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Climate Diplomacy:

Viability of Pakistan-India Cooperation

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Climate change is a global phenomenon and poses a formidable challenge for developed and developing countries. Climate-related disasters can contribute to economic and political instability. Climate change is affecting South Asia in myriad ways and is a common challenge that Pakistan and India can mutually meet to ensure their sustainable development. Joint efforts in renewable energy, water resource management, agriculture and food security, disaster risk reduction, and air pollution are possible. This paper examines the potential for climate diplomacy in South Asia and assesses the feasibility of Pakistan-India cooperation on climate change. It underscores the significance of establishing a bilateral climate framework, engaging in joint disaster relief operations, collaborating on green energy initiatives, exploring climate finance options, and facilitating joint research and training programs. By leveraging shared vulnerabilities, past cooperation experiences, and regional and global commitments, they can, among other things, collaborate on the diplomatic front to combat climate change and enhance climate resilience in the South Asian region.

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Introduction

Climate change is one of the most pressing challenges of the 21st century, with widespread consequences for global health, security, economic stability, and ecological sustainability. It is a mounting threat to the only life-supporting planet and the well-being of its inhabitants.[2] To grasp its essence, the 2006 paper titled "Adaptation to Climate Change: Key Terms" prepared by the Organization for Economic Cooperation and Development (OECD) set out various definitions of climate change, including:

> Climate Change refers to any change in climate over time, whether due to natural variability or as a result of human activity or a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may be due to natural processes or external forcing or to persistent anthropogenic changes in the composition of the atmosphere or land use.[3]

Acknowledging the stark reality that climate change is not a myth, but a potent and imminent threat primarily driven by human activities is paramount. Scientific evidence confirms that human influence has unequivocally warmed the atmosphere, oceans, and land, leading to widespread and rapid changes across Earth's systems.[4] The excessive concentration of

2. Intergovernmental Panel on Climate Change. "Climate Change: A Threat to Human Wellbeing and Health of the Planet. Taking action now can secure our future." https://www.ipcc.ch/2022/02/28/pr-wgii-ar6/.
3. Levina, Ellina, and Dennis Tirpak. "Adaptation to climate change: Key terms." Organization for Economic Co-operation and Development (OECD), May 9, 2006. https://one.oecd.org/document/COM/ENV/EPOC/IEA/SLT(2006)1/en/pdf.
4. Carabine, Elizabeth, and Alberto Lemmo. "The IPCC's Fifth Assessment Report: What's in it for South Asia? Executive Summary." Climate and Development Knowledge Network (CDKN), 2014. IPCC — Intergovernmental Panel on Climate Change.

greenhouse gases (GHG), like carbon dioxide and methane, results in global warming and subsequent climate changes.

Climate change poses a formidable challenge, and its adverse effects are hazardous to developed and developing countries. South Asia, a region highly vulnerable to its impacts, has witnessed many impacts over the past several years, be it destructive floods, cyclones, storms, droughts, or irregular rainfall patterns. According to the World Bank, in the last 20 years, more than 750 million people in South Asia have been affected by one or more climate-related disasters.[5]

These climate-related disasters jeopardize economic and financial stability and increase political disorders. Despite the heightened climate change risk, regional cooperation in South Asia has been a victim of political tensions and historical disputes between countries, notably Pakistan and India. Despite sharing a common history and culture, these states have struggled to build warm ties, with a history marked by conflicts, wars, and unresolved challenges.

Currently, the two neighbors, India and Pakistan, are highly vulnerable to the impact of climate change. Regarding the country's vulnerability to the ravages of climate change, India and Pakistan are the 7th and 8th most at-risk countries respectively. The two neighbors have been undergoing unprecedented heat waves since last year. In May 2002, New Delhi reached its highest temperature of 49 degrees Celsius. Similarly, one of the hottest temperatures in April recorded worldwide was in Pakistan's town of Jacobabad, at 49 degrees. Moreover, the March-to-May was also the driest period for some time in both countries, with 71 percent and 62 percent less than average rainfall in India and Pakistan, respectively.[6]

5. "Climate and Development in South Asia." World Bank, 2023, https://www.worldbank.org/en/region/sar/brief/integrating-climate-and-development-in-south-asia/integrating-climate-and-development-in-south-asia-region.
6. Fitzgerald, Chris. "Why climate change spells danger for South Asia." Asia Times. June 1, 2022. https://asiatimes.com/2022/06/why-climate-change-spells-danger-for-south-asia/.

In this context, "climate diplomacy" is crucial for building consensus and cooperation among various actors. In a globalized world today, states have shared vulnerabilities and growing interdependence. Climate diplomacy allows Pakistan and India to cooperate in common interest without giving up on their security interests rooted in territorial disputes like India's illegal occupation of Jammu and Kashmir, Siachen Glacier, and Sir Creek.

This paper, therefore, examines in detail the impact of climate change on Pakistan and India and analyzes the current state of climate diplomacy in South Asia, discussing the global commitments, regional initiatives, and national policies of Pakistan and India for addressing this serious issue. In addition, it provides insights into the opportunities and constraints for dealing with climate change to create a conducive environment for cooperation in times of common existential threats.

Impact of Climate Change on Pakistan and India

Climate change affects Pakistan and India in various ways. This global phenomenon is reshaping the region from fast-melting glaciers to unprecedented heat waves and extreme variations in rain and snow patterns. The more than 600 million absolute poor population, comprising over half of the world's total poor population, bears the brunt of climate change, heavily relying on climate-sensitive sectors such as forestry, fishing, agriculture, and natural resources for their daily needs.[7]

As South Asia, once considered the "granary" of the globe, faces disruptions in its fragile balance for crop growth, significant challenges emerge. A 2021 study indicates a projected 16 percent decline in wheat production by 2050 in South Asia.[8] Pakistan's agricultural sector, vulnerable to climate change,

7. "Climate Change and Migration in Asia and the Pacific." Asian Development Bank. 2011. https://www.adb.org/sites/default/files/publication/29662/addressing-climate-change-migration.pdf.
8. Siddiqui, Usaid. "What Makes South Asia So Vulnerable to Climate Change?" Al Jazeera, July 8, 2023. https://www.aljazeera.com/amp/news/2023/7/8/what-makes-south-asia-so-vulnerable-to-climate-change.

experienced devastating floods in 2022 submerging one-third of the country, causing 15,000 casualties, displacing 8 million people, and impacting the agriculture sector by 0.9 percent of gross domestic product (GDP).[9] In India, climate change is expected to lead to a 25 percent decrease in rice production and a 30 percent drop in wheat production by 2050, potentially turning the country into a massive net importer. The altered weather patterns resulted in drought affecting 20 percent of India's population in 2021.[10]

Floods, extreme weather events, and declining food production force millions in South Asia to flee their homes. Reports suggest that nearly 63 million people in the region could be displaced by 2050 due to rising seas, river encroachment, and unsuitable agricultural land.[11] In Pakistan, more than 7 million people were compelled to relocate in 2022 alone, with an estimated 2 million becoming climate refugees by 2050.[12] India, experiencing the fourth-highest climate change-induced migration, witnessed over 3 million people forced out of their homes in 2020. Climate disasters are projected to displace 45 million people in India within the next 40 years.[13]

Additionally, climate change poses new challenges to human health in South Asia, with extreme weather patterns contributing to dire health conditions. In Pakistan, heavy

9. Nabi, Ijaz. "Responding to Pakistan Floods." Brookings Institution, February 10, 2023. https://www.brookings.edu/articles/pakistan-floods/.
10. Shagun. "Drought Scare Looms Large Over a Fifth of India." Down To Earth, August 21, 2021. https://www.downtoearth.org.in/news/water/-drought-like-nagaland-stares-at-water-scarcity-low-harvest-78594.
11. Singh, Harjeet, Jessica Faleiro, Teresa Anderson, and Sanjay Vashist. "Costs of Climate Inaction: Displacement and Migration." Action Aid, December 2020. https://actionaid.org/news/2020/climate-migration-south-asia-set-treble-2050-due-political-inaction-global-warming.
12. "Pakistan Floods: Six-Month Wait for Water to Recede, Warn Relief Agencies." United Nations News, September 20, 2022. https://news.un.org/en/story/2022/09/1127051.
13. Krishnan, Murali. "India: Migration from Climate Change Getting Worse." New Delhi, April 19, 2023. https://www.dw.com/en/india-migration-from-climate-change-getting-worse/a-65369043.

rains and floods have led to a high prevalence of poor health outcomes, particularly affecting vulnerable populations. Over 44 percent of Pakistani children under five experience hindered development due to lack of proper nutrition.[14] In India, extreme temperatures contribute to 6.3 percent of all deaths annually, with a notable increase in heat-related deaths between 2000-2004 and 2017-2021.[15]

South Asia's freshwater resources, already strained, face increasing unreliability due to climate change. India and Pakistan rank among 17 states with very high water scarcity.[16] Global organizations predict mass water shortages in Pakistan by 2025, while India is projected to face double the water demand than available supply by 2030, leading to a significant economic downturn.[17]

The economic toll of climate change is substantial in South Asia. A report by the Asian Development Bank (ADB) suggests that without global deviation from current fossil fuel-intensive paths, South Asia could lose 1.8 percent of its annual GDP by 2050, rising to 8.8 percent by the end of the century.[18]

14. Tan, Su-Lin. "Pakistan is bearing the brunt of the climate crisis despite 'small carbon footprint,' minister says." CNBC. September 06, 2022. https://www.cnbc.com/2022/09/06/pakistan-finmin-on-floods-country-is-bearing-brunt-of-climate-change.html.
15. "Heat-related deaths in India increased by 55% in 17 years, finds Lancet study." Scroll Staff. October 26, 2022. https://scroll.in/latest/1035871/heat-related-deaths-in-india-increased-by-55-in-last-17-years-finds-lancet-study
16. Anwar, Iqbal. "Water Crisis confronts both Pakistan and India, says UN report." Dawn. October 7, 2021. https://www.dawn.com/news/1650596.
17. Mangi, Faseeh, Chris Kay, and Archana Chaudhary. "Water crisis brews between India and Pakistan." The Economic Times. January 26, 2019. https://www.google.com/amp/s/m.economictimes.com/news/politics-and-nation/water-crisis-brews-between-india-and-pakistan-as-rivers-run-dry/amp_articleshow/67700195.cms.
18. Ahmad, Mahfuz, and Suphachol Suphachalasai. "Assessing the Cost of Climate Change and Adaptation in South Asia." Philippines: Asian Development Bank. June 2014. https://www.adb.org/publications/assessing-costs-climate-change-and-adaptation-south-asia.

Pakistan faced over USD 30 billion in penalties and monetary losses in 2022 due to heat waves and floods. World Bank Group estimates a decrease of at least 18 to 20 percent in Pakistan's GDP by 2050 due to climate-related risks.[19] In India, the economic costs are already staggering, with cyclone Amphan in 2020 causing over USD 13 billion in damage.[20]

Commitments and Policies for Climate Diplomacy in South Asia

South Asia is a critical region for climate diplomacy, and Pakistan and India are at the heart of it. Examining their climate commitments, including global obligations, regional initiatives, and individual national policies, is essential to understand the regional landscape.

Global and Regional Commitments

Pakistan and India have officially acknowledged the significance of combating climate change. Both have ratified the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Paris Agreement that facilitate climate diplomacy worldwide.[21] They have made different attempts to form suitable domestic arrangements.

Regionally, through the platform of the South Asian Association for Regional Cooperation (SAARC), Pakistan and India were involved in regional initiatives emphasizing collaboration on climate change, disaster management, and environmental issues.

19. "Pakistan urgently needs significant investments in climate resilience to secure its economy and reduce poverty." World Bank. November 10, 2022. https://www.worldbank.org/en/news/press-release/2022/11/10/pakistan-urgently-needs-significant-investments-in-climate-resilience-to-secure-its-economy-and-reduce.

20. Picciariello, Angela, Sarah Colenbrander, and Rathin Roy. "The cost of climate change in India: a review of the climate-related risks facing India, and their economic and social costs." Overseas Development Institute (ODI). June 08, 2021. https://odi.org/en/publications/the-costs-of-climate-change-in-india-a-review-of-the-climate-related-risks-facing-india-and-their-economic-and-social-costs/.

21. "Treaties." United Nations. n.d. https://treaties.un.org/. (UN Treaties Collection. "United Nations Treaty Collection." 2023. https://treaties.un.org/.

These consist of the 1997 SAARC Environment Action Plan; Dhaka Declaration on Climate Change (July 2008); Comprehensive Framework on Disaster Management (2006-2015); SAARC Convention on Cooperation on Environment (April 2010); SAARC Action Plan on Climate Change (2009-2011); Thimphu Statement on Climate Change (April 2010); and SAARC Agreement on Rapid Response to Climate Change (2011).[22] In addition, four Regional Centers namely SAARC Disaster Management Centre (SDMC), SAARC Meteorological Research Centre (SMRC), SAARC Forestry Centre (SFC), and SAARC Coastal Zone Management (SCZMC) have also been established to deal with a variety of environmental issues and natural disasters.[23] However, these initiatives have not yielded any noticeable results.

National Climate Policies

Alongside global commitments and regional initiatives, Pakistan and India have made several attempts to form suitable domestic arrangements around environmental issues.

In Pakistan, the National Climate Change Policy (NCCP),[24] issued in February 2013 and updated in 2022, is the fundamental document illuminating the policy framework for climate change. This policy aims to make Pakistan more resilient to climate change and lead to a low-carbon society. The NCCP gives an overall framework for addressing the hurdles that Pakistan faces or will look at in the future because of environmental degradation.

Before laying out the policy measures for various sectors, Pakistan's NCCP outlined some major climate-related threats, prioritized a sector-based approach, and recognized the

22. "Environment, Natural Disasters and Biotechnology." SAARC Secretariat. July 16, 2022. https://saarc-sec.org/index.php/areas-of-cooperation/environment-natural-disasters-biotechnology.
23. Thapa, Bishal. "*Thimphu Statment on climate change: A mere rhetoric."* South Asia Watch on Trade, Economics and Environment. 2013.
24. "NCCP 2021.Pdf," January 30, 2024, https://mocc.gov.pk/SiteImage/Policy/NCCP%202021.pdf.

significance of developing adaptation and mitigation strategies to combat climate change threats. The updated version sets future focuses under projects, such as the "Protected Areas and National Parks Initiatives," to increase public parks, wetlands, and wildlife reserves to around 15 percent of the total land in the country by 2023. The initial phase of the "Ten Billion Tree Tsunami Program" aimed to plant and rehabilitate 3.29 billion plants throughout Pakistan.[25]

Similarly, through the National Action Plan on Climate Change (NAPCC) released in 2008,[26] India aims to combat climate change by reorienting the development path, including improving programs that were already in place and those planned to be implemented. The NAPCC identifies measures that yield co-benefits for effectively addressing climate change and advancing India's development goals. It frames various steps, including Eight National Missions to simultaneously advance development and environmental issues-related targets of adaptation and mitigation.[27]

Pakistan-India Cooperation on Climate Change

This assessment requires highlighting successful cooperation initiatives between the two adversaries, their shared vulnerabilities, past cooperation experiences, global commitments, and national stances on climate change to motivate them to use their strengths and lead the way in building a sustainable future for this region and a better world.

Environmental Cooperation between Adversaries

Environmental cooperation between adversaries is not a novel phenomenon. Numerous case studies illustrate the potential to overcome past conflicts and geopolitical issues for the

25. "National Climate Change Policy" Ministry of Climate Change Government of Pakistan. 2021. https://mocc.gov.pk/SiteImage/Policy/NCCP%2520Report.pdf&ved=2ahUKEwix_Lf4tbSAAxXiRfEDHUt6B8QQFnoECBcQAQ&usg=AOv-Vaw3PsFXGnp-dk2kBfHWkUyUj.
26. "Doc202112101.Pdf," January 30, 2024. https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/dec/doc202112101.pdf.
27. "National Action Plan on Climate Change." Government of India. 2008.

betterment of relations and socio-economic development. A case in point is the China-Japan relationship, which improved significantly after a Japanese delegation visited China in 1977, leading to the establishment of various agreements and projects, such as the Sino-Japanese Friendship Centre for Environmental Cooperation (FCEC) and the Agreement on Environmental Protection and Cooperation (AEPC).[28]

Another example is the efforts by the United States and China. Both have been able to ponder over cooperative initiatives and achieved favorable results through bilateral efforts and multilateral forums, such as the Paris Agreement, to deal with climate challenge issues.[29]

Similarly, the EcoPeace Middle East, a regional environment peacebuilding organization, brought together Jordan, Palestine, and Israel to address their shared environmental challenges.[30] These case studies demonstrate that despite their differences, states can collectively tackle climate change issues, providing inspirations to rivals such as India and Pakistan.

Shared Vulnerabilities

Regarding climate change, Pakistan and India are at high risk, with several common vulnerabilities and challenges. These include decreasing agricultural income, national capital, and environmental quality, and increasing population density, habitat fragmentation, burden on infrastructure, water stress, social inequality, and health emergencies. The challenges exist against an insufficient capacity to deal with environmental issues.

28. "Japan's Environmental Cooperation for China." Ministry of Foreign Affairs of Japan. 2001. https://www.mofa.go.jp/policy/oda/category/environment/pamph/2001/coop-1.html.
29. Volcovici, Valerie."US, China aim to revive climate cooperation as tension simmer." July 17, 2023. https://www.reuters.com/world/us-china-aim-revive-climate-cooperation-tensions-simmer-2023-07-16/.
30. "EcoPeace Middle East." n.d. https://ecopeaceme.org.

From 2000 to 2018, Pakistan and India consistently stood among the top 10 nations most impacted by environmental issues and climate change, according to the Global Climate Risk Index 2021.[31] Both sides of the border have seen over 500,000 fatalities as a result of ongoing environmental issues and human-caused climate change challenges. In addition, 99 out of 200 cities in India and Pakistan were listed as the most polluted in 2020.

During the annual summer season, the two neighbors experience frequent heat waves. Droughts, heavy rainfall, and flooding have become commonplace. As per the World Bank report, the agriculture sector accounting for over 40 percent of jobs in Pakistan, and almost 50 percent of total labor in India is being disrupted due to unpredictable weather patterns. Water scarcity, particularly in shared river basin areas, is a major concern for both countries.[32] In the face of these threats, individual and unilateral solutions without cooperation are insufficient. Therefore, India and Pakistan must explore ways to pool resources through a bilateral framework.

Past Cooperation Experiences

Despite the challenges caused by disputes, Pakistan and India have made some attempts to cooperate on environmental issues in the past. These include participation in regional and international forums on climate change, renewable energy, agriculture, and electricity. However, the cross-border water management issues, including the Indus Waters Treaty (IWT), are major hurdles.[33] These efforts demonstrate the potential for

31. Eckstein, David, Vera Kunzel, and Schafer Laura. "Global Climate Risk Index 2021." German watch. 2021. https://www.germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_2.pdf.
32. Khan, Omair Farooq. "Common Environmental Challenges and Opportunities for Cooperation between Pakistan & India." ISSRA XIV, (2022): 18-31 Margalla Papers (ndu.edu.pk).
33. "Pakistan seeks cooperation With India in renewable energy, power." The Economic Times. July 16, 2023. https://m.economictimes.com/news/economy/foreign-trade/pakistan-seek-cooperation-with-india-in-renewable-energy-power/articleshow/21107755.cms.

collaboration and the interest of both countries in pursuing an environmental dialogue.

Global Commitments

As parties to the United Nations Framework Convention on Climate Change, Kyoto Protocol, and Paris Agreement, Pakistan and India have committed to reducing their GHG emissions. Under the Paris Agreement, both have presented their nationally determined contributions (NDCs), illustrating their commitments to reduce emissions and improve climate resilience.[34] The need to meet the requirements of international regulations and fulfill their climate pledges can motivate them to collaborate on climate change.

National Policies and Stances on Climate Cooperation

Pakistan and India have formally acknowledged the importance of addressing climate change issues and have taken steps to develop domestic policies. A section above has elaborated on Pakistan's NCCP and India's NAPCC. Pakistan's former Foreign Minister emphasized in an interview the urgency of working together on climate change, acknowledging it is an area of potential cooperation between Pakistan and India. He said, "… because of what we have experienced, I wouldn't wish this upon my worst enemies," referring to the unprecedented floods his country has faced due to global climate change.[35]

Similarly, in a Pakistan-India Dialogue held in Islamabad, experts from both countries discussed prospects of cooperation and their countries' responsibilities for managing climate change.[36] The effort also reflected Pakistan's serious approach

34. "NDC Registry." United Nations Framework Convention on Climate Change. n.d. https://unfccc.int/NDCREG.
35. "India, Pakistan should work on Climate Change: Pakistan Foreign Minister Bilawal Bhutto Zardari." The Economic Times. September 30, 2022. https://www.google.com/amp/s/m.economictimes.com/news/india/india-pakistan-should-work-together-on-climate-change-pakistan-foreign-minister-bilawal-bhutto-zardari/amp_articleshow/94561580.cms.
36. Khan, Rina Saeed. "Can India and Pakistan cooperate over climate change?" The Express Tribune. December 17, 2013. https://tribune.com.pk/story/646813/can-india-and-pakistan-cooperate-over-climate-change.

towards resolving regional issues through confidence building measures (CBMs), such as dialogues and negotiations.

Overall, these efforts signify the importance of collaboration on the ever-changing nature of climate change and shared vulnerabilities, aiming to form a comprehensive bilateral climate framework to mitigate the negative impacts of climate change in South Asia.

Mutual Benefits of Cooperation

Climate stress may lead to regional instability and conflict, but shared goals and objectives can lead to cooperation and peacebuilding. Global environmental challenges are common and often transcend national borders, necessitating international cooperation as a good starting point for building trust and cooperation.[37] In the context of the long-standing India-Pakistan conflict, a bilateral framework can be a sign of peace and reconciliation, by promoting dialogue, trust, and shared interests. Collaboration in environmental protection can help reduce GHG emissions, improve air and water quality and ecosystem conservation, and promote sustainable resource management. Joint initiatives can also open economic opportunities, create jobs, transfer technology, and promote regional integration and stability.

Key Areas of Cooperation

The key areas of Pakistan-India cooperation to address climate change are:

a. Renewable Energy Development

The need for increased use of renewable energy sources has been revived due to environmental concerns. Pakistan and India have a much greater potential for renewable energy sources. As their populations increase, more traditional renewable energy sources may be needed, such as firewood and agricultural and livestock waste,

37. Dresse, Anais, Itay Fischhender, Jonas Ostergaard Nielsen, and Dimitrios Zikos. "Environmental Peacebuilding: Towards a theoretical framework." Cooperation and Conflict (SAGE) 54, no.1 (2019): 99-119. (sagepub.com).

which are relied upon by many of the populations in both countries.

Therefore, renewable energy sources in newer forms, including solar, thermal, and wind power, are becoming increasingly important. India has a long history of developing non-conventional energy sources, and Pakistan has a wealth of experienced scientists and engineers in this field.[38] Furthermore, their plans to build solar and wind farms near each other's territory offer an opportunity for technical collaboration that can contribute to energy integration. Both countries plan to install solar and wind turbines in their respective part of the Thar Desert.

Pakistan is pursuing a massive development strategy to exploit its renewable energy resources. Many projects, such as the wind power plants in Jhimpir and Gharo, are already operational. Others, including the 400 megawatts (MW) solar plant and several wind power projects in the Sindh region, are in the pipeline.[39]

Similarly, the Charanka Solar Park in Indian Gujarat is the largest in Asia, located 50 kilometers away from the international border with Pakistan. In October 2019, it was reported that land near the international border was being considered for the construction of 30 gigawatts (GW) and 25 GW of solar and wind plants in Gujrat and Rajasthan, respectively.[40]

By working together on renewable energy projects, both countries can help to reduce GHG emissions, increase

38. Toufiq A. Siddiqi, "India-Pakistan Cooperation on Energy and Environment: To Enhance Security." Asian Survey (University of California) 35, no 3 (1995): 280-290. https://www.jstor.org/stable/2645545.
39. "Sindh govt launches $105m: Sindh Solar Energy Project," November 16, 2016. https://www.thenews.com.pk/print/569480-sindh-govt-launches-105m-sindh-solar-energy-project.
40. Largue, Pamela. "India-Pakistan border destined for mega renewable projects." Power Engineering International. November 4, 2019. https://www.powerengineeringint.com/renewables/india-pakistan-border-destined-for-mega-renewable-projects/.

energy security, and promote sustainable development for their people.

b. Water Resource Management and Sharing

The longstanding India-Pakistan territorial disputes make this region a nuclear flashpoint, with various risk factors at play. These include the conflict over the Indus River Basin. Both countries are heavily reliant on water. Water issues have now evolved as a major dispute over the last decade. India bears the most significant portion of responsibility as the upper riparian state. However, both sides have been accusing each other of using water illegally.[41]

South Asia can enjoy peace and stability if both states work together to manage their shared rivers, save water, and use irrigation wisely, which will lead to mitigating any conflicts over water. So, India and Pakistan have a big decision to make. They can jointly look ahead to a new level of cooperation to benefit them and the region, or can look back and see climate and water issues as just another reason to stick to the zero-sum game. Their decisions will have a massive impact on regional development and stability.

c. Agricultural Practices and Food Security

Climate change significantly threatens agricultural production and food security in Pakistan and India. Higher temperatures can drastically drop yields. Rice and maize production in India could drop by 10-30 percent and 25-70 percent, respectively, if temperatures rise from 1-4 degrees Celsius.[42] Similarly, climate change may reduce agricultural productivity in Pakistan by 8-10 percent by 2040, with wheat facing one of the most considerable losses. The worst impact, according to a study, may be a

41. Shidore, Sarang. "Climate Change and India-Pakistan Rivalry." Council on Strategic Risks. 2020.
42. "Climate Change threatens agriculture, food production in India: UN body report." CNBC. March 03, 2022. https://www.cnbctv18.com/environment/climate-change-threatens-agriculture-food-production-in-india-un-body-report-12688932.htm.

6 percent drop in wheat and 15-18 percent in rice yields.[43] Therefore, both countries must work together in the agricultural sector. Some ways can be exchanging experts and jointly training scientists in crop improvement, seed, livestock, dairy, irrigation, and rainwater harvesting. By sharing knowledge and best practices, both neighbors can help build food security and be more resilient to climate change.

d. Disaster Risk Reduction and Resilience

India and Pakistan face "high disaster risks," ranking 31 and 24 out of 191 countries, according to the 2023 global INFORM Risk Index.[44] Despite their strained relationship, they must work together on disaster relief to fulfill their regional obligations. They have a history of working together after natural disasters. After the earthquake in Indian Gujarat in 2001, Pakistan helped India through its military, and the two countries talked after a stalemate of almost two years. The famous Agra Summit took place five days later. In 2005, Pakistan and India experienced a powerful earthquake, and Indian fixed-wing planes flew in relief supplies and equipment. New Delhi donated USD 25 million to Pakistan through a UN fundraising program.[45] Disasters will become more frequent and severe due to changing climate conditions. Cooperation in disaster relief can help normalize relations. Both countries must have a shared interest in reducing human and economic losses and

43. Ramay, Shakeel Ahmad. "Climate change killing agriculture." The Express Tribune. August 05, 2023. https://tribune.com.pk/story/2360219/climate-change-killing-agriculture.

44. INFORM Risk Index is a global, open-source risk assessment for humanitarian crises and disasters. It is a collaboration of the Inter-Agency Standing Committee Reference Group on Risk, Early Warning and Preparedness and the European Commission.
https://drmkc.jrc.ec.europa.eu/inform-index#:~:text=The%20INFORM%20Risk%20Index%20is,about%20prevention%2C%20preparedness%20and%20response.

45. Siddharth, Ravishanker. "Cooperation between India and Pakistan after natural disasters," Relief Web. January 09, 2015. https://reliefweb.int/report/pakistan/cooperation-between-india-and-pakistan-after-natural-disasters.

regional tensions and developing disaster relief protocols that will pave the way for progress on other fronts. They need to work together on flood forecasting stations and a coordinated information-sharing mechanism to have early warning systems in place to protect people during a disaster.

e. Air Pollution and Smog

In South Asia, smog is a major cause of death, killing an estimated 1.2 million people in India and 1.1 million in Pakistan annually. This is more than the number of people who died from the Covid-19 virus in either country. According to health data analyzed in 2019 by the Global Alliance on Health and Pollution, India and Pakistan are second and third, respectively, in the world in terms of number of premature deaths due to air pollution.[46] It has a significant impact on public health and economic growth of both nations. According to the World Bank, the annual burden of air pollution-related illness in Pakistan is estimated to be 22,000 premature adult deaths.

India is the most affected state in this regard. India's air pollution crisis has become well-known, with 30 of the most polluted cities in the world being located in India. Poor air quality is the second most significant risk factor for India's disease burden. The economic impact of air pollution on India's economy is estimated to be more than USD 150 billion annually, while the economic impact on Pakistan is approximately USD 47.8 billion.[47] Smog is a problem that transcends borders. Therefore, the increasing menace of air pollution demands rational state responses in South Asia. As a more significant state in area, population, and pollution activity,

46. Siddiqui, Jumiana and Zara Wakeel. "India and Pakistan choke on their smog. Can they clear the air?" United States Institute of Peace. March 29, 2021. https://www.usip.org/publications/2021/03/india-pakistan-choke-their-smog-can-they-clear-air.

47. Fatima, Arooj. "Why India and Pakistan should work toward a joint framework against smog." The Diplomat. March 02, 2023. https://thediplomat.com/2023/03/why-india-and-pakistan-should-work-toward-a-joint-framework-against-smog/.

India must extend cooperative initiatives for Pakistan and other regional states to deal with the challenge on time.

f. Advocacy for Climate Justice

A silver lining appears in the determination expressed by both states' leadership to make climate justice a priority. Pakistan is strongly resolved to work for sustainable solutions. In a 2022 interview with DW, Pakistan's then Foreign Minister called for this justice for developing states. He said that his people were suffering because of the industrialization of more prosperous states. Helping Pakistan to manage the climate crisis was not a "charity" but a question of justice that a country that produces as little as 0.8 percent of the global footprint is the eighth most climate-stressed country in the world.[48] Modi also said in a video message at the World Environment Day in New Delhi that people in developing countries are being hurt by "wrong policies" of some developed countries.[49] Thus, advocacy for climate justice can be an area of mutual interest for both countries and can pay a way for useful cooperation.

Cooperation Challenges

Several obstacles hindering cooperation on climate change between Pakistan and India include:

a. Disputes, Rivalry, and Political Tension

The historical context of Pakistan-India relations is a critical factor in evaluating the potential for collaboration, such as the one on climate change. Since their independence in 1947, there have been major conflicts and wars, including those in 1948, 1965, 1971, and 1999, which have had a

48. Shams, Shamil. "Pakistani FM Bilawal Bhutto calls for climate justice." DW. July 10, 2022. https://www.google.com/amp/s/amp.dw.com/en/pakistan-bilawal-bhutto-calls-for-climate-justice-rejects-western-pressure-over-ukraine/a-63375633.

49. "India raising climate justice issue with developed countries, says PM Modi." NDTV. June 05, 2023. https://www.google.com/amp/s/www.ndtv.com/india-news/india-raising-climate-justice-issue-with-developed-countries-says-pm-modi-4094960/amp/1.

lasting impact on their bilateral relations. Seven decades later, several unresolved issues, at the core of which is the Kashmir dispute, continue to affect relations, casting a shadow over the prospects of cooperation between them.[50]

b. Difference in Priorities and National Interests

One of the main differences is their position on the Kashmir issue. In a unilateral decision, India sees Kashmir as an essential part of its Union. For Pakistan, Kashmir is an "unfinished agenda"[51] of 1947 independence, as the people of this Muslim-majority state had aspired and consented to be annexed with Pakistan – Indian malintent did not let that happen. Indian revocation of articles of its constitution and change in status of its Illegally Occupied Jammu and Kashmir (IOJ&K) territory without the consent of Kashmiris has added fuel to the geopolitical fire.

Terrorism is another matter on which both states have conflicting stances. India professes counterterrorism as its top security priority. It continues blaming Pakistan for so-called terrorist acts, pressurizing it to ensure that no territory under its control is used for launching terrorist attacks. Pakistan, on the other hand, has proven India as a "state sponsor of terror" and that India "habitually uses the terrorism bogey" to hide its human rights violations against Muslims in India and Kashmir.[52] Furthermore, the ongoing Indian hegemonic pursuits reflect its ambition to be a strong regional power and beyond. Pakistan wants to maintain balance to protect its strategic interests,

50. Usman, Ahmed, Shabbir Hussain, Aaisha Amjad, and Jawad Tariq. "The Pakistan-India Security Dilemma - Contemporary Challenges." Journal of Indian Studies 03, no.01 (2017): 19-25. https://giwps.georgetown.edu/dei-resources/the-pakistan-india-security-dilemma-contemporary-challenges/.

51. Sugunakararaju, Dr S.R.T.P, and Shabnum Akhtar. "India-Pakistan Relations: Challenges and Opportunities." IOSR Journal of Humanities And Social Sciences 20, no.12 (2015): 07-12.

52. Zaman, Sarah. "Pakistan rejects US, India calls to curb cross-border terrorism June 24, 2023. voanews.com/amp/pakistan-rejects-us-india-call-to-curb-cross-border-terrorism-/7150753.html.

particularly vis-à-vis Indian military modernization. These differences in priorities and national interests contribute to the complexities of the Pakistan-India relationship and can complicate efforts to align their agendas on climate change.

c. Trust and Transparency

The longstanding history of mistrust, hostility, and conflicts between India and Pakistan has hindered efforts toward peace and stability.[53] It includes wars, border clashes, military standoffs, unresolved disputes, spoilers, irritants, and broken promises. Thus, establishing trust, CBMs, and open communication channels is essential for developing effective cooperation mechanisms. Other parties' intervention can shift the compass, provided their role is neutral, and expect India to be more responsible, given its geographic expanse and military prowess.

Policy Recommendations

To overcome the obstacles and enhance cooperation on climate change, Pakistan and India should engage in meaningful dialogue and take the following steps:

a. Agreement on Commitments and Actions

A comprehensive bilateral agreement will help them outline precise commitments, targets, and actions for climate change mitigation and adaptation. This framework can guide collective efforts to combat climate change challenges, ensure a reduction in GHG emissions, enhance resilience, and build and share their resources and expertise to tackle one of the most pressing global issues.

b. Collaborative Research

The commitment of both states to collaborative initiatives between academic and research institutions will be a

53. "Lack of trust major hurdle in resolving Indo-Pak issues: Envoy." The Economic Times. August 12, 2015. https://m.economictimes.com/news/politics-and-nation/lack-of-trust-major-hurdle-in-resolving-indo-pak-issues-envoy/articleshow/48456184.cms.

useful step. These initiatives should aim to understand the multifaceted impacts of climate change and address these challenges effectively.

c. Climate Mitigation for Sustainable Development

Pakistan and India can develop a comprehensive strategy to mitigate the adverse impacts of climate change and encourage sustainable development. This integrated approach would entail a range of measures, such as transitioning to clean and renewable energy sources, enhancing energy efficiency, promoting sustainable land use practices, adopting eco-friendly urban development, and investing in climate education and awareness. By harmonizing these efforts, both states can stimulate economic growth, enhance resilience, improve living standards, and contribute to a more environmentally conscious and prosperous future for their citizens and the planet.

d. Youth Awareness Programs

It is essential for both Pakistan and India to collaboratively organize youth awareness campaigns, internships, workshops, seminars, training programs, and other events to engage future leaders. These campaigns must educate and empower young people on the critical issues related to climate change, its impacts, and the role they can play in mitigation and adaptation efforts. By encouraging such initiatives, both states can harness their youth's enthusiasm and innovative potential to bring positive change, encourage sustainable practices, and build a generation of informed and environmentally conscious global citizens dedicated to addressing the challenges of climate change.

e. Knowledge Exchange Programs

Both states can establish and promote exchange programs for environmentalists, scientists, and policy specialists. These programs would facilitate the cross-border sharing of knowledge and experiences in climate change management.

By encouraging collaboration and learning between experts in both states, this initiative can lead to the development of innovative strategies, informed policies, and more effective approaches for addressing climate change challenges. Promoting such exchanges will enhance regional cooperation and contribute significantly to global efforts to combat climate change and promote environmental sustainability.

f. Climate Data and Disaster Information Exchange Plaform

Pakistan and India must collaborate on developing a dedicated platform for exchanging climate-related data, including river flows, flood alerts, and disaster preparedness information. This platform would enhance cooperation and share crucial environmental data, particularly in regions prone to climate-related risks and disasters. By facilitating the seamless exchange of information, both states can improve their collective ability to respond effectively to climate-induced challenges, reduce the impact of natural disasters, and strengthen disaster preparedness, ultimately contributing to the safety and well-being of their populations and the regime.

g. Joint Air Quality Agreements for Urban Centers

Pakistan and India must work to establish comprehensive agreements to improve air quality and implement joint pollution control measures. A particular focus should be placed on shared urban centers like Lahore and Delhi, which often face severe air pollution issues. These agreements can harmonize their efforts to combat air pollution, reduce emissions, and enhance the overall quality of air in these densely populated areas. Collaborative measures may include joint research initiatives, policy coordination, technology sharing, and pollution control strategies aimed at improving the environment and health of residents in critical urban zones.

h. Collaboration in Renewable Energy and Fossil Fuels Reduction

Both states can reduce their reliance on fossil fuels and strengthen cooperation in developing renewable energy projects. This will enhance energy security and stimulate economic growth by transitioning towards cleaner and more sustainable energy sources, like solar, wind, and hydropower. Joint projects and resource sharing can also accelerate this transition, leading to a more sustainable and environmentally responsible energy landscape in the region.

i. Sharing Climate-Resilient Agricultural Knowledge

Cooperation in climate-resilient agricultural techniques can help these states develop and adopt innovative farming methods and crop varieties that can withstand the impacts of climate change. This will also enhance food security, reduce agricultural risks, benefit farmers, and increase crop yields while improving agricultural resilience across the region.

j. Climate-Resilient Food Security

Both states must prioritize crop diversification and sustainable water management practices in the face of changing climate conditions. Diversifying crop varieties and implementing water-efficient techniques can enhance food security, reduce vulnerability to climate variability, and resilient and adaptive agricultural practices, contributing to the long-term sustainability of their agricultural systems.

Conclusion

Climate change is not an either-or situation but an international political issue. The policies for its management must be equally and responsibly implemented in South Asia, for which Pakistan and India need to be on the same page. These two regional heavy-weights need to work together on climate change mitigation. Though not an easy task, considering their longstanding disputes and conflicting strategic pathways, these measures are essential for the interest of the people of this region and global stability. They need to learn from workable cooperation cases

among rival states, overcome challenges, understand each other's weaknesses, build trust and confidence, and identify areas of common interest. Effective climate diplomacy in South Asia allows for taking pragmatic steps and collectively building regional peace and progress.