

The Imperative Need for Climate Finance and Global Climate Mitigation Strategy – A Pragmatic Analysis

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Abstract

Since the advent of Industrial Revolution, climate change has been perceived as the prominent environmental issue of the twenty- first century. According to a study, the amount of carbon dioxide (CO₂) in the atmosphere as of July 2021 is the greatest it has ever been in recorded human history. 800 million people, or 11% of the world's population, are currently at risk from the effects of climate change. The world has witnessed extreme climatic events which have resulted in resource- based conflicts and socio- economic imbalance, wreaking havoc on the lives and livelihoods of people. The global impact of climate change is perilous and unprecedented. Without radical actions today, mending to these impact factors will become more challenging. As a response to combat the ongoing climate crisis, several mitigation strategies have been employed to achieve sustainability and adopt efficient measures on the long- run. This paper aims to shed light on climate finance, an integrated approach that will address climate change by providing financial resources. This approach calls for local, national and transnational financing that focus on reducing greenhouse gas emissions thereby enhancing the quality of the environment and the human ecosystem. It requires government intervention to develop competent solutions for global climate change. The paper focuses on the strategies and probable steps of climate finance and also seeks to discuss the greater need in bringing awareness on this issue using comparative excerpts and potential solutions.

Keywords: Climate finance, greenhouse gas, climate change, mitigation, sustainability

INTRODUCTION

The Earth has been experiencing changing climatic conditions since the beginning, owing it all to the natural forces. However, over the last century, the world has seen dramatic changes, the huge percentage of which are concerning. It is now quite evident that the emission of greenhouse gases as a result of industrialization and unfettered economic growth from a global population that has increased multi-fold in the preceding 200 years, is causing the circumstances of global warming at a rate that is uncontrollable. The serious implications that climate change has on forestry, global agriculture, marine ecosystems, biodiversity, wind currents phenomenon, global health, water sources, and other natural and human resources are grave and dangerous. According to studies, global energy demand is expected to increase by more than 50% by 2035, with developing countries growing even faster. The consumption of traditional fuel by about 1.4 billion people is not only causing damage to the environment but it is also one of the causes of several premature deaths especially women and children [1]. The global urgency for needed climate actions was identified in the mid – late 20th century. Several important economic aspects of climate change that are financial in nature such as the pricing and covering- up of risks arising from

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climate change, the awareness and stances of investors towards these risks, and the effects of climate risks upon investment decisions, have not been discussed enough. Sound investment decisions and adequate financial resources are required to combat greenhouse gas emissions and promote adaptation to their consequences. The investment decisions we make now will determine whether we create the path of affluence or destroy the remaining natural wealth and promising paths to prosperity. If the world is to succeed in controlling climate change to sustainable, livable levels, it is increasingly obvious that the world cannot afford to burn all of its fossil fuel supplies [2]. Considering the identified sources of unprecedented climate change, several mitigation techniques have been developed by scientists and researchers all over the world. It ranges from retrofitting energy efficient systems in buildings and industries, investing in renewable technologies such as wind and solar to hydroelectric technologies to promoting sustainable practices.

There is an immediate need for an integrated approach that calls for local, national or transnational coordination that draws financing from private and public sources supporting mitigation and adaptation strategies that will address climate change. Climate finance is however one mitigation strategy. Regardless of the identified mitigation measures, significant emission reductions necessitate large-scale investments. All government agencies and other interested parties must acknowledge and accept the financial requirements of developing nations and comprehend how these resources might be obtained. Resources should be made available with an eye toward balancing mitigation and adaptation [3]. Despite decades worth of economic research produced valuable insights, there seems to be no properly functioning redressal mechanism in place to give the planet a fighting chance.

THE CLIMATE RISK SPECTRUM

The global temperatures and patterns of precipitation are changing rapidly thereby influencing the physiology, behavior, prosperity and distribution of many species. Reports show that earth's temperature has increased by 0.14°F (0.08°C) for every decade since 1880, and the rate of global warming over the past 40 years is exceedingly twice that of since 1981 to 0.32°F (0.18°C) per decade [4]. Statistically, 10 of the comparatively warmer years on record have all taken place since 2005, and more critically, 7 of the 10 have occurred only since 2014 [5]. There are recorded increases in blended greenhouse gas (GHG) concentrations since 1750 that are, by all means, caused by human activities. Since 2011, the concentration levels in the atmosphere have escalated, reaching a stage in 2019 where the annual averages for carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) are each 410 parts per million (ppm), 1866 parts per billion (ppb), and 332 ppb, respectively [6]. Climate change is also recognized as a grave threat to the ecosystem, biodiversity, and health. It has a negative impact on Earth's physical environment and has a significant impact on life everywhere [7].

For instance, global forest area covers almost around 4 billion hectares (ha) of land, or 30% of the Earth's land surface [8]. The prominent forest area has been slowly diminishing by 6 million hectares (ha) annually since the 1990s, predominantly in Brazil and Indonesia [9]. This alarming decrease in forest concentration has caused an abnormal change in the climate system. It is likely that changing temperature and precipitation pattern will have a threatening impact on both natural and modified forests [10]. Furthermore, the dry, hot weather has increased the ferocity and magnitude of forest fires in a number of countries [11]. Several researchers claim that land surfaces are getting more warmer rapidly compared to ocean surfaces. A warmer atmosphere can retain more water vapour, resulting in a significant increase in overall average precipitation. Increased land surface temperature, resulting in salty water in farmlands, severe wildfires, and droughts that threaten plant life have resulted in unprecedented deterioration of human agriculture [12]. In the span of the last 25 years, the global sea level rose on an average of 0.003 meter per year [13]. Ocean acidity is one of the destructive problems that stems from climate change. Acidification of ocean can change the nature of marine ecosystems causing irreparable damage to coral reefs which serves as a source of many perquisites for human communities, fish, and other aquatic species [14]. Every year, an escalating number of animal species face extinction. An approximate of 700 mammal and bird species are affected due to climate change

anomaly. The level of susceptibility varies depending on the type of animal, and different species will be affected differently. Species with low tolerance for rising temperatures face extinction [15]. In contrast to such ecological effects of climate change, financial effects of climate change have been less well studied, although there have been discussions calling for more involvement by the world nations [16]. Robust and proactive mitigation strategies necessitate significant financial investments.

FINANCIAL MECHANISM AND CLIMATE COST

Climate finance is about the responsible investments that governments, corporations, and households have to undertake in order to transition the world's economy to a more sustainable, low-carbon path, thus reducing the concentrations levels of greenhouse gases, and to build perseverance of countries to endure climate change. To reduce the European net greenhouse gas emissions to zero by mid 21st century, energy and infrastructure investments, especially from the private sector, must increase from 2% today to 2.8% of European Union gross domestic product (GDP) i.e., an additional \$376 billion annually [17]. The possible damage from the consequences of climate change would damage as much as 10% of the size of the U.S. economy by the end of the century [18]. Damage caused by climatic events such as floods, drought, wildfires and cyclones could cost the U. S. federal budget around \$2 trillion each year that would amount to a 7.1% loss in annual revenue of the U. S. at the later part of the century, said the White House in an assessment on Monday [19]. As per an analysis conducted by the Office of Management and Budget, which is responsible for administering the annual federal budget, The US government was also warned that it could spend an additional \$25 billion to \$128 billion per year in areas such as coastal disaster relief and management, flood insurance, crop insurance, health-care insurance, wildland fire suppression, and flooding at federal facilities [20].

According to a study conducted by Morgan Stanley, climate-related disasters has cost the world around \$650 billion from 2016-2018 [21]. A rapidly warming world could reduce agricultural yield growth by up to 30% by the mid-century, affecting up to 500 million small farms worldwide [22]. Most parts of coastal and delta cities are likely to be flooded more periodically, acquiring clean-up and, in some extreme cases, moving costs [23]. According to the Global Commission on the Economy and Climate, transitioning to a "low to zero-carbon" sustainable growth path can provide a direct economic fortune of \$26 trillion and create approximately 65 million new jobs by 2030 when compared to current business practices [24]. The report by Energy Transitions Commission has demonstrated that decarbonizing 'hard-to-abate' [25] industrial sectors such as steel, aluminum, cement and heavy transport that is ideally feasible by 2050 with the developed technology that already exists. The total cost to the global economy of implementing this strategy would be less than 0.5% of GDP by mid-century, and it is also subject to further reduction [26].

Many sectors such as energy, food, insurance and real estate are directly affected by the risks caused by a potential price hike on carbon, detrimental shocks to agricultural productivity, or exposures to rising sea levels. There is hindered growth in many developing and underdeveloped countries due to desolated commodity prices, protectionism, intolerable burdens of debt, and lack of foundational growth in the matters of development finance. If living standards are to rise and poverty be reduced, these trends must be reconsidered and reversed [27]. With due regard to the macroeconomic impact of global climate change, asset prices must particularly bear in mind the exposure of their cash flows in relation to climate risks. According to studies, the cost of halting global warming and reducing greenhouse gas emissions to very low levels by the mid-century will be around \$50 trillion. Considering the current rate of greenhouse gas emission, the budget to keep global warming controlled below 1.5°C would be depleted by 2028 [28].

The Green Climate Fund (GCF) was designated as a functioning entity of financial mechanism in 2010. The financial mechanism confirms to the COP [29], which determines its policies, programme priorities, and funding eligibility criteria. Furthermore, the COP established the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF), both of which would be managed by

the GEF [30], and the Adaptation Fund (AF) was established under the Kyoto Protocol in 2001. Nonetheless, it is crucial to realize that the cost required to implement the mitigation strategies is multifold in comparison to the existing funds set up. A comprehensive picture of climate finance is multifaceted, that includes several aspects of information both on the nature of finance and how finance flows from the donor to the recipient and, ultimately, within the recipient framework.

INTERNATIONAL LAW REGIME ON CLIMATE ACTION AND FUNDING

To achieve this long-term temperature goal with the estimate cost, countries must build a global frontier for unfettered cooperation to combat global peaking of greenhouse gas emissions as urgently as possible to attain a neutral climatic condition by mid-century. The immediate need for an effective and forward-looking response to cope up with the urgent need of healthy climate change with due regard to the best available scientific knowledge was recognized in the Paris Agreement [29]. Being legally binding in nature, the agreement has 193 signatories that calls for beneficial contribution to reduce global concentration of greenhouse gas emissions and subsequently, to halt the global temperature in the 21st century at 2 degrees Celsius while simultaneously ensuing efforts to reduce the temperature even further to 1.5 degrees Celsius. The Agreement functions on a five-year cycle of progressively ideal climate action carried out by countries by submitting an updated national climate action plan every cycle that is known as Nationally Determined Contribution, or NDC. Differentiation between different countries' obligations has been highlighted at multiple provisions throughout the agreement. One of the most salient features of the agreement is that it mandated the provision of financial resources to be offered by Developed country Parties to assist developing country Parties on the aspect of both climate mitigation and adaptation in furtherance of their existing obligations [30].

Similarly, one of the notable multilateral environmental agreements is the Montreal Protocol of 1987 on Substances that Deplete the Ozone Layer, which aims to regulate the production and consumption of approximately 100 man-made chemicals known as ozone depleting substances (ODS). According to the provisions of this treaty, all the ratifiers have distinct responsibilities related to the phasing out of the different groups of ODS, prevention and control of ODS trade, annual reporting of data, domestic licensing systems and laws to control ODS imports and exports, and other matters. Developing and developed countries have equal but separate responsibilities depending on their available resources and capability, but predominantly, all the ratified countries have their own binding, time-targeted and measurable commitments [31]. The 'Earth Summit,' also known as the United Nations Conference on Environment and Development (UNCED), was held in Rio de Janeiro, Brazil, five years after the Montreal Protocol, from June 3-14, 1992. The conference emphasized on how different social, economic and environmental factors are correlative and develop together, and how the success of one sector is dependent on the action taken in other sectors to be sustained over time [32]. The primary goal of the Rio 'Earth Summit' was to develop a broad agenda and a new action plan for international coordination efforts on environmental and development issues, which would help pave the way for international cooperation and development policy in the twenty-first century.

Akin to the Rio Declaration, the Kyoto Protocol of 1997 was also operationalized developed and industrialized countries and economies to work on the limitation and reduction of greenhouse gases (GHG) emissions by maintain progression with the individually agreed targets. Targets were set by the protocol for binding emission reduction by taking 37 industrialized countries and the European Union into account. The estimate reduction was 5% in comparison to the 1990s levels over the first five-year commitment period (2008–2012) [33]. All the international instruments and conventions have different sets of targets, yet, the foundational principle remains the same which is “common but differentiated responsibility and respective capabilities”.

COMMON BUT DIFFERENTIATED RESPONSIBILITY

Climate finance as a whole is based on the principle of "common but differentiated responsibility and respective capabilities" [34]. This principle recognizes that the State Parties have varying duties and

responsibilities based on equity and their abilities to address the adverse impacts of climate change but the primary stance is that all countries have an obligation to address climate change [35]. The burden falls upon the developed countries to lead the way and take action in combating climate change [36]. The 1992 Convention recognizes and accepts the fact that changing Earth's climate allied with its adverse impact is a collective concern of the human race. It is of paramount importance to bear in mind that man-made systems and associated activities are the cited causes for the increasing atmospheric concentrations of greenhouse gases, which in turn enhances the intensity of natural greenhouse effect which will result in contribution to additional elements in warming of the Earth's surface and atmosphere. The aftermath will adversely disturb natural ecosystems and humankind. The universal nature of climate change requires the far-reaching efforts and cooperation by all nations of the world. The coordinated participation of the States is essential for developing and implementing an effective and appropriate comprehensive response, taking into account their "common but differentiated responsibilities and respective capabilities," as well as their social and economic circumstances. Appropriate institutions from countries must come forward to support private foreign investment, particularly in infrastructure development and other priority areas. Developed countries with well-established industrialised sectors must strengthen their debt relief programmes for heavily indebted poor countries. Debt relief is an influential aspect of developed countries' responsibilities in the area of development finance and a primary example of common but differentiated responsibilities and respective capabilities [37].

With respect to the environment and global atmosphere condition, the most severe ramifications of climate change are experienced by developing countries [38] whereas the biggest contributors of per capita GHG emissions are found in developed countries [39]. So, the principle is that if developed countries have the highest levels of GHG emissions (representing their contribution to climate change) and the long-term capability and resources to reduce such consequences, they should take on the role of climate change pioneers [40]. In the vast issue of climate change, there is no differentiation in measuring the magnitude of impact affecting the countries whether SIDs [41], LDCs [42], developing or developed. But the point of distinction lies only on how the countries use its resources to cope and absorb its effects. Hence, it is pertinent to understand that the countries that have the resources, strategies and technology to mitigate climate change should take a step forward in coming together to build a global partnership to reduce and reverse the impact of climate change and ultimately, to achieve climate justice for all [43].

POSSIBLE CLIMATE FUTURE

It is an undeniable fact that with the current rate of industrialization, the concentration of greenhouse gas in the atmosphere will proceed to increase and change the global climatic system. These changes will bring several negative repercussions such as acute shortage of food, water resources, biodiversity, human health and other facets of life. Numerous climate models indicate that the increase in average global temperatures is expected to fall within the range of 0.5°F to 8.6°F by end of the 21st century with a possible increase of a minimum of 2.7°F for all scenarios and the global average temperature is predicted to warm at least twice as much as the current temperature in the next 100 years as the temperature has increased during the last 100 years except the scenario where the most combative mitigation strategy of greenhouse gas emissions has been employed [44]. Without a proper strategy in place, there will be increase in average temperatures globally that entails more frequent and severe heat events such as extreme heat waves. The number of days with unbearably high temperatures above 90°F is likely to increase across the United States, particularly toward the end of the twenty-first century [45]. If CO₂ concentrations continue to rise at their current rate, the combination of climate warming and ocean acidification could reduce coral growth by nearly 50% by the mid-century [46].

According to key global projections, for every 2°F of warming, climate models anticipate an estimate of 15% decrease in the extent of annually averaged Arctic Sea ice and additionally, a 25% decrease in the area covered by Arctic Sea ice at the end of summer [47]. Since 1990s, the level of rain fall with

heavy precipitation events has always been well above average. Extreme events such as this would occur twice as often if any mitigation strategy is employed to reduce the global emissions rate, but however, if there is no strategy in place and the emissions increase, alarming precipitation events would occur five times as often from the years 2081-2100 [48]. The grim reality is that many animal species have already faced extinction and some are in the brink of extinction due to global warming and climate change. Irrespective of attaining the goals set by the Paris Agreement, an approximate of 25% of plant and animal species could potentially be lost due to climate change [49]. The reduced air quality that are caused due to wildfires, pollution, etc. can result in respiratory and cardiovascular hospitalizations for lung illnesses, bronchitis, and other breathing problems [50]. If the present-day scenario continues, the future generations will suffer on almost all aspects of life. Without enough funding from abled institutions and governments, the world is in grave danger.

CONCLUSION

Climate change is not a future event. It is an ongoing crisis that is occurring even at this very moment. This is the greatest threat to humankind and the effects of climate change and global warming have wreaked havoc on the physical environment, biodiversity and human race, the root cause of which is the act of humans. Good environment, clean air, water, food and shelter are the inalienable rights of humans and today's drastic climate change is taking away every one of the natural rights of a human being. The cost of mitigating and combating these changes is extremely high which ultimately affects the global economy. This serves as the reason for why it is vital for governments and stakeholders to mobilize climate finance from multiple sources, channels and legal regulations. A sound financial mechanism must be devised in such a manner that the needs and priorities of the country are consistent with the mitigation strategies to reduce the greenhouse gases emissions and global climate change. Multiple international instruments have shed light on the significance of member States, especially the developed and advanced countries, to consider the common good of the society and act on the climate crisis with the resources available. Despite the numerous funds set up, research has till date not shown the decrease in the emissions or temperature. Successful adaptation of mitigation strategies on a long-run does not only depend on the national governments but also greatly relies on the sustainable engagement of the citizens of the nations. Sustainable measures cannot be undertaken without proper funding. Without globally coordinated efforts, the needed change cannot be achieved. Regardless of who we are, what we do, where we reside, the people of this world have a moral obligation to each other, to our future generations and to the other species to sustain the planet and such obligations must be performed before overdue.

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