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Combating Climate Change in the Indo-Pacific Region

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The Indo-Pacific region, which has gained significant attention in global geopolitical discourse owing to its political and economic importance, is presently confronted with formidable challenges posed by climate change. Unfortunately, these grave concerns have been eclipsed by the ongoing geopolitical tensions in the region due to escalating rivalries among great powers. The scholarly discourse around the Indo-Pacific region has been primarily dominated by geopolitical issues, but this paper provides a fresh perspective on the shared challenges of climate change, emphasising the need for cooperation over confrontation. This article provides a detailed analysis of the factors contributing to climate change and their adverse impacts on the Indo-Pacific region. This study undertakes a comprehensive analysis of the Indo-Pacific strategies launched by major players in the region, with a primary emphasis on evaluating their degree of emphasis and initiatives integrated into the respective strategy to tackle the challenges posed by climate change in the Indo-Pacific region. Furthermore, it examines the possibility of leveraging multilateral cooperation by utilising existing regional cooperation mechanisms as well as various newly formed partnerships within the Indo-Pacific region in order to tackle the issue of climate change effectively. This article emphasises India's pivotal role in addressing the climate change crisis in the Indo-Pacific region. In the concluding section, the challenges and prospects for collaboration are discussed regarding mitigating and adapting to climate change in the Indo-Pacific region.

Keywords: Climate Change, India, Indo-Pacific Region, Indo-Pacific Strategy, Multilateral Cooperation

Introduction

The term "climate change" garnered increased recognition in the latter half of the twentieth century, denoting historical alterations to the planet's climate due to continuous rising global surface temperatures. The excessive combustion of fossil fuels by humankind is the main factor behind the steep increase in the average temperature worldwide. Using fossil fuels, forest degradation, and different farming and manufacturing activities all contribute to building "Greenhouse Gases" (GHGs), particularly carbon dioxide and methane. The heat that the planet's surface emits after being warmed by light from the sun is partially absorbed by GHGs. The planet's surface warms more when these gases are present in larger quantities, which causes global warming (Wuebbles & Jain, 2001). The consequences of human-caused

climate change will bring significant difficulties to humankind in the coming years. Climate change is undoubtedly a reality, and it is occurring faster than ever, according to the consensus developed in the scientific community over the last several years. The average temperature of the Earth in 2020, measured at around 1.2° C more than the average between 1850 and 1900, continued its unrelenting upward trajectory (Allen et al., 2018). Although this may appear to be a minor figure, on a global scale, this temperature rise is responsible for everything from an increase in the frequency of extreme heatwaves to more irregular rain patterns to more violent storms to the rise in melting of glacial and polar ice, which results in a rise in ocean level (Bajaj, 2021). As a result, it makes sense to forecast that the Indo-Pacific Region (IPR) would face the catastrophic consequences of the ongoing climate change phenomenon due to its vast population, extensive coasts, and reliance on natural resources for livelihoods and economic development.

Recently, the advent of the concept of the "Indo-Pacific" has largely shifted global focus towards the Asian continent. In recent times, the nomenclature "Indo-Pacific" has garnered considerable traction, effectively replacing the erstwhile terminology "Asia-Pacific" that was used to define this geographical region in earlier times (Köllner et al., 2021). Although there are differences in geographic definitions depending on each nation and its distinctive geographic location within its enormous dimensions, it is widely acknowledged that its scope spans from the eastern coasts of Africa to the western shores of the United States of America (USA). The IPR holds significant prominence in the realm of modern geopolitics, particularly in the domains of economics and politics, owing to its strategic geographical location, which encompasses vital maritime passages like the Malacca Strait, as well as the presence of densely populated nations, which drives enormous energy requirements along its periphery (Das, 2019). While it opens the door to regional collaboration and mutual economic prosperity, it also raises concerns about global competition, climate change, and environmental security, necessitating the need for effective climate governance and more substantial efforts from Indo-Pacific countries to mitigate climate change's repercussions.

The adverse consequences of climate change have recently prompted governments to formulate their security strategies to incorporate problems of climate change and risk management efforts across the IPR. This region is often hit by extreme weather incidents, which leave a trail of devastation. According to the "International Federation of the Red Cross and Red Crescent," climatic catastrophes affected approximately 57 million people in the IPR in 2021 (International Federation of Red Cross and Red Crescent Societies, 2021). The major cities along the coastal periphery and small island nations in the IPR find themselves particularly exposed to the pernicious consequences of rising sea levels, frequent tropical storms, and the intrusion of saline water into drinkable water reservoirs. The severe decline in fish species within the IPR already has a discernible impact on the critical issue of food security. Moreover, the acidification of our oceans and the rising temperatures will undoubtedly intensify this trend, thereby placing further strain on the existing framework of global regulations about fishery regulation. The phenomenon of climate change also acts as a catalyst for the proliferation of security risks throughout the IPR. Consequently, the hostilities, violent clashes, and naval adventurism over the "South China Sea's" conflicting territorial claims might escalate (Fetzek & McGinn, 2020).

In attempting to comprehend how a changing climate may aggravate the future scenario, the repercussions of COVID-19 serve as a good reminder that no nation can claim absolute self-sufficiency, as even prominent and affluent nations have significant social vulnerabilities when confronted with complicated hazards (Jain & Gill, 2022). As the consequences of climate change become more apparent, it is critical to investigate the distinctive characteristics of climate change in the IPR and the strategies put forward by different countries and organisations in the region to address this global challenge. This research paper explores the specific climate change consequences encountered in the IPR, considering issues such as increasing sea levels, extreme weather events, and biodiversity concerns. This study investigates the essential components, aspirations, and tactics embraced by major countries in formulating their national strategies and policies in the context of the IPR to address the issue of climate change. Moreover, it explores the potential for regional cooperation mechanisms, multilateral organisations, and numerous partnerships in the IPR to contribute in resolving the problem of climate change. This paper also attempts to examine India's pivotal role in combating climate change in the IPR through initiatives like boosting renewable energy and international cooperation. We may obtain deeper insights by investigating these research questions, which are pivotal in formulating efficacious policies and fostering regional cooperation amidst the risks posed by climate change in the IPR.

Conceptual Framework and Research Methodology

This study explores the fundamental concepts included within this scholarly endeavour, specifically the intricate interplay between the phenomena of "climate change" and the geopolitical construct of the "Indo-Pacific" region. From a meteorological perspective, climate change refers to the systematic alterations in average weather patterns over time. These changes are typically gradual but exhibit predictability amidst the inherent variability of weather conditions. This predictability applies to stable and changing climates (Weber, 2010). According to the United Nations (UN), climate change can be described as long-term changes in weather patterns and global temperature. These shifts might occur naturally due to fluctuations in solar activity or large volcanic explosions. However, there has been a significant rise in the production of GHGs emissions since the nineteenth century, mainly as a result of the burning of fossil fuels, which act as a protective layer that envelops our planet, effectively trapping the heat that the sun emits and consequently causing a rise in global temperatures (United Nations [UN], n.d.). Similarly, the National Resources Defense Council described climate change as a substantial variation in usual weather patterns over several years, such as the weather being more humid, hotter, or dried up. Climate change can only be differentiated from natural weather fluctuations by its longer-term trend (Turrentine & Denchak, 2021).

Along with "climate change", this paper also utilises the associated concepts like "climate governance," "adaptation," and "mitigation" throughout the paper. Climate governance here is the various negotiations, mechanisms, and procedures adopted by stakeholders at multiple levels to formulate policies, implement them, and coordinate actions towards mitigating and adapting to climate change (Sapiains et al., 2020). Adaptation refers to making necessary changes within the systems of the environment, society, and economy in direct response to either existing or anticipated adverse effects of climate change to decrease these consequences

efficiently or to benefit from the phenomena associated with climate change (Grantham Research Institute on climate change and the environment, 2022). Similarly, mitigation is defined as the deliberate effort to reduce and stabilise the level of heat-trapping GHGs emissions into the Earth's atmosphere (Global Environment Facility, 2022).

Another vital concept employed in this study is the construct of the "Indo-Pacific" region, which necessitates a conceptual explanation since it emerged from geopolitical nomenclature articulated by Western countries. The term "Indo-Pacific" is often used in the realm of foreign policy to refer to an altogether new and unified geographical entity that combines the Western Pacific Ocean and the Indian Ocean. The justification for conceptualising the Indo-Pacific as a different new region originates from the intensification of economic activity and the escalating geopolitical competition within this expansive maritime area, although its precise boundaries have yet to be defined (Cannon & Rossiter, 2018). Prominent stakeholders, including India, the USA, Japan, Australia, and the Association of Southeast Asian Nations (ASEAN), interpret the IPR through divergent perspectives within their respective Indo-Pacific strategies, primarily due to the absence of a universally acknowledged geographical demarcation. Nevertheless, it is worth noting that China persists in employing the term "Asia-Pacific" in its official discourse to denote this specific region, thereby showcasing its dissent towards the nomenclature mentioned above (Medcalf, 2019). This scholarly article analyses the essential factors in the geopolitics of the IPR, including regional power dynamics, maritime security, regional cooperation mechanisms, infrastructure development and connectivity projects. As mentioned earlier, these elements directly influence the formulation and implementation of climate change policies within the region.

The methodological section of this study focuses on the analytical approach used to comprehensively explore the research questions about the cause and impact of climate change in the IPR, the incorporation of climate change into national Indo-Pacific strategies, and potential India's role in combating climate change. The current study primarily employs a qualitative analysis technique. This study utilises data collected from both primary and secondary sources. The primary data compiles prestigious sources such as government records, policy papers, and informal engagements with distinguished persons such as high-ranking officials, prominent professors, and essential speakers at various climate conferences. The secondary data sources include a diverse range of scholarly materials, including databases, statistical records, and academic publications, which include books, journals, and newspapers.

Impact of Climate Change on the Indo-Pacific Region

The IPR is more vulnerable to the adverse consequences of climate change than other regions of the globe owing to its greater reliance on natural resources and farming, highly populated coastline regions, inadequate regulation framework, and also, a considerable section of the society lives below poverty line (Glasser et al., 2022). Climate change has a disastrous impact on the oceans, causing a rapid rise in the temperature of the surface water as well as the warming of the deep water, regularly occurring ocean heatwaves, a drop in the pH value leading to acidification of the ocean, a rise in sea level owing to melting glaciers, the decline of arctic ice sheets, rising upper ocean stratification, a drop in oxygen level of water, a spike in salinity,

and the backflow of saline water to freshwater reservoirs (The Ocean Foundation, 2022). The intensity of storms, droughts, and other weather abnormalities is becoming more severe as temperatures increase. The oceans are changing physically, chemically, and biologically due to increased ocean temperature. When ocean temperatures rise, the capacity of the ocean to hold dissolved oxygen declines, as is seen in the growth of the ocean's dead zones (Bajaj, 2021). The tremendous environmental change that is taking place in the Arctic, coral reefs, and mountains is forcing many species to relocate or die extinct. Climate change poses a formidable threat to the IPR's vast array of marine biodiversity through habitat loss, alterations in species distribution patterns, and increased susceptibility to the encroachment of invasive species, all of which lead to ecological imbalances and the grave prospect of species extinction (Du et al., 2023). The long-lasting consequences of these impacts will endure throughout future generations, regardless of the effectiveness of efforts to mitigate subsequent climate changes.

The "Small Island Developing States" (SIDS) are an essential grouping of 39 countries and 18 associate members situated inside UN regional commissions characterised by their inherent vulnerability to various political, social, economic, and environmental concerns. The Caribbean (including Barbuda, the Bahamas, Barbados, and Cuba), the Pacific (including Fiji, Kiribati, the Marshall Islands, Micronesia, Papua New Guinea, and the Solomon Islands), and the Atlantic, South China Sea, and Indian Ocean (including Bahrain, Comoros, the Maldives, Mauritius, Seychelles, and Singapore) are the three geographical regions in which the SIDS are located (United Nations Department of Economic and Social Affairs, n.d.). The SIDS are widely recognised as being exceptionally susceptible to the repercussions of climate change. They are challenged by rising sea levels, intensified occurrences of extreme weather phenomena, and the ongoing degradation of marine ecosystems. Consequently, the habitability of these islands, as well as the inhabitants' livelihoods and cultural heritage, are gravely threatened (Petzold & Magnan, 2019). They have positioned themselves at the vanguard of this global challenge by actively raising awareness about their heightened vulnerability to the adverse impacts of climate change. The majority of the small island nations in the region are low-income, and a sizable portion of their economy derives from foreign travellers, which would be seriously damaged by the ramifications of climate change, such as the damage of coastal ecosystems and more occurrences of severe weather conditions (Wolf et al., 2021).

As climate change leaves certain regions of the planet uninhabitable to humans, an impending catastrophe of climate-induced migration looms, revealing the inability of present international legal frameworks to address this multifaceted crisis adequately. Latin America, South Asia, and Sub-Saharan Africa emerged as regions with greater vulnerability to the repercussions of climate change, with the possibility of substantial increases in domestic and cross-border migration (Prange, 2022). The migration of people caused by climate change has the potential to jeopardise the region's security and stability. One such case study of how climate change is exacerbating risk is the worsening of pre-existing ethnic and cultural tensions in North-eastern India as a consequence of the constant influx of illegal migrants from Bangladesh. Climate change is widely blamed for the massive surge in natural disasters in Bangladesh, including "flooding, cyclones, storm surges, waterlogging, salt intrusion, riverbank erosion, and land loss," which also prompted migration to India (Saul et al., 2012). According

to the sixth assessment report of the "Intergovernmental Panel on Climate Change" (IPCC), sea levels are rising far more quickly in the "Indian Ocean," and in the "Bay of Bengal" in particular, than they do globally (Intergovernmental Panel on Climate Change, 2022). The possible repercussions of rising sea levels on strategically essential locations due to changes in topography, leading to alterations in maritime boundaries causing conflicts among nations, constitute a substantial danger to regional security and stability (Paskal, 2007).

Climate change is also causing water scarcity throughout the world. Another significant example of how environmental concerns associated with climate change increase vulnerability within a security architecture may be seen in the IPR, where limited access to critical natural resources is a cause of dispute. Nearly half of the world's population gets their water mainly from the Tibetan Plateau, which supplies drinking water to nations such as China and India. The competition over the possession of natural resources catalyses the conflict and could be used as a coercive tool to influence neighbours (Chellaney, 2011). Many scholars have predicted that countries will fight over water resources. The impact of climate risks on the IPR's stability could change the strategic balance among the countries. For example, what was once an environmental issue, "dwindling fish stocks", has led to Somali piracy. The local fishermen were forced to turn to piracy as a means of subsistence due to overfishing by out-of-regional fishermen; the issue worsened over time (Sow, 2017). This "non-traditional" threat of maritime piracy is made worse by the absence of adequate governance in the country, which leads to more "traditional" security issues like the excessive militarisation of the water, as shown, for instance, in the establishment of the naval facility in Djibouti by China (Bose et al., 2022). Nations with significant naval capabilities, such as India, China, the USA, and France, deployed naval warships around the Horn of Africa, primarily to combat the threat of maritime piracy. However, it is essential to note that throughout these missions, naval warships of these nations occasionally find themselves engaged in proximate encounters, posing a more significant threat to the region's stability.

China has been creating artificial islands and militarising them to strengthen the extra-territorial claims of China in the IPR. The coral reefs in the vicinity have been destroyed due to the excavation operation necessary to construct the artificial islands. During island-building projects, Chinese warships constantly manoeuvre, severely polluting the sensitive maritime ecosystem. The carbon emissions are amplified by military training drills, heavy gunfire, take-off and land on aircraft carriers, underwater activities, and even unarmed patrolling boats (Mukherjee, 2022).

However, many of these problems can be mitigated if countries attempt to cooperate on the climate change issue, which would benefit all parties and create a win-win situation. The prioritisation of resource-sharing agreements should be given precedence over the pursuit of competitive access to finite resources to effectively address conflicts arising from the scarcity of natural resources. This cooperation could be in multilateral cooperation, bilateral cooperation or unilateral policy initiative by individual countries. In the next section, this paper will discuss the place of climate change in the Indo-Pacific strategies of significant countries and their initiatives in mitigating and adapting to climate change in the IPR.

Placing the Climate Change in the Indo-Pacific Strategies

In contemporary times, the IPR has taken centre stage within the global geopolitical discourse. The advent of the IPR has brought about a profound transformation in the dynamics of global politics, thereby compelling the major powers within this region to develop comprehensive national strategies. A national strategy for the IPR functions as a comprehensive framework aimed at addressing security complexities and preserving peace while cultivating economic prosperity and encouraging global engagement and partnerships among stakeholders within the IPR. These strategies are crucial for effectively manoeuvring through the rising tide of the Indo-Pacific and ensuring the protection and advancement of their respective national interests (The National Bureau of Asian Research, 2023). Amid ongoing geopolitical tensions and economic rivalries, it is heartening to see that the issue of climate change has successfully secured a place in the national Indo-Pacific strategies of major nations. Within the context of these national strategies, prominent nations have articulated their respective positions concerning climate change within the IPR. Moreover, they have put forth comprehensive action plans to mitigate and adapt to the multifaceted challenges of climate change.

Australia has emerged as one of the pioneering nations incorporating the term "Indo-Pacific" within its official governmental documents. In his "Defence Strategic Update 2020," Australia duly acknowledged the adverse consequences of climate change in the IPR, such as growing water and food scarcity and extreme weather events, as significant threats to Human security and consequently recommended that disaster management and resilience measures be accorded greater importance in defence planning (Australian Government Department of Defence, 2020). The Australian Indo-Pacific Strategy featured a development assistance programme under the guidance of the "Climate Change Action Strategy" and endeavoured to assist partner countries in addressing and adapting to the challenges posed by climate change. It aims to foster a culture of sustainable development with reduced emissions in the IPR while also providing support for pioneering solutions to climate change, particularly those that involve the mobilisation of private sector investments. Australia has substantially boosted its climate funding promise to a considerable $2 billion during the years 2020–2025, of which approximately $700 million of this investment has been explicitly dedicated to climate and disaster funding in the Pacific region. In addition to these endeavours, the Australian government has also introduced a range of significant initiatives, such as the "Australian Infrastructure Financing Facility for the Pacific," the "Climate and Oceans Support Program in the Pacific," the "Australian Climate Finance Partnership," "Australia's Science and Technology for Climate Partnerships" and "Climate Resilient by Nature," to effectively address the looming problem of climate change in the IPR (Australian Government Department of Foreign Affairs and Trade, n.d.).

The USA revealed its Indo-Pacific Strategy in February 2022, a comprehensive framework that outlines its vital interests, identifies security threats, proposes a strategic course of action, and anticipates the role of the USA in the IPR. This policy focuses on countering China bilaterally while encouraging collaboration on transnational issues like the issue of climate change. In this report, the USA acknowledges the IPR as the "epicentre of the climate crisis," given that a staggering 70% of global natural disasters occur exclusively within this geographical expanse. Furthermore, it posits that the severity of climate change is escalating as the glaciers

in South Asia are melting rapidly while the Pacific Islands, imperilled by rising sea levels, struggle to secure their very existence. This strategy emphasises the formation of new partnerships as well as the strengthening of existing ones, like the "Quadrilateral Security Dialogue" (Quad) and the "Indo-Pacific Economic Framework" (IPEF), on critical issues including global healthcare, the crisis of climate change, crucial and new technologies, sustainable development, infrastructure projects, and promoting clean energy. The USA will endeavour to stimulate investments in developing and implementing green technologies through initiatives such as Clean EDGE, facilitate the reduction of carbon emissions in the energy sector, and encourage financial investments in climate-aligned infrastructure projects in the IPR (The White House, 2022).

Japan was among the early adopters of the Indo-Pacific concept, as exemplified by the notable "Confluence of Two Seas" address delivered by former Japanese Prime Minister Shinzo Abe before the Indian Parliament in 2007 (Ministry of Foreign Affairs of Japan [MOFA], 2007). Japan has introduced its "Free and Open Indo-Pacific" (FOIP) strategy, which aims to strengthen cooperation with partner countries and provides financial and technological assistance to nations in the IPR to promote renewable energy initiatives, waste management projects, energy-efficient transportation systems, environmentally friendly infrastructure and connectivity projects, and disaster risk reduction capabilities, which are crucial for developing resilience to extreme weather events caused by climate change such as hurricanes, floods, and tsunamis (MOFA, n.d.). Japan, in its "National Security Strategy 2022", also acknowledged that even though the power balance in global politics is shifting, which is intensifying geopolitical rivalries among countries, pressing challenges such as climate change and infectious diseases, which could pose an existential threat to the human race, still require immediate and collective international efforts (Cabinet Secretariat Government of Japan, 2022). The Japanese government launched the "New Plan for FOIP" in March 2023, intending to bolster efforts to realise the FOIP by enhancing cooperation in fields like climate change, the environment, and global healthcare to promote sustainability and the resilience of Indo-Pacific countries. Along with previous initiatives, Japan has proposed numerous new ambitious initiatives, including the "Asia Zero Emission Community," which seeks to achieve decarbonisation and economic development simultaneously; the "Assistance for Loss and Damage" programme to assist nations prone to natural calamities; and the "Blue Ocean Vision" initiative, which aims to preserve the oceans (MOFA, 2023).

In November 2019, Prime Minister Modi proposed the "IPOI" during the "East Asia Summit" as an inclusive global endeavour incorporating pre-existing collaborative regional frameworks and mechanisms. Its primary objective is to prioritise seven fundamental pillars, among which "Maritime Security," "Maritime Ecology," "Maritime Resources," "Disaster Risk Reduction and Management," and "Science, Technology, and Academic Cooperation" express both explicitly and implicitly India's deliberate efforts to address the problem of climate change in the IPR (Ministry of External Affairs, Government of India [MEA], 2020). The comprehensive assessment of Indian efforts to combat climate change in the IPR has been extensively deliberated upon in the subsequent segment of this paper.

China has thus far refrained from embracing the "Indo-Pacific" concept, opting instead to stick with the old terminology of "Asia-Pacific" when referring to this particular geographic expanse. However, given China's substantial stature as a

formidable force in the region's military and economic realms, it would be negligent to disregard its pivotal role in combating climate change within the IPR. China, the most significant contributor to the world's emissions of GHGs recently, has undertaken measures to mitigate these emissions and impede further ecological degradation. These measures include ratifying the "Paris Agreement 2015" on climate change and the pledge to attain carbon neutrality by 2060 (Maizland, 2021). Globally, China has emerged as the primary sponsor of carbon-intensive infrastructure, notably via its grandiose Belt and Road Initiative (BRI), under which China has recently constructed or intends to construct hundreds of coal-powered power plants in many different nations across the globe. Nevertheless, it should be mentioned that Chinese President Xi Jinping was one of the 40 international leaders present at the Leader's Summit on Climate Change on April 21, 2021, which the USA hosted. He said he would lead "green action initiatives" within the BRI, promising China would proactively resolve environmental concerns in infrastructure, energy, transport, and finance (Global Times, 2021). When the USA departed from the Paris Agreement, a golden opportunity appeared for China to proactively tackle climate change within the region, which may soften its hegemonic image (Unny, 2022).

In its "Strategy for a Free, Peaceful, and Prosperous Indo-Pacific Region," the Republic of Korea committed to assisting the countries in the IPR to accomplish the SDGs in the domains of climate change, transitioning to clean energy, and strengthening regional resilience to deal with transnational threats. Furthermore, South Korea pledges its support for the creation of a collaborative regional framework to support the reduction of GHGs, adaptation and mitigation of climate change with innovative technologies and seeks cooperation with the nations in the region to develop a roadmap for future collaboration in the areas of electrical automobile infrastructures, technological standardisation, recycling of batteries, and other related areas, with the ultimate goal of becoming carbon neutral (Ministry of Foreign Affairs, Republic of Korea, 2022).

It is evident from these strategies that each country, small or big, up to some extent has an understanding that consequences of climate change are inevitable, manifesting in ramifications that seriously affect various sectors of the economy, security, society, and the environment at multiple levels. Despite the IPR being highly vulnerable to the ramifications of climatic problems, it is unpleasant to observe that national strategies adopted by various countries allocate relatively limited attention to climate-related concerns, instead prioritising traditional security and economic pursuits. These strategies must adhere to an unwavering commitment to prioritise climate change mitigation and adaptation while ensuring complete transparency and accountability of their actions in the IPR (International Military Council on Climate and Security, 2020). A good and efficient climate change policy necessitates a carefully planned, cooperative strategy inside and across nation-states that sees climate change, environmental sustainability, and security governance as inextricably linked (Tangney et al., 2021). In the context of individual national strategies, nations have committed to undertaking some measures for climate change mitigation and adaptation. However, it is vital to recognise that relying solely on individual efforts falls short of what is necessary (Vishwanath & Mukund, 2024). In the context of the IPR, the coordinated effort to address climate change issues could serve as a trust-building exercise, therefore requiring attention as a diplomatic initiative because specific environmental challenges have a lower degree of political

complication, making cooperation actions in these fields easier and less likely to provoke resistance from neighbouring countries (Bose et al., 2022). To effectively address climate change, fostering a multilateral, transnational cooperation framework is imperative.

Assessing Multilateral Cooperation in Combating Climate Change

Climate change is an intricate and pervasive issue of global nature, necessitating collective efforts and cooperation from every stakeholder involved. If a particular nation makes significant strides in curtailing its carbon emissions, the efficacy of such efforts will be rendered futile if other nations fail to follow suit. Regardless of the magnitude of sacrifice or hardship endured by the former, the adverse consequences of climate change would inevitably befall them. Suppose nations with different sizes and capacities, each facing different degrees of vulnerability to the risks of climate change, express a shared desire to collaborate on equal terms. In that case, multilateral institutions are pivotal in facilitating such cooperation. There is an urgent need to take leverage of the established regional and subregional frameworks—including the "Indo-Pacific Oceans' Initiative" (IPOI), "the Quad," the "Indian Ocean Rim Association" (IORA), the "Bay of Bengal Initiative for Multi-sectoral Technical and Economic Cooperation" (BIMSTEC), and the ASEAN and giving climate change action priority. Although most platforms already have various ecological and environmental elements, the proper emphasis is missing (Bajaj, 2021).

The ASEAN can be more significant in dealing with other regional organisations and countries. The ASEAN's Indo-Pacific strategy, known as the "ASEAN Outlook on the Indo-Pacific," places significant emphasis on the shared goal of achieving Sustainable Development Goals (SDGs) and the importance of collaboration in the fields of "Climate Change and Disaster Risk Reduction and Management." Furthermore, the strategy highlights the commitment to adhere to the "United Nations Convention on the Law of the Sea" (UNCLOS) of 1982 to foster cooperation in addressing pressing issues such as ocean pollution, rising sea levels, marine debris, preserving and safeguarding marine life and biodiversity, and promoting environmentally friendly shipping practises, among other objectives (Association of Southeast Asian Nations, 2021). The IORA is also critical in battling climate change through its endeavours to foster sustainable growth and equitable development in the Indian Ocean Region; it is focusing on six "Priority" areas and two "Focus" areas, which include critical domains such as "Maritime Safety & Security," "Trade & Investment Facilitation," "Fisheries Management," "Disaster Risk Management," "Tourism & Cultural Exchanges," "Academic, Science, and Technology Cooperation," "Blue Economy," and "Women's Economic Empowerment" (Indian Ocean Rim Association, n.d.). The leaders at the fifth BIMSTEC Summit, convened on March 30, 2022, in Colombo, Sri Lanka, resolved to explore joint endeavours aimed at strengthening cooperation in the domain of environmental preservation and sustainable economic growth within the "Environment and Climate Change Sector," which is one of the seven priority sectors identified by BIMSTEC for cooperation (BIMSTEC Secretariat, n.d.).

In 2018, the leaders of the "Pacific Islands Forum" (PIF), an inter-governmental body of island nations in Oceania that are specifically susceptible to the perils of Climate Change, duly recognised climate change as a matter of regional security, as articulated in the "Boe Declaration 2018." In 2019, the Forum leaders took a

momentous step by issuing the "Kainaki II Declaration for Urgent Climate Change Action Now 2019," which delineates ten crucial appeals to the international community, urging them to embark upon a path of resolute and audacious action in combating the issue of climate change (PIF Secretariat, n.d.). The leaders convened at the PIF meeting in 2021 and duly embraced a declaration pertaining to "Protecting Maritime Zones in the Face of Climate Change-related Sea-Level Rise" unanimously (PIF Secretariat, 2021). This statement acknowledges the significance of the UNCLOS in marking permanent marine boundaries to prevent territorial erosion brought on by the climate.

Smaller nations exhibit a greater propensity to value and adhere to international norms and principles than their larger counterparts, notwithstanding the latter's vocal endorsement of the imperative to uphold international laws and regulations. The presence of small island nations in the IPR serves as a persistent reminder of the need for multilateral institutions such as the UN to promote global climate governance. In September 2015, all countries made a solemn pledge to strive towards the attainment of seventeen distinct "Sustainable Development Goals" (SDGs), one of which was "SDG 14: Life Below Water—To protect and sustainably utilise the oceans, seas, and marine resources for sustainable development." So, they had undertaken the noble endeavour to prevent "ocean acidification" and vowed to refrain from contaminating the "marine ecosystem with non-biodegradable plastics, oil, chemicals, pollutants, and noise" (UN, 2015). After a few weeks, on December 15, 2015, at the "Conference of Parties" (COP21) held in Paris, the international community announced its desire to seek a global armistice in the raging climate war. The member countries collectively reached a temperature limit to safeguard future generations' sustenance. With their "Nationally Determined Contributions" (NDCs) promises, they pledged to halt their severe attack on the environment by curbing GHGs emissions and the unscrupulous exploitation of precious natural resources (United Nations Framework Convention on Climate Change, 2015).

The Quad is also a crucial multilateral forum in the IPR, with four prominent democratic nations, namely the USA in the Pacific Ocean, India in South Asia, Japan in Northeast Asia, and Australia in Oceania, forming a substantial regional network endowed with an abundance of resources at their disposal. The Quad, an influential grouping of nations with a collective GDP accounting for nearly 35% of the world economy and a sizable portion of the population of the world, has the potential to establish itself as a flag-bearer for the global climate agenda (Mehra, 2020). The Quad countries reaffirmed their commitment to advancing concrete cooperation in combating climate change, firmly integrating the Paris Agreement, and achieving COP26 at the Quad leaders meeting in Tokyo on May 24, 2022. The Quad nations are still working to help Indo-Pacific allies, considering their rising demands for a practical transition to a net-zero economy and society and boosting the ability to withstand climate change's consequences. With the ideas of mitigation as well as adaptation and resilience led by the "three pillars of the Climate Working Group: climate ambition, clean energy, and adaptation/resilience," the Quad nations established the "Quad Climate Change Adaptation and Mitigation and Package" (Q- CHAMP) to address these demands (The Economic Times, 2022). The efficacy of the Quad shall hinge upon its ability to compete with China's BRI projects employing its environmentally conscious and clean-energy-focused infrastructure initiatives within the region. Along with the multilateral initiatives at the international level, it becomes

imperative to study the Indian initiative to combat climate change in the IPR.

Indian Efforts to Combat Climate Change

India, which has the world's second-largest population and an excellent economy and market, has the potential to play a crucial role in mitigating and adapting to climate change. For millennia, the Indian people have worshipped and worked to safeguard nature. The position of India regarding climate diplomacy has transformed throughout its history. India's primary dilemma is maintaining a careful balance between promoting growth and reducing poverty while combating the central issue of climate change (Nirupama, 2022). During the 1990s, a notable emphasis was placed on the issue of environmental colonialism, which shed light on the concept of "Common But Differentiated Responsibilities" (CBDR), and in 2015, there was a concerted effort to push for the establishment of an organisation like the "International Solar Alliance" (ISA) to move towards renewable energy (Thakur, 2021). India possesses the capability to offer the nations within the IPR credible leadership in the ongoing struggle against climate change. The demonstration of leadership was evident in Prime Minister Modi's speech at the "East Asia Summit" (EAS) in November 2019, where he recognised transboundary challenges like climate change and marine pollution as a threat to the security of our planet. Furthermore, he emphasised the need for the IPR to serve as a space that upholds essential principles such as unrestricted navigation, free overflight, environment-friendly development, preservation of the environment, and the establishment of an equitable, inclusive, and commonly advantageous framework for trade and investment for all countries (MEA, 2019).

The majority of states in the IPR, in actuality, have ineffective regulatory and institutional frameworks for addressing marine pollution. In this regard, India has taken the lead and ratified several old maritime safety treaties, which have resulted in amendments to the "Territorial Waters, Continental Shelf, Exclusive Economic Zone, and Other Maritime Zones Act 1976," the "Merchant Shipping Act 1958," and the "Coastal Regulation Zone Notification 2018," which sets a critical reminder to address the coastal pollution issue (Sharma, 2021). In 2021, India also started a programme called "Plastic Hackathon 2021" to get rid of all single-use plastic in the nation by the year 2022 (PIB, 2021). India is currently implementing numerous programmes and schemes, one of which is the "National Action Plan on Climate Change," which is a comprehensive plan that encompasses a series of missions that are specifically focused on various critical domains such as renewable energy, green hydrogen mission, energy conservation, water management, sustainable farming, preservation of the Himalayan ecosystem, construction of sustainable habitats, promotion of a greener India, and the acquisition of strategic knowledge about climate change. India has established a special fund, the "National Adaptation Fund for Climate Change," which has been specifically designed to provide critical support to States and Union Territories that are particularly vulnerable to the repercussions of climate change (Ministry of Science and Technology, Government of India, 2024).

India has solemnly committed to addressing the severe climate change issues; however, it is imperative to acknowledge that attaining a net zero target necessitates a fundamental shift in deeply ingrained behavioural habits. The Indian Government has recently launched various national initiatives aimed at boosting the nation's renewable energy capabilities, such as the "Green Energy Corridor scheme",

"Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan" (PM KUSUM), Solar Parks, "Greening of Islands program, Roof Top Solar" (RTS) Programme and renewable energy hybrid projects in various region of the country (PIB, 2024). The Government of India has launched the "National Green Hydrogen Mission" to encourage the large-scale production and export of green hydrogen, aiming to add 125 Gigawatts of clean energy by 2030, thereby decarbonising various sectors, reducing reliance on imported fossil fuels, fostering domestic manufacturing, generating employment, and promoting advance technologies like efficient fuel cells (Ministry of New and Renewable Energy, Government of India, 2023).

In addition to addressing climate change locally, India has established international collaborations. In August 2021, under India's presidency, the UN Security Council adopted the first-ever statement on maritime security, in which PM Modi advocated for the requirement of a "framework of mutual understanding and cooperation" in the domain of maritime security. In his address PM Modi outlined five fundamental principles: amicable settlement of maritime disputes as per international law; unrestricted maritime trade facilitation; collaborative efforts to address maritime threats posed by devastating natural disasters and rogue non-state actors; preserving the marine ecology; and promotion of credible maritime connectivity (Ray, 2021). In the COP26 conference held in Glasgow in November 2021, India and various other nations reiterated and bolstered their commitment to safeguarding extensive marine zones, implementing targeted measures to mitigate the detrimental effects of ocean acidification and rising sea levels, eliminate the scourge of plastic pollution, preserve the delicate sea bed ecosystems, and actively pursue carbon by employing meticulous management strategies for mangrove forests (Mukherjee, 2022). India has also pledged to achieve a "net zero emissions target" by 2070, whose scope is more extensive than simple emissions and necessitates the safeguarding of all categories of natural resources, as their preservation is indispensable for its realisation (Press Information Bureau [PIB], 2022). In the COP26 summit in Glasgow in November 2021, important projects under the "Coalition for Disaster Resilient Infrastructure" (CDRI) and the "International Solar Alliance" (ISA) were announced, including the "Infrastructure for Resilient Island States" and the "Green Grids Initiative—One Sun, One World, One Grid" (PIB, 2023).

India is the single nation within the G20 group that demonstrates a commendable alignment with the critical 2-degree threshold, thereby representing its inherent capacity to achieve its climate targets effectively. The G20 presidency in 2023 provides India with an unprecedented chance to establish leadership in the field of climate change by offering a low-carbon development perspective that other countries could emulate (Roy & Mehta, 2023). India, as the G20 president, played a very critical role in endorsing the "Chennai High-Level Principles for a Sustainable and Resilient Blue/Ocean-based Economy" in the G20 outcome document, thereby reaffirming their collective commitment to the conservation and restoration of global marine ecosystems, recognising the critical need to address the adverse effects of climate change on our oceans (The Print, 2023). During its tenure as the G20 president, India initiated the establishment of the Disaster Risk Reduction Group and the Global Biofuel Alliance, aimed at bolstering multilateral cooperation in addressing the multifaceted challenges posed by climate change. The Indian Navy also takes part in various bilateral and multilateral exercises for Humanitarian Assistance and Disaster

Relief (HA/DR) to improve the collaboration among regional navies in tackling natural disasters. In addition, the Indian Navy plays the role of "First Responder" in the region by providing essential humanitarian aid and support during natural disasters (Mishra, 2024).

Under "India-US Climate Clean Energy Agenda 2030," India and the US agreed on the "Climate Action and Finance Mobilization Dialogue," which aims to encourage both parties to continue their partnership in fighting climate change without being hampered by monetary constraints (The Economic Times, 2021). India and the European Union's (EU) strategic partnership in the IPR could be a key factor in the fight against climate change by enhancing cooperation through non-military measures, focusing on critical aspects such as climate change mitigation, the establishment of robust supply chains and infrastructure networks, and the creation of beneficial partnerships that encompass multifaceted and interconnected elements spanning climate, security, environment, and economic development (Prabhu, 2024). In 2023, during PM Modi's visit to France, the two countries announced the launch of the "Indo-Pacific Triangular Cooperation" (IPTDC) fund to support startups and promote climate-centric innovations in the IPR using a unique model of "Triangular Development Cooperation" in the joint vision statement "Horizon 2047" (Singh, 2024). India has the potential to lead the fight against climate change in the IPR by fulfilling its climate targets, spearheading the reform of global climate finance, encouraging collaboration among nations in green technologies, and bringing all stakeholders on a common platform amid the ongoing political rivalries.

Conclusion

Climate change has been a significant concern in recent years, leading to a worrying rise in the Earth's surface temperature and significant disruptions in our ecosystem. Climate change has profoundly affected the IPR, leading to the depletion of marine biodiversity, increased occurrence of heatwaves, erratic rainfall patterns, severe storms, and rising sea levels due to glacier ice melting, among other consequences (The Ocean Foundation, 2022). The repercussions of climate change pose a greater risk to the livelihoods of the large population living in the IPR due to their heavy dependence on the natural resources of the seas and agriculture, as well as issues of poor governance and widespread poverty. The consequences of climate change, such as the reduction of fish populations, the rise in sea levels, the depletion of marine resources, and the influx of migrants, present a significant threat to the security situation in the IPR (Prange, 2022). Climate change has made plenty of regions of the world unsuitable for human habitation, resulting in extensive migration and exposing the deficiencies of global climate regulations. In recent decades, the global powers have duly recognised the rising strategic importance of the IPR. Consequently, they have diligently formulated comprehensive national security documents specifically tailored to address the complexities inherent in this region. These actors, to a certain extent, incorporated climate change and its intricate dimensions into their respective strategies. However, their undue emphasis on strategic importance and geopolitical factors has unintentionally overlooked the region's urgent need to adequately address climate change. The fundamental transnational characteristics of climate change emphasise the requirement for climate action to transcend the boundaries of any individual nation, necessitating a collaborative and coordinated approach that includes not only individual states but also regional entities and international

organisations(Vishwanath & Mukund, 2024).

Multilateral institutions should play a more rigorous role in bringing together all involved nations to discuss climate change within the IPR. Given its extensive presence and well-established dialogue mechanisms, the ASEAN, the PIF and the IORA provide the appropriate platforms for such discussions. The ASEAN, the PIF and the IORA barely cooperate on issues like environmental degradation and climate change (Bajaj, 2021). The influential countries in the IPR, like Australia, India, Japan and the USA, can play a crucial part in bringing them together. These governments have climate change programmes for Southeast Asia and the Pacific, consequently increased cooperation among different nations could guarantee a comprehensive solution to maritime security challenges related to climate change (Clayton, 2022). India must prioritise addressing climate change and global warming in its foreign policy. The presidency of the G20 and the Shanghai Cooperation Organisation in 2023, along with India's expanding economic and diplomatic influence, its leadership role in the Global South and South Asia, and its increasing presence in the IPR, collectively provided India with a significant opportunity to exhibit resolute leadership and demonstrate a willingness to confront climatic challenges head-on in the region (Roy & Mehta, 2023). Regarding the vital strategies and methods for successfully tackling the challenges of climate change adaptation, the general population needs more collective awareness (Anbumozhi et al., 2012). This prevailing ignorance poses a difficulty in reaching a consensus and successfully mainstreaming the climate change issue. It is critical to devote effort to developing a future vision that includes significant stakeholders at multiple levels and strikes an appropriate balance among opposing viewpoints. The IPR's ability to draw significant economic and political attention has the potential to bring about a fundamental transition, moving it towards becoming a prosperous and developed region of the world. The countries in this region must seek to strike a delicate equilibrium between the need for rapid economic growth, the safeguarding of core security interests, and efforts towards the mitigation and adaptation of climate change.

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