YOUTH AND CLIMATE CHANGE

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The Papers.

Youth Procrastination and Climate Change

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Abstract

The climate has been undergoing a rapid change for the worse, for the past several decades. India, particularly in the last few years, has seen deadly examples of floods, heatwaves, extreme rainfall, thunderstorms, lightning, forest fires, cyclones, etc., to name a few results of increasing global warming and the greenhouse gases in the atmosphere, which are giving rise to climate change. While some actions are being taken to tackle the problem, it has been noticed that the majority of the human population has been finding reasons to avoid engaging in any work or activity related to climate change. So why is this the case, and why this habit of procrastinating can have deadlier consequences for the human population? This paper aims to analyse how the habit of procrastination in human beings can be related to climate change. The fact that people have been putting off acting on climate change has often been cited as the main reason for the situation of the climate today. Therefore, this paper aims to analyse human thinking behind procrastination and describe how the relationship between youth, procrastination and climate change might not always be intentional. The paper takes the help of a comparative study between the generations of Gen Z and Baby Boomers to understand the habit of procrastination and provides solutions for coping with procrastination and acting on the problem

1.0 Introduction

Has the world waited too long to take action against global warming and climate change? This is a question that we all know the answer to but refrain from addressing it or even talking about it in our normal day-to-day conversations. The world is undergoing harsh changes as a consequence of which our future is looking as bleak as ever.

Warnings are being given by the extreme weather conditions in different parts of the world; warnings are being recorded and conveyed to us by different United Nations (UN) Reports every year, which are being ignored. In November 2019, a report by the United Nations Environment Program (UNEP) highlighted that every year of delayed action with respect to climate change would mean that carbon emissions would be required to be cut at a greater and faster pace than what is expected today, with diminishing hope of success. UNEP's executive director Inger Anderson, while highlighting the urgency of the situation said, "*we need to catch up on the years in which we procrastinate*." The UNEP report further highlighted that the carbon emissions need to be cut to at least half, i.e., at least down to 25 billion tonnes by 2030, to have a 66% chance of limiting the rising global temperature to 1.5ºC. (Moore, 2019)

Since we know what needs to be done, it's only a question of how. While there might be many reasons for our current situation, 'Procrastination' does play an unignorable role in this tragedy. The paper aims to understand if and why the youth is procrastinating in the actions for climate change and give possible recommendations to tackle the problem.

2.0 What is procrastination?

By definition, procrastination is the act of delaying or putting off tasks until the last minute, or past their deadline. Some researchers define procrastination as a "*form of self-regulation failure characterized by the irrational delay of tasks despite potentially negative consequences*." (Cherry, 2020) Procrastination usually arises when a particular task doesn't seem enjoyable or if one fears they won't perform the task well. People may also procrastinate when they are confused by the complexity of a task or when they're overly distracted or fatigued. (Procrastination, n.d.)

2.1 Types of procrastinators

Some researchers classify procrastination into two main types: passive and active procrastinators.

- **Passive procrastinators**

  Delay the task because they have trouble making decisions and acting on them

- **Active procrastinators**

  Delay the task purposefully because working under pressure allows them to "*feel challenged and motivated*". (Procrastination, n.d.)

2.2 Understanding procrastination

Procrastinators are often perfectionists, for whom it may be psychologically more acceptable to never tackle a job than to face the possibility of not doing it well. They may be so highly concerned about what others will think of them and their work that they put their futures at risk to avoid judgment. Some procrastinators contend that they perform better under pressure but research shows that the reason they may make a

habit of last-minute work is to experience the rush of euphoria at seemingly having overcome the odds. (Procrastination, n.d.)

2.3 Psychology behind procrastination

Procrastination occurs because one's self-control and motivation, hindered by factors such as exhaustion and rewards far in the future, are outweighed by demotivating factors, such as anxiety and fear of failure. (Why People Procrastinate: The Psychology and Causes of Procrastination, n.d.)

Procrastination can be particularly pronounced among students. A 2007 meta-analysis published in the *Psychological Bulletin* found that 80% to 95% of college students procrastinated regularly. According to researchers, there are some major cognitive distortions that lead to academic procrastination which include:

6 Overestimating how much time they have left to perform tasks.
7 Overestimating how motivated they will be in the future.
8 Underestimating how long certain activities will take to complete.
9 Mistakenly assuming that they need to be in the right frame of mind to work on a project. (Cherry,2020)

Procrastination can also be a result of depression and is also common in people with obsessive-compulsive disorder and attention-deficit/hyperactivity disorder (ADHD). In cases where procrastination becomes chronic, it could have a serious impact on a person's daily life. In such instances, it's not just a matter of having poor time management skills, it becomes a major part of their lifestyle.

3.0 Procrastination related to Climate Change: Climate Procrastination

Whenever environmental preservation or acting in favour of the environment, along with delaying or maybe terminating negative climate change, is concerned, procrastination seems difficult to resist, even if this procrastination leads to disastrous consequences. The main reason for this that can be estimated is that the environmental preservation expected to be done today, to avoid the long-term consequences, is complemented with the short-term and immediate costs. This is an exercise of the will of individuals, that is often tempting to be put-off, and is often never taken into consideration while deciding the life goals.

In 2014, the Health and Human Rights Journal in its editorial on Climate Justice and the Right to Health asked a question that is about to become relevant to the generations to come. The question was whether our era would be viewed as an era of people who enjoyed the "*Great Procrastination*", and was, therefore, guilty of "*Squandering time, dithering on the action, and engaging in half-measures woefully incapable of addressing a threat that our best science warns will be more catastrophic and less reversible each year.*" (Lemery et al., 2014)

It is a fact that climate change and the health effects related to climate change have shown a transparent increase in the past years and have accelerated at a threatening pace. Many have claimed that a stage has been reached where it is expected for global warming to continue to exist and rise in all scenarios, including the scenarios where serious action has been taken to tackle it. Therefore, even if immediate action is taken, global warming is expected to only be slowed down, but not be reversed or terminated. It is, however, astonishing, and heartbreaking to see that even with this knowledge, the world is not doing enough to stop this menace and many countries are, encouraging

the manufacturing and use of new carbon-based technologies and industries, that harm, not just the planet but the individuals as well. All this can only be understood through one term, “Procrastination”, after all, human beings have always tended to leave the most important work for the last, which eventually results in the work never being completed.

4.0 Procrastination and Hypocrisy

As discussed above, procrastination in a layman’s language means to put off something for an indefinite time, which is supposed to be done sooner or as soon as possible. It is often seen that people make elaborate plans on how they want the task to be finished, by making timetables, adding schedules to their calendars, etc., with the hope that they would be able to complete the task within the stipulated time. However, in an unfortunate turn of events, this becomes impossible to be done when the time to execute the task arrives. This is because people abandon the long-term goals, for short-term gains.

It can be argued that a Procrastinator is a hypocrite, who ends up abandoning their own agreed goals, however, there still exists a notable difference between Procrastination and Hypocrisy. Hypocrisy can be understood as not practising what you preach. Therefore, even if you do not believe in climate change and are yourself doing nothing to change the situation, you expect others to do something about it and not sit ideally, which does not work well with people as there is more scope for them to listen to a person who is working for the cause rather than listening to a hypocrite who is just talking and not acting. Comparing this to a Procrastinate is where the difference lies, as a procrastinate is not a hypocrite who does not want to act on the situation. Rather, a procrastinate is a person who experiences conflicts in time-management and

ends up not completing their professed goals. Expressing this about climate change can be when people make goals to switch their flying and driving habits, to a more 'greener' energy provider. However, considering that this change would most likely result in a change in the living habits of the person, the person tends to procrastinate, even if they have an elaborate plan not to. Therefore, people end up doing everything else, except acting on their professed goal, which is to switch to a greener transportation service, and they rather spend their time and energy living the way they already are living, which results in more carbon emissions and increased global warming.

Now, it can always be argued that actions speak louder than words, and if a procrastinate is favouring a task over another task, then they just do not want to act and are misrepresenting people into believing that they care, where they are nothing but another hypocrite. This can be understood as "*scepticism about the existence of genuine procrastination*". But it is not always necessary. In case of preferences, and specifically global preferences related to prolonged courses of actions, and their mismatch, as said by philosopher Chrisoula Andreou, can be understood through the following 2 occurrences:

(i) **Discounting-Induced Preference Reversal**

This occurrence is when humans give more importance to their present happiness rather than their future happiness. That is, if people have the option of earning more in the future and earning less instantly, they will prefer giving more importance to earning less instantly for the fulfilment of their immediate needs and happiness. This leads to the problem of genuine procrastination as the present returns are much more desired by them. Similarly, in the case of climate change, our present happiness lies in our work, comfort, and normal lifestyle, which is threatened by the talks of climate change. Therefore, we

repeatedly put off the changes to be done each day, which ultimately leads to failure to act against climate change altogether, despite the individual's preference.

This can be seen in the situation of trees today. According to a study conducted by the Environmental Pollution Journal, forester Dave Nowak and his team found that trees prevented the death of almost 800 humans and around 670,000 cases of acute respiratory symptoms in 2010 only (Hamblin, 2014). People in history used to plant more trees as they believed the tree to be a symbol of creation, continuation, and fertility on Earth. (Trees | Encyclopedia.Com, 2021)

However, over the years, this trend has seen a change. According to a report by the UN's Food and Agriculture Organization, a net loss of around 1.29 square kilometres of the forest was seen between 1990-2015. (FAO, 2015)

Therefore, even though the present generation has benefitted through the natural resources, like trees, grown by the past generations, they have unfortunately not made enough efforts to secure this natural legacy, which has given rise to the climate change crisis today, which also includes increased respiratory problems in the youth.

(ii) **Stable but Intransitive Preferences**

Preferences are intransitive i.e. when an individual is unable to rank them in an order of likeness. However, even if a person can sort his preferences at any particular time, it would be something that would require immediate action. Therefore, if a person wants to act on climate change eg. adopt veganism, live a minimum waste lifestyle, use less plastic straw/utensils, not eat red meat, etc., they will have to

> constantly act and encourage others to act. However, if it's not the most preferred option for the individual at the time, then the individual can invariably delay acting on climate despite for one more time, i.e., one more extra month of those activities, which they think would not make the situation any worse than what it already is. This again cannot be termed to be hypocrisy, because even though plans have been made by individuals, they are unfortunately not inclined towards executing them, leading to procrastination. (Chrisoula, 2007)

Therefore, Procrastination and Hypocrisy, even though are often taken together, are very different from each other in reality. Taking the example of the British royal couple Prince Harry and Princess Meghan Markle. In 2019, they were criticised for taking 4 private jet journeys in 11 days, in spite of speaking about environmental issues and climate change. This is because it was said that the private jets themselves produced six times more carbon emissions than an average Briton. People had called out on the hypocrisy of the situation, about how their actions are not matching their words.

Therefore, was it right for them to be called hypocrites? According to the authors, YES and NO. As said by Zoe Williams, "*If we carry on like this, there will be no one left to do anything worth doing; even having the time for activism puts you in the zone of privilege because the 'truly oppressed' don't have that luxury*." (Williams, 2019) Even though they might not use the best actions for the cause, it is no reason to oppose the cause in its entirety. If the public stays obsessed with imponderables, how can they claim anybody to be without sin in this world, and how then can the idea of climate change and environmental protection be spread. However, at the same time, it must be noticed that such hypocrisy has become a part of the people, such that they do not realise that their very actions are against their words. Swedish climate activist Greta Thunberg, to set an example on how to live without carbon emissions, sailed

from Monaco to New York on a yacht. The entire trip, including the return, was criticised for emitting 4 times more carbon than flying would have caused. Despite such experiences, neither did Prince Harry and Princess Meghan stop using their jets, nor did Activist Greta Thunberg cancel her yacht trip. This is because they have become used to living comfortably and maybe flaunt their status. (Shellenberger, 2019)

Therefore, there exist instances when hypocrisy gets the better of people when acting in the interest of the environment, however, procrastination may or may not have anything to do with such hypocrisy. Moreover, hypocrisy itself can be intentional or unintentional, wherein the majority of times it comes out to be unintentional.

5.0 Why is procrastinating no longer an option?

The reality of climate change today is no longer a mystery to any of us. The climate change impacts, like floods, heatwaves, extreme rainfall, thunderstorms, lightning, forest fires, cyclones, etc., which were predicted by scientists decades ago, have started highlighting their presence and have come sooner than expected. Climate change has given rise to human rights violation, poverty, malnutrition, etc., which are just among the few social problems that can be related to climate change. As said by Rabih Torbay, "*There has long been talks of a tipping point. Now it feels as if humankind is confronting a breaking point.*" (Torbay, 2020)

The years 2018-19 have seen some major developments in the climate change arena, but unfortunately all for wrong reasons. The United Nations (UN) has time and again provided startling and alarming data related to climate change, and 2019 was no exception. In 2019, according to the UN Reports, the greenhouse gases on the planet were said to have been increased by 43% since

1990. To compensate for this, the planet Earth as a whole is required to reduce its carbon emissions by at least 7.6% per year, between 2020-30. However, in an unfortunate turn of events, instead of decreasing, the carbon emissions have been increasing by 1.5% per year for 2010-20. How can one expect the planet to survive in a healthy condition for long, after knowing about such figures? (*How "climate Procrastination" Has Put the Planet in Peril*, 2019)

The 2018 United Nations Climate Change Conference (COP24) ended with a major disappointment when France abandoned the idea of carbon tax increase, due to the then-ongoing "Gilets Jaunes Movement" in France. This became just one of the many examples of how the world has always given more importance to their social and economic benefits and have completely side-lined and downplayed the climate issue. (Timbeau, 2019)

As known by many, the Paris Agreement, an agreement related to climate change, was accepted by 196 COP21 Parties on 12 December 2015, in Paris. This might be termed as the first voluntary global effort to curb climate change and make a difference in the environment. However, the Paris Agreement ended up becoming nothing but a farce for countries that have not been taking it seriously ever since its existence. A news report, as published by the Universal Ecological Fund, titled "*The Truth Behind the Climate Pledges*", provided an insight into the climate pledges under the Paris Agreement. According to Sir Robert Watson, who is the former chairperson of the Intergovernmental Panel on Climate Change (IPCC) along with being the co-author of the said report, "*The comprehensive examination found that with few exceptions, the pledges of rich, middle income and poor nations are insufficient to address climate change*". Adding to this, he said, "*Simply, the pledges are far too little, too late.*" Some other key findings of the report were:

- Out of the 184 climate pledges entered into by countries under this Paris

> Agreement, almost three-quarter of countries, that aimed at reducing the greenhouse gas emissions, have been termed as inadequate to do so. Only 36 are believed to be sufficient to uphold their commitments of reducing carbon emissions by 40% by 2030; 12 are believed to be partially sufficient as they are capable of reducing emissions by 20-40% only; remaining 136 are believed to be partially or entirely insufficient, which includes India and China. We have reached a point where the countries are required to do double, or even triple, of their actions and decisions to focus on climate change. (*The Truth behind the Paris Agreement Climate Pledges*, 2019)

According to the United Nations Development Programme (UNDP), the Paris Agreement as a whole is only capable of covering 1/3rd of the reduction in emissions, needed to keep the temperature increase below by 2ºC.

One of the other predictions, as given by the Intergovernmental Panel on Climate Change (IPCC) in 2018, dealt with the difference between keeping the increasing global warming between 1.5°C and 2°C. The report highlighted how this 0.5°C difference in temperature, can bring a startling difference in the future of this planet (IPCC, 2018):

7 Under 1.7°C in 2021-2040, about 8% of the global population is expected to experience a reduction in water resources, which would increase to 14%, given that the temperature does not increase further than 1.7°C.
8 With the way things are going, a 4°C increase in temperature would result in a 580% increase in the average chances of flood within the countries which represent 73% of the world population. However, if the increasing temperature is limited to 1.5°C or 2°C, this risk might be reduced by 100% and 170% respectively. concerning

These pointers form only some of the greatest damages that climate change is capable of resulting in, and it is unfortunate to see that despite having the

knowledge and expertise to act on it, countries have time and again side-lined these requirements. However, for how long can we continue to act this way?

A report by the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA) confirmed that the decade consisting of 2010-19 was the hottest in the history of record-keeping of the temperature, in the past 140 years. Further, 2019 was the second hottest year to have been ever recorded and that in the year 2019, the ocean temperatures were the highest in their history. (Borunda, 2020b)

We have, therefore, reached very near to the breaking point of these problems, and it is clear that our future generations, or even our generation for that matter, would be at constant risk of poor health, malnutrition, poverty, etc. The youth is no longer ignorant to climate change, rather they have chosen to ignore climate change. However, it is imperative to note that this habit of procrastination and ignorance of climate change is capable of having dire consequences, which are no longer far from our view.

6.0 Procrastination and COVID-19

COVID-19 has resulted in a range of different issues to arise, and one of the issues includes the increased habit of procrastination in people. During the lockdown, and even after the end of lockdown, people are finding it difficult to complete their tasks within a certain time. Some of the reasons for this increased procrastination include:

(i) Stress: COVID was not a normal situation to have been experienced by people, and the fear of the unknown, resulted in an increased feeling of anxiety and stress in people, which did not let them concentrate on their tasks.

(ii) Shifting Priorities- A shift from the physical to remote working resulted in a decreased feeling of motivation in people, where work was no more the priority of people in life.

(iii) Less social interactions- Virtual interactions were observed to be less emotionally responsive to many people, as a result, interactions which acted as a motivating factor for increased efficiency in people were no longer seen.

In a world where people were feeling lethargic in completing their tasks, climate change was expected to take a further backseat, and that was exactly the case. Even though lockdown gave rise to decreasing temperatures in many parts of the world, the change did not last long, and soon after the end of lockdown, the world was again giving rise to increasing temperatures resulting from carbon-intensive techniques, increasing levels of pollution, food habits, etc.

Comparing COVID-19 to Climate change, it has been made obvious by now that climate change would be much harder to defeat than the pandemic itself. Climate stabilisation requires long term transformations, which people have found difficult to adjust to. This is because, while COVID had immediate and visible effects which pushed the world in making a vaccine as soon as possible, the effects of climate change are still not very visible to people. Acting on climate change is not always immediate and noticeable, and it often makes people question the link between their actions and the outcome of their actions. This reduces their willingness to act for the cause, and this can be seen to exist at a much higher scale due to COVID, as people are desperate in earning back all the losses that they have incurred during this period. (Prakash, 2020)

7.0 Comparative Analysis: Gen-Z and Baby Boomers

The comparative analysis aims to juxtapose the environmental damage and subsequent activism against it between Baby Boomers and Generation Z. The aim is to find out the degree of environmental protection to environmental damage by both generations and see if we can compare activism efforts and find if a trend of procrastination exists or not.

7.1 Who are baby boomers?

"Baby-boomer" is a term used to describe a person who was born between 1946 and 1964. The baby boomer generation makes up a substantial portion of the world's population, especially in developed nations. They have the highest income of any age group and have a more conservative approach to politics.

7.2 Who is Gen Z?

Gen Z is the newest generation, born between 1997 and 2015. They are currently between 6 and 24 years old Members of Gen Z and are extremely racially and ethnically diverse. They are also going to be the most educated of all the generations. They are digital natives who have little or no memory of the world as it existed before smartphones. Gen Zers are progressive and pro-government, most see the country’s growing racial and ethnic diversity as a good thing and consider the climate crisis as one of the biggest problems currently. (Parker & Igielnik, 2020)

7.3 Environmental Damage

According to a report by the Pew Research Centre, the generations can be broken down into the following categories:

1. 1928-1945 (Age 74-91): The Silent Generation
2. 1946-1964 (Age 55-73): Baby Boomers
3. 1965-1980 (Age 39-54): Generation X
4. 1981-1996 (Age 23-38): Millennials
5. 1997 and beyond (Age 22 and under): Generation Z

Geoffrey Supran, a postdoctoral from Harvard, says, "*The climate change generation is a generation of young people born into a warming world, who will be alive to see which climate model scenario plays out, and who has spent—and will spend—essentially our entire adult lives fighting for a just and stable future*". Given that fact that Generation Z and Millennials would most probably be alive to see the outcome of the climate change debate, it is seen that these generations are more worried about climate change. However, does this worry also give rise to actions? (Babb, 2021)

According to a survey conducted in the UK by Censuswide for Aviva, which is a UK insurer, people aged over 55 years were seen to be more involved in every environmental activity that was monitored by them. This included activities such as recycling local bin collections, reducing plane travels, avoiding the use of single-use plastics, and eating only seasonal fruits and vegetables. The survey also found that the population aged between 16-24 years of age, were the worst offenders, in these areas. However, the 2 areas where Generation Z was doing better than Baby Boomers were in going vegan and making second-hand purchases.

Even though it is seen that Generation Z is not transforming their attitudes into action, despite having enough knowledge about climate change through social media, their knowledge and belief is expected to be transformed into a green purchasing behaviour in the coming years. A

preliminary study in Switzerland stated that the behavioural patterns of Gen Z are very different from their preceding generations, as they are more sustainability-oriented and more inclined towards choosing retailers which use green techniques and products. Green production techniques have become important for selling products to the younger generation, as compared to the Baby Boomers, which are more emotional and less likely to spend more on a green product, when they have the option of a cheaper substitute, even if it is not environmentally friendly. (Kamenidou, 2019) (M Topic, 2020)

7.2 Environmental Activism

Gen Z- The generation that takes action

Gen Z ranks climate change as the most important issue of our time, according to last year's Amnesty International survey of more than 10,000 members of 18 to 25-year-olds.

- Ipsos MORI, on behalf of Amnesty International, questioned more than 10,000 people aged 18-25-year olds—also known as Generation Z—in 22 countries for the "Future of humanity" survey.
- In total, 41% of respondents said climate change was one of the most important issues facing the world, making it the most commonly cited, followed by 36% who chose pollution and 31% who selected terrorism.
- Global warming was also most commonly cited as one of the most important environmental issues facing the world (57%), out of 10 environmental issues such as ocean pollution, air pollution and deforestation. (Amnesty International USA, 2019)

- Fridays For Future (FFF)

  FFF is a global climate strike movement that started in August 2018 by Greta Thunberg. She sat outside Swedish Parliament every school day in the weeks leading up to the elections, demanding urgent action on the climate crisis. She along with her team created the hashtag #FridaysForFuture and encouraged other young people all over the world to join them.

  Friday for future India has various chapters and over 10,000 volunteers across the country recently charged under the UAPA and the IT Act for protesting against the new draft Environment Impact Assessment notification, which was later revoked. (Bakshi, 2020)

  Greta Thunberg along with 15 other activists, aged between 8-17, that are part of the lawsuit include Chiara Sacchi from Argentina, Catarina Lorenzo from Brazil, Iris Duquesne from France, Raina Ivanova from Germany, Ridhima Pandey from India, David Ackley III, Ranton Anjain and Litokne Kabua from the Marshall Islands, Deborah Adegbile from Nigeria, Carlos Manuel from Palau, Ayakha Melithafa from South Africa, Ellen-Anne from Sweden, Raslen Jbeili from Tunisia and Carl Smith from the USA have filed a lawsuit against five countries with the United Nation's Third Optional Protocol to the Convention on the Rights of the Child. The lawsuit is filed against five countries: Germany, France, Brazil, Argentina, and Turkey. The activists believe that these nations have not taken sufficient steps to tackle climate change which they believe violates the right of children (tech2 News Staff, 2019).

  - Ugandan teenager Leah Namugerwa began organizing climate protests at home. After learning about Thunberg's Fridays for

Future movement, she co-founded the Ugandan chapter and led a petition to enforce the plastic-bag ban in Uganda. Namugerwa accepts that negotiations with institutions is a difficult process but she trusts the youth of Uganda "I want to raise a generation that cares about the environment. At least if the leaders can't make a difference, we can make a difference" she says (Nair, 2020).

8.0 How can we cope with climate procrastination?

According to the American Psychological Association's (APA) 2018 *Stress in America* survey a whopping 91 per cent of Gen Zs reported experiencing physical or emotional symptoms due to stress in the past month, and 68 per cent reported feeling significant stress about the future. (Wust, 2019)

But along with that, The new Future of Humanity survey by Amnesty International of over 10,000 18-25-year olds across 22 countries reveals that 41% of respondents cited global warming as the most important issue facing the world. (Barbiroglio, 2019)

Thus here we see a dilemma that the youth faces, they are all fervent believers for action against climate change and other socio-economic and political issues but the pressures of the agenda are hurting them mentally which makes them procrastinate. It hence becomes vital to create solutions that are empathetic to their sufferings but also help them work towards their goals to create a sustainable global environment.

The following could be potential methods for individuals to overcome the habit of procrastination concerning the climate crisis :

- Start small

  Change starts from home and hence it isn't required for individuals to take huge leaps and dive into all the sustainable practices at once. If one faces the problem of procrastination, it is best to start small i.e. using a metal straw, cutting down red meat consumption etc and then move onwards when comfortable and prepared. This will ensure that the chances of getting disappointed with oneself are lower and hence incentive is higher. Many in India are vegetarians already, do one small thing that they can do is slowly cut out dairy and animal products like honey if it is in their means and does not obstruct their health.

- Start within your means

  It is also important to make sure that one starts within their means and affordability. For example, veganism is now a popular dietary practice to cut down on one’s carbon footprint but it might not be an economically plausible option to all as it is difficult to find restaurants that offer vegan options and many ingredients are also on the pricier side. Hence starting within one's means will ensure that one does not get demotivated due to either unavailability or inaccessibility. Small measures can include carrying tiffin boxes if one is getting parcels home from restaurants. This will ensure that plastic waste is not unnecessarily generated and also reduces packing charges.

- Create To-do lists with goals you identify with and that have meaning for you

  These goals can be either specific or broad and need not have a very

limited time frame. The only requirement the goals need to possess is to provide a source of drive to accomplish tasks. Having a purpose that is driven through accomplishing certain goals helps overcome procrastination. Simultaneously, your investment becomes rewarding as well. For example, take a list that contains the following goals: attend a climate change rally, switch to a bamboo toothbrush, thrift more clothes and plant/care for a sapling. Accomplishing any of these goals (either large scale or small) will create a rewarding feeling and create a stimulus for achieving the other objectives.

- Create an optimum environment

  Inspiration is a great tool to help one take the required actions. This could be positive reinforcement such as motivational quotes, magazine articles and recordings of speeches or negative reinforcements such as a countdown, whichever one a person prefers. But along with that, it is also important to have tools to reduce one's anxiety or stress and take breaks when needed to avoid a situation of burnout.

- Seek out help and advice when required

  According to the Leadership Alliance's 2017 survey 61% of generation Z enjoy working independently. (Pasare, 2019) This indicates that the youth enjoy their own space and company but it also indicates that a majority of the youth population hesitate to take help or advice. With climate change activism, a lot of the major achievements were gained by large numbers of people working together and hence it is important for not just the individual but the movement as a whole for people to reach out and ask for help to make efficient lifestyle changes and to cope with the changes that decision would entail. In India, the idea of therapy and help is often considered taboo subjects but things have changed at this front and many

people especially the youth are shifting to sustainable lifestyles, so it is important to tell oneself that they are not alone in this journey.

- Learn to forgive yourself

  Allow yourself to make errors and mistakes and learn to move on from it rather than consider it a fault in your persona. It's a completely valid sentiment to feel anxious or low in the face of deadlines and future circumstances. Fighting towards the climate crisis is no small task and is extremely stress-inducing and making major changes in one's life for the cause can shift your centre of gravity for a while. Hence it is advised that one take it slow and get accustomed to everything and then start taking additional steps.

9.0 Let's not forget the Indian Youth- Licypriya Kangujam, Ridhima Pandey, Aditya Mukarji

When it comes to the climate crisis activism we hear the same names like Greta Thunberg and Jamie Margolin but many fail to recognise the contribution that the youth of India has made to the cause. For that reason, through this paper, the authors would like to shed light on the life and work of three exemplary young Indian environmental activists.

- Licypriya Kangujam

  Hailing from Manipur, Licypryiya is a 9-year-old activist who dropped out of school in February 2019 at the age of 8 to protest every week in front of India's Parliament House. She delivered her first speech at the Asia Ministerial Conference for Disaster Risk Reduction in Ulaanbaatar, Mongolia, in June 2018 when she was only 6.

  Licypriya has also set up the Child Movement, a body that aims to raise awareness "*to protect the planet by tackling climate change and natural*

disasters". (BBC News, 2020) one of her main aims is to make climate change compulsory as a subject in earlier classes. Her work has resulted in the Rajasthan government including it in the main curriculum of schools, making it the first state in India to do so and Gujarat is said to follow suit soon. She is often termed as the “Greta of India”, which she doesn't approve of as she considers it the elimination of her story.

- Ridhima Pandey

  She first made headlines in 2017 when she, at the age of 9, filed a petition in the National Green Tribunal against the Indian government for their inaction against climate change and growing pollution in the country, the hearing of which is still pending at the Supreme Court. The then 11-year-old was the Indian representative among the 16 signatories to file a complaint at the UN Climate Action Summit to the United Nations Committee on the Rights of the Child against the lack of government action against climate change. Both her parents work towards forest and wildlife conservation and hence that is where Ridhima got her start and her spark from.

- Aditya Mukarji

  Currently an intern at the UNDP, the young teen got his start in activism by going to cafes convincing people to switch from plastic to bamboo/metal straws at the age of 13. While volunteering for New Delhi-based Chintan Environmental Research and Action Group, that works on waste segregation, he undertook an 18 month-long initiative to eliminate 25 million plastic straws and other single-use plastics from the ecosystem. His efforts got him invited to be a part of the UN Youth Climate Action Summit in September. He is an unshakeable advocate for reforestation and to spread his campaign even to rural areas, he began an

environmental award for girls at a school in Anupshahr, Bulandshahr district, Uttar Pradesh.

10.0 Conclusion

Polar ice caps are melting at a rate of almost 13% per decade, and over the past 30 years, the oldest and thickest ice in the Arctic has declined by an abysmal 95%. According to the NOAA 2019 Global Climate Summary, the combined land and ocean temperature has increased at an average rate of 0.07°C per decade since 1880 and the average rate of increase since 1981 (0.18°C)) is more than twice as great (Lindsey & Dahlman, 2020). Reports find that around 1 million flora and fauna species are now threatened with extinction more than ever before in human history. The average abundance of native species in most major land-based habitats has fallen by at least 20%, mostly since 1900. (*UN Report: Nature's Dangerous Decline "Unprecedented"; Species Extinction Rates "Accelerating,"* 2019). In simpler words, the earth is hurting and humanity has very little time to save it. The youth needs to be at the forefront of taking radical action to combat the climate crisis. As mentioned in the pages above, procrastination is one big hurdle in front of the youth but it cannot be used to dismiss the evident efforts the younger population has taken. The young leaders have given the world hope and inspiration to shift to a sustainable lifestyle that reduces the individual carbon footprint as a small step and marching in protests and making demands from the governments as a larger step. Procrastination is a habit that is difficult to overcome, but climate change does not wait while we procrastinate and continue its actions, which are the consequences of our actions. By starting small and within one's limits by creating to-do lists and seeking help when needed, everyone can fight to protect the planet we cannot replace.

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Climate Change Action through Education: Strategies to Integrate CCEE in Schools

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1.0 Introduction

Humanity is facing the gravest threat from the effects of a rapidly changing climate. Climate has been changing over time due to natural processes such as volcanic eruptions, variations in solar radiation, etc.,[1] However, in the recent past, anthropogenic activities have accelerated climate change, affecting the habitability of the planet. The United Nations Framework Convention on Climate Change (UNFCCC), rightly captures this in its Article 1(2) by defining 'climate change' as "a change of climate which is attributed *directly or indirectly to human activity* that alters the composition of the global atmosphere and which is *in addition to natural climate variability* observed over comparable time periods". While initially we were concerned with limiting global warming to 2 degrees celsius, with the Intergovernmental Panel on Climate Change's (IPCC) estimation on the adverse impacts at the 1.5 degrees mark, we have recognized the necessity to maintain the increase below 1.5 degrees.[2] Adverse impacts including climate related risks to human health, food security, livelihood, water availability etc., will not affect everyone equally, with the disadvantaged and the marginalized being the most vulnerable. Even within the local context, the impacts will differ widely among different regions. In India, an assessment of the past and future trends in the rate of climate change suggests that its impacts on infrastructure, environment, public health and other sectors could hamper the country's developmental goals and economic growth.[3] As the climate system is complex and its threats are multiple, the

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[1] Jennifer Wall : MSFC, "What Is Climate Change?," NASA (Brian Dunbar, May 13, 2015), http://www.nasa.gov/audience/forstudents/k-4/stories/nasa-knows/what-is-climate-change-k4.html.

[2] IPCC, 2018: Summary for Policymakers. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. *World Meteorological Organization, Geneva, Switzerland, 32 pp.*

[3] R. Krishnan et al., eds., *Assessment of Climate Change over the Indian Region: A Report of the Ministry of Earth Sciences (MoES), Government of India* (Singapore: Springer Singapore, 2020), https://doi.org/10.1007/978-981-15-4327-2.

adaptation and mitigation approaches need to invest widely and integrate equity and social justice principles to build resilience among those who will bear the brunt of climate change.

One such approach involves transformation in education, which is now a recognized essential element for global response to climate change. It helps bring awareness on climate change and its implications among school and university students, as well as encourages youngsters to contribute individually and collectively towards climate change action. Education for Sustainable Development (ESD) also forms a key target under Sustainable Development Goal 4 (Quality Education), which includes a climate change component to ensure learners acquire knowledge so as to take appropriate action and the skills to enable the transition towards sustainable development. UNESCO suggests a 'whole-school' approach, wherein students' learning is aided by both formal and informal ways, further promoted by school's values and activities i.e., to live what they learn and learn what they live.[4] Stressing the role of ESD in achieving the 17 SDGs, the UNESCO's ESD for 2030 toolbox identifies five priority areas namely: policy, learning environments, building capacities of educators, youth and local level action. However, India has not effectively integrated climate concerns in education as a result of which the potential of youth in climate action remains under-utilized. In this paper, we focus specifically on school education in order to propose certain strategies for integration of both formal and informal education with the existing framework.

The paper is divided into two sections. The first section analyses the status of climate change literacy in India and makes the case for the necessity of educating children and youth on climate change. It proposes formal education through curricular changes and teachers' capacity building as effective

[4] Natalie Gibb, "Getting Climate-Ready - A Guide For Schools On Climate Action" (United Nations Educational, Scientific and Cultural Organization, 2016), https://unesdoc.unesco.org/ark:/48223/pf0000246740/PDF/246740eng.pdf.multi.

strategies for climate change education. Noting the significance of informal ways of learning, the second section focuses on participative learning and infrastructure as 'aids' to formal education on climate change. As we propose the strategies, we have also identified certain existing frameworks which could be a good starting point to integrate these strategies.

2.0 Education, Environmental Learning, and Development Agendas

Combating climate change has been one of the most problematic and fatal challenges across the globe. While actions and discussions are being taken place for the same, the question here is- are they enough? Global climate change has already had observable effects on the environment. Glaciers have shrunk, ice on rivers and lakes is breaking up earlier, plant and animal ranges have shifted and trees are flowering sooner.[5] Scientists and environmentalists are confident that lack of response will result in global temperatures continuing to rise for decades to come, largely due to greenhouse gases produced by human activities. Even so, if we collectively stopped emitting greenhouse gases at a global level. We, humans, have waited too long before taking serious actions against it, and have already damaged the climate enough that global warming would continue to happen for at least several more decades, if not centuries. At this stage, it is more so important that everyone is literate and aware of climate change, its effect, and causes.

a. Comparative analysis for climate change literacy in India- demographics

Prior studies and researches have shown that only 37 percent of Indians nationally say they know "a great deal" or "something" about

[5] Randal Jackson, "The Effects of Climate Change," Climate Change: Vital Signs of the Planet, accessed February 7, 2021, https://climate.nasa.gov/effects.

global warming. This study also found limited awareness of global warming as an issue. [6]

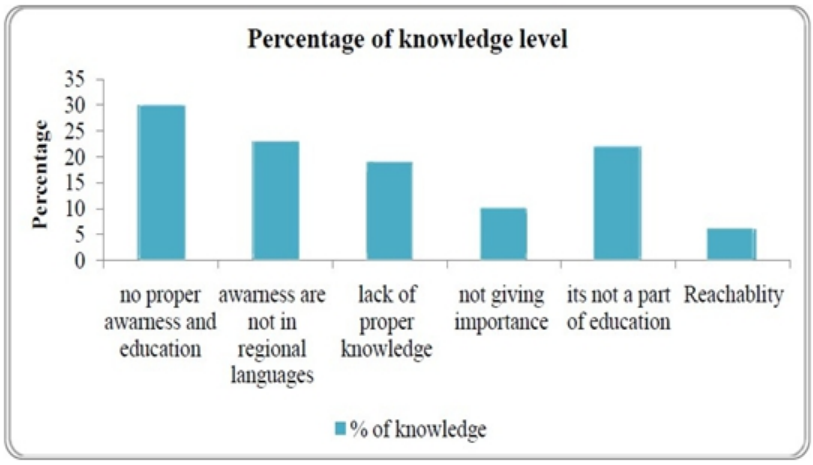

Figure 1: Source: ("Communicating Climate Change Importance through Interactive Multimedia Framework for Promoting Education and Effective Public Awareness on Climate Change," 2017b, p. 412)

A survey taken around cities and villages in select five states showed that, although people perceived changes in climate and resources, only just over 40% said they had heard the term "climate change" and knew what it meant – which is the second-lowest percentage of all the Asian countries surveyed.[7] The level of awareness was lowest among poor people but there were marked differences by state. For instance, the level of awareness was high in Odisha and Uttarakhand and they were more likely to believe that climate change was happening. Odisha had the highest exposure to communication related to climate change of all the surveyed states and the people in Uttarakhand reported strong affinity with the environment as attributable to their level of awareness and belief.

[6] Vigneswaran Selvaraj et al., "Communicating Climate Change Importance through Interactive Multimedia Framework for Promoting Education and Effective Public Awareness on Climate Change," January 1, 2017, 414.

[7] Varinder Gambhir and Prerna Kumar, "India: How the People of India Live with Climate Change and What Communication Can Do" (BBC Media Action, 2013), https://dataportal.bbcmediaaction.org/site/assets/uploads/2016/07/India-Report.pdf.

The data from the survey, indicating the level of awareness among different states is reproduced below:

	All	Gujarat	Madhya Pradesh	Mumbai City	Odisha	Tamil Nadu	Uttarakhand
Base: All respondents	8368	1461	1518	787	1524	1530	1548
%	%	%	%	%	%	%	%
Heard of climate change	44	18	29	45	75	31	63
Believe climate change is happening	57	66	43	57	82	26	67

Table 1: Source: Climate Literacy and Individual Consumption Behavior: An Evaluation of the Indian Experience. (2019). European Journal of Sustainable Development, 190. https://doi.org/10.14207/ejsd.2019.v8n5p187

For India to be able to take action, it is highly important that people, especially the children and youth, the most important stakeholders are educated about the subject. How climate change will affect them, their responsibilities and what can be done to prevent it from worsening? Such

questions and introducing science education to promote understanding of the scientific processes, including the inherent uncertainty will not only promote the behaviour towards the climate change issue but help people adapt to effective interventions and healthier lifestyles. However, as far as textbooks for classes VI-XII (NCERT), there are chapters on ecology, sustainable development and resource management with no specific reference to 'climate change' (except the science textbook for class XI). It is also significant here to note that the curriculum revision made in the light of academic disruption due to COVID-19 pandemic, has deleted certain crucial chapters related to environmental education and climate change for the academic year 2020-2021.[8] Early education about the issue will help model behavioural norms, set new or change existing social norms, portray less consumption-oriented, energy-intensive lifestyles, promote new values and ideals around the family size and reproduction, and lay a foundation for a broad acceptance of policy interventions.[9]

b. Effective climate change education strategies

i. Reconstructing science and environmental education

Education has a fundamental role to play in bridging inequalities in wealth and opportunity, and in building social cohesion. It should aim at nurturing students who are literate, numerate, articulate as well as curious and passionate about learning.[10] When we talk about reconstructing the science curriculum, or integration of environmental education in the

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[8] "CBSE | Academics Unit : Revised Curriculum/Syllabus," accessed February 7, 2021, http://cbseacademic.nic.in/Revisedcurriculum_2021.html.
[9] Selvaraj et al., "Interactive Multimedia Framework", 412.
[10] Annette Gough, "Towards More Effective Learning for Sustainability: Reconceptualising Science Education," Transnational Curriculum Inquiry 5 (January 1, 2008).

curriculum, we talk about ***creating a culturally and socially relevant syllabus***. Bridging the gap between science and environmental studies and creating a mutually respective relationship between the two; we move towards protection and enhancement of the environment and education as an instrument of development for improving the quality of life of human communities.[11] While, to formulate a proper response towards climate change we need more than just education and literacy on the topic, these early efforts are undoubtedly very crucial in addressing climate change. Inputs like integrating environmental education and providing the students with a deeper understanding of science in their environment, promotes learning and systematic change. Not only this, but for a global response or even a policy reform in national settings, we require a foundation of understanding and knowledge that will only be formed through education in early stages in which schools play a prominent role.

Environmental education is a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions.[12] Environmental education is more than information or facts about the environment. Rather it creates a holistic perspective, that is individualistic to each person

[11] "Environmental Education: Objectives, Aims and Principles of Environmental Education," Your Article Library (blog), May 8, 2014, https://www.yourarticlelibrary.com/environment/environmental-education-objectives-aims-and-principles-of-environmental-education/39724.

[12] OA US EPA, "What Is Environmental Education?," Overviews and Factsheets, US EPA, December 13, 2012, https://www.epa.gov/education/what-environmental-education.

and their awareness, sensitivity and participation to the environment and its needs. Its aim is to show that each country's actions can have repercussions on several others, due to the economic, social, political and ecological interdependencies of the modern world. In this regard, it should help to develop a sense of responsibility and solidarity among countries and regions as the foundation for a new international order which will guarantee the conservation and improvement of the environment.[13] Simply put, environmental education in schools should not only provide knowledge about the science behind climate change, or say problems related to climate change, that are both immediate and distant but also ***create an attitude of concern and stimulation to improve and maintain the environmental quality***. Furthermore, it will furnish and dispense skills and provide participation opportunities to help resolve the environmental challenges.

Italy on November 5, 2019 becomes the only european country to formally integrate climate change and sustainability in their curriculum- declaring "climate emergency" and becoming a model for creating climate change literacy a priority. Environmental experts from Columbia and Oxford Universities have been recruited to help to prepare the new curriculum targets for each grade, including advice on the best approaches to engage each age group.[14] Teachers were trained for the same and from

[13] "Environmental Education: Objectives, Aims and Principles of Environmental Education" 2014

[14] Yi, "Is Italy the first country to require Climate Change Education in all schools?," Bureau international d'éducation, August 26, 2020, http://www.ibe.unesco.org/fr/news/italy-first-country-require-climate-change-education-all-schools.

September 2020, students in every grade have been required to learn about climate change and sustainability one hour a week (a total of 33 hours).[15] It has taken an integrative approach, but internalizing the aspects of climate change and sustainability with the existing subjects so that students are equipped to approach the traditional subjects from the lens of sustainability.

Whether as a separate subject or as a transversal theme in the school curriculum, it is essential to ***cultivate environmental values and knowledge among young people so that they can lead more sustainable lives***. To stimulate their curiosity about the natural world and their concern for the health of the planet, appropriate teaching programmes must be promoted.[16] A curriculum framework that can be standardised in the Indian schooling system for environmental education can be formed through keeping these three guidelines:

1) ***Knowledge of climate change and wider environmental processes***

   To instill knowledge of climate change and other environmental processes, there are certain topics that need to be included into the curriculum with sufficient scope for expansion according to the educational levels and stages. For example, certain aspects can be included in the existing science, social studies or geography classes as per different grades. The ***syllabus should include both specific, content-***

[15] "Italy to Require Schools to Teach Climate Change, in World First," Big Think, November 11, 2019, https://bigthink.com/politics-current-affairs/italy-climate-change.

[16] "The Importance of Climate Change Education - Iberdrola," accessed February 7, 2021, https://www.iberdrola.com/social-commitment/climate-change-education.

based knowledge (e.g. climate, deforestation, habitat loss, water cycle, soil erosion, air pollution) ***as well as awareness of strategies to address pressing environmental concerns*** (e.g. reducing carbon consumption, encouraging low carbon development, reducing deforestation through sustainable forest management, improving water and waste management).[17] Certain topics that could be included as proposed by G.V. Gopal and V.V. Anand[18] are:

- The natural processes which take place in the environment.
- The impact of human activities on the environment.
- The comparison between different environments both in the past and present.
- Environmental issues such as the greenhouse effect, acid rain and air pollution.
- Local, national and international legislative controls to protect and manage the environment
- How policies and decisions are made about the environment.
- How human life and livelihood are dependent on the environment.
- The conflicts, which can arise about environmental issues like river water sharing.
- How the environment has been affected owing to past decisions and actions.
- The importance of planning and design and an esthetic

[17] Colin Bangay and Nicole Blum, "Education Responses to Climate Change and Quality: Two Parts of the Same Agenda?" *International Journal of Educational Development* 30, no. 4 (July 2010): 359–68, https://doi.org/10.1016/j.ijedudev.2009.11.011.
[18] G.V. Gopal and V.V. Anand, "Environmental Education in School Curriculum an Overall Perspective," accessed February 7, 2021, http://wgbis.ces.iisc.ernet.in/biodiversity/sahyadri_enews/newsletter/issue22/art5.htm.

consideration.

- The importance of effective action to protect and manage the environment.

2) ***Knowledge of local environmental conditions, associated risks and management strategies, disaster risk reduction - values attitude and positive action***

Across India people have noticed changes in climate including increased temperatures (87%), decreased rainfall (82%) and increasingly unpredictable extreme weather events (65%). In the five states surveyed, perceptions of changes in climate were remarkably similar, despite their different geographic locations. [19] They were able to link these perceived changes to changes in availability of and pressure on the resources. More than half of those surveyed felt that water availability had decreased over a 10-year period. This decrease in water availability was a big issue in the megacity of Mumbai, where 63% of people perceived a decrease compared with people in smaller towns (46%) or rural areas (53%).[20] More than a third of people felt that electricity and fuel availability had decreased over the last decade. Nearly half (44%) of people surveyed in rural areas felt that agricultural productivity had decreased. This perception of a decline in resources was perceived across all states except for Gujarat, which has undergone significant recent development.[21] Majority of those surveyed expressed concerns about their children's future and wanted the

[19] Gambhir and Kumar, "India: Climate Change and What Communication Can Do", 28
[20] Gambhir and Kumar, "India: Climate Change and What Communication Can Do", 28
[21] Gambhir and Kumar, "India: Climate Change and What Communication Can Do", 28

younger generation to be educated on the changes in their immediate environment and what they could do about it.[22] Therefore, ***integrating information about the local environmental conditions, associated risks and management strategies will promote positive attitudes towards the environment and give them a practice based knowledge to deal with problems and improve the environmental quality***.

The precise contents for the same will be localized, depending on the immediate environment and the associated concerns. Few possible aspects could be annual flood cycle and how to manage it; sustainable agricultural methods; existing areas of pollution and potential strategies for improved water, soil and waste management; sustainable forest management; and awareness of valuable endemic species (both flora and fauna) and how to protect them.[23] Not only this, but students would have a basic understanding about disaster management, where they'll learn about environmental disaster risk reduction. The curriculum will support them ***to identify and plan for emergencies such as natural disasters as well as other environmental risks*** such as water contamination, soil erosion, deforestation (leading to landslides), and disease resulting from inappropriate waste disposal. Recent research suggests that these participatory strategies can have a considerable impact on community health and well-being.[24]

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[22] Gambhir and Kumar, "India: Climate Change and What Communication Can Do", 72 & 76

[23] Bangay and Blum, "Education Responses to Climate Change", 6

[24] Bangay and Blum, "Education Responses to Climate Change", 6

3) *Education through the environment*

Environmental education has an ability to solve societal needs, the needs of a community problem and their solutions and workforce for tackling cooperative minds. We need the school children to share and develop the motivation from school about various environmental issues, which are the challenges of today and prepare them for the future.[25] When we talk about education through the environment we talk about applying the theory, knowledge and understanding to a practical and solution based approach. While, here we are talking about Role-Play Simulations (RPS) as a tool for adaptation education and engagement. ***Activities and events where students are encouraged to apply their knowledge or even contribute to the environment*** for example, planting trees or taking out a composting drive would encourage them to learn more and effectively about the topic.

So, what are role play simulations and how are they relevant to climate change education? RPS is a type of a serious game that engages students to solve a hypothetical problem based on certain real issues so that they learn new approaches. Especially in the context of strategizing and policy making, these games have been shown to be effective for conveying complex information, fostering mutual understanding to propose creative and workable solutions. They can immerse people in realistic situations that they have not yet confronted; help them grapple first-hand with unprecedented and complex situations; and provide them with an

[25] Gopal and Anand

opportunity to experiment in a safe, low cost environment.[26] Research suggests that RPSs can help participants learn technical and content based knowledge, such as the potential impacts of climate change, as well as process based knowledge, such as how scientific uncertainty can influence decision making.[27] RPS approaches in multi-stakeholder negotiations also act as 'safe spaces' for people to work on issues and learn from each other. Post-simulation reflection sharing also enables the participants to reflect on the collective experience and practically relate the same to real life as they go back. In light of these strengths, science-based RPSs show great potential as a tool for fostering climate adaptation literacy, enhancing collaborative capacity, facilitating social learning, and otherwise preparing stakeholders and the public to participate in the real collective risk management decisions facing their communities and organizations.[28]

The idea behind integrating RPSs is to enable a realistic dialogue created by students and negotiated decision making. By engaging in RPSs, students could experiment with possible solutions and understand different perspectives. These RPSs can also help stimulate risk management strategies or become an extension to learning about disaster management without the direct political, financial, relational, or other consequences. This ***enables students to understand***

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[26] Danya Rumore, Todd Schenk, and Lawrence Susskind, "Role-Play Simulations for Climate Change Adaptation Education and Engagement," *Nature Climate Change* 6, no. 8 (August 2016): 18, https://doi.org/10.1038/nclimate3084.

[27] Rumore et at., "Role Play Simulations"; Leah Stokes and Noelle Selin, "The Mercury Game: Evaluating a Negotiation Simulation That Teaches Students about Science–Policy Interactions," *Journal of Environmental Studies and Sciences* 6 (January 29, 2014), https://doi.org/10.1007/s13412-014-0183-y.

[28] Rumore et at., "Role Play Simulations", 18

the climate risks and brainstorm adaptation strategies, where the participants can determine which action best suits the situation that is proposed. Through such simulations, we could introduce collaborative and participatory approaches to decision making by analysing the potential pros and cons. Such simulations could be followed with a facilitated debriefing conversation which provides an opportunity for participants to make sense of their simulation experience and what they take away from it.[29]

Furthermore, ***this kind of high quality learning cannot happen independently and needs to be supported by changes in curriculum, pedagogy and assessment methods***. For example, the standard method of testing that has been existent till now requiring learners, teachers and schools to rely on memorisation and rote learning needs to be transformed so as to encourage critical thinking and problem solving. In other words, encouraging high quality teaching requires changes in curricular, teaching approaches and systems of assessment which place value on high quality learning.[30]

ii. Teachers Training Programme on Climate Change

The Teachers Training Program on Climate Change, initiated by the climate project foundation and taken up by the UNFCCC, is designed to give teachers confidence in facilitating climate change and sustainability education inside and outside the classroom. The project enables teachers to help young people understand the causes and consequences of climate change, bring

[29] Rumore et at., "Role Play Simulations"
[30] Bangay & Blum, "Two Parts of the Same Agenda?", 364

about changes in attitudes and behaviours to reduce the severity of future climate change and build resilience in the face of climate change.[31] The aim of the teacher's training program is to be able to reach as many schools and students with proper resources and understanding. India has a population of 1.2 billion people and an in-school youth population of over 500 million. It is necessary that students learn about climate change and how to adopt more sustainable ways of living.[32]

Reaching all 500 million students through extensive workshops, study material, activities, traditional methods would be very expensive, and would require a large carbon footprint. ***If teachers are trained they can integrate climate change education into their lessons and make it a priority***. Students across India would be supplied with online courses, webinars, modules etc. whereas teachers, as given by the UNFCCC and climate reality project, would be trained extensively for the following[33]:

- Approaching climate change education within a multidisciplinary frame addressing the basic science of climate change, causes, impacts (local & global), and solutions (adaptation & mitigation)
- Professional development for the teachers of diverse subject backgrounds to help them to integrate climate change content into their lessons plans
- Promote sustainable development education within the framework of education for climate change

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[31] "Teachers Training Program on Climate Change - India | UNFCCC," accessed February 7, 2021, https://unfccc.int/climate-action/momentum-for-change/activity-database/teachers-training-program-on-climate-change.

[32] "Teachers Training Program on Climate Change-India", UNFCCC

[33] "The Climate Reality Project - India," accessed February 7, 2021, http://www.tcpf-india.org/.

- Interactive learning to build on thinking skills as well as foster socio-affective (emotional) learning
- Develop a responsible attitude to cater to the reduction of wasteful consumption, caring for the environment and engrossing healthier and greener lifestyles.

Although, the role of education in addressing the challenges of climate change is increasingly recognized, the education sector remains underutilized as a strategic resource to mitigate and adapt to climate change.[34] The given framework could be a great beginning to integrating climate change and sustainable development as a standardized syllabus across India that has it's legitimate space in the curriculum.

3.0 Non-formal Climate Change and Environment Education (CCEE)

Climate change issues are complex and climate change education must improve the capability of the learners to adapt, analyze problems and develop creative solutions by getting them out in the field[35]. Fraser and Greenahlgh note that in today's world where improving capabilities becomes a priority over competence, there needs to be diversion from the traditional education and training.[36] They further emphasize that capability is enhanced through a problem based learning by adopting feedback on performance, challenge of unfamiliar contexts and the use of non-linear methods.[37] In addition to pedagogical approaches, the learning

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[34] Yoko Mochizuki & Audrey Bryan, "Climate Change Education in the Context of Education for Sustainable Development: Rationale and Principles" *Journal of Education for Sustainable Development* 9, no.1 (2015): 4–26, https://doi.org/10.1177/0973408215569109

[35] Diane Pruneau, Abdellatif Khattabi, and Mélanie Demers, "Challenges and Possibilities in Climate Change Education," *US-China Education Review* 7, no. 9 (2010): 22.

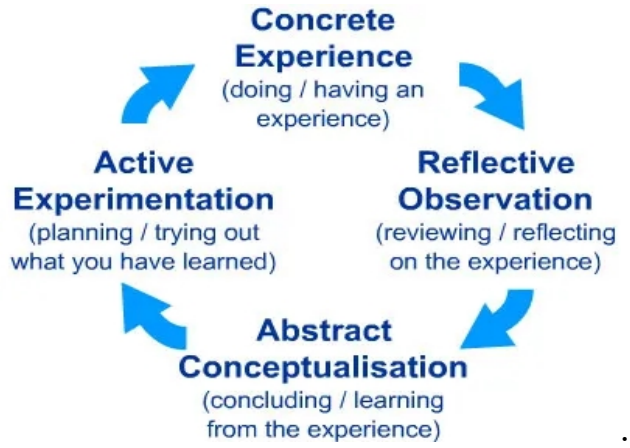
[36] Sarah W Fraser and Trisha Greenhalgh, "Coping with Complexity: Educating for Capability," BMJ : British Medical Journal 323, no. 7316 (October 6, 2001): 799–803.

[37] Fraser and Greenhalgh, "Coping with Complexity", 800

spaces also have positive impacts on learning when planned and implemented effectively.[38] Therefore, ***for CCEE, the departure from conventional methods must involve both pedagogical and infrastructural changes***. In this section, we propose two tools: experiential and participative learning; and design and infrastructure as tools that could be utilized and the opportunities that the existing frameworks offer for CCEE.

1. Experiential and Participative learning

Experiential education refers to the pedagogy in which educators engage with learning through direct experience and reflection in order to increase knowledge, values and also to improve their capacities to contribute towards community action.[39] Experiential learning theory as proposed by David Kolb in 1984 involves a four-stage learning cycle that involves experiencing, reflecting, thinking and acting that needs to be applied repeatedly in every experience and interaction.[40]



The Experiential Learning Cycle

Image Source: https://www.simplypsychology.org/learning-kolb.html

[38] Peter Barrett et al., The Impact of School Infrastructure on Learning: A Synthesis of the Evidence (Washington, DC: World Bank, 2019), https://doi.org/10.1596/978-1-4648-1378-8.
[39] "What Is Experiential Education?," Association for Experiential Education, accessed February 7, 2021, https://www.aee.org/what-is-ee.
[40] "What Is Experiential Learning?," Institute for Experiential Learning, accessed February 7, 2021, https://experientiallearninginstitute.org/resources/what-is-experiential-learning/.

Results from a study among Form Four students by adopting Kolb's experiential learning model in the context of climate change education showed that experiential learning improved students' knowledge about climate change, in addition to which, there was also a significant increase in their motivation towards the environment.[41] It found that experiential learning exposed students to various environmental problems and issues related to climate change, which also forced them to make decisions to resolve such issues. There are similar studies across the world which suggest the same.[42] Experiential learning also offers a ***good opportunity for students to create a link between schools and communities for their mutual benefit.*** For instance, in Thailand, Srilanka and Indonesia, under the curriculum-integrated Child-led Disaster Risk Reduction education, children's knowledge of their physical environment was invaluable in creating hazard maps and identifying evacuation routes.[43] Similarly, ***traditional knowledge systems are also a good resource f****or students to learn from, develop solutions and act*. Therefore, it is equally important to find opportunities to link conventional learning with community experience and knowledge systems. Environmental education projects could be the start for schools in order to encourage student involvement with communities. These projects should be ***designed to promote inclusiveness*** and acknowledge varied lifestyles and experiences of traditionally excluded groups. It's approaches should explore ways to better align education with students' diverse realities and the various

[41] Mageswary Karpudewan and Nur Sabrina Mohd Ali Khan, "Experiential-Based Climate Change Education: Fostering Students' Knowledge and Motivation towards the Environment," International Research in Geographical and Environmental Education 26, no. 3 (July 3, 2017): 207–22, https://doi.org/10.1080/10382046.2017.1330037.

[42] For eg., See Diane Pruneau et al., "Experimentation with a Socio-Constructivist Process for Climate Change Education," Environmental Education Research - ENVIRON EDUC RES 9, no. 4 (November 1, 2003): 429–46, https://doi.org/10.1080/1350462032000126096.

[43] Lynne Benson and Jon Bugge, "Child-Led Disaster Risk Reduction: Practical Guide" (Save the Children, 2007), https://www.preventionweb.net/files/3820_CHLDRR.pdf.

places they inhabit.[44] Effectiveness of student-community engagement through CCEE projects depends on how far the governmental policies incorporate and facilitate such engagements. In this context, we consider State Action Plans on Climate Change for the state of Tamil Nadu and the Union Territory New Delhi and the National Green Corps in order to explore the extent to which these initiatives consider the relevance of the education departments. Presently, Tamil Nadu and New Delhi's State Action Plans on Climate Change emphasize on creating awareness, building capacities of students and teachers for disaster risk management and climate change. However, they emphasize on creating awareness among students, and do not venture towards engaging them in participatory activities (exception being disaster reduction programme). At the national level, the programme for the National Green Corps by the Ministry of Environment, Forests and Climate Change operating through eco-clubs set up at schools aims at building cadres of children working towards conservation and sustainable development. These eco-clubs are funded by the Central Government with an annual grant of Rs. 2,500 each.[45] In addition to this, the eco-clubs are also funded by the state governments for their activities. Comparing the funds given for eco-clubs, the Government of Delhi provides a grant of Rs. 20,000 per school[46], whereas the Government of Tamil Nadu provides a meagre amount of Rs. 5,000 per school[47] per year. Apart from the scant grants, there is also no feedback mechanism to reflect on the participatory activities, without which there cannot be an effective implementation. Eco-clubs provide a

[44] Selim Iltus, "A Companion to the Child Friendly Schools Manual: Climate Change and Environmental Education" (UNICEF, 2017), https://s25924.pcdn.co/wp-content/uploads/2017/11/CFS_Climate_E_web-1.pdf.
[45] "National Green Corps Monitoring System," 2016, http://ngc.nic.in/Home.aspx.
[46] "Delhi State Action Plan on Climate Change" (Department of Environment, Government of NCT of Delhi), accessed February 7, 2021, http://moef.gov.in/wp-content/uploads/2017/08/Delhi-State-Action-Plan-on-Cimate-Change.pdf.
[47] "School Education Department - Policy Note 2020-2021", accessed February 7, 2021, https://cms.tn.gov.in/sites/default/files/documents/sedu_e_pn_2020_21.pdf

valuable opportunity for students to engage with communities to bring changes through concerted action with the aid of local knowledge. However, for it to be successful, *we need* ***co-ordinated action between education and environment departments which are equally relevant to achieve the potential of participatory learning through existing schemes***.

2. Design and Infrastructure

School buildings have an enormous impact on people within the school, the community around it and the environment. As students learn more from actions and experience, it is significant to understand the interface between school design/infrastructure and the teaching methodologies employed in schools. Apart from the basic standards/codes with respect to essential furniture, equipment and requirements for functioning, school design and infrastructure development in the context of climate change plays out in two ways *viz.,* climate change proofing and employing school spaces and buildings as learning tools.

a. Climate Change Proofing

Climate change proofing refers to designing educational infrastructure that is disaster-resilient and safe by minimizing the risks and associated costs of weather-related damages.[48] It involves compliance to the National Building Code of India (2005), developed by the Bureau of Indian Standards (BIS) which includes standards for earthquake resistance, energy conservation[49] and facilities for the physically challenged. These infrastructural changes are a recognized approach to mitigate the effects of

[48] Bangay & Blum, "Two Parts of the Same Agenda?"
[49] See Energy Conservation Building Code, 2007

climate change[50] and schools are even used as *community resources*. Well constructed and disaster resilient school buildings have come to aid local communities during cyclones and floods as shelters. ***Climate proofing initiatives also encourage engagement with communities and participation of children in decision making***. For instance, in the Philippines, when school children in San Francisco municipality realized their school is under threat from landslides, they debated and opened up the decision to relocate the school to a community referendum.[51]

b. Efficient Use of Infrastructure to be Employed as Learning Tools

In order to develop school spaces as learning resources, Buildings as a Learning Aid (BaLA) as a concept was integrated into Sarva Siksha Abhiyan (SSA) to maximize the pedagogical potential of built spaces in schools.[52] BaLA was curated by Mr. Kabir Vajpayee with Vinyas, Centre for Architectural Research & Design supported by UNICEF. It assumes that school buildings can be used as resources for teaching and learning and wherein it makes a two level intervention: a) by developing spaces to create a variety of teaching-learning experiences and b) building elements in spaces as teaching and learning aids. It stresses on understanding

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[50] "Education Sector Responses to Climate Change: Background Paper with International Examples" (UNESCO Bangkok, 2012), https://unesdoc.unesco.org/in/documentViewer.xhtml?v=2.1.196&id=p::usmarcdef_0000215305&file=/in/rest/annotationSVC/DownloadWatermarkedAttachment/attach_import_c8e17fee-1897-4a88-ab10-960041286baa%3F_%3D215305eng.pdf&updateUrl=updateUrl8053&ark=/ark:/48223/pf0000215305/PDF/215305eng.pdf.multi&fullScreen=true&locale=en#Climate-Change-15Feb.indd%3A.5533.

[51] Marla Petal, "Disaster Prevention for Schools Guidance for Education Sector Decision-Makers (Consultation Version)" (UNISDR, Geneva, November 2008), https://www.preventionweb.net/files/7344_DPforSchoolssm.pdf.

[52] "Sarva Siksha Abhiyan: Framework of Implementation Based on the Right of Children to Free and Compulsory Education Act, 2009" (Department of School Education and Literacy, Ministry of Human Resource Development, 2011), https://seshagun.gov.in/sites/default/files/2019-05/SSA-Frame-work_0.pdf

the physical world around children and nurturing the natural environment around children as an essential element of BaLA at elementary level, in the context of enabling an effective learning environment.[53] A study conducted among students of five middle schools measuring the outcomes of green building literacy in the pro-environmental behaviour, found that students who attend school in buildings specifically designed to be "green" exhibited higher levels of knowledge about energy efficiency and environmentally friendly building practices.[54] SSA also envisions creating a sustainable ecosystem, incorporating the elements of green architecture etc. However, even this prescribes to development of an ecosystem that is conducive for cognitive development and none of these schemes or concepts emphasize the relevance of green architecture in developing environmental consciousness. Nevertheless, ***BaLA provides a conducive framework to integrate school infrastructure and design with environmental learning and climate change education, provided we develop sufficient standards for building sustainable infrastructure and design in schools.*** There is a global movement towards building 'green schools'/eco schools which are designed to be environmentally sustainable. which not only minimize environmental impacts and improve the occupants health, but also improve the environmental and sustainability literacy among children when exposed to such design and infrastructure.[55] Indian

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[53] "Effectively using BaLA (Building as Learning Aid) in Elementary Schools A Teacher's Manual" (Vinyas & UNICEF, 2012), http://www.edudel.nic.in/upload_2013_14/145_52_dt_03102013/SecA.pdf

[54] Laura B. Cole. "Green Building Literacy in the School Building: A Study of Five Middle Schools in the United States." *Children, Youth and Environments* 25, no. 3 (2015): 145-74. Accessed February 7, 2021. doi:10.7721/chilyoutenvi.25.3.0145.

[55] Amy Civetti, "LEED Helps Schools Achieve Better Health and Learning for Students," Center for Green Schools, April 24, 2017, https://centerforgreenschools.org/leed-helps-schools-achieve-better-health-and-learning-students.

schools are also transitioning towards building green schools, but only as a voluntary measure under the international rating system, LEEDS (Leadership in Energy and Environmental Design) and certain Indian initiatives such as IGBC (Indian Green Building Council) Green Schools and the Green School Programme by the Centre for Science and Environment (CSE)[56]. The Green School in Bali for instance is almost entirely built with bamboo, which is a local resource with the mission to develop responsible and green habits by internalizing the concept of sustainability and introducing these practices. The ***experiences and resources offered by these private initiatives can be incorporated into IS : 8827 -1978*** (Indian Standards Recommendations for Basic Requirements of School Buildings) ***and other building codes governing school infrastructure.***

[56] "What Is a Green School?," Green Schools Programme, 2019, https://www.greenschoolsprogramme.org/schools/the-programme/what-is-a-green-school/.

4.0 Conclusion

Climate Change is an imperative issue, which with time is becoming extremely challenging to tackle. There is a disturbing gap between climate change literacy, awareness and an actual action that can work against climate change. An educational framework that functions at all different levels is without delay necessary. It would not only give climate change the recognition it deserves, in terms of action and plan to prevent it, but start doing so by creating a foundation of an eco friendly community and lifestyle among Indians. Our research paper suggests strategies to incorporate changes into the existing Indian education system, to acknowledge and cater to climate change on an educational level. The paper suggests a holistic framework where climate change and environmental education is integrated in the pedagogy and school infrastructure to facilitate both formal and informal ways of learning. It proposes a curriculum where climate change and its implications can be taught and improved through continued, active learning, in the course of both application and practical skill, and theoretical and critical thinking. We propose the adoption of Kolb's experiential learning model as a strategy for effective learning through role play simulations and community participation, for which the National Green Corps and Eco-Clubs at schools offer a good framework to work upon.

Additionally, the framework talks about an improved teacher's training programme, so to provide teachers and students all over India with resources and knowledge to start integrating eco- friendly and responsive activities to improve climate action at individual, school as well as the community level. By linking climate change and environmental education to immediate and tangible issues, teachers could improve their own understanding of the foundational concepts and get a better perspective of the subject beyond the academic understanding. A research in India suggests that having understood the local relevance of the subject to learners' everyday lives and livelihoods, the teachers

had more positive attitudes about the subject and were better equipped to teach it.[57] The paper also emphasises the importance of school infrastructure and design in improving the effectiveness of pedagogical approaches. We suggest climate change proofing and design transformations as strategies to make schools green and disaster resilient. Schools that are designed to be green when integrated with pedagogy through 'Building as Learning Aid' (BaLA) have a great potential for improved learning outcomes as students are consistently exposed to sustainable practices. With a comprehensive climate change and environmental education that focuses on both curricular and non-curricular integration, we can build a structure that will help students to have a practical and solution oriented approach towards climate change and thereby formulate informed strategies for climate action.

[57] Allison Anderson, "Climate Change Education for Mitigation and Adaptation," Journal of Education for Sustainable Development 6, no. 2 (September 1, 2012): 191–206, https://doi.org/10.1177/0973408212475199.

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Mainstreaming Gender in Climate Change Action: A Nuanced Approach

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1.0 Introduction

Climate change has become one of the most talked-about topics in contemporary times. Not only has it gained significant attention in pop culture, but it has also become politically polarising. Ideologies either choosing to completely ignore climate science or are aggressively demanding more radical policies from the government. Even though climate change as a topic has been understood and discussed from every angle possible, a facet that has repeatedly been undermined is that of gender. The dimension of the unequal representation of young girls in politics and science is still not being talked about. This is partly due to governments not paying much attention to women-centric issues and partly due because the tissue in itself is very complex and nuanced. On the face of it, gender and climate don't seem to converge at all. But if we delve a bit deeper into the psyche of society and it's indifference towards climate change policies, we will see nothing but gender bias and illiteracy amongst women. We will notice the strong connection between illiteracy among young girls and climate action. Since both these things are related, we will be looking for the common threads that are a danger to both climate action and women. Since the problems are common, the solutions can be too. This paper will attempt to suggest practical and straight-forward solutions when it comes to the problem of underrepresentation of girls in the struggle against climate change.

2.0 What is climate change and what does it mean to us?

2.1 The Current Climate Situation

If the 21st century were to be defined by certain keywords, climate change and social media would be two of them. This is not to say that climate change is a strange new phenomenon like social media. On the contrary, climate change has gripped our Earth and its atmosphere since the dawn of time a.k.a The Big Bang. Since the Big Bang, the climate conditions of the Earth have continuously changed, from Boiling oceans to Ice Ages, into what we know to be regular climate today. But the kind of changes in the climate we talk about in contemporary times is significantly different than any such changes preceding them, as these are said to be induced almost entirely by us humans and our activities. The United Nations Framework Convention on Climate Change (UNFCCC), which defines "climate change" as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (World Health Organization, 2014).

Climate change should be a high priority issue for us. Some of the extreme weather events that have occurred like the Australian bushfires have cost the Australian govt. billions to deal with the whole ordeal, other than the loss of biodiversity (McDonald, 2019). And these are just a few of the many devastating losses the Australian people suffered not to mention psychological damages. Other extreme weather events include cyclones in the Arabian Sea (hitherto unprecedented), lightning strikes

and global temperature rising by 0.7-degree celsius. The intensity of normal weather phenomena has risen extremely and all of these abrupt changes can be traced back to climate change and The Earth being overburdened with harmful activities.

The serious problem here isn't just climate change, but the continuous ignorance and disdain expressed by people when it comes to this change. People don't realise that even if climate change isn't threatening their livelihoods at this instance, when it finally does in the future it will have been too late to do anything about it. This is not the first time these ideas are being expressed. Governments around the world have time and again vowed to do something about this issue by forming the UNFCCC(United Nations Framework Convention on Climate Change) in 1994 and signing documents like the Kyoto protocol in 1997 and the Paris Agreement in 2016, but so far in terms of actual improvements, little has been achieved. A lack of conviction on the part of the people and consensus on the part of the Govt can be sensed in the international scene.

At the national level too, the situation isn't much better. The climatic conditions of India have seen a steady decline in terms of quality of air and the condition of resources. Erratic rainfall coupled with flash floods. Unprecedented heat and cold waves. Droughts and rapidly dissipating water-table. The survival of 800 million of the 1.3 billion Indians still hinges on traditionally climate-sensitive sectors such as agriculture and forestry, and many indigenous social groups hold on to natural resources as a means of their livelihood . Large-scale rice cultivation and livestock husbandry have contributed greatly to India's methane emissions, making it the third-largest emitter, after two relatively developed countries: US and China (Timperley, 2019). The average duration of summer and heat

waves has lengthened. There has been a noticeable shift in rainfall, resulting in frequent dry spells, and increasingly intense wet spells. Drought propensity, rising sea levels and melting glaciers are some of the other adverse changes observed.

India has made significant contributions in global climate talks, fighting the phenomenon of "environmental colonialism", and introducing accountability for developing as well as developed countries alike in climate change talks. India is credited with formulating a Kyoto Agreement-like policy in Berlin CoP 1995 (Thaker & Leiserowitz, 2014, p. 113). Although India is part of international treaties on climate change, domestic efforts are conspicuously too-little, too-late, and sometimes, completely absent. It is needless to say that devastating impacts point to a lack of action and plain ignorance. Floods, droughts and landslides are glimpses of what is to come if corrective action is delayed. It is projected that India may be at the mercy of localized, intense rains in urban areas (*India: Climate Change Impacts*, 13-06-19), while the national average rainfall is decreasing (Joint Global Change Research Institute & Battelle Memorial Institute, Pacific Northwest Division, 2009). Over half of India's forests are expected to experience an alteration in their types, which will result in disruption of the existing biodiversity they harbour. Wheat and rice production will bear the brunt of groundwater depletion. In the Indian context, climate change has partnered with other historical, deeply-entrenched socio-economic ills like caste hierarchy and patriarchy, to drive the wedge of inequality further into the social fabric. Rise in prices due to decreased production is going to hit the poorest 40% of the country (*India: Climate Change Impacts*, 13-06-19), while water scarcity, although already visible in urban spaces like Delhi and Mumbai, is more acute for village-girls who are forced to walk up to 21 kilometres to fetch

water (Malhotra, 2015). Heat stress is likely to affect the manual labourers toiling to construct what's probably going to be an air-conditioned high-rise, while farmers sans irrigation facilities will be affected worse than other farmers (Padmanabhan et al., 2019).

3.0 Girls at the Centre of Climate Change

The connection between the condition of young girls in society and climate change may not be immediately clear but is, nevertheless, of great significance and might actually be the missing link when dealing with climate change from a policy maker's point of view. Global statistics speak for themselves regarding the connection between gender and climate change, For example, the World Economic Forum's global gender gap report stated that countries with greater gender gaps tend to be poorer and more vulnerable to climate change (Samy, 2011, p. 99).

Currently, only 65% of Indian women and girls are literate (Chandra, 2019). The problem here is that since a majority of climate change schemes in India require some basic education to work, they fail to impact the millions of uneducated girls who could actually make substantial contributions. The untapped potential of these girls is said to be one of the great hindrances to climate education. Most of the time even if girls do go to school, they rarely get to complete it, for soon after reaching adolescence many of them are pulled out of school and married off. All their potential that could be used to better the climate change scenario in India goes wasted. It's also not as if girls can work after marriage, with literacy being a problem in getting a job, social hindrances and stigmas around working girls further deepen the issue of climate illiteracy and the consequential indifference for our environment that stems from it.

Further, economic dependence makes girls even more vulnerable to the negative consequences of climate change since they have virtually no control over their circumstance whatsoever.

An indirect impact of climate change on girls is devastating. Severe climate occurrences cause more girls to drop out of school, while families often resort to child marriage of girls to battle economic hardships. Sexual and physical violence, along with untimely and unwanted pregnancies are other threats that ensure extreme climate conditions, as girls and women are prone to human trafficking. The physical burden on girls increases as groundwater tables deplete, forcing them to walk more. There's a tacit intra-household bias against girls when it comes to sharing family resources. Males are accorded a higher share of food since they are purported to be the breadwinners of the family (*5 Ways Climate Change Is Disrupting Girls' Lives*, 2020).

Also since women in rural areas (Samy, 2011, p. 99) are primarily responsible for domestic work which is heavily dependent on natural resources like wood, water, cooking oil etc. their daily lives are more likely to be impacted by the unstable climate conditions. Even though women make use of resources like land and cattle on the domestic front, they seldom have ownership rights over any of these resources. Girls have little agency over their lives, and their decisions are taken for them, so it's improbable for girls to make an impact in the field of climate without doing away with the regressive social customs that are a hindrance to any sort of the positive change in climate action. This is where the scientific and social aspects of climate change intersect.

All these barriers that come between women and climate action, come before an extreme weather event has even occurred. The hindrances only increase in cases of devastating landslides, heat waves, floods etc. The World Disaster Report

recognizes the widespread consensus that “women and girls are at higher risk of sexual violence, sexual exploitation and abuse, trafficking, and domestic violence in disasters” (IFRC, 2007). In such situations, young girls are even more vulnerable and at risk of security, so preventing such disasters will not only reduce the damage done to life and property but also the social paranoia and personal devastation that accompanies the aftermath. These nuances are often undermined in gender-climate discussions by climate activists and policy-makers which is why important questions and changes are never made to climate policies in the first place. Governments tend to do the bare minimum when it comes to fulfilling international climate change obligations, the fulfilment of these goals is more about keeping the face in international politics than bringing actual change.

The problem not only persists on national and international levels, even at the domestic level, but women also bear more risk to climate change. Poor rural women who can’t afford a proper LPG cylinder must make do with a wooden *chullah* which more than once has been known to be the cause of many diseases amongst women like asthma, bronchitis etc. Furthermore when due to floods, dam building or other disasters, rural areas are evacuated the burden of migrating also falls on women who are expected to take care of the children, animals and transitioning households. Young girls also hold other important responsibilities like fetching water which can be pretty problematic and difficult even without climate change-related water depletion. All these responsibilities and burdens that women and girls carry are often overlooked when talking about gender and climate change. These hardships are never given much thought to, for this is supposedly the ‘norm’. Leaders must make systemic changes that are more empathetic to the trials of women. If we hope to make some changes in our climate policies that are effective and efficient, this is where we must start.

4.0 Girls As a Catalyst for Positive Climate Change

Girls and women are the most drastically affected when it comes to climate change, with huge disruptions in their lives, and added burdens. But at the same time, with the right steps, they can be the catalysts of climate change reversal.

In 2017, Project Drawdown, an international non-governmental organization released their compendium of the 100 most adaptable solutions to fight the looming clouds of climate change. It came as a surprise to the world that among the many solutions for arresting or slowing down climate change, educating a girl was listed at the 6th rank. Usually, climate change strategies are focussed on the tangible, infrastructural change that can usher in sustainability, and this structural change shook orthodox thinking. Educating a girl child, though an intangible and long-term solution, is one that finds its roots in addressing a concern that balloons with each passing second: Population. The population has been ascertained as a major driver of climate change. The 'carbon legacy' (Murtaugh & Schlax, 2009, p. 17) of every new soul brought into the Earth's atmosphere leaves a little less room for the environment to breathe. The issue, though seemingly straightforward, is problematized by the intersection of other political nuances discussed below.

Another equally worrisome dimension of population growth is the circularity between population and climate change. While unabated, reckless population growth can undoubtedly lead to unbearable pressure on ecological resources, one has to realise that that the ramifications of climate change - particularly violent ones, such as natural calamities - lead to mass displacement and pauperization of the already marginalized (Thomas et al., 2015, p. 27). It can, therefore, be safely surmised that if a family gauges the survival of their firstborn as dismal, they will to put it bluntly, "hedge their bets" by producing multiple offspring.

The effects of conscious family planning, or blatant ignorance of the same, cannot be emphasized enough. If it continues at the prevalent exponential pace, the world population is expected to swell by around 2 billion in the next 30 years and 3.5 billion more by 2100. To put things in perspective, one lesser child obviates approximately 58.6 tonnes (*Climate Change*, 2020) of carbon emissions, which is enormously larger than other suggested, and equally crucial measures like opting for a hybrid car (0.52 tonnes), recycling (0.21), and going vegan (0.82 tonnes).

Although it is family planning that is the armour suggested to brave the gusts of climate change, education happens to be the alloy this armour is forged of. Contemporary theories at the intersection of reproductive behaviour and economics have rationalized childbearing as contingent on several socio-cultural and economic factors, a significant one of them being education. Reports (Pradhan, 2015) from various parts of the world have indicated a decline in fertility rates in accordance with increasing educational qualifications since education equips the female with the knowledge and know-how to aspiring for a job and even a career. Education also widens the horizons of awareness towards family planning and pre and postnatal care; being lettered compounds the bargaining power of women in the family, and therefore assists in the assertion of reproductive choices.

However, it is worthy to mention here that this approach, completely hinged on fertility, teeters the thin line between environmental concern, and unfair, social policing. For instance, the fecundity of developing and least developed countries in South Asia and Africa is largely looked down upon, whereas a seminal study argues that every newborn in the United States will leave a carbon footprint 168 times that of a Bangladeshi newborn. However, the onus of arresting the breakneck speed of population growth is almost completely placed on women from the Global South. A reproductive-rights based approach

towards female education is the need of the hour in order to “avoid population-focused agendas from being misappropriated by coercive state policies that further infringe on the reproductive rights of marginalized women.” (Kwauk & Braga, 2017)

Moreover, socio-cultural customs and traditions have a heavy bearing on family planning. Studies (Ghosh & Keshri, 2020, p. 56) have found that the age-old patriarchal preference for sons has declined amongst the illiterates (15% to 12% from NFHS 3 to NFHS 4), while the same has recorded a surprisingly large increase from 7% to almost 23% in the same period among female graduates in certain parts of India. Possible explanations offered to pertain to a higher standard of living achieved with a better-educated son (since according to Indian traditions, sons have to take care of the family); since many women are first-generation learners, they might not be able to wield their increased bargaining power as efficiently in the family.

It is imperative, therefore, to not place excessive emphasis on fertility, and rather a mainstream gender in climate by supplementing this with increasing say of women in climate policy roles and increasing leadership roles for women in the fight against climate.

There’s a growing concern threatening the legitimacy of education as a tool to check climate change. Conceded, fertility rates retard in the face of female education, which can go in favour of the step, but there are doubts regarding the carbon emissions which might be generated on account of a more educated society demanding better standards of living with their economic growth. This doubt emphasises the fact that quality of education, and not quantity (in terms of schooling years), matters in this sense, since an aware populace is more likely to make environmentally conscious choices, not just with regard to family planning, but in other aspects of their lifestyle as well. With respect to the

former, a study in Ethiopia (Rovin et al., 2013, p. 21) found that a community of women displaying awareness regarding climate change and its adverse effects themselves cited family planning as a viable strategy to tackle it. However, concrete answers have not been offered in this respect till now, and extensive empirical studies are required to support the argument.

5.0 Working Towards A Solution

Now that we have realised the potential young girls have and the amount of change they can bring to climate action (or the lack thereof) in India, we must find ways to cultivate and harvest such potential. It won't be an easy task for the social and economic hurdles girls face in Indian society. So, we must find ways to empower and educate young girls and women either by bringing down these hurdles or by working our way around them. Afterall girls in the labour market are an untapped bank of human resources. In a full potential scenario (Sinha, 2019), if women start contributing equally to men in the labour market, the global GDP could increase by $28 trillion by 2025 which is more than enough to handle the climate change crisis by 2030. But we must approach the issue of girls and climate change a bit differently. Until now international and national climate organisations have very superficially included women and climate change with a lack of emphasis on young girls. Policymakers have failed to recognise the deeply rooted reasons and social intricacies behind climate inaction amongst women. The dimension of gender has either been completely left out from policies and treaties or has only briefly been expounded upon. They have focused on empowering climate change at a very superficial level and in a completely wrong direction. It was only in 2020 that the European parliament mentioned a gender perspective in its European Green Deal (Allwood, 2014, p. 11) stating that the new resolution 'emphasises the need for

a gender perspective on actions and goals in the Green Deal, including gender mainstreaming and gender-responsive actions' (para. 6). Though resolutions like these are a step in the right direction, it is difficult to ascertain exactly what direction that is. Resolutions like these have rarely ever come to life through public policies or statutes. No planning or funding is attached to them so that they may be realised in real life. Such vague concepts are not tangible and hence not achievable.

Instead of focusing on climate change through girl's empowerment, why not focus on girl's empowerment through climate change. Why not develop policies that save the climate and uplift women both economically and socially?

5.1 Creating Awareness

It is a fact that we cannot defeat that which we do not understand or know of. The reason why climate policies fail to take shape when they are executed is for the simple reason that people are not aware of them or the subject matter they deal with. A common man/woman living in India today won't be concerned with climate change as he/she will have things like health care or children's education to worry about even if climate change is a danger to his/her children. It is these common masses that need to be informed especially young girls since a girl is most likely to be ignored when it comes to climate action. A simple way to educate the population of India is to start with the future of India i.e. it's school-going children. Children grasp things easily and better when taught at an early age. Therefore environmental education must be integrated with school learning in the Indian Education System. If the threats and dangers of climate inaction are explained to children at an early age, they will be

impressed upon their minds. Their conviction to change this static state of affairs will be much greater than the previous generations.

However here too great reform will need to be made to the current education policies by the Govt. The National Education Policy (NEP) 2020 introduced by the Govt. does very little to emphasise the importance of climate studies to children. The interest generated amongst the children when it comes to the environment is still restricted to the surface level. Environmental studies and climate sciences are either completely missing from schools or are treated as non-serious co-curricular. The Govt. needs to emphasise the gravitas of the situation. Children must be made aware of the serious consequences of not dealing with the current climate crisis. Children need to be taught practical skills that will help them to understand and save the environment. Outdoor activities must be prescribed that deal with cultivating green skills amongst the children like gardening, a genuine interest in plants and nature, scientific experimentation that combines technology and sustainability. Breakthroughs in scientific experimentation could cheapen environment-friendly technology and enable the common man to live a more environmentally sustainable life. But here too, scientific accomplishments would be of little consequence when it comes to addressing women-centric climate problems.

If fertility has to be harnessed as a factor for ushering in positive climate change, then healthy dialogue regarding reproductive justice is needed. Prevalent socio-cultural norms perpetuate ignorance of reproductive rights of newly married girls. Healthy sex education is required in both rural and urban areas, which includes education on rights, safe sex practices, and education on judicial recourse.

There's a dearth of female participation, and leadership in Science, Technology, Engineering and Mathematics (STEM) related fields, which directly affect policy-making and research in climate change action. Despite 43% of females in India enrolling in STEM-related fields, they only represent a dismal 14% of the workforce. Systemic and societal forces have historically prevented girls from growth in their careers, obscured or belittled their significant contributions to the field, and have become so prevalent, that they're perniciously thought of as 'obvious'. This affects career choices of girls by instilling a doomed outlook towards professional growth, and many don't even think of beginning a career. Awareness regarding STEM fields and opportunities for girls to grow in these fields are needed to bridge this gap of underrepresentation. Policy reform is definitely needed to further female participation in STEM (the same has been discussed later), but a change in the mindset of both the recruiters as well as aspirants needs to be made. To foster a new crop of women leaders, the stories and contributions of the handful of present women pioneers need to be recognized, respected and lauded. Conclaves with women speakers, designated scholarships for girls in the field of science, and an increase in the number of scientific institutions for girls are some of the small ways which can make a difference. The NEP 2020 has the provision of a Gender Inclusion Fund which can be utilized to achieve this goal.

5.2 Capacity Building

While education remains one of the most effective ways to counter regressive gender norms that affect the climate, it is a sad truth that in

India only those from socially and economically privileged positions have access to education and learning resources. People, especially girls from rural areas, have almost no access to proper climate education and the regressive environment they live in offers no opportunities to learn about the climate. In such cases, it becomes extremely hard to encourage people to engage in climate centric activities organised by the govt. or climate organisation even if these people are the ones most likely to be impacted by extreme weather events.

In such cases, if girls can't reach education, it must be taken to them. One of the ways Governmental organisations bridge the gap between girls living in rural areas and formal education is by setting up camps in an effort to teach them the basics of an issue that might concern them like female infanticide or vocational courses etc. A similar strategy could be applied when it comes to climate education as well. Since rural girls from conservative backgrounds aren't comfortable in joining co-ed courses, girls-only camps could be set up in villages that offer to teach girls green skills and climate-related vocational courses. The added incentive of economic profit could be used to encourage the families these girls come from, that are not in favour of such camps. Academic institutions like the Indian Institute of Science Education and Research, Pune could provide academic materials and guidance to the camps and monetary expenses could be borne by either the govt. or a climate non-profit. The state institutions could approve of a short 3-6 months curriculum to get the women ready in as little time as possible. Experienced students who are willing and able to travel could in turn be appointed as teachers and could in turn teach other rural girls with higher clarity and coherence. All the Govt. needs to ensure a proper curriculum and framework to standardise such camps all across India, with teachers who teach the girls in their own

language and offer an escape from regressive aspects of village life. Such camps need only teach basic skills and information required to help the climate. Eco-friendly practices could actually lead to an improvement in the circumstances of rural girls and women.

Also, another advantage of educating a girl would be the circulation of knowledge. In rural areas, women are the primary caretakers of infants and children and are largely responsible for their upbringing and moral grooming. An environmentally conscious woman will raise an environmentally conscious child, hence indirectly influencing climate education efforts around the world. Thus educating a woman will lead to educating at least one child from that household. Initiatives for the spread of green skills, such as the Green Skills Development Programme, should be properly implemented. Even though more than 30 programmes were introduced under the initiative to educate the youth of India, the initiative is barely being implemented with a target of only 5 lakh students. Only 84 institutions have been selected when thousands of institutions all across India could use such a programme. Such initiatives must be organised on a country-wide level and should be compulsory for girls to attend so that they could benefit from such programmes and help implement the skills and gain knowledge about the environment.

Another connection that policymakers undermine or overlook is that which women have with agriculture. Over 70% of people in rural India are farmers by profession and a majority of these farmers are helped by their wives, daughters and sisters etc. when it comes to everyday farming activities. So, even though girls don’t own land assets or resources, they have access to farms and fields all the same. Thus the possibility of introducing eco-friendly agricultural practices through women farmers

cannot be ignored.

Agroecology is a science which deals with agricultural practices and their impact on the environment. It explores the different connections agriculture has with the environment and how these connections can be used to optimise production and save the environment at the same time. This is no easy task since most of the time, the environment has to be damaged and manipulated to get a high yield of crops. Even though states like Tamil Nadu have followed models of organic farming ("Back to Basics with Organic Farming," 2019) and succeeded, agroecology is still not regarded as a proper and viable science. This is evident in the complete absence of agroecology (Vasavi, 2020) as a subject under environmental cities in the NEP 2020. Not only this, the NEP does not mention any such art, science or skill that harnesses agricultural practices to improve the condition of the environment. The reason behind such a lack of attention or desire towards agroecology is partly due to ignorance and partly due to the lack of successful agroecology ventures in India. The incident of Tamil Nadu is isolated. The kind of organic farming practised and sustained cannot be practised elsewhere, at least not as successful and even if it is, it still doesn't solve the issue of gender and climate change. Hence we must take inspiration from elsewhere. Here are two illustrations from Brazil that show a successful convergence of women's empowerment and environment-friendly farming:

a. The *Pintadas* women of Brazil

*Adapta Sartao*_was a civil society-led project in the state of Bahia, Brazil. It ran from 2006 to 2018. Its main purpose was to find a solution to the drought-like conditions existing in *Bahia*

and introduce better farming techniques amongst the local farming communities. Achieving food security and better access to water were major priorities so the first city acted upon was one of the poorest cities in that state, *Pintadas.* The city had approximately 1400 farms with only some 300 owned by women. The rest of the women engaged in irrigational responsibilities while their male counterparts took care of the animals on the land. Women also cultivated fruit trees and a local coconut called *Licuri* to earn some extra income. Their work was largely undervalued and considered "light and easy". With the help of the project *Adapta Sartao,* the women were able to come together, pool their resources and market their local fruits like *Guela* and *Licuri*. This has strengthened the city's regional identity whilst also increasing appreciation for local fruits. The public policies of the city have also helped the women by fixing a supply of fruits to local schools and hospitals. Hence the women have been able to gain greater financial independence and respect in the community. The *Pintadas* city's Women's association has moved on a step further to a fruit restaurant and a fruit pulp factory. Here women can often be seen helping neighbours with agricultural practices and singing songs with each other during work.

b. Seed picking *Yarang* women of Brazil

For some years the Xingu basin of the amazon river had been suffering from silting and degeneration. This was due to the deforestation that had occurred in the forests surrounding it. Almost a million hectares of land was deforested and as a result,

the basin and surrounding springs started disappearing or depreciating. These springs and basins are of supreme importance to the indigenous seed collectors living in the Xingu area. These basins cultivated the forest around them and helped with seed dispersal that ensured a perennial supply of new vegetation in and around the forest. Hence the basins were of extreme importance when it came to protecting the area from climate change. The *Ikpeng* women were a seed picking community that entered the forests and collected the seeds. In order to save their environment, the *Ikpeng* women joined the Xingu Seed Network that helped them to sell their seeds to local farmers. As per a public policy, all farmers and landowners had to recover and replenish a portion of their landholding as part of a land conservation project. In order to recover and regenerate their lands, these landowners bought seeds from the Xingu Seed Network which in turn were supplied by the *Ikpeng* women. In this way, the *Ikpeng* women were able to save almost 6000 hectares of basin land.

In both the illustrations there are some common factors that govern their success. The fact that these indigenous and rural women organised themselves into associations and collectives contributed greatly to their voices being heard. Also a unique combination of non-profit organisations being supported by the govt. policies can be seen here. All the associations have worked together with the govt. in ensuring that all their initiatives are backed by a public policy which was monumental in the success of these initiatives. The Govt. of India is yet to back climate change associations and organisations through environment-friendly public policies. If models of agroecology are to work on a large scale in

India, then the Govt. and other such collectives need to come to an understanding and unite to serve a common goal. Till now Govt. policies have done very little to address the concerns of climate activists struggling to protect the environment and have done even less to address the concern of gender inequality and unequal distribution of resources when it comes to climate change. Gender inequality in policy-making needs to change too.

It's not as if the Govt. of India hasn't introduced any climate policies at all. The government of India has drafted a Scientific Social Responsibility (SSR) policy, based on the Corporate Social Responsibility (CSR) framework, to inculcate a sense of giving back to the society amongst professionals involved in the field. As per reports, the policy mandates that any scientific professional has to devote at least 10 person-days engaging with the community, be it in the form of talks, workshops, or any other manner. Suitable indicators will be put in place. The policy can be efficiently used for imparting highly technical skill-based knowledge amongst a willing female workforce directly from professionals in the field. Apart from just skill-building, learners can get an insight into the life of a scientific professional, especially female professionals, and interact with them to gain more insights about the field.

5.3 Leadership

Apart from integrating women into climate change activism at the ground level, women need to be in positions of power as well. For the empowerment of any community, there needs to be a representation of that community in the political scenario. Women need to be uplifted and

supported to ensure that more and more female representation takes place in the sphere of politics. Disadvantaged communities need to be supported by the political system to come into some power. Some form of institutional compensation like a reservation is often used to help the socially or economically backward in becoming empowered, similar reservations could be used to accommodate women in politics as well. While a 33% quota for women exists in the Panchayati Raj, the same is yet to be introduced in the Lok Sabha as well. The 33% reservation for women bill in Lok Sabha has not been passed yet, as it never manages to get a majority in the house. Prejudice and the consecutive loss of seats are a few reasons for MLAs not wanting women's reservation in the Lok Sabha. All this will need to change. The govt. needs to focus on women's issues and lack of representation in the Indian political and social systems. All those currently in power will need to unite for the common cause of female empowerment in order to make major and useful changes to the system. Women will need to raise their voices in this matter too and come forward as a possible political force that has a right to be recognised.

Not only will it be empowering towards young girls everywhere who will have female role models to look up to, but also bring emphasis on issues which could be better understood by women like abortion laws and environmental laws. A woman's perspective won't be excluded from environmental issues if a woman is involved in the decision-making process. This will ensure gender-sensitive policies in environmental law as both male and female perspectives would be better considered. The social intricacies and nuances that are largely ignored when it comes to climate change policies, will be better grasped. Women will need to be involved not only in the political sphere but in the academic sphere as well. Girls heading surveys and scientific ventures would also make up

for the lack of gender sensitivity in climate research.

Young girls of current times who cannot ever aspire for political representation need to be empowered too. Self- help groups are an incredible way to do just that. SHGs are collectives of usually rural women and girls that come together and pool in their resources to pursue an entrepreneurial venture. SHGs have been empowering for girls in many ways as they get economic independence and social bonding experiences that are comforting. Many successful SHGs like *Lijjat papad* continue to exist in India. The same model could be used to encourage climate action amongst young girls. It could range from collective agroecology to making environment friendly sanitation pads. This model has worked in Brazil and will need to be supported by the surrounding political and social systems to flourish in India. The Govt. could provide specific monetary benefits to climate action SHGs led by girls like lower interest rates in Banks and start-up funding. This way girls will have some control over their lives and some agency in taking their own decisions whilst doing something good for the environment.

Girls need to be represented in leadership positions is not the political sphere but also the area more consequential to climate change i.e. STEM. To create female leaders for climate change action, girls first have to be represented adequately in science. About 47% of Indian girls in STEM have cited family-related pressure which has forced them to reconsider their professional goals and trajectory. Almost 11% of women and girls face the risk of being furloughed from their jobs in the field since they perform tasks which can easily be automated. Their extraction from this position requires adequate skill-building.

From an early age, children are exposed to strictly defined gender roles, which associate computational and innovative qualities mostly with males, while females are assigned nursing and caretaking roles. This gender bias, a social construct, has been present for so long that it has acquired an omnipresence and false legitimacy in our system. Almost 76% of Indian women workers were of the view that their male colleagues were inherently more adept at traditionally 'hard' subjects like mathematics and science.

Making the field of STEM more approachable and egalitarian towards girls would bring about tangible short term change, while success stories emerging from the same can alter long-held patriarchal views. The draft Science, Technology and Innovation Policy (STIP) 2021 has sought to address the raging gender inequality in STEM-related jobs in India. Several measures have been proposed to institutionalize gender equality. Some of these issues, like outreach programs to form an interface between the world of science and the community, gender sensitization workshops and seminars and mandatory inclusion of girls in policymaking or evaluation panels (up to 30% of the total capacity) have already been discussed. Other than that, childcare benefits like paternity leave would be made gender-neutral while dual recruitment policy will be encouraged so that couples, which hitherto could not work in the same department, would now be permitted to do so, and no couple would have to make the hard choice between career and family. Infrastructural provisions like creches, day-care and flexibility of working hours would be offered. In schools, young girls could lead to scientific experimentation and research projects in an academic institution. STEM camps for girls could also be organised so that these sexist gender norms can be broken.

Though progressive, these policies would have to be evaluated stringently and frequently. Provisions for the data collection on drop-out rates as well as other indicators will be collected, and gender audits would be encouraged.

5.4 Other Recommendations

Adequate and accurate data is the foundation on which policies are based. For gender inclusion in climate change, there has to be a solid empirical scaffolding present to identify blindspots and formulate policies.

Despite girls being at the centre of action against climate change, there "is a paucity of data documenting, as we said, women's roles and engagement in climate change adaptation" (Rao & Raj, 2019). Well-defined indicators for assessing female participation in climate change and other gender-specific indicators were conspicuously absent in talks of climate change. It is needless to say here, that data collection has always been the Achilles' heel of Indian policymaking process, and reform to address the various leaks and exclusion/inclusion biases for creating a robust and up-to-date database is direly needed.

Government bodies can maintain ties with rural and urban NGOs working towards climate change to collect relevant data for female participation in climate change action. This database can further be used to develop an online archive for the preservation of indigenous knowledge implemented in fighting climate change.

6.0 Conclusion

In the past few years, the pace and effects of climate change have increased manifold, resulting in countless incidents of the devastation of various ecosystems. Discourse and action against climate change have also picked up steam, though we see political truancy on climate change goals, which has resulted in the formation of several vocal climate pressure groups. Gender, in recent years, has come to be recognized as an altogether different and crucial aspect of climate change. Various studies have been carried out to determine the position of young girls with regard to change in the climate. Women, young girls and children are still largely marginalized social groups which stand to lose the most. Talks around gender mainstreaming in climate action have received impetus from recent findings that educating girls is an effective tool in fighting climate change. Education is said to have a retarding effect on fertility rates, thereby slowing the growth of world population, which, if left unchecked, could overburden our natural resources. However, the use of educating girls is not limited to just fertility, and also spills on to the debates of female representation, participation and leadership in climate action, subsequently aligning with the larger goal of gender parity in decision making for well-rounded, gender-sensitive planning. In line with the discussion on educating girls and its impact on climate change, the authors offer some policy recommendations for the integration of education of girls with gender-sensitivity in climate change. These recommendations are subdivided into three categories - awareness, capacity building and leadership - in accordance with the ends they're supposed to meet. From imparting specialized green skills to the eradication of gender bias in scientific job roles, much needs to be done in order to make an impact. The challenge of imparting the good quality of education to girls is exacerbated by the fact that educational gender parity in India is in shambles, and large

structural gaps need to be filled in a short span of time efficiently. The only hope India has is the spirit of young girls everywhere, waiting to be provided with the education necessary to take flight into the world.

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