sector. The risks to economic activity like reduced productivity, damaged infrastructure, adverse health effects, etc. lead to financial risks wherein there is an observable reduction of asset value and risky credit. These, in turn, result in economic activity risks and so the cycle continues.

Climate-related risks to financial stability can be broadly categorised as 'physical' and 'transition' risks. Physical risks are the effects on the assets and liabilities of financial assets due to the existing risks and worsening climate conditions, while transition risks arise from policy measures and technological changes required to shift to a low-carbon economy. These risks lead to a rather catch-22 situation where a measure such as a policy change or response to combat climate change would reduce the physical risks but simultaneously lead to transition risks arising from the unanticipated and muddled shift towards a low-carbon economy. On the other hand, avoiding or delaying this transition to a greener economy would build up the physical risks on account of the rising emissions (Board, F. S., 2020).

Physical risks stem from changes in

physical, natural, and even human capital. When climate change affects physical capital, resources and financing is needed in order to reconstruct; events like supply chain disruptions (which have been highlighted during the current pandemic) can reduce investment. Climate risks have an inherent uncertainty surrounding them, which can lead to a rise in risk premia and, in turn, affect the value of financial assets (market risk) and their prices (Board F. S., 2020). An instance of physical risk in terms of the corporate credit portfolios is the bankruptcy of Pacific Gas and Electric (caused by droughts leading to increased fires from its operations), dubbed the first "climate change bankruptcy' by The Wall Street Journal (Grippa et al., 2019). Physical risks have also led to a rise in non-life insurance. The rising losses from climate change could lead to rising premiums or even withdrawal of coverage which would severely affect the at-risk regions. The non-linearity of climate risk changes and its self-reinforcing nature could upset the whole financial system.

The 2015 Paris UNFCCC conference mentioned the need to limit global temperatures to 2 degrees Celsius, with 1.5 degrees being the desired goal. This requires major changes and measures to shift towards a greener, low-carbon economy, giving rise to transition risks. The global economy functions like a well-oiled machine more so now than ever, with each economic entity's actions/processes affecting another. As such, financial institutions and firms face transition risks due to the activities of their suppliers and consumers in addition to their own operations. Energy and carbon-intensive firms are likely to increase the exposure of all firms with inter-linked functioning, and these firms might face reduced profits, increased operational costs, etc. on account of shifting consumer and investor preferences as well as policy changes. Rising physical risks could call for a greater and urgent need for action and resulting policies might be too hasty or poorly implemented, resulting in transition risks that work simultaneously with the physical risks. Technological changes or unanticipated policy measures could also lead to a rocky transition. But the future is not all bleak as climate risk-associated policies while causing transition risks can also boost innovation and investment (Board F. S., 2020) and lead to growth in less carbon-intensive firms.

Considering the extent and severity of

the risks associated with climate change, the responses to effectively battle this issue need to be employed with the long-term and the whole economy in mind. Measures like the disclosure of firms' carbon emissions and exposure to climate risk, and stress testing to gauge this exposure along with the feasibility of an orderly transition to a healthy economy, are the need of the hour. Investors can engage in corporate activism to further strengthen these efforts. The economy can also draw lessons from the Covid-19 pandemic which severely affected equity valuations (Bolton et al., 2021) but recovery was eventually possible due to a wide range of mitigation measures. A tax on capital required to fund this mitigation can work in the instance of climate risks. Research in this field will help realise the need for measures that effectively impact various investors, firms, institutions, sectors, regions, and economies. The financial market is believed to incorporate climate change-related information but climate risk's impact on asset prices can be better gauged by understanding investor sentiments and how they are pricing this information into their portfolio (Diaz-Rainey, 2018). Similarly, it is necessary to understand firms' balance sheets before they engage in financing the green economy transition. Investment in less carbon-intensive assets and green bonds, a smooth and effective path on paper, entails many gambles and associated risks which need to be analysed in order to proceed ahead without actually taking two steps back.

While we can measure the immediate costs associated with climate change, many potential costs are beyond the scope of typical economic analysis which only makes it harder for visual creatures like us to understand the scope and scale of this issue. As such, a lot depends on the policy measures and steps taken by governments as well as the financial bodies in order to regulate and mitigate the threat posed by climate change (Grippa et al., 2019).

A destabilised financial market means loss of wealth and rising demand for liquidity. This, thereby, calls for the need to integrate climate change into the framework of central banks and other financial institutions, as these are directly or indirectly dealing with carbon-intensive firms and assets. This path to a greener economy is shrouded with physical and transition risks as well as risks associated with various policy measures but can be achieved gradually and with well-

researched response measures.

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THE INTERSECTION OF GEOPOLITICAL ECONOMICS IN SHAPING INDIA'S NASCENT GREEN STIMULUS

RIYA MARIAM VARGHESE, CO-EDITOR

"As one of the most innovative and vibrant economies on Earth, India, isn't simply at the mercy of a changing climate, it is a critical part of the solution"

-Samantha Power
Administrator,
USAID

With recent developments at various forums and intergovernmental panels, it is safe to say that India has assumed its role in the global sphere as one of the forerunners of a climate conscious world. A number of reports that have studied the regional disparities of climate change have led us to establish that countries lying closer to the equator will face an unequal impact of climate change since effects of a warmer climate will be harsher on them. Owing to its geography, India is more susceptible to erratic changes in its climate and weather patterns compared to a number of highly developing/developed countries lying in the northern hemisphere.

Ravaging floods and record breaking heat waves have already become a common occurrence in the country, killing millions over the years.

Drought has harmed crops, resulting in hunger and a spate of farmer suicides. Habitability boundaries are being pushed as global temperatures increase (Hayden, 2017). In research from World Bank Group (2013), loss of snowmelt from the Himalayas resulting in water scarcity in some regions and overabundance in others, are prominent indicators of climate change on the subcontinent.

Here are two things we seek to analyse through this piece. Firstly, to understand the evolution of India's geopolitical standpoint with regard to climate change for the decades it sought to be involved in climate politics. Secondly, the role of the former in shaping the economic implications of climate change on the country and the evolution of its climate policy.

EVOLUTION OF INDIA'S ROLE AS A STRATEGIC PLAYER

A paper written by Aniruddh Mohan

"From Rio to Paris: India in Global Climate Politics" sought to analyse India's involvement in climate politics for more than two decades. It established that India has gone from being a dissenting voice on the periphery of global climate policy to being a driving force behind worldwide efforts to tackle climate change. How does this come about?

At the 1972 United Nations Conference on the Human Environment, the then prime minister Indira Gandhi laid down the foundations of India's initial standpoint. She particularly highlighted how climate change, attributed to emissions in status quo, was largely the impact of the more developed or industrialised nations given that they contributed significantly to the same. It was there that the premise of "per capita allocation of emissions" being a criterion for dividing responsibility for climate change was initiated. This very idea still finds a precedent in shaping India's climate change policy even today.

But what do the numbers suggest?

A study of current and past cumulative greenhouse gas (GHG) emissions suggest that India's share is a meagre 3.21 percent compared to 24.6 percent by the United States (the period under consideration being from 1878 to 2020) (Ritchie & Roser, 2020). The phrase "Common But Differentiated Responsibilities" (CBDR) was used in Article 3 of the UNFCCC 1992, to recognise these variances in historical culpability of different countries. (Mohan, 2017)

However current and future GHG emission predictions suggest that India is the 3rd largest emitter and the share will keep rising, which gives more than enough reason for the country to take accountability and enforce stringent measures to tackle the same. India's dual position as a substantial emitter in the present while not having significant historical blame for climate change, an issue to which it is extremely vulnerable, means that it plays a unique role in global climate politics. (Mohan, 2017)

THE ECONOMIC OVERVIEW THAT DICTATES INDIA'S GREEN STIMULUS

In contrast to industrialised economies, India's green transition does not entail paying individuals who work in sectors that must be decarbonised while upgrading other, more profitable industries.

Its pledge to lower its economy's carbon intensity by 45 percent by 2030 (over 2005 levels) is considerably more ambitious than that of the other economies, since it necessitates fully abandoning carbon-intensive growth while still at a relatively early stage of development. However, according to the Centre for Science and Environment (CSE) this means that India will need to adopt more aggressive efforts to cut emissions from the transportation sector, as well as energy-intensive industries like cement, iron and steel, non-metallic minerals, and chemicals. It will also require India to reinvent its mobility networks in order to move people rather than automobiles, as well as enhancing public transportation in cities and improving the thermal efficiency of our dwellings.

India has already demonstrated its potential to absorb and catalyse transformation at a large scale in various areas. One such area is renewable energy. The power generation sector accounts for around 45 percent of India's greenhouse gas emissions, which is expected given the country's abundance of coal. The Prime Minister pledged to increase the country's non-fossil fuel production capacity to 500 gigawatts by 2030 at COP26. India, on the other hand, has already installed over 100 gigawatts of renewable energy capacity by the end of 2021 (Sharma, 2022). Additionally, according to projections by the Central Electricity Authority (CEA) of India, the present trajectory paints an optimistic scenario with respect to this particular goal which might be achieved by the end of 2030.

However, the concern comes with regard to technology. All our ambitious promises made at these forums would need major technological advancements in various sectors. If we require any tangible change in the short term, we need promotion of advanced technology, support and development of existing ones as well as creation of platforms for wider reach and engagement, all the while having enough funds to carry these out.

While meeting our 2030 objective may be simple, maintaining this reduction in emissions intensity after that may be tough. If we do not cut emissions intensity in the manufacturing and transportation sectors, both of which are particularly carbon-intensive, we will soon strike a wall. Steel, cement, pharmaceuticals,

and chemicals, for example, are all heat-intensive industries. It would be troublesome if we did not adopt new technology to switch to better alternatives (Express News Service, 2022).

ONWARD AND UPWARD

The so-called "greening" of India's developmental pathways is not the choice to be taken by any one, but billions of citizens in having a climate conscious approach. Moreover, the evolution of India's climate policy has happened in tandem with its foreign policy. The employment of geoeconomic instruments to advance strategic goals is a hallmark of India's modern foreign policy. Energy and climate policy are critical components of the new thinking because they provide actual avenues for achieving these objectives. Overall, India's climate policy helps to solidify its position as a major player in global governance whilst holding onto its position as a developing country. Though previously considered a difficult and reluctant player in these negotiations, recent developments indicate a shift in the country's acknowledgement of its own role and responsibilities that go beyond the historic responsibility of bigger actors.

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CLIMATE CRISIS: INDIA IN A DOUGHNUT

TANISHA GULATI, WEB-EDITOR

INTRODUCTION

Amidst the reports of a shaky economy and a blooming economic recovery, a crisis has been knocking on our doors for quite a while now. According to GermanWatch (2021), India is ranked amongst the top ten countries most vulnerable to climate change. As we are normalising the pandemic and preparing for the climate crisis, the cracks within our economic system have never been more visible. From an era of denial and delay in climate action, today's systems have well settled into a neoliberal era.

In 2012, a 21st Century Compass emerged to direct our journey for a safe and just space for humanity. The compass looks like a doughnut and combines social foundation with planetary boundaries (Raworth, 2012). Along with global average temperatures, the promises for green, sustainable, inclusive growth have increased, proving to be fruitless. The Doughnut Economic model, further elaborated by renegade economist Kate Raworth gives a balanced and sweet spot for our planetary home (Raworth, 2018).

THE DOUGHNUT ECONOMIC MODEL

The economists of this century have to triumph over crises that exist simultaneously. In the end, our goal is to provide for everyone's needs within the planetary boundaries. The model aims to ensure that our economy thrives, i.e. people do not fall short on healthcare, safety, food, education and others. At the same time, human activity must not enforce an overshoot on the planet.

With years of economic growth and forward looking policies, we have not been able to provide for everyone. Around 9.9 per cent of all people are estimated to have been undernourished in 2020 (World Health Organisation, 2021); closing the global gender gap has increased by a generation from 99.5 years to 135.6 years (World Economic Forum, 2021), and climate change is deepening these inequalities. The climate crisis cannot be seen in

isolation as an environmental issue but is indeed at an intersection of everything and anything on Earth. The doughnut is built on a growth agnostic structure to put our economy's priority right on track. **Let's dive into the sweet socio-economic spot!**

UNDERSTANDING THE DOUGHNUT ECONOMIC MODEL

The figure was first developed in 2012 and has evolved. The doughnut's outer surface (ecological ceiling) represents nine planetary boundaries as recognised by Rockström et al. (2009). The boundaries are climate change, ozone layer depletion, air pollution, biodiversity loss, land conversion, freshwater withdrawals, nitrogen and phosphorus loading, chemical pollution and ocean acidification.

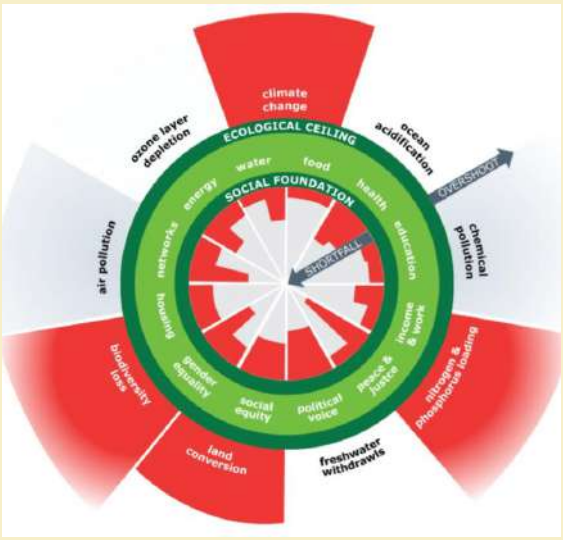
At present, four boundaries have exceeded the ecological ceiling: climate change, biodiversity loss, land conversion and nitrogen and phosphorus loading (Kate Raworth, 2020).

The inner surface (social foundation) represents the twelve aspects of social foundation: social equity, political voice, peace and justice, income and work, education, health, food, water, energy, networks, housing and gender equality. Currently, the world is in a 'Great Shortfall' in ensuring humanity's basic needs within the social foundation. Between the ecological ceiling and the social foundation lies the safe and just space for humanity. It is a balanced space where an accumulative and extractive economy transforms into a distributive and regenerative economy.

A safe and just space for humanity to thrive in: A first illustration

Source: Raworth, 2017

The Doughnut of Social and Planetary Boundries



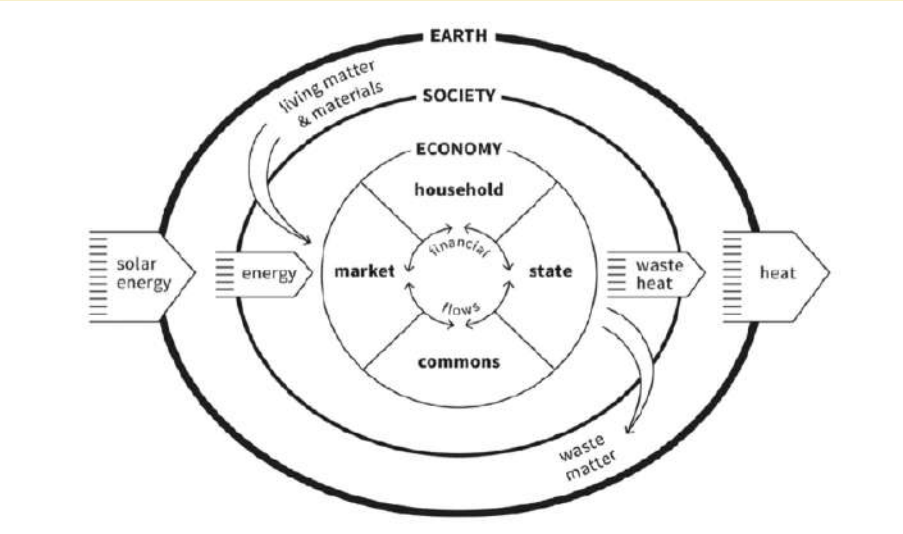
Source: Raworth, 2020

Figure 2 depicts the planetary overshoot and shortfall in the respective ceiling and foundation up to 2017.

According to Raworth (2017), the seven ways to work within and beyond the Doughnut Economic Model:

1. **Change the goal**: The present economic system is fixated on extractive economic growth. Extractive economic growth relies on the consumption of natural resources without any time for processing and regeneration. It is pivotal to change the goal from growth to making a safe and just space for humanity within the planet's limits.
2. **See the bigger picture**: Currently, the economy is presented within a neoliberal framework. Seeing a bigger picture reallocates our our attention to the creativity of the commons and the embedded economy.
3. **Nurture human nature**: At the centre of economics is the Homo Economicus - The Rational Economic Man. The concept has become a self-fulfilling prophecy, where self-interest has dominated humanity's nature. It is time to embrace the 'non-tragedy of the commons' and true human nature.
4. **Get savvy with systems**: The world around us has been designed and built. When ecosystems collapse and markets crash, getting savvy and redesigning the systems around us is rational.
5. **Design to redistribute:** According to Kate Raworth (2017), inequality is a design failure and not an economic necessity, as portrayed by Kuznets Curve. Redesigning the economy would imply that the aim is to move beyond redistributing income.

The Embedded Economy



Source: Raworth, 2017

It includes redistribution and power-sharing.

6. **Create to regenerate**: The world generates 2.01 billion tonnes of municipal solid waste annually, with at least 33 percent of that—extremely conservatively—not managed in an environmentally safe manner. The waste needs to be managed within a regenerative framework, where discarded materials are used as food for the following production cycle.

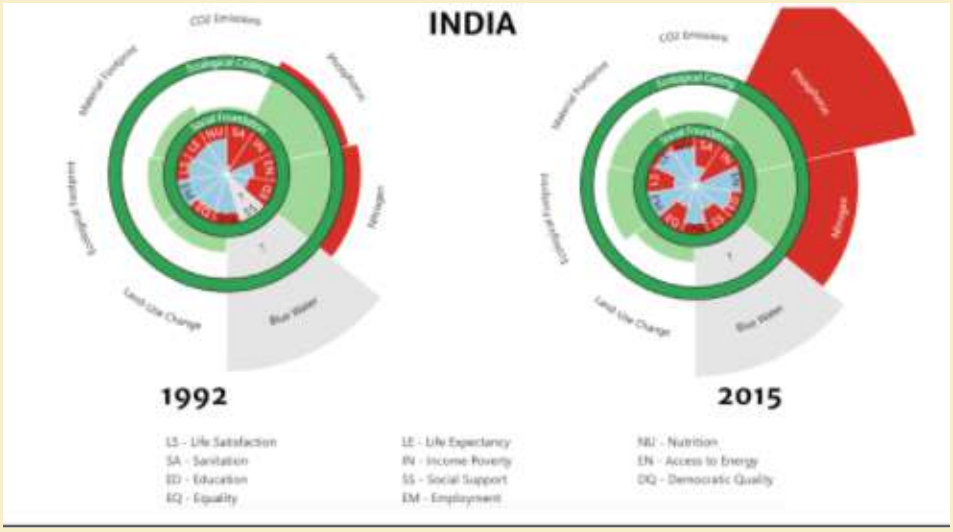
7. **Be agnostic about growth**: Growth seems an essential indicator for our economies. The addiction to growth-oriented political and economic scenarios needs to be flipped. If the set goal of absolute human prosperity is at the epicentre of our policies, growth or lack of it could become irrelevant in the most far-fetched economic thinking.

INDIA IN A DOUGHNUT

It is deduced that inaction on climate change will reduce India's economic potential by 5.5% per year on average over the next 50 years (Sharma, 2021). In 2021, 4.6 crore Indians fell into extreme poverty. In the same year, billionaires' wealth increased from Rs 23.14 lakh crore to Rs 53.15 lakh crore (Chandhoke, 2022). These cracks do not need sugar coating but could use a doughnut-like recovery from the pandemic.

Historically, India's carbon footprint has been low, and Figure 3 depicts the same. While phosphorus and nitrogen loading has overshot the ecological ceiling (depicted in red), India's social foundation has remained weak and shaky. The Covid-19 pandemic has exacerbated this incapacitated foundation while ensuring that wealth

India's ecological ceiling and social foundation - 1992 and 2015



Source: Fanning, A.L., O'Neill, D.W., Hickel, J., and Roux, N. (2021)

inequality deepens in the country (Oxfam India, 2022). The vexed question remains, how do we ensure human prosperity in a flourishing web of life? The economic goal for the world still remains growth with added spices of 'sustainable', 'flourishing', 'long lived', 'green', 'inclusive' and others. E.F Schumacher, also known as The Buddhist Economist in 'Small is Beautiful: Economics as if People Mattered' points out that "Infinite growth of material consumption in a finite world is an impossibility." (Schumacher, 1989). With the popularisation of the degrowth movement globally, India's five trillion economy ambition has to be reassessed to some extent. On top of that, India's climate action is highly insufficient as per Climate Action Tracker (2021).

Nevertheless, the doughnut economic model stays agnostic to growth, which makes the model adaptable enough for growth-oriented politicians and world leaders. Rethinking the economic system has remained hypercritical throughout the years; thus, the bending of political will remains essential.

In 21st Century's India, a thriving population is not a vision but a reality if the doughnut is at the policymaking table.

CONCLUSION

The climate crisis is often identified as an opportunity. A rational economic outlook would consider the cracks and the inconsistencies within the economics of climate change. While the doughnut economic model is an alternative to the unfolding crises, it is not the only one. It is open to exploration to move beyond the

neoliberal era. Moreover, the model draws its framework from different schools of economics. While few leaders have brought the doughnut on their policy making tables, it is yet to be seen if India will adapt to the sweet, safe and just space for humanity. Furthermore, will India keep the same attitude towards its domestic policies as is often announced on the global platforms?

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CLIMATE REFUGEES: CAN THERE EVER BE A STILL HOME?

ISHIKA SINGH, ASSISTANT EDITOR

The term “climate refugees” was first coined to explain the increasingly large-scale migration and cross-border mass movements of individuals that were partly caused by weather-related disasters. The mass human displacement and its ramifications have generated and gestated the normative debate about global climate change-induced displacement. It has become an annual phenomenon where reports highlight various residents that are compelled to escape from their roots, homelands, and countries due to multiple ravages of climate change.

Migration is one of the foremost challenging consequences that residents, and the local and national governments face because of global climate change. Flooding, deforestation, erosion, and rising sea levels are the first causes of displacing populations. Additionally, securing adequate nutrition and managing drought and saltwater intrusion impacts the sustainability of fledgling communities. Their ability to flourish depends on adaptability to an unknown environment, utilising resources sustainably and also the resilience to rebuild their lives after destruction. While a full picture is yet to be established, UNHCR estimates that global forced displacement has surpassed 84 million at mid-2021(Refugees-Statistics UNHCR, 2021). Rising sea level is another threat. Over the past 30 years, the number of citizens living in coastal areas at high risk of rising sea levels has increased from 160 million to 260 million, 90% of whom are from poor developing countries and little island states. For instance, in Bangladesh it's predicted that 17% of the country is going to be submerged by the increase in water level by 2050, and 20 million people living there are in constant danger of losing their homes. The Ecosystem Threat Register (ETR) released in September 2018 by the Institute for Economics and Peace (IEP), an Australian international think factory, points out that a minimum of 1.2 billion people may be displaced by these threats by 2050. During this context, the international response to the matter has gradually

begun to progress. (Ecological Threat Register,2021).

Appropriate responses from the developed world whose industrial emissions are majorly to blame for hastening global climate change, plays a critical role in preventing a worldwide humanitarian crisis. The concept of 'climigration' has been the subject of recent debate. Robin Bronen concluded that 'climigration' has indeed played a pivotal role in the permanent relocation of varied societies secondary to a rising sea-level (Bronen 2009:68). Steven Castles also agrees that aggregation of ecological ruin is crucial in people fleeing their homes(Castles, 2002), and Lori Hunter hypothesised that demographers can play a significant role in population distribution associated with environmental hazards (M.Hunter 2000:18). The above statements consolidate that climate related migration is indeed a real and crucial problem. In developing countries, migration has become commonplace thanks to politically fragile and poor economies.

Victims of such natural disasters require economic and political stability so as to revive their homes in their country.

Government and non-government organisations must take preventative and protective measures to support them. If governments fail to try to do so, people are forced to re-establish themselves in alternative locations. Systems and procedures must be established to spot those in genuine need of Permanent Secured Habitat. We must make sure that any measures taken by governments to curb immigration don't prevent refugees from receiving the support to which they're morally entitled. A close understanding of the roles and responsibilities of the various sectors that are involved in aiding and intercepting people and other migrant points is essential. The accelerated global temperature change will play a more prominent role in migration which was once embedded in complex political, social, and economic factors. Preventing an outpouring of 'homeless' populations would force integrated strategies for his or her sustenance. The answer to the matter of climate-associated migration can only be addressed by attacking the foundation cause, then providing sanctuary and aid for those areas and communities already affected.

However, it's hard to mention that the international community and governments do enough to

handle climate change refugees, given the seriousness of the matter. One of the explanations for this is often the dearth of a transparent climate refugees definition, and therefore the absence of international organisations and institutions to deal with and clarify the problem. The climate change refugees don't seem to be covered by the 1951 Convention referring to the Status of Refugees, which protects people that have a well-founded fear of persecution on racial, religious or other grounds, nor are they eligible for cover under the Convention. Official data on climate refugees is virtually non-existent – this is often why they're called the "forgotten victims of Climatic change."

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THE IMPACT OF GREEN BONDS ON CLIMATE MITIGATION

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In a rather bold statement, Indian Prime Minister Narendra Modi promised to achieve net-zero emissions by 2070 at the COP26 in Glasgow. He also emphasised the need for developed countries to contribute $1 trillion to developing countries since they have historically emitted fewer greenhouse gases than countries such as the United States but are now bearing the economic costs that come with net-zero commitments. Such statements throw attention to the effectiveness of instruments to mobilise funding for sustainable development and their role in climate change mitigation. A remarkable innovation in the field of sustainable finance, green bonds were first issued in 2007 by the European Investment Bank (EIB). To increase the incentive for investors, no income tax is levied on the interest from such bonds. Yet, there is still uncertainty surrounding the extent of their impact due to the lack of a proper framework for their issuance.

UNDERSTANDING THE AIM

Before studying the implications, it's important to take into account what green bonds are designed to deliver. There is one stark contrast between green bonds and conventional fixed-income securities in that the issuer pledges to use the funds obtained to finance projects that are meant to have positive environmental or climate effects.

The adjacent green label isn't restricted to just climate mitigation, but a more generalised notion of environmentally beneficial projects like water security, waste reduction etc.

THE GROWTH OF THE GREEN BOND MARKET

With rising investor awareness, there has been an increase in appetite for ESG(environment, social and corporate governance) products amongst all market participants. Since their introduction in 2007, Climate Awareness Bonds (CABs) worth $1tn will be issued by 2023 (Climate Bonds Initiative).

While the EIB was the first player in

the market, many governments and corporations have followed in its footsteps. Outside China and India, the growth of the green bonds results from a market-based approach, which non-state actors and set guidelines mostly facilitate. Components outlined in these guidelines can also be found in the guidelines of the Climate Bonds Initiative (CBI) and Green Bond Standard (GBS) proposed by the Technical Expert Group on Sustainable Finance (TEG) of the European Commission (TEG 2019).

Since 2007, the global green bonds market has grown exponentially, from 11 billion USD issued in 2013 to 167 billion USD issued in 2018 (Maltais & Nykvist, 2020). Participation grew exponentially after the 2015 Paris Agreement as more and more stakeholders pledged to take action.

Europe is the largest market for green bonds. However, the involvement of companies like Amazon and Tesla in the US and the introduction of sovereign green bonds in India hint at expanding the market further.

TRACKING IMPACT

According to Fatica and Panzica, 2020, 56% of bond proceeds are used to finance projects directly associated with climate mitigation.

Such projects include investment in renewable energy infrastructure and energy-efficient technology. An important thing to note is that the finances flow into stand-alone projects, i.e. they don't directly cause a decrease in the carbon emissions of firms.

However, despite low objectivity, such projects have resulted in the creation or retention of jobs around the world and reduced fossil fuels imports for countries. This implies that even if there is little improvement on the individual firm level, credible progress has been made on a national level.

The JRC (Joint Research Centre) study (Fatica and Panzica, 2020) employed econometric analysis, to analyse matched bond-issuer data. The results indicated that green issuers successfully decreased the carbon intensity of their assets, specifically when refinancing initiatives were taken up for existing projects. It also highlighted that the additional cost of external reviews for bonds improves reputational standing, promising more incentives to the issuer.

Some of the most impactful green bond reports highlight projects

undertaken by the World Bank. Having issued approximately USD 17 billion worth of Green Bonds in 24 currencies, the organisation has undertaken projects in several sectors like energy, agriculture, forestry and fishery in countries like Turkey, Armenia, China and India. With proper allocation of funds, these projects have successfully avoided 15000-30000 tCO2 equivalent emissions annually in each country. Focus on a climate resilient agriculture through such projects has also facilitated proper use of natural resources in the agricultural sector and decreased the amount of agricultural waste being generated (World Bank Sustainable Development Bonds Impact Report FY20).

THE MISSING PIECES

At a time when demand heavily outpaces supply, it becomes necessary to evaluate the progress that these financial instruments have made towards mitigating the looming threat of climate change. Many studies suggest that there is a disconnect between issuers' climate targets and existing green bond frameworks, resulting in gaps in post-issuance reports (Tuhkanen, Vulturius, 2020).

The gap exists mainly between green bonds and corporate climate targets. Since transitioning to a carbon-free model poses reputational and financial advantages, a lack of transparency may increase 'greenwashing' attempts, wherein these products will be used to mislead consumers about the company's carbon footprint. However, the involvement of non-party stakeholders is integral to the polycentric approach of the Paris Agreement to stimulate legal and policy frameworks set by the UNFCCC (Chan, Brandi, and Bauer 2016).

In such a situation, it's important to create a set of principles that can effectively create a solution to the climate crisis. These should target eliminating informational asymmetry and restrict the scope of misinterpretation to avoid greenwashing. The main objective here is to achieve transparency to quantify the footprint of the economic activities undertaken through such investments.

CONCLUSION

The green bond market has grown organically and holds the potential to mobilise long term climate finances from a wide variety of sources.

It has been a catalyst in achieving goals outlined in the Paris Agreement and the Sustainable Development Goals of the UN. However, there is still potential to grow and refine the framework within which this market operates. There is a dire need to integrate impact indicators that focus less on offsetting and more on reducing emissions.

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PERSPECTIVES

SOURCE: IBERDROLA

COP 26: DRIVEN BY CAPITALISM OR THE URGENCY OF CLIMATE CHANGE?

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INTRODUCTION

At the 26th Conference of Parties (COP 26) held at Glasgow, Scotland, from October 31 to November 12, 2021, over one hundred countries agreed to cut methane emissions by 30% by 2030. Several announced "net-zero targets" and pledged to phase down unabated coal power. Are these responses to climate change under the system of capitalism enough to curb the crisis? Several environmentalists answer no; here are some reasons why.

THE CARBON FOCUS OF NET-ZERO TARGETS

According to the Sixth Assessment Report of the IPCC (Intergovernmental Panel on Climate Change), "net-zero CO2 emissions" or "carbon neutrality" is defined as "anthropogenic CO2 emissions being balanced globally by anthropogenic CO2 removals over a specified period."

So what are the problems with net-zero targets? First, they only apply to carbon dioxide, not other greenhouse gasses. They also overlook other forms of ecological destruction linked to climate change, for example, biodiversity loss.

Second, as explained by Nagraj Adve, they only address the reduction of carbon dioxide by expanding existing natural processes or implementing new technological ones.

Third, net-zero emissions stabilize global warming irreversibly at the level it has reached for thousands of years. In his paper, *Global Warming in the Indian Context: An Overview*, Adve refers to a 2018 IPCC report explaining that all anthropogenic emissions immediately reducing to zero would mean less than 0.5 degrees celsius of further warming. However, this will add to the current 1.1 degree rise (Adve 2020).

The capping of the climate crisis is seen as a two-step process. First, stopping CO2 emissions. Second, drawing them down by practices like expanding the forest cover. This commercializes corporate control

over forests because they can then be sold as a commodity. Planting trees is also not equivalent to building a forest. This further disadvantages forest-dependent communities. Forests are not even a reliable sink for CO2 (Adve, 2020). For example, the Amazon forest now has a greater emission than consumption of carbon dioxide.

THE BINARY OF DEVELOPED AND DEVELOPING NATIONS

COP26 also featured a promise by developed countries to help finance the adaptation of cleaner technologies to phase out coal in developing countries. Adve highlights the insufficiency of analyzing national carbon contributions and using the developed-developing binary when it comes to bridging technological gaps.

One reason is that "a nation-state framework of analyzing global warming chooses to ignore these huge internal differences of income and wealth" (Adve, 2020, p. 18). Adve gives the example of successive Indian governments arguing that India's contribution to global emissions is very low. But the direct cause of this is the low emissions by India's poor. The richest Indians cause plenty of carbon emissions and this inequality gives the nation a scapegoat.

He highlights that COP 11 (of the Kyoto Protocol) did not require developing countries to sign, including India and China, which left some of the world's largest emitters unchecked (Adve, 2020).

O'Connor puts forth another argument that growth in trans-national activity is accompanied by high unemployment in developed countries and poverty in developing countries. "Increasingly it is evident that capital has no loyalty to any particular people or place, only to the imperatives of its own reproduction" (O'Connor, 1994, p. 3).

This also allows the biggest contributors of global emissions to exercise pressure over developing countries, presenting an unequal balance of power in the hands of the major climate-change contributors.

VAGUENESS OF POLICIES

In *Winning Coalitions for Climate Policy*, Jonas Meckling, Nina Kelsey, Eric Bieber, and John Zysman criticize the ineffectiveness of existing policies such as carbon pricing. They encourage specificity in climate policy in order for them to be easily understood and politically binding (Meckling, Kelsey, Bieber, Zysman, 2015)

This was seen at COP 26 with the increasing jargon being used to frame climate policy presenting language barriers (such as “net-zero”) and the political loopholes they often allow for rich industries.

Evan D. G. Fraser and Warren Mabee offer an explanation to the vagueness of international policy in their article, *Summit: vague answers to well-known problems?*. They explain that summits sponsored by bodies such as the United Nations, for example, COP, mandatorily must respect national sovereignty. This may conflict with policymaking as nations worried about effects on their domestic policy, challenge climate-change negotiations. The World Trade Organization even forbids the differentiation of internationally traded goods on the grounds of their production methods. This limits basing trade policy on environmentally beneficial standards.

Cunha said that “even the way capitalism deals with the problem of pollution is configured by alienation: everything can be discussed, but the mode of production is based on commodification and maximization of profits” (Cunha, 2015, p. 4).

One simply cannot alienate themselves from natural phenomena like geographically-close cyclones or floods. Such effects are felt unequally due to factors including socio-economic and geographic backgrounds, which highlights the necessity of representation from the most affected people and areas at international fora to provide insights in formulating policy. The rich, white men at global policy fora do not experience the daily lives of the most affected people and areas of the climate crisis.

This presented another issue: COP 26 was called the most exclusionary COP to date by Rachael Osgood, the director of immigration at COP26 and activists who claim the exclusion of thousands of frontline communities from the global South (Taylor, 2021).

Greta Thunberg said in her speech at COP 26 that “it is not a secret that COP26 is a failure, it should be obvious that we cannot solve a crisis with the same methods that got us into it in the first place” (Thunberg, 2021). Capitalism is a system that relies on a stable climate and functioning ecosystems but destroys this very aspect. Are our leaders’ responses to climate change under capitalism enough, or do we need to change the system completely?

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CLIMATE CAPITALISM: PAVING THE WAY FOR A GREEN AND CLEAN ECONOMY- THREATS, OPPORTUNITIES AND SOLUTIONS

ARUSHI ARORA, THIRD YEAR, LADY SHRI RAM COLLEGE, UNIVERSITY OF DELHI

INTRODUCTION

Climate Change is probably one of the most debatable topics of this decade. While there may be a lot of ambiguity and speculation on how we plan to tackle it and how it impacts the status quo, one thing is crystal clear- Climate change is no longer a marginal issue. It is no longer a problem or threat for those who believe in it. It is real, and it is urgent. Awareness alone isn't enough anymore, and we are already experiencing the wrath of adverse climatic conditions through drastic impact on health, economy and life on earth at large.

As we struggled to battle it out with an invisible threat that has engulfed the entire planet, our ignorant business practises, rampant industrialisation and sub-optimal policy ambition added fuel to the fire. As the raging pandemic laughed in our face, it was a sheer reminder of the fact that the natural balance, when disturbed, comes with a ripple effect that cripples economies. No amount of preparedness can help us mitigate climatic risks.

but the real question is, how do we bring about changes in the way we live? In a world where fossil fuels are a major source of energy and profit motive lies at the hearts of businesses, it is very convenient to side-line the climate crisis as a long-term consequence with no immediate effect. Why would any major company choose to invest gargantuan amounts of money into investments that promise a green and clean future?

Genuine concern for the future may be a reason that drives individuals to make conscious decisions, but corporations are not that easily convinced.
Here is a crackdown of the possible reasons that may drive (or force) major companies and corporations to hop into the green economy bandwagon: -

INVESTOR SENTIMENT AROUND GREEN INVESTMENTS IS LOOKING UP

Investors seem to be waking up to the risk of the climate crisis that lies

ahead of us. Bill Gates led 'Breakthrough Energy Ventures', the cleantech venture capital fund investing in complex technologies including energy storage, electric aviation, synthetic palm oil, zero-carbon steel and hydropower turbines makes it clear that things on the clean-tech front are looking up. Stocks and Shares in solar and wind energy businesses, electric vehicle companies, and environmental technology pioneers have been on the rise for months, challenging fossil fuel rivals' position.

OPPORTUNITY TO GAIN A COMPETITIVE ADVANTAGE AND CAPITALISE ON A GROWING MARKET

We need huge investments and funds for adaptive measures. Undoubtedly, it is extremely costly for businesses to invest in green infrastructure and even riskier since the gains would not materialise immediately. However, long-term sentiment does suggest that those who catch up on the curve right now will gain an unprecedented competitive advantage. FICCI, India, proposing incentives like total exemption in import duty on biogas engines, state government exemption in taxes on organic manure and exemption of duty on energy produced by treating solid waste are a few measures to lure investors into environment business.

CHANGING REGULATORY LANDSCAPE MAY ADD TO THE URGENCY

The changing regulatory landscape will also be a driving factor for polluting companies to switch gears. The government, however, has to pay heed to encouraging the corporate behaviour they want instead of deterring the kind they don't. Needless to say, four-fifth of our energy requirements are fuelled by fossils, but this needs to change. Reduction in emissions will not be achieved by halting the economy but slowly phasing in better economic models, innovative and sustainable solutions and rewiring of business practises. The United Kingdom, for instance, announced this week that it would ban the sale of new petrol and diesel cars and vans from 2030 to cut carbon emissions. Increasing regulatory pressure is both essential and crucial in shaping how the world readjusts and leans towards a green economy. The Paris agreement to keep the temperature level 2 degrees Celsius below pre-industrial levels by 2030 can only be achieved if we act now.

MARKETS ARE NOT FREE AND FAIR ANYMORE

Free markets have worked wonders in the past. Free-enterprise has enabled us to reach where we are today. Capitalism and globalisation have led to growth spurts that are unmatched.

However, the price in the market today fails to reflect the true cost. This undoubtedly has led to market failure. To explain with an example, the last decade saw fossil fuels and energy being priced too low. This led to excessive consumption. The low-price tag failed to reflect the true cost of carbon to society. We now begin to realise these costs in the form of increased healthcare expenditure and new diseases.

PLAUSIBILITY OF SOLUTIONS WITHIN A CAPITALIST SYSTEM

The capitalist system extensively integrates both corporate and national interest. We can initiate the movement towards shifting the epicentre of growth from short-term profit motives to a sustainable growth trajectory. The enthusiasm to tap into the sustainable investment market is gaining traction but only the support of industry giants can help make these early signals bring fruit. 70% of the world's pollution traces back to 100 companies. Policies and products from these companies trace back to individual behaviour. As people become more aware of what they eat, how they travel and where they work, and as more and more people understand the damaging impact of carbon emissions, it will be extremely difficult for businesses to turn a blind eye to climatic concerns. At the end of the day, the real power or the current global trends do trace themselves back to consumers and individuals.

While many countries and big techs have vowed to go carbon neutral and even carbon negative, realising results holds utmost importance here. Very few companies, at present, record their emissions and even fewer disclose them. This needs to change. Accountability and transparency will lie at the root of this green recovery. As we stand at the brink of recovery from a pandemic, we stand to gain an opportunity to build a business model that keeps both climate and profits in mind. Now this may sound odd. If you think about saving the world, it seems imperative that profits will plunge. But to our and the planet's relief, that's not exactly true and climate capitalism is the key to achieving this delicate balance, a shift from efficiency to resilience.

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TRADE IN ESTS: SIGNIFICANCE AND CHALLENGES

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INTRODUCTION

The world is in a climate emergency - a code red for humanity, cites the IPCC 2021 report. With a careless attitude, we keep on scratching the earth. The impact of climate change has been profound throughout the globe in the recent decade. Impacts of Climate Change know no political boundaries. What happens on one part of the globe will have some impact at some time on all other parts. Since it is a global crisis affecting all, we need a holistic and ecological perspective to tackle this crisis. Technology has substantially shaped our lives till now in all aspects. It has caused many ecological and social problems, but ironically it is also the key to address this global challenge. Such as the Environmentally Sound Technologies or ESTs, which are more sustainable and can be used to lessen climate change impacts.

WHAT ARE ESTS?

Agenda 21 of the Rio de Janeiro Summit described ESTs as the technologies that "protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes'' (1992 p. 34.1). So basically, they are green technologies with lesser opportunity costs. To make it simpler to understand, non-conventional energy sources (like solar PV cells), filtering machinery for water, filtering machinery for gases, products related to air pollution control, waste incinerators, natural fibres, electric vehicles are some of the examples you can identify as ESTs or Environmental Goods(EGs).

ESTs were first emphasised during the Rio Earth Summit in 1992 and ever since then, have become a major component of international environmental cooperation. As put forward by many experts, Trade in ESTs can scale up the use of cleaner technologies by facilitating market creation and expansion.

TRADE IN ESTS - IMPLICATIONS ON DEVELOPING COUNTRIES

UNEP states that EST trade provides a triple win opportunity for the environment, economy and people in developing countries (2018 p.1). A boost in EST trade will promote economic development as well as protect the environment. Transfer of ESTs to low income developing countries will lead to creation of jobs in the concerned sectors. It will promote innovation and support domestic technology development, bringing the costs down. But developing countries foresee many problems related to transfer of technology in ESTs. Intellectual Property Rights (IPR) prohibit access to such technologies, as licensors and owners of these technologies keep prices prohibitively high. Even while transferring the technology, the owners may not transfer the related know-how to effectively utilise the technology. In another argument, IPR monopolists sometimes refuse to sell the technology, fearing competition from low-cost manufacturing in developing countries.

On the other hand, developed countries hold that a strong IP regime would encourage investment in R&D activities and would enhance the confidence of licensor firms into transferring the technology to developing nations.

In the context of establishing an effective trade regime in ESTs, the developing countries often cite the Doha Declaration on Public Health, 2001 that allows access to patented medicines through compulsory licensing. However, the developed countries assert that the concerns of developing countries about patents on ESTs are built on a wrong comparison with medicine technologies since ESTs are radically different from medicine technologies.

PERTAINING CHALLENGES

While emerging economies such as China have remarkably increased their share in global EST trade, many low income developing countries have not yet fully benefited from EST trade. While tariffs have been subsequently reduced for many ESTs, further reduction could help facilitate a smoother trade in ESTs. Some are of the opinion that trade liberalisation can facilitate market expansion and growth of EST trade. At the enterprise level, shortages of skilled labour to provide services related to the design, installation and maintenance of ESTs possess a challenge. Furthermore, lack of information and knowledge or technical know-how regarding ESTs act as a barrier to growth in EST trade. Technology owners often cite IP rights as the reason for not

transferring the technologies.

CONCLUSION

Trade in ESTs is increasing with the growing participation of developing countries. Since developing countries are becoming active players, world trade in ESTs is showing an upward trend, increasing by almost 60% from USD 0.9 trillion in 2006 to USD 1.4 trillion in 2016, with a peak of roughly USD 1.6 trillion in 2014 (UNEP 2018). Trade in ESTs will increase international cooperation on access to science, technology and innovation. There are many untapped opportunities and great potential for achieving the sustainable development goals. Development, transfer, dissemination and diffusion of ESTs will not only benefit low income countries, but also protect the environment. The UN Environment Report on trade in ESTs reveals significant potential for developing countries to benefit from trade and development of renewable energy technologies and other environmental goods and services. ESTs can help countries realise Sustainable Development Goals (SDGs).

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ENERGY TRANSITION AS A STEP TOWARDS REMEDY FOR THE PROBLEM OF CLIMATE CHANGE

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Climate change refers to the changes in the temperature and the weather patterns of the earth. The natural course of change that takes place in climate is very slow and its impact is negligible. But since the Industrial Revolution, the pace of the change in the climate has risen significantly. The overuse of fossil fuels for energy production to meet the ever-growing needs of mankind has led to several problems like depletion of resources, global warming, etc. Burning of fossil fuels leads to the emission of greenhouse gases which act as a blanket trapping the sun's heat and raising the temperature *(Energy Transition, 2022*). The downsides are not just seen in the form of climate change but it also has a negative effect on the economies of the countries. According to research by the Swiss Re Institute, the largest impact of climate change is that it could wipe up to 18% of GDP off the worldwide economy by 2050 if the global temperature rises by 3.2 degree Celsius (This is how climate change could impact a global economy, 2021). The changes in the weather conditions also affect human lives significantly. So keeping in mind the following disadvantages of the excess use of fossils, we humans performed a shift in the sources of energy production and called it energy transition.

Energy transition can be defined as the process of shifting from fossil-based energy production to zero-carbon emission energy production. The main aim of this transition is to lessen the burden, which has been put on fossil fuels by humans. Coal is the major source of energy production but it also has a very high carbon emission. It was not just after the industrial revolution that humans practiced an energy transition rather it was performed in the pre-industrial revolution era too when we shifted from wood to coal as a method of energy production. The use of fossils for energy production has always had an impact on climate but that impact became vehement after the Industrial Revolution. Coal and wood are natural resources and are non-renewable in nature. That is why,

when humans became aware of the downsides of these fossil fuels, they started shifting from non-renewable energy sources to renewable energy resources like solar energy, wind energy, hydro energy, etc. Since the commencement of human civilisation, we have used majorly wood, coal, and petroleum as energy production sources. Coal and wood have been in use since cavemen times. Wood as a resource was easily collectible and in abundance, whereas coal which has more latent heat than wood and burns for a longer duration requires some knowledge and skills for its excavation. The burning of these fossil fuels always had an impact on the climate, but in the pre-industrial revolution era, the impact was negligible. As the humans explored, their knowledge and needs rose, and so did their energy requirements leading to uncalculated usage of fossils for energy production. Recent measurements from the Mauna Loa Observatory in Hawaii showed that the atmospheric carbon-dioxide level exceeded 417 parts per million (ppm) whereas the pre-industrial levels were about 278 ppm. In other words, carbon dioxide levels in the atmosphere are reaching levels 50% higher than before the industrial revolution *(How CO2 levels have changed since the industrial revolution, 2021).*

The effect of global warming on the economies of the countries is rising day-by-day. Damage to property and infrastructure, lost productivity of people due to mass migration are ways in which economic growth is influenced. The agricultural sector sees the maximum inflation due to the shortage emerging due to climate change (Wade K, 2022). Extreme climatic conditions, frequent droughts lead to reduced crop yield. Higher global food prices in the end squeeze the consumer's income. The burden of climate change will be felt mostly by the developing countries of the world. Sectors like agriculture and forestry tend to be the backbone of the developing countries, and changes in these sectors will hugely impact the economies of the developing countries. Damage to the capital stock and labor supply means losses for businesses which, in turn, weakens the economy. The labor productivity will also weaken as the world economy adjusts to the changing climatic conditions. Therefore, the general consensus along with the available evidence suggests that we should act sooner rather than later to avoid future costs.

Humans transitioned to a sustainable form of energy to cope up with the losses done to the climate and economy

due to the overuse of fossils. Renewable energy sources such as wind, hydroelectric power, solar and geothermal energy are generally more sustainable than fossil fuel sources. In the proposed climate change mitigation pathways that are compatible with limiting global warming, we phase out coal-fired power plants, and try to produce the major electricity from clean sources such as solar and wind. The shift is towards using electricity instead of fuel for transportation. Wind and solar energy produced 9.4% of worldwide electricity(*Das S, 2021)* as in 2020. The energy production share is rising rapidly while the cost is falling continuously. The Intergovernmental Panel for Climate Change (IPCC) estimates that 2.5% of the world's Gross Domestic Product (GDP) should be invested in energy sources to limit global warming(*Wikipedia, 2022*). Several initiatives are also being taken by organizations like the UN to spread awareness about climate change. The recent COP26 summit held in Glasgow, Scotland, the United Kingdom which observed participation from several countries, is a fine example of such programs.

In the end, I would like to conclude with the hope that the pieces of evidence suggest that humans have become aware of the downsides of climate change, and are also working towards battling the problems faced due to climate change. The economies of developing countries can also bounce back with financial and infrastructural help from the developed nations.

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ELECTRIC VEHICLES: ARE WE HEADING TO A GREENER DESTINATION?

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The world economy has been exploding with growing production and expansion all the while posing serious repercussions for the environment. Economic growth at the cost of the environment has tremendously negative impacts and reverses the growth in terms of reduced social welfare. The environmental impact of economic growth includes increased levels of pollution, a higher risk of damaging natural habitats and global warming. These ramifications result in the vulnerability of human lives posing existential threats for most life on the planet, especially for mankind.

With these profound negative impacts stripping off our planet of its ability to support life, it is of utmost importance that measures should be put in place to ensure a safe environment. Owing to improved technologies and optimized utilization of resources, several attempts have been made to control the exponentially rising environmental hazards.

One of the major reasons for increased greenhouse gases in the atmosphere is due to widespread burning of fossil fuels. To combat this plaguing issue, an attempt to mitigate the hazards posed by fossil fuel cars is being addressed by a new technology: Electric Vehicles (EVs).

EVs have been hailed as a new technology for reducing oil consumption and combating climate change around the world. Electric vehicles are powered by electrical energy that is stored in a battery pack. Several leading companies have decided to transform their manufacturing units to more electric-based vehicles and aim to stop selling gasoline-powered cars. General Motors has claimed to switch to battery-powered vehicles by 2035 while Volvo claims to have an all-electric lineup by 2030 (Tabuchi & Plumer, 2021).

Certain researchers have suggested that electric vehicles have smaller carbon footprints than gasoline-powered cars, regardless of where the

their electricity comes from (Earthjustice, 2021). Power networks, which rely on a variety of sources ranging from fossil fuels to clean renewable energy, provide the electricity that charges and fuels the battery of electric vehicles. As energy grids vary from region to region, it follows that the carbon footprint depends on the source of the electricity produced.

Running electric cars has lower greenhouse gas emissions than gasoline-powered cars, as revealed in a study by experts at the Union of Concerned Scientists, reinforcing the benefits of electric vehicles (Choudhury, 2021). The carbon dioxide emissions from these cars, however, will be high if they are not powered by solar panels, wind turbines, or even nuclear or hydroelectric power.

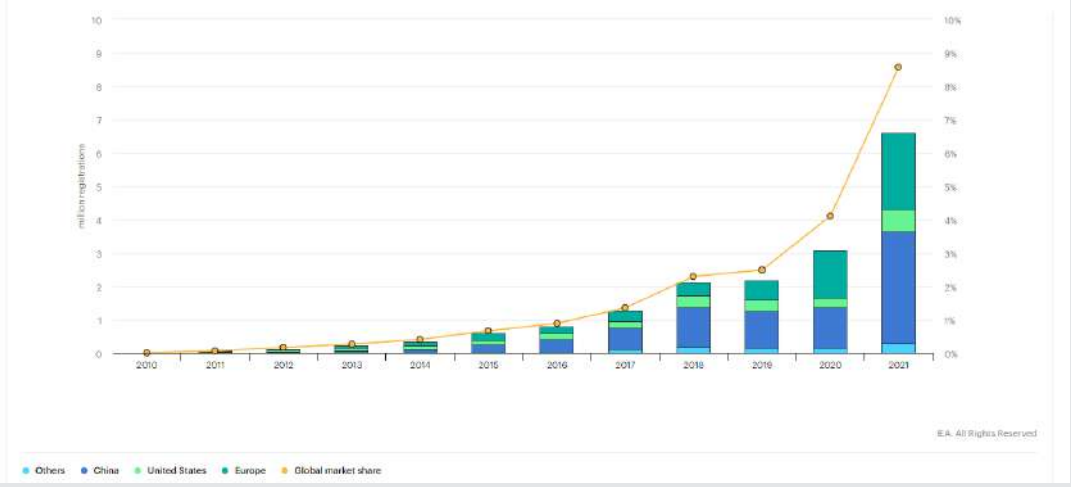
When compared to gasoline cars, most electric cars today create much less global warming emissions. For example, throughout the course of its lifetime, an all-electric Chevrolet Bolt is estimated to emit 189g of carbon dioxide for every mile travelled (Tabuchi & Plumer, 2021).

However, it's estimated that a gasoline-powered Toyota Camry emits 385g of carbon dioxide per mile. A new Ford F-150 pickup vehicle emits 636g of carbon dioxide each mile, making it even less fuel-efficient (Tabuchi & Plumer, 2021).

In 2021, almost 6.5 million EVs were sold, in comparison to the 3.1 million in 2020, which is a 108% rise in sales (Boyle, 2022).

Even though electric vehicles seem like a plausible solution to overcome

Global Sales of EVs 2010-21



Source: Boyle, 2022

environmental hazards, they are more emission-intensive during the manufacturing process because of their batteries. The lithium-ion cells that power most electric vehicles, like many other batteries, rely on raw minerals like cobalt, lithium, and rare earth elements, which have been linked to serious environmental and human rights concerns, particularly cobalt. As a result of cobalt mining, hazardous slags can leach into the environment, and studies have shown that nearby communities, especially children, are exposed to high levels of cobalt and other metals (Ambrose et al., 2021). Extracting the metals from their ores also requires a process called smelting, which can emit sulphur oxide and other harmful air pollutants.

The water required for producing batteries means that manufacturing electric vehicles is about 50% more water-intensive than traditional internal combustion engines (Tabuchi & Plumer, 2021). Supply chains have stated they are keen on developing batteries that decrease cobalt composition in batteries. Yet, because mines are so prevalent, it is not feasible to make these commitments, according to Mickal Daudin of Pact, which is a non-profit organisation that works with local a mining communities in Africa (Tabuchi & Plumer, 2021).

While electric vehicles may not emit harmful gases while being driven, they are not zero-emission vehicles. The stages of manufacturing, energy production and at the end of their life cycle are where there is a likelihood of emission of pollutants. According to a study from the International Council of Clean Transportation (ICCT), 99% of lead-acid batteries (in gasoline-powered cars) in the conventional car industry are recycled in the United States (Gonçalves, 2020). On the other hand, there is a very specific mixture of chemical components and tiny amounts of lithium in electric vehicles' lithium-ion batteries. Lithium, for example, was only collected at a rate of 5% in 2011 in the EU, with the rest either being incinerated or disposed of in landfills (Gonçalves, 2020).

According to UN estimates, 68% of the world's population will live in urban areas by 2050, so issues like traffic, parking, and high consumption rates will also need to be addressed (United Nations, n.d.). To ensure that electric vehicles are a sustainable mode of transportation in the future, certain changes will need to be incorporated in the manufacturing and production

process.

One solution can be to tackle used electric vehicle batteries by giving them a second life since they can support the electric grid of buildings and store energy from wind or solar electricity sources. Experts ascertain that used batteries contain valuable metals and other materials that can be recovered and reused. The percentage of lithium batteries currently being recycled is negligible but researchers suggest that it is soon bound to increase.

Several automakers, notably Nissan and BMW, have experimented with grid storage using old electric vehicle batteries. General Motors has said it designed its battery packs with second-life use in mind (Ambrose et al., 2021). Nevertheless, reusing lithium-ion batteries comes with its own set of challenges, including extensive testing and upgrades to ensure that they perform reliably and efficiently. But if the process is done properly, used car batteries can be continued to be used for a decade or mode as backup storage for solar power, as suggested by researchers at the Massachusetts Institute of Technology.

Since the batteries can be reused for over a longer length of time, this would help mitigate the environmental impacts of their manufacturing process. Solutions are constantly being developed to make electric automobiles greener, more eco-friendly, and long-lasting. And although there is room for improvement, electric cars today are already, in general, more eco-friendly along their lifecycle than conventional fossil fuel cars, especially if they are powered with clean electricity. Therefore, electric vehicles have the potential to replace conventional cars if their energy is harnessed in a sustainable manner that fosters a cleaner, greener environment.

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THE INTERTWINING ECONOMICS OF 5G AND CLIMATE CHANGE IN INDIA

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INTRODUCTION

India is a price-sensitive market, and in the long run, the sustainability of the Indian mobile industry is at stake. 5G offers an opportunity to promote the country's development of a new generation of digital connections and create an income stream. This new technology will be capable of not just ensuring fast internet on our phones, but also helping power IoT (Internet of Things) networks to run connected cars and homes smarter (Agnoletto, 2020). However, 5G is yet to roll out in India even though Airtel, Jio, and Vodafone Idea have been provided with a trial spectrum for 5G and once it is over, 5G is expected to go live by the end of the year 2022. But before 5G takes its toll on the lives of people, let's deep dive into its consequences on the economy and climatic conditions of India (Dhapola, 2021).

THE 5G ECONOMY

The 5G connectivity is a revolutionary step across many sectors in India. This fast and intelligent internet connectivity system of 5G promises a prospective transformation and delivers socio-economic benefits to India. It is predicted that during 2023 - 2040, the contribution by the advancement of 5G will give a boom of approximately $450 billion to the Indian Economy (Agnoletto, 2020). The network needs a combination of low-frequency spectrum (i.e. below 1 GHz), medium (e.g. 3.5 GHz), and high (e.g. millimeter wave spectrum). Each range offers distinct performance characteristics that will help India achieve its 5G vision. 5G mmW spectrum allocation - with 26.28 and 40 GHz is the priority, due to high throughput and efficient use of spectrum over small distances. Also, in the years to come the mmWave spectrum is also expected to play an important role in meeting the demand for improved mobile data services.

Alongside, India also imposes a challenging ground for the operators to invest in newer technologies. This is because even though the market penetration of smartphones has been substantially increasing, it faces the

challenges of having some of the lowest Average Revenue Per Unit (ARPU) globally. However, the 5G mmWave shines as a ray of hope and is expected to be potent in enabling enhanced mobile broadband(eMBB), fixed wireless access (FWA), ultra-reliable, low latency communication, and massive internet of things(MIoT). The amalgamation of 5G, artificial intelligence, the internet of things, and smart platforms could potentially disrupt the market and deliver significant benefits to consumers, enterprises, and society (Agnoletto, 2020).

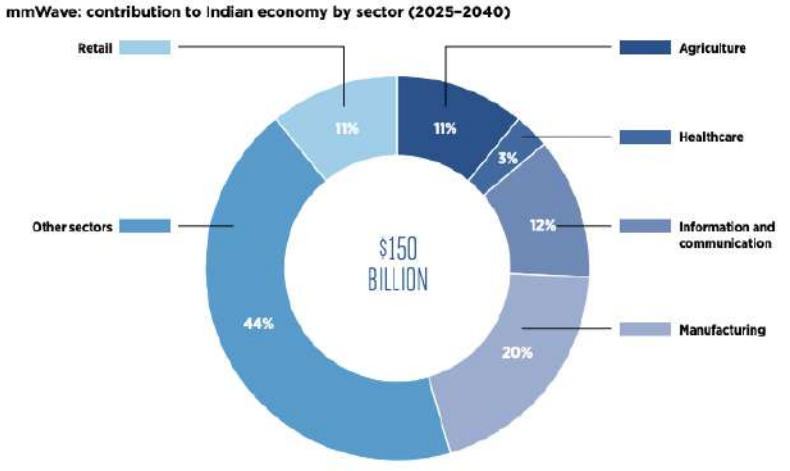
These changes brought forth by 5G connectivity will contribute towards a major development of the manufacturing industry, reflecting profitability and willingness to adopt innovations; it will account for 20% of the total contribution by 2040 followed by ICT (12%), retail, and agriculture (11%). Also, the benefits towards the healthcare sector are approximated to amount to $4 billion in the years 2025 - 2040 (Agnoletto, 2020).

THE CLIMATE FACTOR

5G connectivity is significantly faster as compared to 4G and is capable of delivering up to 20 gigabits/second on the peak data rates and 100+ megabits/second on the average data rates. It is designed in a manner to support a 100x increase in traffic capacity and network efficiency (WHAT THE FAQ: What Is the 5G Network and How Will It Impact the Environment and Our Health?, 2021).

Although no concrete proof has been established yet regarding the impact of the 5G network over the climate on the country, the speculations, some even from the scientists, paved their way into people's minds.

mmWave: Contribution to Indian Economy by Sector (2025-2040)



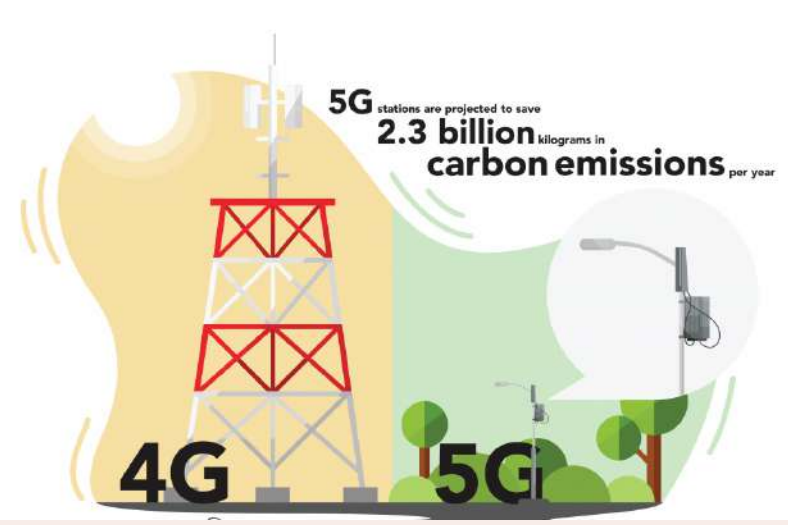
Source: GSMA, 2020

The claims are such that the 5G connectivity will emit powerful radiation and require multiple towers to be set up; even penetrating wildlife areas can cause substantial harm due to the increased exposure, to humans as well as animals. These radiations could also result in an increased amount of temperature posing a risk for the climatic conditions of India. Multiple scientists and researchers, researched a lot about these radiations, and numerous published research papers and articles cited that these radiations could be the beginning of multiple severe and traumatic health issues for humans (WHAT THE FAQ: What Is the 5G Network and How Will It Impact the Environment and Our Health? 2021).

However, on a positive note, many are also presuming that the advancement of 5G could bring changes that could minimize the risk of climate change and bring us closer to a greener future. With the 5G network, climate change technologies, smart meters, and smart energy grids, managing and monitoring the consumption of energy would be easier due to which a health check can be kept of the planet. It can also help in smart water management, improved traffic management leading to fewer congestions, and smart buildings with technologically advanced lightings all of which are contrary to the popular belief yet based on thorough research (Nell, 2022).

A MERGER OR A CLASH?

India has the potential to gain $11 trillion in economic value by keeping a check on climate change and reducing carbon emissions (Niharika Sharma, qz.com, 2021). However, if India did not act towards this the scenario could be a contradictory statement.



Source: CENGN,2021

Also, the World Health Organization (WHO) says "no adverse health effect has been causally linked with exposure to wireless technologies." But this statement has been on the basis that only a few studies have been done to understand the implications of connectivity. Amid the concerns, the WHO is conducting "a health risk assessment from exposure to radio frequencies, covering the entire radio frequency range, including 5G." This assessment report will be published by 2022. However, not everyone is convinced. Over 190 scientists from 39 countries wrote an appeal to the United Nations and WHO in 2017 warning against exposure to such radiation and calling for stricter wireless technology guidelines, arguing that these pose health risks and will contribute to a new form of environmental pollution. They claimed that the WHO had not done enough to issue protective guidelines on the subject and demanded that the 5G rollout be halted until potential hazards were investigated by independent scientists (Dhapola, 2021).

CONCLUSION

Concluding, as of now, it cannot be projected whether 5G will turn out to be in favor or not of the climate conditions and subsequently its impact on the economy but the turn of events will certainly lead to some major changes within India and its fight with the climate crisis and now only the time can tell the future of Indian economy.

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IMPACT OF 'THROWAWAY ECONOMY' ON CLIMATE CHANGE

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INTRODUCTION

Countries have been found to be ignoring the tremendous impact of the "throwaway" economy on global warming emissions, according to a recent study, which found that more than half a trillion tonnes of virgin materials had been used since the 2015 Paris climate agreement. The throw-away economy refers to the prevalence of consumer objects with a limited lifespan, in which we discard items when they stop working or are no longer useful and replace them with new ones. This is in contrast to an economy where resources are limited when we expect an item bought to last a long time (Pettinger, 2021). According to data conducted by the organisation Circle Economy, 70 percent of greenhouse gas emissions are associated with the creation and usage of things, ranging from clothes to food to planes to buildings. However, in its annual report on the condition of the world's material consumption, researchers stated that national climate promises to decrease emissions focus solely on fossil fuel use, ignoring the world's growing desire for things (Agence France-Presse, 2022).

PROS OF A THROWAWAY ECONOMY

A throwaway economy encourages mass production of goods and economies of scale. Manufacturing new products may be less expensive than repairing existing ones. Cheap goods make them more affordable to a wider range of people. The throwaway economy enables and encourages continuous modernisation. For example, replacing our phone every 2-3 years allows us to upgrade to a newer version with additional features (Pettinger, 2021).

THE COSTS OF A THROWAWAY ECONOMY

1. Low-Quality Products: A throw-away economy pushes businesses to manufacture low-quality items. Previously, if anything got damaged, we were more likely to complain but it seems to be easier to just throw it away and get a new one these days. It is easy to notice the low prices

whereas long-term durability is difficult to see. As a result, the motivation for enterprises is to manufacture things that are inexpensive and attractive.

2. Environmental Costs: Rather than having a single good that lasts a long time, we may have to buy new ones every couple of years. This has an environmental cost since it requires the use of scarce resources and additional transportation. As a result of our 'over-consumption' and usage of more environmental resources than required, there are external consequences to a throw-away economy. Toxins may be discharged into the economy as a result of the disposal of items. Old televisions with CRT (cathode ray tube) displays, for example, contain around 2-3kg of lead — a pollutant and neurotoxin.

3. Encourages Sluggishness: Throwaway economy encourages laziness in people. People do not give much value to the goods they buy. They also prefer to buy disposable cups and plates rather than doing the dishes, which adds to the number of trash sites and pollution.

4. Pareto Inefficiency: A throwaway economy is inefficient in the long term. We employ valuable metals and nonrenewable resources, the costs of which will rise in the future. (Pettinger, 2021).

HOW DOES IT AFFECT CLIMATE CHANGE?

Modern society is structured on the concept of buying cheap articles and disposing them when it breaks, even if it is repairable, based on convenience and a rising economy. By living in this manner, we pollute our environment, mostly with non-biodegradable materials such as plastic. This way of life is wreaking havoc on the environment and the world's resources. We're running out of landfill space and the cheap oil needed to manufacture these 'throw-away' items. It is unsustainable, harmful, and affects climate adversely (*Waste Reduction: The Throw-Away Society | EMS*, n.d.).

WHAT CAN BE DONE?

The solution rests in the development of a circular economy. We need to go beyond a single-use attitude. All items, particularly plastics, metals, and textiles, should be developed with the idea of recovering and recycling their basic components.

In today's economy, we take resources from the Earth,

manufactures items from them, and finally discard them as garbage — the process is linear. In a circular economy, on the other hand, we prevent waste from being created in the first place. The circular economy is founded on three concepts:

1. Get rid of garbage and pollutants.
2. Products and materials should be circulated (at their highest value)
3. Nature must be rejuvenated (MacArthur, 2018).

This is supported by a shift to renewable energy and materials. The use of finite resources is separated from economic activity in a circular economy. It is a strong structure that helps businesses, individuals, and the environment altogether.

The circular economy provides a model for a restorative and regenerative way of living. It makes good business sense. The world's largest corporations are increasingly agreeing — major brands like Marks & Spencer, L'Oréal, Mars and The Coca-Cola Company are now aiming toward utilising 100 percent reusable, recyclable, or compostable packaging by 2025 or sooner (MacArthur, 2018).

WHY DO WE NEED A CIRCULAR MODEL?

Circle Economy has established data that brings to light the escalating climate catastrophe. According to them, product manufacturing and implementation account for 70 percent of total greenhouse gas emissions. This applies to fashion, transportation, and even the structures we utilise on a regular basis. While the government is eager to talk about reducing dependency on fossil fuels, just one-third of the population is found to be considering circular economy options. According to the analysis, the world is currently consuming 70 percent more virgin fibres than it can fairly renew on its own. The weight of those materials is rising year after year. In 2016, the quantity was about 90 billion tonnes; by 2019, it had risen to more than 101 billion tonnes. Circle Economy reports show that 90 percent of virgin resources taken from the world end up as garbage. According to the organisation, just 8.6 percent of waste is being recycled (Buxton, 2022).

CONCLUSION

As we become more aware of the negative consequences of this way of life, we must make adjustments. It is vital that we make a transition to a more circular economic model that encourages repair, reuse and

collaborative activities such as borrowing products that you may only need to use once. The circular economy will also benefit the environment in the long run. It will safeguard our seas from the assault of plastics and microfibres, keep our shorelines clean, and keep landfill waste out of our soils. It is also very important that we figure out how to make changes to our daily routines that will help us reduce waste.

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INDIA AND COP 26: OPPORTUNITIES AND THREATS

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The 26th Climate Change Conference under the United Nations Framework Convention on Climate Change (UNFCCC) held in Glasgow, became a matter of world attention and marked the epoch of climate related political exchange. Conference of Parties(COP) is the supreme decision making body of the convention. All states that are Parties to the Convention are represented at the COP, where the climate mitigation approaches undertaken by them are scrutinised. What makes the COP26 climate conference even more unique is that the opinions of developing countries were voiced more strongly and persuasively (UNFCCC, 2021). The conference brought together 120 world leaders from across the globe and for 2 weeks, the world was riveted on all facets of climate change – the science, solutions, political will, and clear indications of action. The Glasgow Climate Pact is the fruit of intense negotiations among almost 200 countries over the 2 weeks, stupendous formal and informal work over many months, and constant engagement both in-person and virtually for nearly 2 years (United Nations, 2021).

"The approved texts are a compromise", said UN Secretary General Antonio Guterres. "They reflect the interests, the conditions, the contradictions and the state of political will in the world today." (UNFCCC, 2021).

During the COP26 convention, a host of decisions were agreed upon by both the developed and developing countries:

1. Support for Adaptation: Developed countries will double collective adaptation finance by 2025 from 2019 levels, for building resilience. The Glasgow climate pact also established a work program to define a global goal on adaptation, which will identify collective needs and solutions to the climate crisis already affecting many countries.
2. Need for stronger National Plans: Countries that have so far not updated new plans with reference to the Nationally Determined Contributions (NDCs) are urged to

present stronger national plans in the 2022 conference, instead of 2025, which was the original timeline.

3. Recognizing the emergency (Tacit Acceptance): All countries were persuaded to raise climate targets in line with the 1.5-2.0 degrees Celsius warming limit by the end of 2022 (Ghosh, 2021).

4. Moving away from fossil fuels: Countries were signalled to accelerate shifting away from fossil fuels and coal to renewable energy. Countries ultimately agreed to a provision calling for a phase-down of coal power and a phase-out of "ineffective" fossil fuel subsidies – 2 key issues that had never been explicitly mentioned in the decision of UN climate talks before.

5. Climate Finance: Developed countries fell short on their promise to deliver US $100 billion a year for developing countries. Voicing "deep regret", the Glasgow outcome urged the developed countries to fully deliver on that goal urgently.

India boldly voiced its interests in the Glasgow summit, with Prime Minister Modi emphasising that the world cannot achieve newer targets with old goals of climate finance.

a) Commitments

PM Modi committed India to becoming a 'carbon neutral' country through a 'net zero' goal by 2070 (BBC, 2021). The PM resisted the pressure for a 2050 deadline. This announcement was backed by Modi spelling out how the country would take key steps to achieve the target through a clear time-line for other sectoral targets:

1. Meeting 50% of India's total energy requirements from renewable energy.
2. Reducing 1 billion tons carbon equivalent of Greenhouse Gases from projected emissions by next 9 years.
3. Reducing carbon intensity (carbon emission per unit of GDP) by 45% by 2030 from 2005 levels.
4. Increasing the share of renewable energy from 450 GW to 500 GW by 2030 as part of Nationally Determined Contributions. (Narain, 2021)

b) Cogent Arguments

The PM, in his speech, emphasised how India has fulfilled its climate vows made in the past as well as under the Paris Agreement, but many developed countries have failed to do so despite big promises (Narain, 2021). India is the only country among the major economies which fulfilled its Paris pledges (NDCs) in letter and in spirit and has been on

track to achieve the rest of its goals. In fact, India's contribution in climate change mitigation far outstrips its role in emissions. The country with a population of 125 crores constitutes 17% of the global population but its contribution to the emission has been only 5% (Narain, 2021). Lashing out at the developed countries for their unfulfilled promises of mobilising climate finance of $100 billion per year by 2020, Modi reminded them of their responsibilities of climate support for developing countries.

c) Importance to Adaptation

Strategies were introduced by India to end the discrepancy regarding adaptation as a goal for mitigating climate change:

1. Our development policies and projects must entail "adaptation" as a major component. Projects like 'Nal se Jal'-tap water for all, 'Swachh Bharat'- clean India mission and 'Ujjwala'-clean cooking fuel for all in India, have provided adaptation benefits.
2. Many traditional communities have adequate knowledge of living in harmony with nature. "Preservation of lifestyles in compliance with the local conditions can also be an important pillar of adaptation" said the Prime Minister in his speech. (Mohan, 2021).

d) Amendments introduced by India

India objected to phase-out of coal and fossil-fuel subsidies. It recommended a switch from "phase-out" to "phase-down" with respect to coal power use in the final text, which was agreed during the last minute amendments to build consensus. The country even included points on "targeted support to the poorest and the most vulnerable in line with the national circumstances."

However, China was the first to 'mildly' object to this paragraph regarding coal power, after which India proposed a new version of it. What is even more galling is that China, which consumes 50% of the world's coal, sat pretty while we exposed ourselves to the scorn of the western media. Moreover, this differentiation between phase-out and phase-down is irrelevant without a deadline. India really did not gain anything by forcing such a change. We should have rather exposed the double standards of the developed countries related to finance and technology needed to meet the ambitious target announced by the Prime Minister.

Holistically, COP26 has proven to be

a crucial international platform where India could justify its contributions to global climate change and the related mitigation strategies. In retrospect, it is a huge challenge that India has undertaken to increase its renewable resources, to reduce the emissions, however, it is not unachievable. In order to implement this gargantuan task, India ought to have real commitments in the right direction, combined with stupendous efforts to meet its goal.

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THE NEW PANDEMIC- FOOD INSECURITY DUE TO CLIMATE CHANGE

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INTRODUCTION

The years 2020 and 2021 will be remembered as the years of the coronavirus pandemic. But, as we're dealing with COVID-19, David Beasley, the head of the UN World Food Programme (WFP), has warned of another peril on the horizon.

In 2019, about 700 million people were starved, and the United Nations had warned that another 132 million might be added to that total in 2020. The situation has been aggravated by the pandemic. Hunger was on the rise even before the pandemic, due to poverty, population growth, disease, violence, and climate change (FAO,2021).

As a result of the climate problem, an additional 183 million people may face famine by 2050. As our globe warms, it has an impact on how food is raised and delivered. When we talk about climate change, we frequently refer to the future influence that climate will have on human civilization or the environment. Climate change is already influencing, and will continue to influence humans. Since the early 1990s, the number of climate-related disasters such as excessive heat, droughts, and floods has increased.

DISTURBED BALANCE

Harvests have been diminishing, and crops have been damaged by pests such as the massive locust swarms that ravaged East Africa. Plant diseases, on the other hand, are getting more difficult to anticipate as they adapt to changing climates and develop in previously unexplored locations.

Food is becoming less nutritious as a result of climate change. When plants such as wheat, corn, rice, and soy are subjected to carbon dioxide levels expected for 2050, they lose up to 10% of their zinc, 5% of their iron, and 8% of their protein content. (FAO, 2021)

The oceans are also affected. As the water temperature rises, fish that like particular temperatures are forced to relocate. This indicates that folks who

now consume fish may need to discover alternative food sources in the future. Rising temperatures also mean that areas that were formerly favorable for cultivating specific crops are no longer so. Farming has moved to woods as it becomes more difficult to get a decent yield from existing farmland and as the population and need for food grows.

For example, in Brazil's Amazon, the forest has been cleared for farmland. As a result, circumstances have become warmer and drier, worsening droughts. Then there's water agriculture, which consumes over 70% of global freshwater, which is becoming increasingly limited in most regions of the world. Groundwater supplies and how to utilize them responsibly to irrigate crops and plants are poorly understood. Only 1% of agricultural land in Sub-Saharan Africa is fitted for groundwater irrigation, compared to 14% in Asia. (*How Climate Change Threatens Food Security (and Why We're All at Risk)*, 2021)

However, too much water may also be an issue. To provide an example, in May 2020, Bangladesh was attacked by a huge storm, Amphan, which was followed by major floods, destroying the rice harvest that the locals were raising. This resulted in a substantial food shortage as well as a decrease in agricultural productivity.

FINANCIAL CRISIS

Poor populations in cities that may not have the financial means to compete are among the ones most likely to suffer in a climate-disrupted society. Climate change has already had the greatest impact on those who are least equipped to cope with it. That impact will very certainly worsen in the future, disproportionately affecting those communities that are unable to respond due to a lack of resources, food, or money. It may also have an impact on individuals who produce food. Subsistence farmers harvest crops solely for their use and that of their families. Extreme weather and bugs have the potential to wipe out whole crops, leaving them with nothing. On a global scale, nations that rely significantly on food imports such as wheat and rice may suffer if global food supplies are insufficient and exporting countries keep more food for their people.

WAY FORWARD

As we work to establish a greener post-COVID world, several modifications may be undertaken. One of the most reliable methods is to

encourage individuals to eat more plant-based meals. Climate change has a huge impact on the food we grow and eat, and food systems which provide our meals, are also contributing to climate change and environmental degradation. Around a quarter of the world's greenhouse gas emissions are produced by the global food system. It has, therefore, been discovered that food systems alone will restrict the world from meeting the 1.5 degree Celsius climate change target within 30 to 45 years. Given that they require huge amounts of grain, water, and land for production, meat and dairy products have the highest carbon footprint. Eating less of both can help guarantee that everyone has adequate food and reduce global warming emissions. As the threat to crops grows, diversifying harvests is one answer. New drought-resistant and flood-resistant crop types are also being developed and are becoming more extensively employed. However, their performance may be contingent on favorable seasonal conditions. Forecasting nations, who are most vulnerable to famine and climate change, frequently have less resources to assist them in adapting. As a result, financial assistance is critical.

The victims are the poor, notably impoverished farmers in developing nations. They are the ones that have to deal with the repercussions. Furthermore, the types of measures necessary in terms of decreasing emissions or adjusting to the repercussions of climate change frequently result in increased inequity. The impact of climate change on food security will worsen the existing disparities on our planet, if they are not undertaken in a way that takes into account the needs and requirements of the most vulnerable sections of people.

As a result, the COVID-19 problem is a harbinger to the longer-term climate change crisis. Going ahead, we need to consider how to encompass redundancy, resilience, and variety into resolving this problem so that we aren't stuck in a single, vulnerable modality that works great when things are going well but collapses when things aren't.

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THE ECONOMIC COST OF WIELDING NUCLEAR ENERGY FOR CHANGE

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A BRIEF CONTEXT

Our venture into the world of nuclear energy started with a German chemist and his discovery of a radioactive element called Uranium in 1789. Numerous scientific operations and experiments confirmed the fact that tremendous amounts of energy were released by a self-sustaining chain reaction of radioactive atoms, which when controlled via a reactor proved constructive and when uncontrolled would prove to cause unfathomable amounts of damage. Following this, countless discoveries and major transformations have made the Nuclear Energy industry we see today worth a projected $58.4bn (Arbaaz and Prasad, 2022).

Atomic energy in the past has been harnessed for everything, from producing food and space propulsion to nuking entire cities in war, and it continues to have a major impact on our planet. Most of the buzz and intrigue around nuclear power came from its extensive exploitation in World War 2 when Fat Man and Little Boy were dropped on Japan and resulted in massive devastations and the end of the war. Convincingly enough, another such war wielding nuclear weapons would cause irrevocable damage both environmentally and economically, and as such the focus was shifted to more rational and commercial exploitation of atomic power.

The detailed physics of nuclear reactors remains irrelevant to our discussion about the economic impact that nuclear development over the years has caused and its future implications, however, harnessing energy from raw radioactive materials is costly precisely because of its physics. As a modern substitute for the traditional planet-damaging fossil fuel industry, atomic energy adoption as a sustainable and potentially clean and cost-efficient source of energy seemed promising. However, significant developments have taken place since its initial adoption and this article examines its economic impact.

AN ATOMIC ACCOUNT

The idea of “nuclear renaissance” was coined in the late ’90s and ’00s as a

response to climate change concerns.

Heat and electricity were first harnessed with an experimental breeder reactor (EBR_1) designed and operated by Argonne National Laboratory and sited in Idaho, USA. Commercial electricity was initially produced in December of 1951. The USA and the Soviet Union began their efforts in the research and development of nuclear reactors and 1959 saw the emergence of nuclear-powered surface vehicles after extensive application on submarines. Today, the use of nuclear power goes well beyond the provision of carbon-less energy and is useful in the treatment of diseases, diagnosis and medical assistance, and space missions amongst many others. The equipment and power plant market is expected to cross 49 billion dollars worldwide by 2025 (Statista, 2022).

By producing 1207 TWh of electricity, India ranks third worldwide.It is the only nation to have developed, demonstrated, and deployed nuclear reactors indigenously. In aiming to increase its atomic energy contribution from 3.2% to 5% by 2031, India's surge in nuclear energy will contribute to a more sustainable and economic future for the country *(IBEF Knowledge Centre, 2021).*

According to former Atomic Energy Commission chairman Anil Kakodkar, India can't meet the net-zero target without nuclear energy. He also said that nuclear energy is the only way for India to provide low-cost electricity and balance the grid.

Currently, 440 nuclear reactors across the world generate 10% of global electricity with the major contributor being the USA. Around 50 additional reactors are being constructed to account for 15% of the existing capacity (World Nuclear Association, 2022). The year 2020 saw a fall in nuclear power generation from 2657 TWh to 2553 TWh and about thirteen countries produced at least one-quarter of their electricity from atomic reactors. But one major concern in this industry is the life of the nuclear power plants, the average being 35 years. At this rate, most of the operational plants in the developed countries would be closed off by 2025 (World Nuclear, 2022).

CAUSE OF COST

Coal and gas continue to have well-established markets in the world as long as carbon emissions are not fully costed. Setting up a nuclear power plant is expensive but when compared with the net climate, health and

operational costs, its competitiveness with traditional plants has improved. The Levelized Cost of electricity (LCOE) analysis, particularly for low discount rates, shows that nuclear energy is competitive.

In the U.S alone it is the largest source of clean emission-free power, avoiding 470 metric tons of carbon each year which is equivalent to removing 100 million cars from the roads (office of nuclear energy, 2021). LCOE for nuclear energy is low in the operational cost segment but the capital costs account for 60% of the same, leading to a risky economic position due to nuclear taxation in some countries. According to the OECD Nuclear Energy Agency (NEA), the overnight cost (Construction cost if no interest was incurred during construction) of a nuclear plant built in the OECD rose from about $1900/kWe at the end of the 1990s to $3850/kWe in 2009, based on its 2020 report Projected Costs of Generating Electricity. With a 3 per cent discount rate, nuclear power is the lowest cost option for all countries. However, due to the capital intensive nature of nuclear energy compared to natural gas or coal, the cost rises relatively quickly as the discount rate is raised.

During the lead-up to COP26, we saw growing political commitment to achieving net-zero greenhouse gas emissions by the middle of this century. Anything less means failure to meet the goals of the Paris Agreement. A new analysis in this edition shows that since 1970 nuclear reactors have avoided emitting 72 billion tonnes of carbon dioxide, compared to the emissions that would have occurred if coal-fired power had been used instead (World Nuclear Energy 2021 Report).

THE CONCLUSIVE CONDENSATION

Following the bold promises of attaining net zero-emissions by 2070, India drew a lot of attention to nuclear energy as the catalyst for this undertaking. India is predominantly a coal-dominated economy, which seriously increases its emission burden. The projected cost of climate change across the globe is around $300bn by 2030, out of which India incurred a cost of $87bn in 2020 itself (Joshi, 2021). However, for developing countries, decarbonization comes at a huge cost which relays the debate back to foriegn aid from developed nations. Due to the aforementioned costs and discrepancies related to nuclear waste disposal and hazardous working conditions, political outrage

ensnare the Indian Nuclear landscape hindering international relations. Getting even close to the emission targets requires India to have strong energy-based ties with the United States and Russia among other nations (Joshi, 2021).

All things considered nuclear energy remains the answer to a sustainable world and a way to achieve the ambitious targets set in the United Nations climate summit, at a reasonable cost (both environmental and financial) to the planet.

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UNDERSTANDING THE GLOBAL CARBON INEQUALITIES

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Constant development and continuous innovation have been the motto of mankind since time immemorial. From the invention of the wheel to launching rockets to Mars, the tale of "development" is a highly acclaimed chronicle every generation talks about. In this race of bigger and better ignorance has been instilled in all our minds. This ignorance has blinded the sight of forests being cleared, communities being displaced and the entire ecosystem being damaged. The eye-opener for mankind came from melting glaciers, frequent hurricanes and wildfires, continuous cyclones, and unpredictable climate patterns.

The constant development I talked about time and again was again confined to some parts of the globe but the price is being paid by every life form. This sprang up the debate of Global carbon inequality and its adverse effect spanning all regimes. Economic Inequalities are often synonymous with a hateful curse, causing troubles for governments around the globe to embrace the need for equitable development. These inequalities have special say on carbon emissions and have great variance across different nations of the world.

TERRITORIAL EMISSIONS VERSUS CARBON FOOTPRINT

It has been widely viewed that activities that enhance economic development, be it the construction of dams, well-networked transport, production of goods and services, etc. cause heavy damage to the environment in the form of forest cleared, greenhouse gases emitted, exploitation of resources, etc. This economic development is critical to various nations of the world as this decides the quality of life the citizens live and how prosperous they are in the long run. Often the developing countries export huge qualities of goods and services produced to other developed countries. Now the question arises, which country is responsible for these carbon emissions, the country who produced these or the country who is using the goods and services? Territorial

emissions correspond to carbon emissions within the territorial boundaries of the nation, even though the goods produced are being exported to some other country.

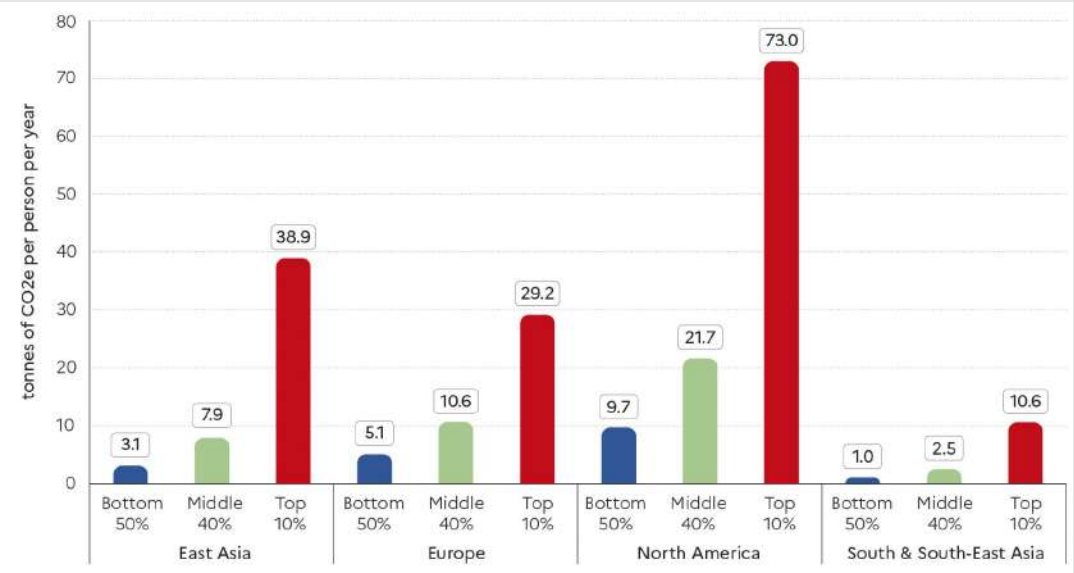
The water required for producing batteries means that manufacturing electric vehicles is about 50% more water-intensive than traditional internal combustion engines (Tabuchi & Plumer, 2021). Supply chains have stated they are keen on developing batteries that decrease cobalt composition in batteries. Yet, because mines are so prevalent, it is not feasible to make these commitments, according to Mickal Daudin of Pact, which is a non-profit organisation that works with local

Whereas Carbon footprint corresponds to the carbon emissions that are embedded in the usage of goods and services, produced in the home country or imported from some other country. Now calculations that follow figures of territorial emissions do not sound just as high-income countries can externalise the production and import back the goods and hence practice ecological dumping while vouching for reduced carbon emissions. This sounds even more like inequality in the carbon emissions calculation.

WHAT DO THESE INEQUALITIES LOOK LIKE?

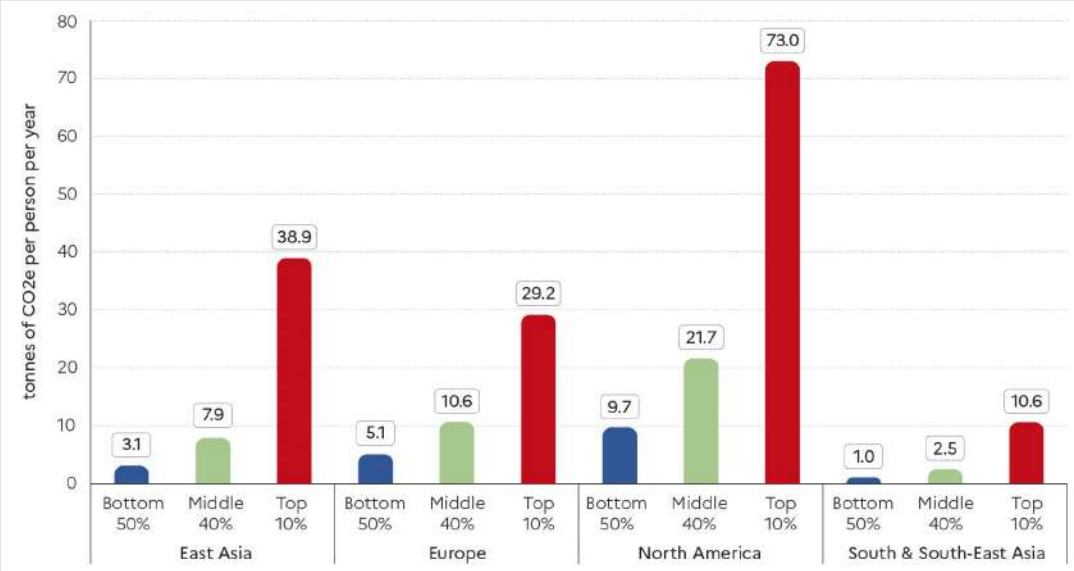
Unlike income inequality that often looks like rich v/s poor, carbo inequalities paint a place where there exist variations within countries and across nations. According to The World Inequality Report 2022, the top 10% emitters

Per capita emissions around the world,2019



Source: World Inequality Report, 2022

Per capita emissions around the world,2019



Source: World Inequality Report, 2022

in the Income pyramid are responsible for around 50% of the total emissions while the bottom 50% in the pyramid contribute to 12% of the total emissions (World Inequality Report, 2022).

Apart from this shocking fact, there are inequalities in carbon emissions among the nations as can be seen in the graphs.

As depicted in the graph, North America is responsible for the highest emission whereas Sub-Saharan Africa has the least emission. An important fact to be noted here is that North America includes many high-income countries whereas Sub-Saharan Africa accounts for many low-income countries. Apart from this inequality among nations, there are unequal emissions within nations too.

The carbon footprint of the richest is more in every region whereas the bottom-most contenders of the income pyramid contribute least to the emissions. These bottom dwellers have already achieved the emissions targets to be reached by 2030 (World Inequality Report, 2022). Often the reasons cited for this inequality are the consumption patterns and the lifestyle that high-income countries offer their citizens. Various measures have been taken to mitigate this inequality and reduce emissions, but often these don't strike the correct chord.

WHO ARE WE TARGETING - RICH POLLUTERS OR POOR SUFFERERS?

The climate emergency and its widespread implications have been witnessed all over the globe.

Nations have joined hands to come up with policies to have a check on the emissions and reduce them to reach the 2030 targets. Among various policies, the one that caught public attention is the Carbon Tax, a regressive tax levied on certain goods and services. The tax was advocated to reduce the emissions and revenue generated to be spent for the public good. The results were fairly disproportionate which culminated with protests and public outcry in countries like France. Although this fiscal policy caused a reduction in emissions in other countries, what lacked in France is the improper attention given to the middle and lower-income class of the society. Think about the poor man paying tax for everything from riding his two-wheeler to going to work to provide for his family. Hence, environmental policies if not properly designed to occupy this inequality can lead to disasters and backlash on part of the stakeholders affected (World Inequality Report, 2022).

CAN THIS BE CORRECTED?

Inequality causes countless repercussions in promoting proper policies and mitigating the gap. The above discussion of carbon tax highlights the need for well-thought-out policies for climate justice. Various thinkers have proposed means to design such policies:

- Monitoring: Before designing policies to mitigate carbon emissions, it is more than necessary to calculate the emissions and the reason for the same. The inequalities lurking in the society have to be acknowledged and consumption patterns to be studied. A proper mechanism should be constructed to monitor the carbon emissions along the lines of these inequalities.
- Cost-benefit analysis: After monitoring and studying the carbon emissions of different stakeholders, the policymakers should then understand the costs of promoting the policies and benefits that may accrue from the same. The need is to penalise the wealthy polluters and not the poor sufferers.
- Inequalities reduced: This is a mammoth task but if done with collaborative efforts of both the polluters and the sufferers, the inequalities can surely be reduced. Various countries use the carbon tax policies and reported lower emissions owing to the same. The inequalities that

- exist thus need to be understood and policies targeting these inequalities be designed to ascertain climate justice and reduce inequalities.

(WID - Wealth and Income Database, 2021)

WHERE DO WE GO FROM HERE?

Climate emergencies throughout the world have brought the humanities on toes. Dormant nations have finally understood the call and have been working on various steps to reduce this. But the time is not to walk blindly but rather to understand the inequalities existing and take informed steps. The targets set for 2030, are still far to reach. Reality has to be understood well and concrete steps have to be taken. Humanity has to understand the responsibilities well and strive for a better future for every lifeform on earth.

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AN ARGUMENT IN FAVOUR OF CARBON TAX

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INTRODUCTION

800,000,000. This is not just a number. 800 million represents 11% of the world's population that is already experiencing the consequences of climate change in their everyday lives, including increasing natural disasters, protracted droughts and erratic weather patterns (Adler et al., 2021). Climate change is one such issue that people fail to recognise as an important one owing to its commonality. However, much to our misfortune, the climate is not as oblivious to our activities as we are of the climate. And whether we like it or not, our growing carbon footprint and exponentially increasing carbon emissions oblige us and the developed countries especially, to cut down unnecessary wants since it is the fruit of colonial mindset- mind you not just colonialism but colonial mindset that prevails even today- that we are reaping a degrading climate.

CURRENT PARADIGM FAVOURS POLLUTERS

Our insatiable desires gave birth to trade, the present-day model of tariffs and non-tariffs barriers (NBTs) which, implicitly incentivizes dirty industries by charging them lower import taxes, while at the same time imposes higher tariffs and quota restrictions on cleaner industries, where dirtiness of an industry is determined by the amount of CO2 emitted by it in producing $1 of output. This fact is statistically established to be true for 48 countries including India where carbon tax on traded goods is a negative figure ranging from $80 to $120 per ton of carbon emission (Shapiro, 2020). Industries that are contributing maximum to global warming and releasing a greater share of carbon dioxide in the atmosphere, for instance primary industries like iron and steel, do not directly face the consumers because of their Direct to Business model (D2B) and therefore they do not face high tariff and quotas. However, final good producing industries remain at a disadvantage because one, they face trade restrictions directly despite polluting comparatively less and second, they also do not get any

incentive to emit less carbon in a world where large polluters avail the benefits of effective 'subsidy' on per ton carbon emission..

CARBON TAX OVER CARBON EMISSION CAP

Capping per industry carbon emission might be a potential solution to the core problem. However, it comes with a greater issue of faulty and inefficient implementation across all parts of the world and raises questions like- Would industries in absence of a law/policy that monetarily penalises them for surpassing permissible carbon limit make sincere efforts to cut down their carbon levels? And this question is rational since we are aware that despite knowing the hazards of climate change, little to meagre was done by businesses and industrialists to avert it. Thus, stepped in the proposal for Carbon Tax.

COST BENEFIT ANALYSIS

The cost of not introducing carbon tax or the opportunity cost of carbon tax is determined by the Social Cost of Carbon (SCC). SCC is a measure that estimates in dollars the economic damage that emitting one ton of carbon dioxide in the atmosphere would cause and the present day SCC or economic damages from climate change are predicted to reach $1.7 trillion a year by 2025, and roughly $30 trillion per year by 2075 if the current warming trend continues as per the report from Institute for Policy Integrity, New York University School Of Law et al. (2021). SCC explicites the story of implicit deadweight welfare loss of negative externalities of development 'sustainable' only on paper, because in a free market regime without tax, richer people and countries consume more than what was required to sustain the whole world including poor people and countries combined.

In a carbon tax paradigm, social efficiency will be restored because consumers will be exposed to the full social marginal cost, resulting in a reduction in the quantity consumed and in addition to this, the tax will shift supply to the left, thus restoring sustainable equilibrium. Note that although the principle of this tax is to translate the moral obligation of reducing carbon emissions into a financial obligation for producers, and to impel consumers to make sustainable and rational choices from the plethora of goods and services available in the market, some argue that the tax will be regressive in nature and will aggravate income inequalities since tax rate cannot be kept low, else cost of high carbon

emissions will not be high enough for producers, and a high tax would mean burden on the economically poor. However, the inherent nature of this pigouvian tax can be reversed by utilising the revenue generated from it to offset costs for low income households.

If the revenue from carbon tax is used to reduce the marginal tax rate on personal income of a particular income group, say middle class and lower-middle class, then it would provide a larger relief to lower income households as compared to high income households. Similarly, reduction in tax rates on labour and capital will offset disincentive to work and invest, and if subsidy on green infrastructure is combined with this, it would act as an impetus for producers to diversify into greener technologies. Apart from the research and development that could happen with tax revenue, a refundable tax rebate targeted at lower income tax payers and reducing rebates for high income taxpayers makes this model more progressive.

Furthermore, myths such as carbon tax being inflationary are false since statistical evidence from Canada and Europe over past three decades shows that, although carbon tax did change relative prices, it did not increase the overall price level; the impact in fact was slightly deflationary, perhaps due to the absence of monetary policy reaction in most jurisdictions that introduced carbon taxes . Moreover, the study showed that income compression was pronounced in the case of richest households suggesting success of redistribution schemes, thus highlighting the macroeconomic benefits of carbon tax. (Konradt and Weder Di Mauro, 2021)

CONCLUSION

Effect of carbon tax when analysed in real life studies such as in Canada and Europe varies from model-based studies which portray carbon tax to be inflationary unlike its slightly deflationary impact observed in the states mentioned above, which too existed due to absent reaction of monetary policy and in future can be prevented because we are better aware of its consequences today.

Carbon tax is an example of an innovative solution that not only ensures a reduction in global CO2 levels, but also has additional macroeconomic benefits such as providing funding for schemes aimed at reducing income inequality and developing green infrastructure.

This tax has potential enough within itself to bring about changes in all sectors of the economy for the better, but that does not mean no more needs to be done with respect to cutting down our emissions. Building cycling infrastructure, improving public transportation in the first year of tax collection and afforestation are ideas that need to be put from paper into action to save our present.

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ARE CONFERENCES LIKE COP26 EVEN IMPACTFUL?

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INTRODUCTION

"The rain it raineth every day," Feste tells the audience at the end of 'Twelfth Night', *"And the cop it coppeth every year"* (Ucini, 2021).

According to the United Nations Framework Convention on Climate Change, Conference of the Parties (COP) is the supreme decision-making body of the Basel Convention and its key task is to annually review the national communications and emission inventories submitted by Parties. With these, the COP assesses the steps taken by the Parties and the progress that has been made in achieving the ultimate objective of the Basel Convention which is the protection of human health and the environment against the harmful effects of hazardous wastes. Mr. Alok Sharma, President of COP26, has referred to the conference as *"last best hope"* to get the climate urgency under control yet the gulf between pledges and fulfilment of detailed, short-term plans is yet to be closed.

SHORTCOMINGS OF THE CONFERENCE

Bringing a change in the climate for the better means sacrificing the current usage of fossil fuels among other things. This task becomes exceedingly difficult for underdeveloped or developing countries because of the lack of finances provided for this change. For example, India's climate and environment minister Bhupender Yadav told the conference,

"Richer nations should not expect poorer countries to stop subsidising fossil fuels such as gas. The lowest-income households rely on these to keep energy costs down."
(Tollefson & Mahsood, 2021)

Moreover, climate change is a phenomenon that continues to cause loss and damage to the development of countries. For example, according to the estimates of the World Bank, the impacts of climate change could push an additional 100 million people below the poverty line by 2030. Additionally, the adverse impacts of extreme weather is resulting in $520

billion in annual consumption losses and is pushing 26 million people into poverty each year. (World Bank Group, 2015)

Therefore, despite a country's efforts to resolve the issue, climate change will continue to increase damage in all aspects. Consequently, the idea of 'loss and damage' funds has often been brought up in the conference, only to be shot down by the developed countries. They claim that this issue is closely bound to the concept of adaptation – implying that no specific loss and damage finance is required because adaptation to climate change does not provide a basis for liability, or compensation by developed countries. (Serdeczny, 2021). The developing countries have argued that loss and damage refers to the impacts of climate change that cannot be adapted to, and where losses are permanent. These losses have proven to be due to their historical role in pushing up global greenhouse gas emissions and having a major impact on climate change. (El-Hadary, 2021)

THE INFLUENCE OF THE RICH

According to the statistics of the Climate Analysis Indicators Tool in the years 1850-2011, developed countries are responsible for 79 percent of historical carbon emissions. It is incredibly unfair that developing countries suffer more than the developed ones, while they are largely responsible for climate change. Several policy makers have adamantly campaigned for fair climate finance and a fair zero-carbon economy but this issue is yet to be considered.

The United Nations defines climate finance as support for efforts to bring down greenhouse gas emissions, or to help the developing countries adapt to the various effects of climate change, and it flows from industrialised or high-income countries that have the money and technological expertise towards the most vulnerable and poorest developing countries. Such a step would be heavily opposed by the rich countries as they have often proven to be the least responsive in fulfilling the goals or owning up to their climate liability. Rich countries are yet to deliver on their promise to make $100 billion available annually to countries in the Global South to aid them in meeting their climate goals and deal with the loss and damages caused by climate change. Also, the aim for rich countries to double their efforts at the beginning of COP26 has not been met. (Nature Editorial, 2021)

To quote Greta Thunberg who had expressed her disappointment in the

recent COP26, *"The COP has turned into a PR event, where leaders are giving beautiful speeches and announcing fancy commitments and targets, while behind the curtains governments of the Global North countries are still refusing to take any drastic climate action."*
(Guardian News, 2021)

Hence, it is quite clear that until the influence of the rich countries over the decision making is not regulated, the movement for climate change will not be holistic and hence it will be impossible to meet its goal.

POSITIVE IMPACTS OF COP26

Despite the failures of the Conference, there is no denying the fact that such meetings ensure that the critical issue of climate change remains on the foreground of global concerns. The conference has also brought about accountability in all Parties as they are now answerable to the world about their efforts made and damages caused to the environment while carrying out their country's economic development.

Some direct impacts of COP include-

- At least 57 countries have decreased their greenhouse gas emissions to the levels required to ensure curbing of global warming.
- At least 51 'carbon pricing' initiatives are in the works so far; charging those who emit carbon dioxide per tonne emitted.
- In 2015, 18 high-income or industrialised countries committed to donating US$100 billion annually for climate action in developing or lower income countries. So far, over $70 billion have been mobilised.

(United Nations, 2019)

CONCLUSION

The Conference of Parties with its annual meetings and pledges, has definitely contributed in encouraging new international initiatives, but the incorporation of the sentiment of sincere urgency is still lacking. There is not enough harmony between their words and actions.

The world leaders need to realise that the issue of Climate Change is taking the face of the harbinger of humanity's doom and if they do not take up their role as leaders and lead the world to a better environmental condition now, it will soon be too late.

COP needs to accelerate the velocity of its implementation of decisions so it can achieve what it has been promising the citizens of the globe

since the past 26 years - a safe, non-hazardous climate for all living beings.

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INNOVATIVE TRANSFORMATION OF GLOBAL ECONOMY TO ACHIEVE NET ZERO EMISSIONS

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Have you all wondered why there's no significant positive change in the environment despite having so many international organisations and policies regarding climate change? Why is the environment still seeking revenge against the human community?

Not only that, but we also developed a habit of recognising differen calamities by naming them, especially cyclones like cyclone Yaas, cyclone Tauktae, cyclone fani and so on as their numbers have been raging towards infinity. Let's dig into some previous climate change incidents that occurred in recent years to wake us up from this leniency of taking action towards this issue as who knows when this problem would become so monstrous that all of the humans will be swallowed by it in no time. The biggest concern because of climate change is volatility in the temperature. According to the research and advocacy group Climate Central, a rise in the sea level would be most devastating for the coastal areas that are the homes of 340 million to 480 million people, eventually forcing them to migrate to safer areas which will lead to overpopulation and pressure on the existing limited resources in those areas.

- Soil erosion is another major issue. Every year, 68 billion tonnes of topsoil is being eroded 100 times faster than it can naturally be replenished or recovered. This would gradually lead to a loss of soil fertility. It's a bigger concern as the global population is expected to reach 9 billion in the mid-century, leading 820 million people to starve to death worldwide..

- Research from the World Health Organisation (WHO) depicts that an estimated 4.2 to 7 million people die from air pollution (Robinson, 2022) every year around the world. Shocking, right? In Europe, the EU's environment agency showed that air pollution was behind the 400,000 annual deaths in the EU in 2012 (Robinson, 2022).

Unfortunately, we don't have a time

machine invented yet in this world that can take us back to the time when there was no climate crisis. So, many countries have joined the race to achieve net-zero emissions by 2050. Setting up a target to achieve net zero emission by 2050 is as difficult as climbing Mount Everest in just 10 hours. But it's not actually impossible. To achieve this target, the biggest ever transition of the global economy will be needed.

According to the report given by McKinsey & Company (management consulting firm), there'll be a whole transition of four areas in achieving net zero by 2050: demand, capital allocation, costs and jobs.

- Demand: To achieve net zero, the demand for low emission products would increase and the demand for high-emission products would automatically decrease leading to a whole different structure of demand. There'll be an end of coal production for the usage of energy by 2050 in a net zero scenario. Also, the production of oil and gas would decline by 50-70 percent in this case eventually leading to an increase in the sales of battery-electric cars to 100 percent by 2050.

- Capital Allocation: Approximately, $9.2 trillion per year would be needed between the years 2021 and 2050 on low-emission assets and enabling infrastrucutre. Sectors like mobility, power and buildings would account for almost 75 percent on physical assets in this process.The economic adjustments in an orderly manner would prevent future physical risks that could happen in disorderly transitions to achieve net zero.

- Costs: The production costs of the sectors like steel and cement would go up by 30-45 percent from the current levels.

- Investment will become essential for building renewables, grid and storage capacity demanding capital costs and depreciation charges. By 2050, the operating costs of generation would decrease by 60 percent as the energy requirement would shift to renewables.Costs can be lower than 2020 levels dependent on the evolving innovations of power technologies and grid design. The costs for electric cars would go cheaper than Internal Combustion Engine (ICE) vehicles by 2025.

- Jobs: According to the analysis, there would be 162 million jobs

generated and 152 million job losses happening in the management of different sectors by 2050 in the global economy. In addition, 41 million job gains and 35 million job losses would occur in the process of spending on physical assets that are required for the net-zero transition by 2050. Job gains would be noticeable in the low-emission production sectors while the job losses would happen in the fossil-fuel intensive sectors. Almost 34 million jobs would be lost in livestock and feed-related works by 2050. On the other hand, there would be an increase of 12 million jobs in poultry farming (Krishnan et al., 2022).

It's easy to sketch a path rather than taking an actual walk on it smoothly. This innovative and fundamental transformation of the global economy can only be successful if its transition would be orderly and smooth. To make this happen, the stakeholders need to follow the adjustments smoothly. The disruptions and chaos created by this transition have to be handled well otherwise many repercussions would be faced. An increase in energy costs can push the burden over low-income households and the replaced workers might find it difficult to shift to other sustainable sectors. There could be other serious challenges and constraints in the transitions which have to be managed carefully otherwise the whole system will be devastated. The key problem is whether the world is ready to muster the courage and the boldness that is demanded by this inevitable transition. It may seem a little imaginary but if the transition becomes the reality then the rewards would exceed the avoidance of the climate impacts alone as countries would have to work together (Carrington, 2022). People need to realise that now is the time to take action towards a sustainable world!

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BENEFITS OF CLIMATE ACTION: DECODING INDIA'S FUTURE

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"What is needed today is mindful and deliberate utilisation, instead of mindless and destructive consumption."
-PM Narendra Modi
at COP26 summit
in Glasgow, 2021

We are familiar with the effects of climate change that has recently been seen in some cities of India like Delhi, witnessing a drop in average temperature and a greater frequency of extreme weather events in the last five years. Despite being a developing nation in the global south, India is ranked tenth in the Climate Change Performance Index 2021. So, steps taken today can be helpful to limit future risks to the planet we share and the peace we seek. (Financial Express, 2021)

INTRODUCTION

In simplest manner, climate change is the periodic modification of earth's climate brought about due to the changes in the atmosphere. It has been observed that per capita emissions will possibly increase by 40% by 2030 with continued economic growth that leads to rising energy use. India is positioned as the third largest emitter of CO2 in the world (EPW, 2020). This is quite uncertain but a comprehensive greenhouse gas inventory is within reach. It can serve as baselines to track increases and decreases in future emissions and can help communities identify ways to reduce emissions as per their capacity and responsibility. With this, we can cut greenhouse emissions, and therefore air pollution in India, which would have health benefits that depicts the most cost-effective in the world. Several recent studies show that taking corrective measures to control climate change, or action against the same is feasible and affordable if once adopted.

Today, several necessary and groundbreaking technologies exist but the real challenge is to utilise them for the better. Addressing this problem, PM Modi met world leaders at the CoP26 Summit in Glasgow. While the world is facing the dual challenges of COVID-19 and climate change, there has been growing acceptance of the fragilities of our

energy, economic and health systems.

REASONS FOR STRONG ACTION TO CURB CLIMATE CHANGE

The costs of fighting climate change will be much less than the costs of climate change for the economy and society. For a country like India, building a climate-friendly, low-carbon society and the economy is a big challenge and also a huge opportunity. Every region in India is already experiencing the costly effects of climate change - including coastal areas threatened by rising sea levels and the communities in the northlands facing more crop-damaging heat waves and pests. Frequent changes in climate can facilitate Zoonotic spillover, a multilevel process by which pathogens (e.g., SARS-CoV-2, Ebola virus etc.) manage to overcome a series of natural barriers and infect other animal species. This propagates a pathogen's survival, development and dissemination and thus can make the pandemic situation even worse.

It is reported that due to climate change, India may lose 3-10% GDP annually by 2100. Timely and strategic actions to address this challenge will bring significant benefits to India while also helping us avoid some of the worst consequences of unchecked global warming (The Indian Express, 2021).

WHY DO WE NEED TO BUILD A LOW-CARBON SOCIETY ?

At the global summit, our hon'ble prime minister announced the low carbon development strategy as enunciated in the 'Panchamrit' that is an important reflection of our government's strong commitment towards sustainable development. In light of this step, we can consider several benefits of building a low-carbon society :

- More 'green' jobs : The International Labour Organization estimated that by shifting to a green economy, India could generate 3 million jobs in the renewable energy sector by 2030 (ETN,2021). In jobs such as manufacturing of solar panel modules, rooftop solar power generation, inverters and converters, energy-efficiency pumps and end-use components for LED bulbs, more people are needed to make this transition feasible.
- Saving business and household money : To lay up savings of business and households, the

nation will need to make some up-front investments. For example, more efficient appliances, heating and cooling systems, and and production processes. However, from reductions in electricity and fuel use, the resulting drops in energy bills will more than offset the costs of these investments.

- Efficient public transport systems : Car manufacturers are required to make their cars more efficient through new engines, materials and design similar to Europe's electric or plug-in hybrid cars. The Indian government has to make their transport and vehicle procurement systems more efficient and sustainable. For instance, buses running on alternative fuels will add to the cleaner air and pollution-free atmosphere.

- Improving public health : Cuts in emissions will reduce the amount of mercury and other heavy metals and by-products of coal-fired power plants that enter our air, water, and food. Conversely, through a shift to cleaner forms of energy, it will result in reducing the cases of many health related diseases such as asthma and other respiratory illnesses. It will result in huge relaxation in the health sector due to pollution.

- **Growth in the economy :** A low-carbon society will help in securing supplies of energy and other resources, which will result in reduction of oil and gas imports. This will also improve India's energy supply security. In addition, it will be less vulnerable to increasing oil prices in India. All these factors can facilitate the development of the Indian economy to a great extent.

HOW WILL CLIMATE ACTION BENEFIT THE INDIAN FARMERS?

Farmers are more vulnerable to climate change due to frequent heavy rains, droughts, land and soil degradation amidst other consequences. Addressing the problem to the farmers can help avoid climate change induced agricultural crisis. Under the vision to fight against climate change, farmers can make money by installing wind turbines, solar panels and other clean energy technologies on their land and buildings. In place of directly reducing their own emissions, industries subject to curb global warming emissions would pay farmers and ranchers, to increase the amount of carbon stored in soils and vegetation, reduce nitrous oxide emissions from

fertilizer use, or reduce methane emissions from animal use. Annual forum of the Global Alliance for Climate-Smart Agriculture (GACSA) showcases that farmers are using practices such as crop rotation, intercropping and multiple cropping to fight climate change which adds value to the yield-earning of farmers (DTE, 2016). In the recent budget (2022-23), it is announced by the Ministry of Finance under point 95 i.e., 'Transition to Carbon Neutral Economy', that 5 to 7 per cent biomass pellets will be co-fired in thermal power plants resulting in CO2 savings of 38 MMT annually in order to provide them extra income and help avoid stubble burning in agriculture fields (Hindustan Times, 2022).

COMPETING INTERNATIONALLY WITH 'GREEN ECONOMY'

This is a fact that the clean energy economy is poised to be the growth industry of the future worldwide. Already, China is the world's largest producer of solar panels and had once committed to increase its solar power capacity 15 times over by 2011, aiming for two gigawatts of installed capacity by that year. India is planning and even getting successful outcomes to boost solar power from near-zero to 20 gigawatts by 2020 and now is a part of an ambitious $19 billion, 30-year plan to increase the share of renewables in the country's energy mix (UCSUSA,2021). As our country is rich in resources, it must continue to expand its burgeoning clean energy industries which includes solar, wind, geothermal power, and biomass among others to keep pace with other countries. Strong policies by the Indian leaders to promote investment in clean transportation, renewable energy and energy efficiency, as part of a comprehensive climate plan, will create the momentum needed to keep these industries internationally competitive. As a result, India can make its position stronger in the international market.

CONCLUSION

Climate change concerns all of us and individual action can limit its hazardous effects. Global leaders recognise that climate action has several benefits; it helps save energy, improve air quality, secure our energy supplies and create growth and jobs. India is fighting climate change through ambitious policies and close cooperation with international partners. Focusing on forests and urban green spaces could mitigate climate change through carbon sequestration. Further, it can prevent floods and landslides, enhance resilience to droughts, and improve resilience of coastal infrastructure.

The overall aim is not to discuss the consequences of climate change but to act on it. By using expected and feasible methods we can reduce greenhouse gas emissions, air pollution and noise levels and congestion. As a result, decoding India's future, we can add that there will be significant savings in health expenditure and pollution control measures while ensuring the growth of the Indian economy.

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THE RELATIONSHIP BETWEEN TRADE AND CLIMATE CHANGE

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International trade is an indispensable engine of economic growth. However, this economic growth comes with significant social and environmental costs. Between 1990 and 2018, greenhouse gas emissions have increased by nearly 50 per cent. The leading cause of growth in emissions is increased consumption which is in line with rising living standards globally. Therefore, there is a very urgent need to reduce greenhouse gas emissions, including introducing climate-smart trade policies, among many other things.

EFFECTS OF TRADE ON THE CLIMATE CHANGE

Trade economists have developed a conceptual framework to examine how trade may affect the environment. The framework breaks down the impact of trade into three effects:

- **The Scale Effect:** The scale effect is when there is an increase in the emission of greenhouse gasses from increased economic activity. In other words, an increase in trade often leads to an expansion in the levels of production of a country. It means that there will be a requirement for greater energy use, and since most countries rely on fossil fuels as their primary energy source, it may lead to higher levels of greenhouse gas emissions. Moreover, increased trade may also give rise to greater use of cross-border transportation services, increasing greenhouse gas emissions.

- **The Composition Effect:** This refers to how trade changes the share that each sector represents in a country's production when relative prices change, resulting in the contraction of some sectors and the expansion of others. Moreover, the increase or decrease in emissions of greenhouse gasses will depend on whether the emission-intensive sectors are expanding or contracting. For example, if a country's comparative advantage lies in sectors that are less emission-intensive, the trade will lead to lower greenhouse gas emissions and vice versa.

- **The Technique Effect:** This effect refers to improvement in the production method of different goods and services so that the quantity of emissions of greenhouse gasses decreases. In other words, this effect corresponds to the effect of technological development. This effect can help reduce GHG emissions in two ways. First, an increase in trade will lower the cost and increase the availability of climate-friendly goods and services. Second, opening to trade usually leads to a rise in income levels, and the rise in income may, in turn, make people demand lower GHG emissions, similar to the demand for a cleaner environment.

The most important fact to note here is that the scale effect and technique effect work in opposite directions. Whereas the composition effect depends on the comparative advantage of a particular country. Therefore, the net effect of trade on GHG emissions and hence on climate change cannot be clearly determined. It will depend on the magnitude of each of the three effects.

However, a climate-smart trade policy usually focuses on minimizing the impact of the scale effect and maximizing the positive impact from composition and the technique effects. That is easier said than done because reducing the scale effect involves a trade-off with economic growth, which is a very important and crucial goal for any country.

WHAT IS CLIMATE-SMART TRADE?

In general, climate-smart policies are the policies that are focused solely on climate change. In other words, these policies are intended to limit and lower GHG emissions. When these policies are integrated with trade to minimize the negative effect of trade on the environment, it is called climate-smart trade. Some examples of climate-smart trade policies include removing fossil fuel subsidies, removal of tariffs on environmental goods (or providing subsidies), regulations governing emissions requirements, removing undue wastage in trade procedures, and substituting printed documents for digital documents.

In other words, climate-smart trade policies are policies that specifically take into consideration the impact that international trade activities can have on climate change, rather than just their economic and social impacts. Moreover, climate-smart

trade policies include all government regulations aiming to reduce or limit net greenhouse gas emissions, which can affect foreign trade and investment. Such policies play a crucial role in achieving the goal of sustainable development. As stated, international trade has a huge potential to contribute to climate change mitigation or adaptation. Furthermore, it also can build the capacity to adapt to climate change and its associated impacts.

Role of WTO in Climate-Smart Trade
Since there is a strong connection between trade and climate, various world organizations are starting to get concerned about the situation. Similarly, even the World Trade Organization (WTO) is doing its bit in making trade climate-smart and reducing the negative effects of trade on the environment. In the Doha Round of negotiations, WTO members launched the first multilateral trade and environment negotiations. Even though the issue of climate change is not explicitly part of the WTO's negotiation agenda, there are a few key areas listed in the negotiations of the Doha Ministerial Declaration under Paragraph 9 are can prove to be relevant to climate change, including:

Improving Accessibility to Climate-Friendly Goods and Services: WTO plays a huge role in increasing the accessibility to climate-friendly technologies and services by reducing tariffs and other trade barriers on them. Many of the products which were discussed in the Doha negotiations have been identified by the IPCC as a range of mitigation technologies that can help in overcoming the challenges posed by climate change.

- Mutual Supportiveness Between Trade and Environment: The Doha negotiations had also discussed negotiations to strengthen the relationship between trade and environment regimes. Paragraph 31(i) focused on the relationship between existing WTO rules and the specific trade obligations set out in multilateral environmental agreements. There were several other measures mentioned to ensure that trade regimes and the MEAs go hand-in-hand to ensure climate-smart trade and mitigate the emissions of GHG as much as possible.

IMPACT OF CLIMATE CHANGE ON TRADE

The link between trade and climate change is not unidirectional. Even climate change can have an impact on

trade because the physical processes associated with climate change can affect the pattern and volume of international trade flows. Climate change can impact trade in two ways, including:

Change in Comparative Advantages: Climate change can significantly impact a country's comparative advantages and thus, lead to a change in the pattern of international trade. The impact will be stronger on those countries

whose comparative advantage comes from climatic or geophysical features. For example, countries that are more reliant on agriculture may experience a reduction in exports if future climate events result in a reduction in crop yields. However, climate change can even produce a positive impact as it may succeed in increasing agricultural yields in other regions and changing their comparative advantage for good.

Increased Vulnerability: Climate change may make supply, transport and distribution chains upon which international trade depends more vulnerable. There can be plenty of examples for such events. For example, extreme climate change events like hurricanes or tornadoes may temporarily close ports or transport routes and damage infrastructure critical to trade. Similarly, coastal infrastructure facilities are vulnerable to flood damage, transportation of freight by inland waterways, such as the Rhine, could be disrupted during droughts, and so on.

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FREEZING TEMPERATURES AND SOARING ECONOMIES: IS THERE A LINK?

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It has been observed that cold climates are prevalent in developed countries, which are all surprisingly located outside of the tropics. In fact, it is backed by statistics that as one gets closer to the tropics, average per capita income drops by 9% (The Intergovernmental Panel on Climate Change, 2020). As a result, an unusual pattern emerges in most developed cold countries, prompting the fascinating question, Is there any hidden link between temperature and economic growth? And if yes, then is this an indication that future climate change could exacerbate income disparities between rich and poor countries?

EFFECT OF RISING TEMPERATURE ON ECONOMIC GROWTH

For starters, several well-documented studies show that higher temperatures are projected to cause more harm in low-and middle-income countries. And, if measures aren't taken to resolve this issue, it might eliminate close to one-tenth of their per capita production (IMF, 2012).

But, the question is, even though these portions of the world — the low-income countries — have contributed the least to the problem, why would they suffer the most? This is because these economies are more reliant on agriculture or other outdoor activities and, therefore, have fewer resources to reduce heat effects through technologies like air conditioning. They have a larger share of income allocated to food items and have restricted access to savings and credit. Whereas in developed countries, these sectors account for a small portion of the economy, and therefore, the economic effects of rising temperatures will be minor.

To verify this connection, significant evidence has been provided by Dell, Jones, and Olken (2012). They show that a 1°C increase in temperature in a particular year affects economic growth by 1.3% points in the next year in impoverished nations.

IMPACT ON PER-CAPITA OUTPUT

In countries with high average

temperatures, a rise in temperature lowers per capita output in the short and medium-term, with agriculture, industry, and political instability as key pathways. Higher temperatures limit agricultural output, impair labour productivity exposed to the heat, hinder capital accumulation, and harm health in hot climates.

Burke et al. (2015b) utilised economic output as the dependent variable rather than growth rates. They introduced a quadratic specification to account for the nonlinear impacts of temperature on economic output. He discovered that the optimal temperature for economic output is 13 degrees Celsius and that output drops drastically above this temperature in poor and rich countries. The critical thing to note here is that most developed economies are located in colder climates, with yearly average temperatures close to the 13°C–15°C mark. Henceforth, a slight increase in temperature has little impact on their current growth. However, developing market economies and, in particular, low-income countries have much hotter temperatures, and thus, a temperature rise significantly lowers their per capita GDP. In fact, even after seven years of a weather shock, the median emerging market economy's per capita output will be 1% lower, while the median low-income country's will be 1.5% lower.

IMPACT ON SECTORAL-OUTPUT

Higher temperatures have the greatest impact on the primary sector (agricultural, forestry and logging, fishing, and mining). The agricultural value-added and crop output decreases in the initial years of temperature shocks rebound slightly in the succeeding years but stay depressed over the medium term. Even the manufacturing industry suffers equally as temperatures rise in hotter regions (Dell, Jones, and Olken 2012; Burke, Hsiang, and Miguel 2015a).

This is because labour's productivity on cognitive and physical tasks is reduced when exposed to heat above a particular temperature. Moreover, higher temperature affects labor productivity in heat-exposed industries by a significant amount. On the other hand, in non-heat-exposed sectors, higher temperatures have no discernible effect, even in countries with hot climates.

CONCLUSION

All in all, the general consensus is conflicted. While some perceive the curious connection between temperature and economic growth as fascinating, others give it the cold shoulder. According to the critics, it's an obvious fact that temperature fluctuations will clearly affect a small agricultural country

differently than a huge industrial country. Furthermore, the temperature terms will mainly capture the influence of single-year temperature fluctuations on GDP, but the time function will capture the longer-term impacts of climate change, as well as a variety of other unidentified trends. The second problem with this link is that the value of GDP per capita for all countries was given the same weight in almost all the studies, which drastically distorts the predicted coefficient of any non-country-specific term, such as temperature terms. Small countries, in particular, are given the same weight as the United States.

Thus, the bottom line is that even though a cold climate is one of the characteristics that distinguishes developed economies, it is not the sole cause of their economic prosperity.

And yes, future climate change would widen the gap between rich and poor countries. However, even the developed and emerging economies aren't immune to it all thanks to the possible spillover effects like conflicts and migratory pressures from these nations where soaring temperatures are anticipated. So, the developed countries should increase financial and technical assistance to low-income nations in order to help them build resilience while also working to reduce and mitigate their own emissions.

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ARCTIC CLIMATE CHANGE: IMPACT ON SETTLEMENT AND INFRASTRUCTURE

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INTRODUCTION

Over the decades, urbanization and human activities have caused a massive amount of damage to the environment and climate change remains one of the consequences. The dramatic climate changes are expected to transform the Arctic Ocean from the frozen sea all year round to open waters in summer and ice sheets visible only in winters. These changes will have a serious impact on marine ecosystems, ecosystems, economic activities, and indigenous people. The Arctic region is currently warming at twice the rate of global temperatures. (*Chapter 3: Polar Regions*, n.d.).

Permafrost thaw (a frozen substance, which becomes liquid as a result of warming up) is one of the major climate problems faced by the world at present. Permafrost is any ground that remains frozen for at least two years straight. Since the Earth is facing global warming the permafrost is thawing. This means that the ice is melting leaving behind water and soil. Permafrost temperatures have been constantly increasing since the 1980s. Since major infrastructure is held up on permafrost, thawing can cause a lot of destruction and damage to the lives of indigenous people.

Permafrost thawing becomes hazardous since perennially frozen land becomes the key variable to Arctic infrastructure. Several other causes include - the release of greenhouse gasses by microbes and the thawing of ancient bacteria that can spread sickness.

Climate change has and continues to have a significant effect on the marine ecosystem. The impact of climate change on such infrastructure couldn't be analyzed in numbers. It has an impact on species composition, production and ecosystem structure and function, changes in ocean properties, and hydrography. Such alterations have an impact on physiological, behavioral, and distributional changes in Arctic marine mammals and seabirds.

HUMAN RESPONSE TO CLIMATE CHANGES

Over four million people reside in the Arctic approximately, and around three fourth people live in urban areas. In major cases, indigenous people are negatively impacted through various sectoral activities like oil, mining, and gas development. In other cases, local people are benefited financially. Overall the situations have made it complicated and difficult to come to a conclusion.

In terms of tourism, the Arctic has seen a significant rise as travelers seek it as " the last chance to visit " which has created new challenges in governance. (Chapter 3: Polar Regions Â– , n.d.). Polar class expedition cruise vessels have been created for recreational Arctic sea travel. This contributes to international research activities.

Climate change is facilitating easier access to natural resources that helps in generating financial resources for the Arctic residents and government. There is a serious need for governance to cooperate with a global multi-regulatory system for the same.

IMPACT ON SETTLEMENTS AND INFRASTRUCTURES

Over the past 30 years, the Arctic sea ice area has seen quite a drastic reduction. However, no research confirms any direct impact on the Arctic infrastructure. The effect on infrastructure still remains difficult to quantify. The current environmental pressure on Arctic civil engineering structures are ocean waves, ice loads, precipitation, and earthquakes. The heat flows are impacted through increased radiations between the ground and atmosphere. In major cases, global warming has acted as an accelerator for permafrost degradation associated with construction activity.

The forecasted climate warming may have an impact on the current infrastructure and the rise in permafrost thawing may be extremely serious.(Raspotnik, n.d.) Thawing even reduces the bearing capacity of piles in infrastructure such as residences. Furthermore, uneven surfaces can affect the functionality of the drainage systems and pipelines.

Permafrost coastal erosion is one of the major engineering challenges that require a multi-functional approach since this makes up 34% of the world's coastline. A large percent of villages in Alaska are affected by coastal erosion and relocating the natives in these villages can cost way many billion dollars. Such damage impacts industrial operations too that depend on natural resources. The erosion along the perma-frosted banks of Kokolik river inthe Point Lay In the drainage of

main freshwater sources in 2016. Another example is the Arctic storm that hit Utqiaġvik in 2017 that caused a lot of public damage and therefore was declared a federal disaster. (Raspotnik, n.d.)

If the next 5 to 10 years continue to show the impacts of thawing, then this may have a serious impact on infrastructural damage.

PRESENT EFFORTS FOR THE CHANGING ARCTIC

To easily analyze the current impact and the interrelationship of climate change in the Arctic, a research team was formed in support of the National Science Foundation's New Arctic program. The project aims to answer certain specific research questions. The outcomes expected through this five-year research project include- A thermal model to evaluate and predict the extent of permafrost degradation for the next century. A holistic model to predict the necessary advancements required in civil infrastructure with the continued climate change and permafrost degradation. The current outcomes of the research will help in better policy making and decisions by the government. The ultimate goal is to protect the Arctic region along with economic prosperity and promote human health. (NCBI - WWW Error Blocked Diagnostic, n.d.)

CONCLUSION

History is evident that over years, global temperatures have witnessed a significant rise. Alaska coming under the Arctic is one of the most affected locations. At present, the loss remains on a significantly lower side, however, if this continues, we might see serious damage not only to the Arctic infrastructure but also to the basic livelihoods. Areas under the Arctic come under the great hazardous zones that are prone to high risk and damage. Temperatures here are significantly low so even the slightest of permafrost thawing can cause serious damage to the households. Hence, it is necessary for the government to come up with the policies and decisions that work for welfare.

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AGRICULTURE TRANSFORMATION REQUIRED TO ADAPT CLIMATE CHANGES

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INTRODUCTION

India's agriculture accounts for 14% of the economy and employs 42% of the population (*India GDP From Agriculture*, 2021). The agricultural and allied products exports stood at US$ 41.25 billion in FY21("Agriculture in India: Information About Indian Agriculture & Its Importance," 2021). Agriculture and livestock farming has caused a major amount of deforestation. About 2 acres of rainforests are cleared every second for animal husbandry and farming (Brown,2019). Agriculture not only contributes to climate change but also is affected by the effects of climate change. 18% of gross national emissions come from agriculture and livestock (Mission 2070: A Green New Deal for a Net Zero India, 2021). Agriculture is a major source of methane and nitrous oxide emissions which are more powerful than carbon dioxide. We need to bring transformation in agriculture so it does not cause any harmful effect to the environment and also is not affected by the impacts of climate change.

IMPACT OF LIVESTOCK FARMING ON ENVIRONMENT

Livestock farming affects biodiversity, causes water pollution, and deforestation. About 70 billion farm animals are reared annually and 6 million animals are killed for food every hour worldwide.

It generates about 14.5% of greenhouse gases and is a greater source of emissions than all the transport systems combined. The major contributors of greenhouse gases from this field are methane and nitrous oxide. Methane is mainly produced by enteric fermentation and manure storage. Enteric fermentation is a part of the digestive process of ruminants like goats, buffalo, sheep, etc. Nitrous oxide is mainly generated from manure storage and the use of organic and inorganic fertilisers. Feed production includes processes like land-use change, manufacturing, use of fertilisers and pesticides, feed processing, feed transport, which contribute 45% to the emissions arising from this sector.

Water scarcity is a worldwide problem affecting 700 million from 43 countries and animal farming consumes 34-76 gallons of water annually. It also uses 70% of

agricultural land and 45% of the total land on earth (Brown,2019).

OTHER FACTORS OF AGRICULTURE AFFECTING THE ENVIRONMENT

About 80% of nitrous oxide comes from the application of fertilisers – both synthetic nitrogen and manure ("Mission 2070: A Green New Deal for a Net Zero India," 2021). Manufacturing pesticides releases a significant amount of carbon dioxide, methane, and nitrous oxide. It also affects the mortality of aquatic animals, which are the primary source of natural food chains. Overuse of pesticides causes soil to lose its fertility and leads to soil erosion. The crops grown with the help of pesticides are less nutritious and lack minerals and can cause a variety of illnesses.

Rest greenhouse gases emissions are due to rice cultivation, use of fuel in tractors used for ploughing, tilling, sowing, and harrowing, transporting, burning of crop residue, and electricity used for lighting, cooling, and heating. Methane and nitrous oxide released by rice farms is equivalent to that released by 600 coal plants (The Hindu,2018). Transportation is very important for efficient marketing of agriculture and road transport is the most common means of transportation as it is inexpensive and convenient. The burning of crop residue not only leads to greenhouse gas emissions but also leads to soil deterioration, increased levels of particulate matter and smog that causes health hazards.

WAYS TO REDUCE THE IMPACT OF AGRICULTURE ON THE ENVIRONMENT

By 2050, the demand for livestock products is likely to increase by 70% (Brown,2019). Shifting to a plant-based diet and eliminating eggs, meat, etc has many benefits. It will help people to reduce the risk of various diseases such as heart attacks, strokes, diabetes, and several types of cancer because we tend to consume more potassium, antioxidants, magnesium, vitamin A, C and E and lower levels of saturated fats. It will help to keep climate change under 2C and save a great amount of water. Strategies are being developed to reduce enteric fermentation which includes diet manipulation, vaccination, chemical additives, animal genetic selection, etc.

Emissions from manure storage can be reduced by the separation of solid from liquid manure, reduced storage time, anaerobic digestion, and by reducing animal protein intake. Intensive rotational grazing is a great way to increase forage production and reduce nitrous oxide emissions. A productive animal has less impact on the environment and thus, animal health and welfare require precise

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attention. Improved fertility, new breed sand crosses can reduce greenhouse gas emissions to a large extent. Crop production should be diversified and more nutritious and eco-friendly crops should be grown. In the areas where rice production is low, the farmers should be incentivized to produce different crops like millets and sorghum. It will not add nutritional value to food systems but also holds the potential to reduce inputs. The farmers can reduce the use of pesticides and fertilisers by incorporating green manure, botanicals, and biological pests into their practices. Examples of natural pesticides are mint, chives, and sage. Micro-irrigation systems like sprinkler and dip should be promoted in more and more areas. Agricultural experts and scientists have developed practises like rice intensification (SRI), alternate wetting and drying (AWD), and direct-seeded rice (DSR) for efficient utilisation of irrigation water. No-till farming is another sustainable way that helps to reduce soil erosion and water requirement for plant growth.

In order to reduce the use of fossil fuels and reach its target of 500GW renewable energy by 2030 ("Mission 2070: A Green New Deal for a Net Zero India," 2021), the government should provide subsidies to the farmers so that they start using solar power energy in their production process. The government should allocate resources to research and innovations so that Indian agriculture becomes climate-resilient and sustainable. The farmers should be encouraged to make use of Information and communication technology or digital tools which would help them to increase their productivity by providing them with information and services and managing risks related to weather conditions. Food loss and waste also need to be reduced since it causes land pollution and can reduce harmful emissions by 15%(Ranganathan, Waite, Searchinger, Hanson, 2018).

CONCLUSION

Sustainable agriculture is the need of the hour as agriculture production is getting affected due to dry spells, heatwaves, and erratic rainfall. With a growing population and demand, the production needs to be efficient. A balance needs to be achieved between low greenhouse gases emissions and an increase in production. Millions of farmers need to be educated and empowered to adopt sustainable agriculture and green energy. Therefore, sustainable agriculture can bring a positive change in the lives of people, their livelihoods, and the overall planet.

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THE ECONOMICS OF BIODIVERSITY

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The world is endowed with biodiversity: the diversity of life. It is so enormous that the number of Earth's current species ranges from 2 million to 1 trillion, of which about only 1.74 million have been documented till now, and over 80 percent have not yet been described or discovered. The world has prospered economically and achieved great heights. This implies that we are living in a world where we are efficiently using nature as an asset for development. In reality, this growth has come at an unbearing cost to nature. The demand that we have set from nature far exceeds the supply on a sustainable basis. We have used natural resources such as the sea for transporting goods, harvesting fish, and for many more activities without any cost. Worsening this situation, government subsidies which harm biodiversity are 5 to 6 times more than finances available for preserving nature. It impacts nature to an extent of 4 to 6 trillion US dollars annually, which constitutes 5 to 7% of the global GDP. The root cause of this problem is the absence of institutions that can work on providing incentives for economizing the use of Nature's fundamental services.

ECOSYSTEM AS ASSETS

Earth's biosphere is a web of interconnected self-regenerative entities called ecosystems. Individual organisms in ecosystems help in maintaining the generic library, preserving and regenerating soil, mitigating the drought, operating the hydrological cycle, and maintaining the gaseous composition of the atmosphere. This is what ecologists call "regulating and maintenance services". These organisms are hidden from the view of humans. The soil contains an enormous number of such organisms. The processes undertaken by these organisms are complementary to each other. Degrading one can affect the entire system. The economics of biodiversity include natural capital in addition to produced capital and human capital. Regulation and maintenance services of ecosystems provide us with nature provisioning goods such as food, medicines, fibers along with cultural services such as landscape beauty -, sacred beauty. The human need for such goods and services has far

exceeded the supply creating a critical situation. Corporate companies are unable to measure their returns from investment in regulating and maintenance services as these services are non-excludable, that is companies cannot confine the benefits to those who pay for them. Due to this, companies prefer investing in those forms of natural capital that are direct inputs for provisioning services such as farms and plantations whose products can be excludable. This investment practice has eroded nature.

The introduction of non-market institutions such as nature reserves and state reserves for maintaining and regulating services has helped in the protection of cultural services. The economics of biodiversity lays a huge emphasis on 'externalities 'which refers to the unaccounted consequences for others of our actions. Due to non-excludability, as the biosphere is a tangled web of the ecosystem, we cannot offer a formula policy due to differences that can arise out of the processes of the ecosystem which entangle with one another. This interconnection is the reason economic systems harbored what we called natural externalities and this is why central governments and all international organizations such as World Bank, International Monetary Fund need to include estimates of ecological consequences of their policies advocating them.

BIODIVERSITY OF ECONOMICS AS PORTFOLIO MANAGEMENT

Nature as a study of portfolio management is studied in relation to diverse assets within nature and considered as more than a mere economic good. Under this study, assets are considered as durable entities not only with use-value but also with intrinsic worth. Due to nature being underpriced, the best we can achieve with our portfolios may nevertheless result in massive collective failure of managing the global portfolio of all our assets. The gap between demand and supply can be defined as people trying to achieve a balance on a hanging bridge and ultimately crashing it down.

As diversity within a portfolio of financial assets helps in reducing financial risk and uncertainty, diversity within a portfolio of natural assets helps in resilience and withstanding risks. Biodiversity has a lot of dimensions including diversity among living organisms, among their genes, and the ecosystem in which they live. Recent estimates show that demands we make from the biosphere far exceed the biosphere's ability to supply. Current estimates show that current extinction rates of species have risen to 100-1,000 times the average extinction rate over

the past tens of millions of years and are continuing to rise. In absolute terms, 1,000 species are becoming extinct every year if 10 million is taken to be the number of species (Dasgupta, P., February 2021). At the global level, climate change and COVID-19 are striking expressions of Nature's loss of resilience.

INCLUSIVE WEALTH AND SUSTAINABLE DEVELOPMENT

To measure sustainable development or whether the economic development path the country has chosen follows sustainability, nations need to adopt a system of economic accounts that records inclusive measures of their wealth which includes nature as an asset. Inclusive wealth refers to the social value of an economy's productive capital, human capital, and natural capital. The Gross Domestic Product which is used to measure economic performance is a faulty application of economics, as GDP is a flow in contrast to inclusive wealth which is stock. GDP does not include the depreciation of assets such as the degradation of the natural environment. GDP is indispensable in short-run macroeconomic analysis but is not suitable for appraising investment projects and identifying sustainable development since GDP has never been formulated to fulfill these purposes . Any economy could register a higher growth rate of GDP by depreciating its assets. In recent decades the world has achieved high economic growth at the expense of eroding natural capital or Nature. Economic progress should be referred to as growth in inclusive wealth. The citizens have to invest in global assets with a focus on social worth. Maximization of inclusive wealth will lead to economic progress. As per the Dasgupta review, we have failed to manage our port global portfolio of assets sustainably. A recent estimate from 1992 to 2014 shows that produce capital per person has doubled, human capital per person has increased about 13% globally and the stock of natural capital per person has declined by 40%. The increase in human capital at the expense of natural capital worth is being referred to as economic growth and development.

NATURAL CAPITAL: THE IMPACT INEQUALITY

The demand that we make from the biospheres can be called our ecological footprint or impact inequality. The gap between the demand and nature's ability to supply can be referred to as impact inequality. We measure human activities with global GDP which refers to the market value of final goods and services produced in a year. To take into account the goods and services we have taken from the biosphere we first

need to convert them into units. Sustainable development can be seen as adopting a path of development in which we try to convert impact inequality into equality. To achieve a sustainable development basis we need to require a transformative change in global institutions.

Individuals need to be encouraged to align their actions and choices to promote the common good. The change will only be possible with coordination and changes among institutions at the national and transnational level, vision and political support, changes among the individual with society as a whole. This requires a well-structured Marshall Plan. A Global Marshall Plan will aim to maintain an overall balance of biodiversity in order to achieve the goal of sustainability and global economy.

CONCLUSION

Nature's supply can be increased with Investment in Nature in various forms. The changes in land-use patterns, technological advancement, and sustainable food production systems can reduce these sectors' contribution to climate change. The Nature-based solutions to protect and restore help companies in reducing risks regarding supply chain functions and generate employment. Low-income countries can generate quick returns by investing in natural capital as the bulk of the country's wealth relies on natural capital.

It is less costly to conserve nature than to restore it once it is damaged or degraded. Preservation and restoration of natural assets help in alleviating poverty. We require international and national level Institutions that can administer our global commons such as high seas and what rent can be imposed which needs to be paid by countries on such global public goods that are housed within national jurisdictions. If governments can eliminate environmental degradation subsidies on nature we can save resources. Processes which govern ecosystems are non-linear as ecosystems harbor thresholds which would radically cross their transformation ability to supply goods and services and make it worse.

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THE USE AND ABUSE OF GREEN FINANCE

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INTRODUCTION

BanKiMoon said,“Sustainable development is the pathway to the future we want for all.”It provides a framework for stimulating economic growth, achieving social justice, practicing environmental stewardship, and strengthening governance." Green Finance is one such method for achieving the objective of sustainable development.

Green finance is any organized financial activity designed to achieve a better environmental outcome (e.g., corporations, banks, governments, international organizations, etc.) by designing, promoting, executing, and supporting initiatives with long-term consequences using financial instruments. In other words, Green Finance provides active actors with the financial instruments they need to produce more activities with positive and long-term externalities. Green financing may include the promotion of renewable energies, energy efficiency, water sanitation, and environmental audits etc (*What Is Green Finance*, 2021).

HISTORY OF GREEN FINANCE

Climate change has emerged as one of the most pressing issues of the twenty-first century, demanding an unprecedented global response. Discussions in the finance community have focused on ESG (environmental, social, and governance) problems relating to a project's susceptibility to climate change and its climatic effect. While the origins of green finance can be traced back to the 1970s, the sustainability movement did not reach a tipping point until 2015, with the adoption of the Sustainable Development Goals and the Paris Agreement that stipulated parties to ensure "financial flows commensurate with a path toward low greenhouse gas emissions and climate-resilient development." In response to national and international efforts, increased investor demand for green assets, and impetus from key industry groups, Green Financing

has established an ever-expanding menu of ESG-related financial products (*Green Financing: A Look at the History and the Options Available for Developers*, 2021).

GREEN FINANCING INSTRUMENTS

Green finance credit structures are roughly classified into three groups depending on their names and purposes: activity-based debt, behaviour-based debt, and the recently proposed transition bond.

Green bonds, social bonds, sustainability bonds, and green loans are all forms of activity-based financing that are used to fund or refinance green initiatives or activities. Green bonds and social bonds are the most popular kind of activity-based debt since they have been around the longest and have a well-established structure. The World Bank's first green bond, issued in November 2008, laid the groundwork for long-term capital market investing.

Sustainability-linked bonds and loans do not have a defined use of proceeds; rather, they incorporate sustainability targets, with the issuer relating corporate sustainability to financial requirements. Sustainable goals might include reducing greenhouse gas emissions, establishing a quota for workplace diversity, and a variety of other initiatives.

The most current form, transition bonds, focuses on bringing financial resources to activities that are difficult to designate as green but nonetheless play a part in the environmental transition. It mostly revolves around the application of revenues to energy efficiency projects, resource efficiency, gas transmission network retrofits, carbon/emission reduction, and other initiatives that promote the energy transition.(Larsen, 2019).

WILL GREEN FINANCING REALLY DELIVER ON ITS PROMISES?

Green finance has gotten a lot of attention recently as a result of increased worldwide efforts to prevent climate change. The adoption of the United Nations Sustainable Development Goals and the Paris Climate Agreement were significant successes by international organizations and national governments, reflecting an increased commitment to environmental sustainability.

According to recent reports by the IMF, green money may improve environmental quality by subsidizing environmental rules and reducing carbon dioxide (CO2) emissions. It can cut fossil fuel usage by 26%, resulting in a 12.4 percent reduction in CO2 emissions (IEA, 2017). Green money

is linked to a variety of sustainable development goals, both directly and indirectly, and may be reached through encouraging private engagement in green financing (Does Green Finance Really Deliver What Is Expected? An Empirical Perspective, 2021).

Green Finance is significant because it encourages and supports the flow of financial instruments and related Services toward the creation and execution of long-term business models, investments, trade, economic, environmental, and social initiatives and policies. The intertwining of these two is critical because the financial sector, through its intermediary activities and risk management, plays a critical role in fostering sustainable economic development while channeling investment to the real economy.

Furthermore, based on the lessons learned from the global financial crisis of 2006-2009, the effects of global warming,Green Finance Initiatives have been addressing the 2030 Sustainable Development Goals (SDGs) Agenda by stressing the change of focus from shareholder value production (economic) to stakeholder value generation (economic, environmental and social). Green Finance reflects the financial sector's future by utilizing novel financial mechanisms and promoting investments in projects with beneficial and long-term externalities (Why Is Green Finance Important, 2021).

THE ABUSE OF GREEN FINANCE AND GREEN WASHING

One of the biggest issues that arose as a result of green finance was "greenwashing". Greenwashing is the technique of creating a false image or presenting misleading information about how a company's products are better for the environment. Greenwashing is defined as making an unfounded claim in order to mislead customers into believing that a company's products are ecologically beneficial. Greenwashing is an attempt to profit from the rising demand for ecologically friendly products (Corporate Finance Institute, 2020).

The business world frequently has little understanding of what it means to be sustainable or green. And when businesses use such terms to gain attention or money, they frequently exaggerate their accomplishments in comparison to what they have truly accomplished. According to a recent Asset Benchmark Research Poll, over two-thirds (61 percent) of fixed-income investors consider corporate 'greenwashing' to be a big worry. This is a major concern, particularly among large corporations that are driven to present

themselves as "Green" or "Socially Responsible" in order to appeal to specific portions of their consumers (Calling out the Green Fakes and Mistakes, 2021). Some green bonds have been tainted by incorrect labeling. The green bond is meant to reflect the company's desire to green its assets over time. However, the perception of a misalignment between green bonds and the company's projected capital expenditures is continued. Green finance development confronts several hurdles, including misleading claims of environmental compliance, a plethora of green loan definitions, and maturity mismatches between long-term green investment and investors' generally short-term goals. mismatches between long-term green investment and investors' generally short-term goals.

CONCLUSION AND WAY AHEAD

Even when frameworks, standards, and recommendations begin to emerge from different industry groups, the company executives contemplating sustainable finance still lack a clear regulatory framework to assist them comprehend the rules they'll be playing by. The process of developing a uniform framework is hindered by the huge variances in the operations of diverse businesses. In the absence of uniform, objective criteria or thorough laws, charges of "green washing" will prevail. These harges have an influence on more than just the reputation of the businesses under investigation. The greatest approach to avoid being accused of greenwashing is to embrace responsibility through products such as Sustainability-Linked Loans. In this regard, good reporting and openness are critical, especially if issuers seek repeat investment. In these cases, the history of a corporation is quite important. Finally, everyone should keep in mind the goal of sustainable or green finance: to accomplish the UN Development Goals, to decrease the economic implications of climate change, and to face the difficulties posed by COVID-19. It's a good reminder that these financings aren't just one-time undertakings that businesses may start and then abandon. The risks and possible scrutiny are too enormous, with consequences they will only have to suffer in the future if they disregard it now (Ng & Pacifico, 2020).

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IS CLIMATE CHANGE REAL FOR INDIA?

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The latest Intergovernmental Panel on Climate Change (IPCC) has warned that the earth can face an irreversible climate catastrophe as early as 2050 rather than the earlier estimates of the end of the century because of the increasing rate of warming. Levels of greenhouse gases in the atmosphere, mainly carbon dioxide that causes global warming, have almost doubled in the past 100 years because of the burning of enormous amounts of fossil fuels like petroleum and coal to produce energy for human use. Amid all this comes the Indian pledge of "Panchamrits" by the Indian Prime Minister Narendra Modi speaking at the COP26 summit in Glasgow. These Panchamrits include increasing non-fossil energy capacity, increased usage of renewable sources of energy, reduction in carbon emissions and carbon intensity, and finally pledging to achieve a net zero target by 2070. These tall claims and proposals reflectthe gravity of climate change and its effects in india. Media Center, 2021)

OBSERVATION OF THE CLIMATE CHANGE WITNESSED BY INDIA

One important prerequisite to understand climate change is that it is not a regional but a worldwide phenomenon. An increase in 1 degree Celsius of temperature which might be a result of any particular regional activity, has the adverse effects like extreme temperatures, erratic weather patterns, warming oceans and shrinking of polar ice cap resulting in rising sea level etc., alike on all parts of the world whether it be the threat of inundation of Mumbai coast or the Maldivian coast.

India's average temperature has increased by about 0.7 degrees during 1901-2018 which can be attributed to increasing greenhouse gases. This is further projected to rise by approximately 4.4 degrees celsius by the end of the century. Sea surface temperature in the Indian ocean has also witnessed an increase by 1 degree celsius and thus the ocean heat content in the Indian ocean has increased substantially and is continuing to rise further. The most unfavourable impact has been felt in rainfall patterns which have been witnessed by even laymen over the years. There is a significant decrease in summer monsoon

precipitation by 6 percent since 1951 with notable decreases over the Indo-Gangetic Plains. There has been a shift in the recent period toward more frequent dry spells (27% higher during 1981–2011 relative to 1951–1980) and more intense wet spells during the summer monsoon season.There is an increase in the number of localized heavy precipitation worldwide because of an increased atmospheric moisture content which is again a result of the adverse climate change. The intensity of tropical cyclones which bash the Indian coast has increased tremendously. (Ministry of Earth Sciences (MoES), 2020)

IMPENDING CLIMATE DISASTERS IN INDIA

Climate change is a massive threat to humanity as a whole. The geography of India further intensifies this threat because of a vulnerable profile in many regions. India can face varieties of disasters in the future, ranging from food scarcity to natural disasters which will have an impact on human life. The changing pattern of rainfall over the entire nation has specifically affected the agricultural sector which contributes to the highest employment share in India. Large number of farmers in India depend on rainfall intensity and its specific pattern for growth of crops, regions which has sometimes resulted in farmers committing suicide. Deforestation on a large scale for setting up industrial regions has led to a substantial fall in underground water level in many regions following which, tube wells have also run dry.

At the same time, increasing temperatures resulting in rising sea levels has resulted in disasters like flooding of the Odisha coast almost every year, which is also intensified by the tropical cyclones that have been largely affected by the climate change. It can further lead to extreme weather conditions like heat waves or prolonged dry spells. According to the 2019 Inform Risk Index, India has some of the most significant disaster risk levels globally, ranking 29th out of 191 countries. (Athal, 2022)This can worsen the health situation in the nation which is already under stress due to the Covid-19 pandemic.

The term was first introduced in the 2012 United Nations conference on Sustainable Development in Rio de Janeiro. The World Bank, the Organisation for Economic Cooperation and Development, U.N. Environment Programme, have all presented reports suggesting green growth for sustainable development plans. But over the years many researchers have found that the

promise of a green economy has come out to be based more on wishful thinking than on practical implications. The green economic theory stated that technological upgradation would make decoupling of GDP from resource use possible. After conducting experiments and studies researchers found that the ground for this theory was rather bookish than practical: even under the best conditions, absolute decoupling of GDP from resource use is not possible on a global level. A study found that even if all the nations go above and beyond for applying green economy, then too the consumption would be much higher than what we are consuming today (Jason Hickel, 2019).

A study to analyse the possibility of a green economy in Islamic countries found that many challenges lie ahead: weak management, increasing poverty, many local border conflicts, high economic dependency on natural resources and increasing food security (Vaghefi, Chamhuri, Aziz; January, 2015). Another study suggests that a green economy is possible only if technology becomes efficient enough to achieve decoupling of growth from environmental impact while others suggest that it is a misguided e

robjectives and policy makers need to look towards alternative strategies.

The outcomes that we expect out of a green economy remain elusive in th eal world. Although sectors like construction, agriculture and transport have managed to create less pollution and use less resources per unit of output, these improvements have struggled to fully offset the scale and speed of economic growth. Increasing the efficiency may even fuel more consumption and pollution. This paradox was first observed by the economist William Stanley Jevons in 1865, when he noticed that the introduction of a more efficient steam engine coincided with more coal consumption instead of reduced consumption. Such "rebound effects" exist all over the economy. Mechanised farming is being promoted on the basis of increased efficiency and yield while it is overlooked that low-tech agriculture is a more productive way of meeting global demand and lowering environmental burden (Jason Hickel, 2018).

Technology is indeed crucial in lowering the environmental burden but its role seems to be exaggerated. Environmental agreements and scenarios internationally have

proposed that large-scale. Technologies will be deployed to store carbon emissions but we are yet to see their work on a small scale level. The argument that the environment can go hand in hand with making profits has very little implications in the real world. For instance, many firms cannot afford to take the risk or be the first movers when it comes to banning plastic bags, introducing carbon labelling or charging for plastic bags. Sustainable investments like conserving ecosystems or financing for electric vehicles are simply not attractive investments to the private sector as only little profits can be made through these. If there will be no profits, the private sector has no incentive to take part in a green economy.

The idea of a green economy also introduces the concept of green consumption. Through this concept the responsibility is dedicated from government and businesses to ordinary people; we as individuals are conned into fighting environmental problems while the real culprits go unseen. Green consumption is still consumption. The act of 'consuming green' puts more burden on the environment as it fuels the extraction and use of natural resources. While it's wrong to assume that consumers cannot make a difference, we should not be fooled into believing that through green consumption environmental burden can be reduced (Jason Hickel, 2018).

Supporters of green growth argue that as long as we get the numbers right – a tax on carbon, a clean energY subsidy, or a price tag on nature – markets can foster sustainability. But tackling environmental problems through the market includes a lot of guesswork while the outcome is also not guaranteed. It also seems that making general consumers aware of the terminology of the green economy is a tough job. Most consumers prefer multiple choices, quantity and value for their money. In such a case, a large number of consumers would still incline towards the conventional system. For example, many consumers would still buy from fast fashion clothing brands instead of sustainable clothing brands.

The chances of practical implication of a green economy are very bleak. The concept is like that of a fairytale and would not strive in the harsh reality. It is partly misguided and governments should look for a better alternative and policy framework for reducing the environmental burden. A combination of some market-incentive tools, like carbon taxes, cap and trade schemes

and subsidies to resource-efficient innovation, is widely seen by governments and international institutions as the feasible measure to foster economic growth while mitigating its bad environmental impact.

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CLIMATE CHANGE: INDUCED WILDFIRES

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"Nature never did betray. The heart that truly loved her."
-William Wordsworth

The truth these words hold is unarguable. If only humans held on to them as strongly as they do to their material desires, the state of our environment and the overall state of affairs would not have been alarming. Earth's temperature is rising disturbingly, reports by the World Meteorological Order (WMO) state that the planet will warm by 4-5 degrees Celsius by the end of the century.

Is it really just a coincidence that cases of wildfires have been increasing year after year? Along with wildfires, there have been trends of rushing global temperatures and we have witnessed some of the warmest years in the recent past. Wildfires are not a recent phenomenon, there have been cases of dangerous, uncontrolled wildfires in the past as well. These are basically fires that have caused huge destruction to wildland vegetation, forests, and other grasslands. Wildfires can be attributed to natural lightning strikes or even a careless human spark in a forested area. There can be numerous causes for a wildfire. But scientists claim that apart from these, there is another very critical cause of wildfires, which indeed is the most dangerous and uncontrolled reason one can imagine, 'Climate Change.

THE LINK BETWEEN CLIMATE CHANGE AND WILDFIRES

Initially, it is hard for people to relate climate change with wildfires because, for most people, climate change is still a hoax. But climate change not only causes frequent wildfires but also increases the burned area significantly. The rising global temperatures have both direct and indirect impacts on wildfires. Longer summer dry seasons and warmer springs are some of the direct impacts. On the other hand, indirect impacts are much more frightening, rising temperatures lead to early and

rapid snowmelt which eventually causes the soil to remain dry for longer periods and makes the forestland prone to such wildfires. Dry soil also invites bark beetles and other harmful insects. If a tree gets attacked by bark beetles, it dies. In the past as well, Bark beetles have put an end to millions of trees and destroyed forestlands turning them into kindling for hazardous wildfires. (Rosner, 2021)

EFFECTS OF WILDFIRES

1.E**ffects of Wildfire on Economy and Environment**

The effects these wildfires have on an economy are beyond belief. Forests are the biggest source of stored carbon around the globe. When these forests catch fire they release gigatonnes of carbon dioxide into the atmosphere adding up to the elevated levels of air pollution. The soil of the area that catches fire becomes unproductive for a long period of time. Agricultural land becomes infertile because of lack of moisture, loss of organic matter, and increased pH value. Hence, farmers lose their crops and livestock within a few hours in the fire. Apart from vegetation loss, Wildfires sometimes destroy places of heritage and places with important istorical significance (archaeological remains). This eventually reduces tourist attractions. Not to mention the thousands of unfortunate deaths caused by these wildfires, biodiversity is burned to death leading to the extinction of rare species. Recently, bushfires have destroyed 90% of the known habitat of the Western ground parrot, a bird whose population prior to the fires was estimated to be 140. (Nag, 2018)

2. **Effects of Wildfire on Health**

The effects mentioned above were merely targeting the economy and the environment but the effects on human health are daunting, smokes emitted from fires have adverse effects on the lungs. The pollutants found in the smoke are particulate matter, they are so tiny that they enter and lodge deep inside the lungs and trigger asthma attacks, heart attacks, and are dangerous enough to kill. It also causes eye-related issues like eye itch, eye pain, and reduced visibility.

WHAT CAN BE DONE?

“Climate change is real, it is happening right now, it is the most urgent threat facing our entire species.”

- Leonardo DiCaprio

We need to take action right now or it will be too late. One solution that can really help in limiting global warming

is to reduce greenhouse gas emissions. There are tiny personal lifestyle changes that can create huge changes to reduce global carbon impact. Try employing alternatives when possible —use cleaner fuels, travel without greenhouse gases, plant more trees, shift to a more plant-based diet, and use renewable sources of energy when possible. Basically, the easiest way to cut back on greenhouse gas emissions is to buy less stuff and be less selfish. These small steps will result in fewer fossil fuels being burned around the globe. Moreover, climate action policies can facilitate a decarbonised economy.

In the recent budget announcement also, the finance minister of India put a lot of emphasis on clean and efficient energy usage and not wasting resources. Finance minister Nirmala Sitharaman clearly mentioned during her speech that we need "mindful utilisation rather than mindless consumption". A lot of funds have been allocated to promote clean technology in India. We can not undo things overnight, but yes we can slowly and gradually make this work.

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CLIMATE CHANGE - IMPACT ON HEALTH IN INDIA

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INTRODUCTION

Climate change poses a negative influence on billions of people's lives and health, and it will continue to do so in the coming decades. Moreover, climate change has a direct impact on the most basic immediate needs such as clean air, safe water, enough food, and a safe place to live. It also creates new obstacles for the control of infectious diseases, as well as constantly building the strain on the ecological, economic, and social systems that keep citizens safe. *(Health and Climate Change Toolkit, n.d.).*

Changing climate is a serious public health issue, with major health consequences projected in a variety of ways in different parts of the globe. Increased respiratory and cardiovascular diseases, injuries and premature deaths from extreme weather events, changes in the prevalence and geographic distribution of food, waterborne illnesses and other infectious diseases, and threats to mental healthare some of the harmful effects n the health due to these disruptions. (Human Health, n.d.)

Even though the rich and industrialised countries are mainly responsible for the majority of greenhouse gas emissions, o the poor and developing countries suffer the consequences of global climate change in terms of negative health consequences. It can cause severe problems for developing countries like India where most of the population relies on sectors highly impacted by climate change like agriculture which makes climate change a significant and emerging threat to public health. (Amutha & Juliet, 2017)

IMPACT ON HEALTH

Temperatures in both ocean water and surrounding air may rise as a result of climate change. Coastal flooding caused by rising sea levels owing to rising temperatures can force people to utilise contaminated water, inadequate sanitation systems, or forced migration into areas with insecure water and sanitation, which can lead to the spread of Cholera. In many developing nations, rising temperatures and shifting rainfall patterns are expected to reduce crop production, putting a strain on food supplies. In the country, there are 13 coastal states and union territories that are vulnerable to sea-level rise, as well as 84 coastal districts that are influenced by tropical cyclones.

Cyclonic activity is most prevalent in states such as Tamil Nadu, Andhra Pradesh, Odisha, and West Bengal, as well as Gujarat and the Union Territory of Puducherry. Undernutrition and related diseases are currently the leading cause of death worldwide, killing over 3.5 million people per year, the majority of whom are children in underdeveloped countries. Given its reliance on natural resources and climate-sensitive industries including agriculture, water, and forestry, India could confront a serious resource constraint. Some of the major health consequences of climate change include; health effects of extreme weather, health impacts of air pollution, diseases spread by water and food, diseases spread by vectors, consequences of food and water scarcity, psychosocial consequences for displaced people, and conflicts over access to essential resources have a negative influence on health (Impact Of Climate Changes On Human Health In India, n.d.).

WHO IS AT RISK?

Climate change affects everyone, but some regions and groups are more vulnerable to climate-sensitive health effects due to their age (children and the elderly), gender (particularly pregnant women), marginalisation (associated in some areas with indigenous populations, poverty, or migration status), or pre-existing medical conditions or other health conditions such as HIV. Health problems caused by climate change have a significant socioeconomic impact. People in coastal regions, megacities, mountainous and polar regions, as well as people living in small island developing nations (a group of small island countries that share comparable sustainable development difficulties) are especially sensitive to climate change. Climate change causes more damage in impoverished countries with poor health infrastructure, and they require aid to plan and respond. (Health and Climate Change, n.d.)

WHY SHOULD INDIA BE CONCERNED?

India is the leading developing country with the Great Himalayas in the north and a highly populated coastline in the south. The Great Himalayas, the world's third-largest ice mass, is 7500

care is extremely limited even in the current policy environment—will be necessary (Impacts of Climate Change on Public Health in India: Future Research Directions, n.d.). The most effective methods to develop resilience and safeguard human health would be for towns, health professionals, and national governments to take early action to help prepare for heat-health risks. Several common features should be included in a positive heat-health preparedness program, such as identifying local vulnerabilities within a certain population and geographical area, health dangers and actions are being monitored and tracked, educating health care providers and the general population about climate change's health consequences, making plans for emergency situations (Climate Change and Health Preparedness in India: Protecting Local Communities in Ahmedabad, Gujarat from Extreme Heat, 2011).

The population's age structure, socio-economic profile, baseline prevalence of climate-sensitive diseases, public awareness of risk, the built environment, etc. must be considered when designing public health responses. Adaptation techniques in response to climatic variability and change must also be tailored to India's distinct geographical scales. Controlling infectious diseases by removing vector breeding habitat, limiting vector–human interaction through improved housing, and supervising mosquitoes, pathogens, and disease burden monitoring are all possible adaptation techniques in India. Another area where adaptation could be prioritised is improving sanitation and drinking water by promoting low-cost, effective water treatment and expanding rainwater harvesting, safe storage, and grey-water reuse. To go beyond the assessment of climatic variability and illness outcomes to predictive models accounting for climate change to support focused adaptation, the health community will need to cooperate closely with climate scientists and development experts. It will also be vital to form partnerships with both the government and the private sector (Impacts of Climate Change on Public Health in India: Future Research Directions, n.d.)

CONCLUSION

The study ‘Impact Of Climate Changes On Human Health In India’, suggests that the links between climate change and human health are complicated and multi-layered, and that future climate change health implications are still unknown. Given the growing influence of climate change on human health, mitigating methods such as

strengthened health systems and service delivery mechanisms through early detection, disease surveillance, vector disease control, and health insurance are becoming increasingly important. The need of the hour is to invest in research and development, health risk assessment studies, vulnerability mapping studies, baseline conditions, scenario modelling, and the adoption of clean development methods, among other things.

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THE ROLE OF EQUATOR IN CLIMATE CHANGE

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The equator has been an element to determine the temperature in the globe. The rotation and revolution of the earth around the sun have led to the phenomenon of seasonal changes, with extreme winters near the south pole and the north pole and extreme summers near the equator. The equator determines the types of health issues, type of clothes to be sold, the furniture and infrastructure, types of services, types of agricultural produce, extraction of natural minerals, and many more which affects economically.

For the past ten years, the climate has been drastically changing. “A world in which the rich will emit while the poor will suffer is not one many people would want,” says Solomon (Martin, 2015). The climatic conditions are affected by a number of reasons, majorly by harmful human activities like greenhouse gas emissions and reflectivity and absorption capacity of the earth. One of the major calamities caused by humans was the use of chlorofluorocarbon (CFCs) in Air conditioners and refrigerators; this has caused ozone layer depletion, which has caused various skin diseases significantly in the African continent. The role of the equator on climate change can be better understood with a comparison between the countries - Canada (near to the north pole) and Indonesia (on the equator). Canada has extreme weather with temperatures ranging from extreme snowfall (-63 ℃) to extreme summers (42℃). However, in Indonesia, the temperature is constant ranging between 22 ℃ - 27 ℃ . Canada is considered to be a developed nation with one of the largest economies across the globe. At the same time, Indonesia is care is extremely limited even in the current policy environment —will be necessary (Impacts of Climate Change on Public Health in India: Future Research Directions, n.d.). The most effective methods to develop resilience and safeguard human health would be for towns, health professionals, and national governments to take early action to help prepare for heat-health risks. Several common features should be included in a positive heat-health preparedness program, such as identifying local vulnerabilities within a certain population and geographical area, health dangers and actions are being monitored and tracked

educating health care providers and the general population about climate change's health consequences, making plans for emergency situations (Climate Change and Health Preparedness in India: Protecting Local Communities in Ahmedabad, Gujarat from Extreme Heat, 2011).

The population's age structure, socio-economic profile, baseline prevalence of climate-sensitive diseases, public awareness of risk, the built environment, etc. must be considered when designing public health responses. Adaptation techniques in response to climatic variability and change must also be tailored to India's considered to be a developing nation.

INFRASTRUCTURE

A significant determinant of the architecture of a region is climatic conditions. A decision on the styles of building malls are made. A climate-adaptable infrastructure is necessary for all year transportation, easy habitation, and to run the economy.
The infrastructural requirements of Canada have been increasing since 1970 with 305,200 M with a highest in 2017 at 1,443,818 M. The country faced a decline in the infrastructural investments in 2020 at 511,637 M. Whereas the infrastructural requirements of Indonesia has been fluctuating from 23,500 M in 1970 till 959,307 M in 2017. The country faced a decline in the infrastructural investments in 2020 at 425,058 M. (World Bank Group, 2021)
A decline in 2020 in both countries is due to the long hit Covid 19 pandemic.
The infrastructural investments in both countries vary significantly. This is because of the climatic difference. Canada being an extremely weathered country, requires infrastructure adaptable to severe cold and severe heat therefore the cost of establishment is higher. In comparison Indonesia has persistent weather conditions throughout the year consequently the same infrastructure can be utilized all around the year.

HEALTHCARE

Another factor to understand the equatorial impact on the countries is the healthcare expenditure (% of GDP) and the type of diseases . According to the temperature, the nature of diseases, the severity, and the level of investments vary. Every nation must keep its citizens, the work force, healthy in order to have increasing human capital. The healthcare expenditure (% of GDP) of Canada was 8.276% in 2000 with the highest in 2016 at 10.97%. The current health expenditure is 10.79% in 2018. Whereas in Indonesia the expenditure ranges from 1.909% in 2000 to 3.117%

in 2014, currently 2.871% in 2018 (The world bank, 2019).

The types of diseases that are significantly high in Canada are majorly Cancer (malignant neoplasms), heart disease, stroke and Chronic Lower Respiratory Disease (CLRDs) which accordingly require high investment in medical equipment and maintenance. (Haynes, 2017) In contrast diseases like tuberculosis, tropical diseases and water borne diseases like malaria, measles,and polio are more prevalent in Indonesia. (Yi, 2017) Therefore Indonesia has less requirement of heavy medical equipment, the diseases are very common to a constant weather region and thus low reserve for healthcare expenditure.

AGRICULTURAL LAND

Agricultural land in a country describes the availability of fertile land for production. The climate of a region molds the agricultural produce of that region. With a change in the climatic conditions, the agricultural produce has to be adapted to be self independent and to earn profits.

The cultivable land in Canada is only 581,990 sq. km in 2018 out of the total area of 9.985M sq. km. The country, being a developed nation, will have less contribution to agriculture. But underutilisation of resources is significantly due to heavy snowfall, where around 40% of the area is snow covered which is unfair for cultivation as no crop can be grown on extremely snowy land. On the other hand, agricultural land in Indonesia is 623,000 sq. km in 2018 out of 1.826M sq. km, which is a significant portion as being a developing nation. The constant weather conditions provide favorability for rabi and perennial crops (The World Bank, 2019).

ENERGY AND MINING

Obtainability of natural resources like petroleum, gold, iron, minerals, solar energy, and anonymous ores is a boon for any country's income. The resources provide an up hand towards employment generation and a permanent source of income. The energy and mining (% of total energy) in Canada was 19.691% in 2014. Canada is the largest exporter of crude Petroleum and producer of resources like gold, uranium, diamond, lead. Most of the extraction area gets snow capped for half of the year due to which the extraction process gets hindered. With global warming, there will be a rise in the temperature which can contribute towards reducing the snow levels in the area and enhancing the extraction process. Comparatively, the energy and mining (% of total energy) in Indonesia was 0.839% in 2014. Indonesia has a huge reserve of geothermal energy and

is the producer of nickel ore (The World Bank, 2015). Through the comparative analysis of a country far from the equator and a country near to the equator, it is evident that a change in the climatic conditions will economically benefit the country far from the equator, especially developed ones. The increase in temperature will reduce the cost of infrastructure, healthcare, agriculture, and extraction. In contrast, an increase in temperature will further increase the difficulties of the regions near the equator. It will further increase the economic cost of development, especially in the poor developing nations.

In conclusion, the policy of the rich helping the poor should be initiated so as to receive the benefits of changing climate globally.

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IMPACT OF CLIMATE CHANGE ON OCEAN ECONOMY

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INTRODUCTION

Oceans and seas cover almost two-thirds of the earth's surface. They provide us with food and minerals, generate oxygen, absorb greenhouse gasses and keep climate change in check, determine weather patterns and temperatures, and serve as highways for sea-borne international trade. Oceans play a major role in contributing to achieving sustainable development, economic growth, and livelihoods. Billions of people worldwide rely on oceans as a source of jobs and food, underscoring the urgent need to sustainably use, manage and protect this natural resource. According to the OECD, oceans contribute $1.5 trillion annually to the overall economy. The FAO has estimated that around 60 million people are employed worldwide in fishing (39 million) and fish farming (20.5 million).

ABOUT OCEAN ECONOMY

“The ocean economy broadly consists of all ocean-based human activities that generate revenue, employment and other monetary and nonmonetary benefits(OECD 2016).”

Therefore, these ocean benefits, and the resources needed to get them, are traded in global markets and have market prices. Examples of these ocean benefits are wild capture fisheries and marine aquaculture (also known as mariculture), ocean surface use for transportation (shipping); ocean-based tourism; the emerging blue carbon markets, etc. The Organisation for Economic Co-operation and Development (OECD) projected that market-based ocean industries would expand at least as fast as the global economy as a whole over the next decade. Therefore, it is believed that the impact of climate disruptions on these industries can have grave economic consequences.

FISHERIES AND AQUACULTURE

In 2018, global fisheries and aquaculture aggregated to approximately 179 million tons, with a “first sale” value estimated at US$401 billion, generating over US$164 billion in exports, including 60 percent from developing countries (World Bank,2021).

In 2018, total global capture fisheries production was recorded at 96.4 million

tonnes. Estimates also tell that approximately 30.6 million people are either in capture fisheries, operating approximately 4.6 million fishing vessels (FAO 2020). Small-scale fisheries are considered as the backbone of socio-economic well-being of coastal communities especially in the developing countries. Fish and fish products are constituted as the most traded food commodities in the world. In 2016, approximately 35 percent of fish production was traded internationally for either human consumption or non-food uses. In 2018, world aquaculture fish production amounted to 82.1 million tonnes, 32.4 million tonnes of aquatic algae, and 26 000 tonnes of ornamental seashells and pearls, aggregating to an all-time high of 114.5 million tonnes. In 2018, the inland aquaculture produced 51.3 million tonnes of aquatic animals, accounting for 62.5 percent of the world's farmed food fish production (FAO 2018).

EFFECT OF CLIMATE CHANGE ON FISHERIES AND AQUACULTURE

Fisheries and aquaculture production is vulnerable to climate change through impacts on the cultivated organisms as well as on the cost and infrastructure of conducting mariculture operations. The wild and cultivated marine species are impacted by changing environmental conditions and these impacts tend to vary by location, species and method of production.

- It is expected that ocean warming would increase mortality rates and decrease the productivity of higher trophic level species.
- Rising sea level would increase saltwater intrusion into delta and estuaries affecting brackish water aquaculture and changing coastal morphology could reduce habitat availability.
- The increase in storm strength and frequency put infrastructure at risk and an increase in weather variability is interconnected with lower profits.
- Ocean acidification obstructs the calcification of mollusc shells which leads to a reduction in recruitment, higher mortality and increased vulnerability to disease and parasites.
- Increase in rainfall will increase the turbidity and nutrient loading of rivers, potentially resulting in more harmful algal blooms (HABs) that reduce production and endanger human health.
- Climate change resulted in reduced feed availability and overfishing which poses a challenge to the growth potential for fed aquaculture

COASTAL TOURISM

About 40% of the world's population lives on the coast within the coastal zone (Burke et al., 2001) and they are dependent on coastal tourism besides their other professions like fisheries, agriculture and so on. Therefore tourism, in the coastal regions, is a significant way of earning. An increasing interest in coastal tourism has been witnessed over the years which can be marked by the global growth of whale watching diving certification which has been increasing 12.1% annually since 1990 (Garrod & Wilson, 2003).

It has also been projected that ocean tourism would be the top contributor of ocean industries by 2030 in terms of its production value, when it will account for 26 percent of the ocean-based economy, compared with 21 percent for oil and gas (OECD 2016). Coral reef tourism tends to be one of the best-studied sectors and prospectively one of the most valuable ocean tourism options for many coastal nations, Coral reef tourism has a worth of $35.8 billion globally every year (Spalding et al. 2017).

EFFECT OF CLIMATE CHANGE ON COASTAL TOURISM

- Marine heatwaves impact habitat formation species that can disrupt the provision of ecosystem services.
- Ocean warming can increase the frequency, intensity, and structural extent of bleaching events that result in coral reef mortality and a subsequent reduction in reef fish diversity and numbers that on-reef tourism depends on.
- It is expected that storms and storm surges would increase in intensity and become more frequent, resulting in a reduction in the desirability of a place for tourism, obstructing transportation (flights and ferries), and destroying the coastal infrastructure that supports tourism significantly.
- A rise in sea level impacts coastal integrity and coastal assets. It causes coastal erosion that potentially can lead to coastal squeeze. This tends to have a negative impact on visitors' perceptions and associated economic impacts.
- Ocean warming affects fisheries productivity and the migration patterns of species that are major pull-outs for tourism (e.g. whales, sharks, turtles).
- Climate change affects coral reef tourism directly on the following:
- Coral reefs and associated species on which some reef

tourism directly depends (e.g. snorkeling, diving, recreational fishing)

- Weather conditions that drive a tourist's preference for the place.
- Coastal infrastructure that supports tourism.
- The ocean tourism that largely depends on healthy coral reef ecosystems, such as diving and snorkeling (on reef tourism), changes in reef conditions are anticipated to impact tourists' preferences and coral reef tourism's economic values.

CONCLUSION

Healthy oceans and coastal ecosystems are not only crucial for economic growth and food production, but they are also significant contributors to global efforts to mitigate climate change. Therefore, it is necessary that we take strategic steps to protect the oceans. Improved fisheries management, investment in sustainable aquaculture, and protection of key habitats are essential activities to be undertaken to restore the productivity of oceans and generate benefits worth billions of dollars in developing countries. In addition to these activities can be "Blue carbon" sinks such as mangroves, tidal marshes, and seagrass meadows that protect coastal communities from floods and storms.

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NEOLIBERALISM: ECONOMICS AND CLIMATE CHANGE

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INTRODUCTION

There have been various changes in the environment over the past 25 years that are linked to neoliberal policies. Neoliberalism is an economic philosophy that includes policies associated with free markets and capitalism that encourages free trade and the private sector instead of government regulations (*Neoliberalism*, n.d.). It is imperative to understand the concept of neoliberalism to establish and analyse its connection to climate change.

UNDERSTANDING NEOLIBERALISM

Neoliberalism is known as 'a politically guided intensification of the market rule' in the public realm (Ciplet 2017, 2017). It is a policy model that encompasses both economics and politics and encourages the transfer of control of economic factors from the general public to the private sector (*Neoliberalism*, 2020). It is a programme for destroying collective structures which may impede pure market logic (Essence of Neoliberalism, 1998). Policies lay heavy emphasis on privatisation, globalisation, minimising government interference in the market, limiting government spending and deregulation. Its sole aim is to achieve efficiency in the market and to free it from crisis or economic failures because of government intervention and taxation.

NEOLIBERAL ENVIRONMENTAL MANAGEMENT

The debate of neoliberalism and the environment includes many theories from environmental economics, geography and political ecology. A giant argument favouring free trade is that the cost of pollution and environmental degradation should be included in the market and that private property is preferred for efficient resource management. Whereas the underlying economic theories put it in the behaviour of a negative externality, that can be managed through the government regulation with the assistance of fines and penalties. But neoliberal economists argued that this 'command and control policy' is inefficient. In environmentalism, it assumes the private property rights owned by the private sector are to use

resources through the commodification of unowned , state-owned, or commonly owned resources such as forests, water, and biodiversity. Neoliberalism believes that the environment is best managed when resources rights are fully defined, and defendable. It is only for using the land and other resources efficiently by private owners. Further, it shows the value of protecting the environment and using it carefully. Thus, all these things are in favour of Neoliberal economics in the environment ("Neoliberalism and the Environment in Latin America," 2006). If we see social welfare versus Neoliberalism, we found two views for that. The one side favouring neoliberalism says that human well being can be advanced by liberating an individual's entrepreneurial freedoms and skills with the help of strong private property rights and free markets. Whereas others think that giving freedom to the entrepreneurs causes changes in the environment followed by danger to wellbeing. So, it would side with socialism by bringing efficiency in the work but not equity. But definitely, it will cause the surroundings to change.

MATTER OF CLIMATE CHANGE

Climate change is the long term change in the climate and weather patterns. This can occur due to natural or manmade reasons. The UN climate change conference in Glasgow (COP 26) determined many factors of climate change and found solutions for the same. These mainly focus on cutting the greenhouse gas emissions to reach net-zero emissions till mid century and rising temperature to the level of 1.5 degrees celsius (COP26: Together for Our Planet | United Nations, n.d.).

There exists an inverse relationship between the development of a nation and climate change. Thus, there is a question about the development of developing nations with a low carbon economy. Development requires some of the changes necessary in the environment as neoliberalism suggests and encourages free trades for developing industrial activities. The target of reducing carbon emissions can be achieved in the developed countries quickly but it needs some time to be treduced along with the development in the developing nations. From here, we can conclude that the given freedom in this neoliberalism can be proved to be a great cause of climate change. As it has minimum government interference, it can be said that the private sector has more control over the environment which results in less environmental control.

The debate around neoliberalism has two approaches. In one way, economists say to use resources efficiently we should promote it to overcome the problem of land degradation and pollution. But on the other hand, it will generate the use of coals or pollutants and land and forests by private owners individually without any rules and laws. It will increase human causes of climate change. In the beginning, it was introduced to reduce government interference causing less responsibility, decreasing financial needs and resulting in lower taxation, reducing inequality but then it appears to be increasing levels of Inequality in many countries and its adverse effect is found to be causing changes in nature. As is the case in the mining sector of Chile and Peru, these countries have shown a boom but the mining industry has been blamed for problems like land and soil degradation, depletion and pollution ("Neoliberalism and the Environment in Latin America," 2006). That is why this causes a great loss of pure nature. Time and again, neoliberal approaches towards environmental policies have led to the looming climate crisis.

CONCLUSION

Throughout the study of neoliberalism and its effects, we can say it has both negative as well as positive impacts on the environment and development of the society. The environment is linked to neoliberalism only because the economic sectors also depend on nature (as for water, solar energy, etc). Neoliberal policies change the impacts of industrial activities mainly through trade, investment and environment regulation. We can say that the introduction of neoliberal policies has no remedy to climate change but only by rolling back these policies can we solve the crisis of climate change or the changes in our surroundings.

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RE-IMAGINING ECONOMIC GROWTH TOWARDS 2030

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**** THE VIEWS EXPRESSED ARE PERSONAL***

Have you ever purchased a toffee and wondered, why is it so cheap with all that plastic and chemical? Does the cost of that crisp A4 sheet at the photocopier, cover the price our planet has paid to produce it? What if the cost of jeans accounted for the environmental impacts of 7,500 litres of water (UN 2019) and over 44 pounds of carbon emissions that went into making it? This mirage of affordability in which we live is created by the systematic exclusion of environmental costs in production costs.

The greatest ignorance behind an economy that does not account for environmental costs of growth, is the assumption that man is separate from nature. We have historically dismissed these ecological impacts as externalities because they expose excesses and impose limitations that we are scared to acknowledge. Our models for economic growth are, therefore, symptomatic of a deep-rooted arrogance and a fragile hubris, of impunity and a misplaced superiority, which has blinded us to an irrefutable truth: economic growth fuelled by ecological destruction is suicide.

Our existing patterns of consumption and production have exceeded planetary boundaries and pushed us to the brink of an ecological collapse. We have already transgressed the 'safe zone' for biodiversity loss and the 'safe operating space' for novel entities (Persson 2022). This means that both the sheer scale of ecosystems destroyed, as well as the quantity of artificial materials produced (e.g., plastic), has surpassed the planet's capacity to assimilate. This in turn has triggered extreme weather events like floods, heatwaves, droughts, etc. which have increased in frequency and intensity (IPCC 2021).

COVID-19 and climate change have questioned and exposed the vulnerability of our economic systems, which have mindlessly fuelled consumerism. Such contemporary pandemics would perhaps not exist if we pursued nature-based growth as opposed to nature agnostic development. There is growing consensus that countries must discard GDP as a metric for growth, and transition to broader metrics of

prosperity which, for e.g., make forests worth more alive than dead. In fact, the father of modern GDP Simon Kuznets, never envisaged it to be the measure of a country's growth. Echoing this sentiment, Robert Kennedy is famously quoted as saying, that "The Gross National Product measures everything except that which makes life worthwhile." (Rutger Bregman 2017)

It is important that governments, businesses, and households assess the ecological footprint of their activities and internalise such costs while making policies or purchases. Countries must adopt taxonomies like the European Union, which classifies and promotes only environmentally sustainable economic activities and investments. It prescribes climate change mitigation and adaptation, circular economy, protection and restoration of biodiversity, etc. as pillars to determine the sustainability of economic activity and prevent greenwashing. Interestingly, the EU taxonomy also defines 'ecosystem services' as the direct and indirect contribution of ecosystems to the economic, social, and cultural welfare of society. In this vein, it will be of relevance to look at the 'Happy Planet Index' used by Costa Rica to measure its growth and well-being..

As per this metric which also assesses the ecological footprint of economic activity, Costa Rica has a more efficient economy than the USA, despite a GDP that is less than half of the States.

The focus on nature-based solutions to combat climate change could also increase jobs, growth, and sustainability. In 2020, India alone incurred costs of USD 87 billion due to damage by climate change. However, opting for ecosystem-based disaster risk reduction, as compared to gray infrastructure enhancements, could yield co-benefits such as carbon sequestration, water quality and habitat improvement, erosion reduction, increasing biodiversity, etc. A study estimates that developing natural oyster reefs could provide ecosystem services of USD 40,000 per acre annually. It is no surprise, therefore, that as per conservative estimates the global value of ecosystem services is around USD 125 trillion as compared to the global GDP of USD 85 trillion in 2020. The Great Green Wall project in Africa plants trees across 8,000 km to restore 100 million acres of degraded land, sequester 250 million tonnes of carbon, create 10 million green jobs, and provide food security to many millions in the area by 2030 (UNCCD 2022). A recent report estimates that every one dollar spent on restoration

could yield up to USD 30 in economic benefits (UNCCD 2021).

Economists now need to re-imagine the way a country's growth is assessed. Rather than mindlessly pursuing unprecedented levels of GDP, countries could seek to outdo each other in the 'Happy Planet Index' which would foster a spirit of solidarity and humanitarian competition as well. More accelerated efforts are required to decouple economic growth with environmental damage. Cost to nature and the value of ecosystem services must be integrated into national planning. Countries and enterprises with a high value of ecosystem services should be heroed, as against those with higher GDPs.

The writing is on the wall. The cost of inaction due to climate change will far outweigh the cost of investing in sustainability now (STERN 2006). The business and economic case for climate change must, therefore, be amplified to the point where profitability and sustainability are synonymous.

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IS A GREEN ECONOMY POSSIBLE?

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Green economy is defined as a low carbon resource efficient and socially inclusive economy (U.N. Environment Programme). It aims at making profits without causing any harm to the planet and is an attempt at overturning the conventional system of profits over the planet. It claims that economic expansion is compatible with the planet's ecology. Many believe that the move to a green economy is a great policy response to climate change and ecological breakdown.

The term was first introduced in the 2012 United Nations conference on Sustainable Development in Rio de Janeiro. The World Bank, the Organisation for Economic Cooperation and Development, U.N. Environment Programme, have all presented reports suggesting green growth for sustainable development plans. But over the years many researchers have found that the promise of a green economy has come out to be based more on wishful thinking than on practical implications. The green economic theory stated that technological upgradation would make decoupling of GDP from resource use possible. After conducting experiments and studies researchers found that the ground for this theory was rather bookish than practical: even under the best conditions, absolute decoupling of GDP from resource use is not possible on a global level. A study found that even if all the nations go above and beyond for applying green economy, then too the consumption would be much higher than what we are consuming today (Jason Hickel, 2019).

A study to analyse the possibility of a green economy in Islamic countries found that many challenges lie ahead: weak management, increasing poverty, many local border conflicts, high economic dependency on natural resources and increasing food security (Vaghefi, Chamhuri, Aziz; January, 2015). Another study suggests that a green economy is possible only if technology becomes efficient enough to achieve decoupling of growth from environmental impact while others suggest that it is a misguided objective and policy makers need to look towards alternative strategies.

The outcomes that we expect out of a green economy remain elusive in the real world. Although sectors like construction, agriculture and transport have managed to create less pollution and use less resources per unit of output, these improvements have struggled to fully offset the scale and speed of economic growth. Increasing the efficiency may even fuel more consumption and pollution. This paradox was first observed by the economist William Stanley Jevons in 1865, when he noticed that the introduction of a more efficient steam engine coincided with more coal consumption instead of reduced consumption. Such "rebound effects" exist all over the economy. Mechanised farming is being promoted on the basis of increased efficiency and yield while it is overlooked that low-tech agriculture is a more productive way of meeting global demand and lowering environmental burden (Jason Hickel, 2018).

Technology is indeed crucial in lowering the environmental burden but its role seems to be exaggerated. Environmental agreements and scenarios internationally have proposed that large-scale technologies will be deployed to store carbon emissions but we are yet to see their work on a small-scale level.

The argument that the environment can go hand in hand with making profits has very little implications in the real world. For instance, many firms cannot afford to take the risk or be the first movers when it comes to banning plastic bags, introducing carbon labelling or charging for plastic bags. Sustainable investments like conserving ecosystems or financing for electric vehicles are simply not attractive investments to the private sector as only little profits can be made through these. If there will be no profits, the private sector has no incentive to take part in a green economy.

The idea of a green economy also introduces the concept of green consumption. Through this concept the responsibility is dedicated from government and businesses to ordinary people; we as individuals are conned into fighting environmental problems while the real culprits go unseen. Green consumption is still consumption. The act of 'consuming green' puts more burden on the environment as it fuels the extraction and use of natural resources. While it's wrong to assume that consumers cannot make a difference, we should not be fooled into believing that through green

consumption environmental burden can be reduced (Jason Hickel, 2018).

Supporters of green growth argue that as long as we get the numbers right – a tax on carbon, a clean energy subsidy, or a price tag on nature – markets can foster sustainability. But tackling environmental problems through the market includes a lot of guesswork while the outcome is also not guaranteed. It also seems that making general consumers aware of the terminology of the green economy is a tough job. Most consumers prefer multiple choices, quantity and value for their money. In such a case, a large number of consumers would still incline towards the conventional system. For example, many consumers would still buy from fast fashion clothing brands instead of sustainable clothing brands.

The chances of practical implication of a green economy are very bleak. The concept is like that of a fairytale and would not strive in the harsh reality. It is partly misguided and governments should look for a better alternative and policy framework for reducing the environmental burden. A combination of some market-incentive tools, like carbon taxes, cap and trade schemes and subsidies to resource-efficient innovation, is widely seen by governments and international institutions as the feasible measure to foster economic growth while mitigating its bad environmental impact.

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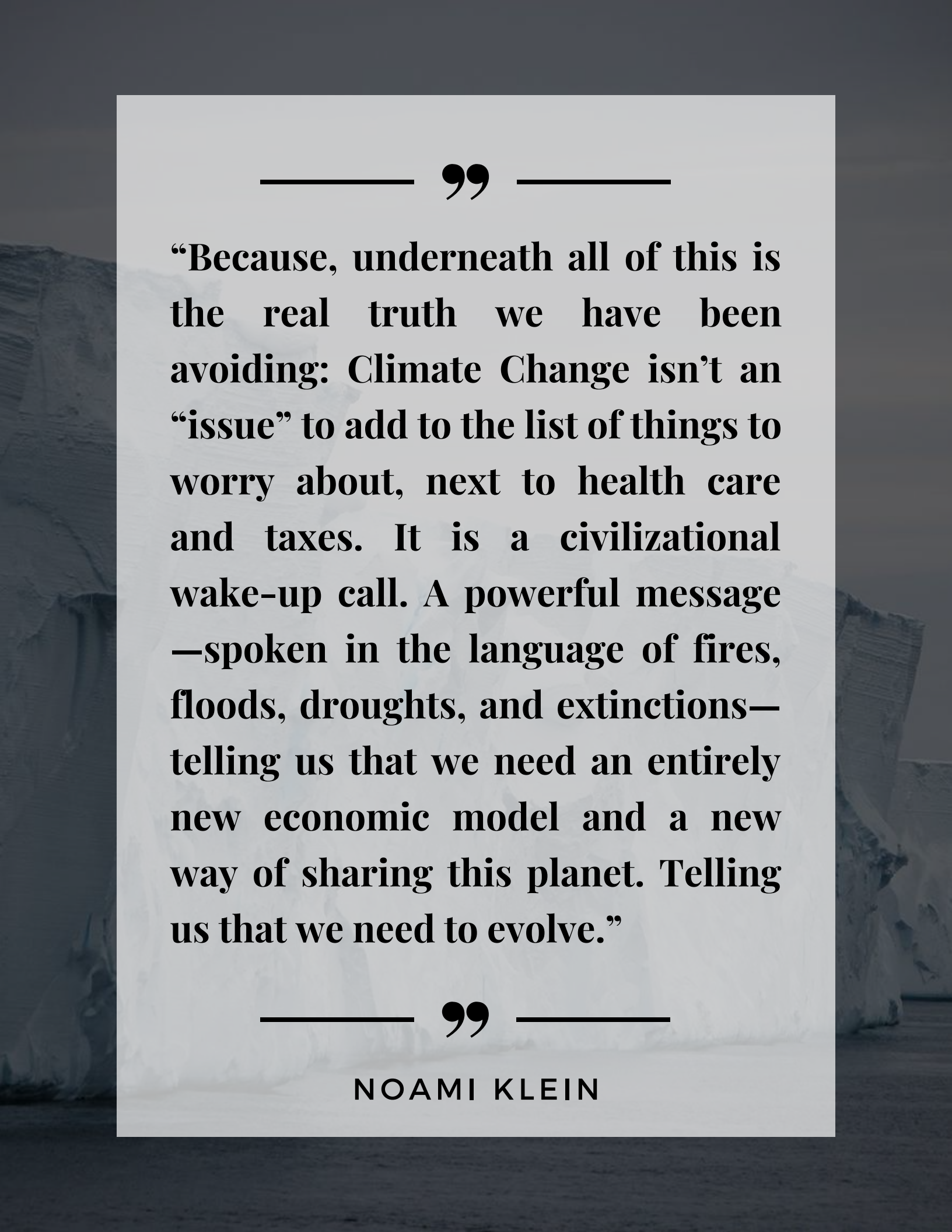
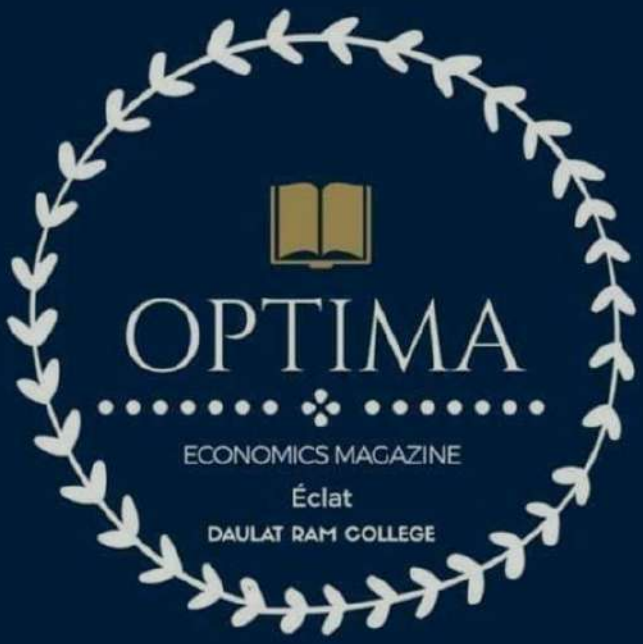


“Because, underneath all of this is the real truth we have been avoiding: Climate Change isn’t an “issue” to add to the list of things to worry about, next to health care and taxes. It is a civilizational wake-up call. A powerful message —spoken in the language of fires, floods, droughts, and extinctions— telling us that we need an entirely new economic model and a new way of sharing this planet. Telling us that we need to evolve.”

NOAMI KLEIN



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