

Stability in South Asia vis-à-vis Climatic Vulnerabilities

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Abstract

The paper discusses the intensity of the repercussions that climatic vulnerabilities hold for peace and stability in South Asia. Briefly explaining basic concepts, it provides important facts and figures that highlight the severity of the phenomenon. Examples from the recent past have been used to establish a relationship between climatic changes and conflict. Major countries in South Asia have been discussed individually to determine their levels of vulnerability in addition to examining the current situation in South Asia with regards to climate change in an effort to predict security risks for the region at large. The research has been concluded with some suitable suggestions that can help countries reduce risks of massive instability, if not completely ruling them out.

Keywords: Climate, South Asia

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Introduction

Life took eons to evolve, man took centuries to develop the world but far lesser to bring it to the verge of destruction. As a reference in time, it was not when he dropped bombs over Nagasaki or perpetrated the Holocaust. It was much before that, when he trod into the Industrial Revolution that he started digging his grave. The Industrial Revolution ushered numerous economic benefits and prospects for human development; but little did man speculate that it can in anyway prove fatal. However, with global warming the Earth that man inhabits, did take the revenge for his apathy for nature.

Emissions from industries have hastened ozone depletion. Increased pollution has allowed for more heat to be trapped inside the Earth's stratosphere resulting in global warming; a constant rise in the Earth's temperature that is constantly changing and shifting regular weather patterns across the world. Global warming is instigating the fast melting of glaciers, resulting in a rise in sea level. It is altering rainfall patterns and causing changes in crop yields, consequently increasing the occurrence and intensity of floods and droughts alike.

Over the past one and a half century the problem has intensified many folds because of a significant 0.87 degree Celsius rise in temperature. The end of the 21st century is likely to see a 1.5 to 4.5 degree Celsius increase; at this point we can imagine the ramifications it will come with.¹

Though the rise in temperature is a shared phenomenon across the world, the effects of climate change have more implications for some than others; the former comprising the underdeveloped and developing countries. Ironically, these countries are the least responsible for the looming threat they are facing and there is very little that they can do about reversing the fate they are destined to meet.

Since the Industrial Revolution started in the mid-18th century, the amount of carbon released in the Earth's atmosphere has been 337 billion metric tons.² According to the proceedings of the National Academy of Science of the United States of America (PNAS), developed countries have contributed 70 per cent to the noted increase in carbon dioxide concentration in the Earth's stratosphere from 1850 to 2005. It was measured through a simple carbon-cycle model. The PNAS also holds developed countries responsible for up to 80 per cent of the increase in global temperature.³ Apart from the burning of fossil fuels in industries, an important factor that contributed to the rise in carbon emission levels in the atmosphere is deforestation.

Deforestation came with multiple sets of ecological problems in addition to the increase in carbon dioxide levels. While carbon emissions definitively contribute to global warming, deforestation is a cause for more destructive floods, loss of land to rising sea levels and changes in rainfall patterns. Ironically, deforestation in the developing world gained momentum at a time when the developed world had already exhausted its own forest-based resources and needed the developing world's reservoirs to meet its demands.⁴

The aforementioned figures are not something that can be neglected considering the toll they are taking on basic living standards. From livelihood to health and infrastructure, a drastic increase of 42 per

¹ "United Nations Framework Convention on Climate Change", last modified May 1, 1993, https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf.

² G. Marland, T.A. Boden, and R.J. Andres, "Global, Regional, and National Fossil-Fuel CO₂ Emissions," *Carbon Dioxide Information Analysis Center*, accessed November 1, 2019, <https://cdiac.ess-dive.lbl.gov/trends/emis/overview.html>.

³ Ting Wei, et al., "Developed and Developing World Responsibilities for Historical Climate Change and CO₂ Mitigation," *Proceedings of the National Academy of Sciences*, 109, no. 32 (2012): 12911- 12915,

⁴ Gordon B. Bonan, "Forests and Climate Change: Forcings, Feedbacks, and the Climate Benefits of Forests," *Science*, 320, no. 5882 (2008): 1444-1449.

cent has been recorded in the frequency of natural disasters since 1980s.⁵ Fast melting glaciers have contributed to the rise in sea levels that have endangered the existence of more than 38 island nations and pushed them to the brink of extinction. Sea level rise is likely to push populations inland from coastal areas, which is far from the ideal solution to the problem at hand.

Catastrophes as Catalysts

By now, the notion that the world's climate is changing drastically enough to alter the quality of life for many across the globe, requires no elaboration. What is less researched is how the ensued impact is not only merely altering territories, but also reshaping geopolitics across the globe. Though, by far acting as an underlying threat emulsifier, in former United Nations (UN) High Commissioner for Human Rights, Zeid Ra'ad Al Hussein's words; 'A continually warming world will be a graveyard for entire ecosystems, entire peoples – and potentially even entire nations'; and the reality is no less horrific than this insinuation.⁶ Besides loss of land to rising sea levels, resource scarcity is implied as the scariest aspect of climate change for resource scarcity has the capability to draw people and countries to each other's throats. Scarce resources will strangle fragile economies further, forcing them to take desperate measures in order to protect their interests at all costs.

The thinning of shared resources will increase inter-state tensions as each state would struggle to attain maximum benefits from whatever remains. Scarcity of resources will displace people from their long-inhabited abodes, to take refuge in places that are better conducive to a good quality of life. The likeliness of the influx of refugees will exacerbate the situation for host countries which will compel the host population and governments to adopt hostile policies toward the burgeoning refugee population. Such nationalist policies being adapted at the state level will sour inter-state relations, complement ethnic and religious strife within communities and provide suitable breeding grounds to terrorist organizations.

Resource scarcity has always been an important underlying cause in the deterioration of the social fabric in African states. According to a database on social conflicts in Africa, more than 6,000 clashes, as part of social conflicts are in one way or another, a result of climatic stress; a database collected for the years 1990 to 2008 concludes so after monitoring 47 countries.⁷

South Sudan is the most recent case in point. Born of a civil war, it reached the verge of collapse shortly after gaining independence. The state's deepening food insecurity and political fragility put it atop the fragile state index in 2017.⁸ By June 2017, over half the population of the state was estimated to be food insecure. A United Nations Development Programme's (UNDP) study of the country reveals that though the major cause of instability in the country is the competition for political power, one of the primary causes is environmental degradation and natural resource scarcity, leading to resource based conflict.⁹ The impact of such a strife, according to the same report, is archetypical; mass deprivation followed by population displacement, market disruptions, loss of harvests and livestock,

⁵ Alex de Sherbinin, Koko Warner and Charles Ehrhart, "Casualties of Climate Change," *Scientific American* 304 (2011): 64-71.

⁶ "United Nations Human Rights Commission, Office of the High Commissioner," November 3, 2016,

⁷ Cullen S. Hendrix and Idean Salehyan, "Climate Change, Rainfall, and Social Conflict in Africa," *Journal of Peace Research*, 49, no. 1 (2012): 35–50.

⁸ J. J. Messner, "Fragile States Index 2017: Factionalization and Group Grievance Fuel Rise in Instability," *Fragile States Index*, last modified May 14, 2017, <https://reliefweb.int/sites/reliefweb.int/files/resources/951171705-FragileStates-Index-Annual-Report-2017.pdf>.

⁹ Kinza Hasan, "Business Case Assessment for Accelerating Development Investments in Famine Response and Prevention; Case Study South Sudan", United Nations Development Programme, last modified January 26, 2018, https://www.undp.org/content/dam/undp/library/crisis%20prevention/UNDP_FamineStudy_SouthSudan_2017.pdf.

inflation, increased fiscal deficits, disruption of essential social services, conflict related deaths and injuries, malnutrition etc.¹⁰

In addition to internal conflict, a recent report from The Independent proposes a connection between climatic stress, crime and violence against women and children in the country. The report suggests that South Sudan's dwindling water resources have caused an increase in incidences of rape and child abduction. As water resources decline, the herding community is compelled to move more frequently as they continue losing cattle to thirst and hunger. To compensate for the loss of livestock, an increased number of cattle raids escalate the chances of clashes between the local communities and rival ethnic groups. Apart from cattle, a growing concern is the profitability in the kidnapping of children who are then sold further; a growing practice. Women, responsible for fetching water, have to travel long hours for their families. As they make the perilous journey, they not only risk death from dehydration and exhaustion but also rape and violence.¹¹

For many years, the Arab Spring has remained a classic example of how climate change can act as an ignition for massive unrest throughout a region, transforming the structure of governance and the social fabric of Middle East and North Africa (MENA).¹² The region never lacked issues that could plunge into unrest, but it did disintegrate at a time that coincided with the global economic crisis, not so accidentally. Although an insufficient trigger on its own, what transpired as the Egyptian Revolution was a protest sparked by rising bread prices in Egypt. In 2010, wheat crop yield fell drastically in Russia, Ukraine, Canada and Australia; in each with their own set of mainly climate related reasons. China, the biggest wheat consumer and producer, was going through a drought around the same time. This compelled the Chinese government to purchase wheat from the international market which resulted in a shortage of wheat and a global price hike for other countries. Egypt, being one of the top importers of wheat was destined to feel the economic impact. Interestingly, all other countries that experienced the 'Arab Spring' are low income and high consuming, wheat importing countries.¹³

Flowing from Tunisia and Egypt, the wave of protests reached Syria in March 2011, where the discontent protracted into a war between opposition groups and the ruling Ba'ath party. At the time, Syria was suffering from the worst drought in its history that had affected hundreds of thousands who relied heavily on agriculture and livestock for their livelihood. The population migrated to urban centres which were already struggling under the autocratic regime's fraught governance. Lack of employment opportunities, incompetence and non-empathetic demeanour of the government added to the grievances and provided the struggling Al-Qaeda's leadership, which was fighting for survival at the time in Iraq, with an opportunity to breathe anew and more ferociously.¹⁴ The world witnessed the emergence of the Islamic State of Iraq and Syria (ISIS) as a perpetrator of terrorism like none other. Now that ISIS has lost control over all its territory, it is still a threat, operating remotely from different

¹⁰ Ibid.

¹¹ Bel Trew, "South Sudan, Where a Water Crisis is Leading to Child Kidnappings and Rape," *The Independent*, last modified April 4, 2019, <https://www.independent.co.uk/news/world/africa/south-sudan-water-crisis-war-conflict-women-a8853176.html>.

¹² Erin Blakemore, "What was the Arab Spring and how did it spread?," *National Geographic*, last modified March, 29, 2019, <https://www.nationalgeographic.com/culture/topics/reference/arab-spring-cause/>.

¹³ Troy Sternberg, "Chinese Drought, Wheat, and the Egyptian Uprising: How a Localized Hazard became Globalized," *Centre for Security Studies*, last modified April 25, 2014, <http://www.css.ethz.ch/en/services/digital-library/articles/article.html/178763/pdf>.

¹⁴ Caitlin E. Werrell and Francesco Femia, "The Arab Spring and Climate Change," *Center for American Progress Progress*, last modified February 2013, <https://climateandsecurity.files.wordpress.com/2012/04/climatechange-arab-spring-ccs-cap-stimson.pdf>.

countries with or without an alliance with local organizations.^{15 16} A few of the more notorious cases include that of Boko Haram in West Africa and the Easter Sunday bombings in Sri Lanka.^{17 18}

Does The Shoe Fit?

South Asia as a region has been declared the most vulnerable to climate change. Two South Asian states, Bangladesh and the island nation of Maldives are among the countries most vulnerable to the impacts of climate change. Both the countries fear extermination at the hands of rising sea level.

The picture is not very rosy for the rest of the countries in the region either. Approximately 800 million people are likely to be affected by the changing climate, millions of who are already living below poverty lines.¹⁹ By 2050, South Asia in most likelihood, could suffer the loss of approximately 1.8 per cent of its Gross Domestic Product (GDP), increasing to 8.8 per cent by 2100. While Maldives is expected to be the hardest hit in the model, Bangladesh is projected to see a giving in of 2 per cent while Bhutan 1.4 per cent, India 1.8 per cent, Nepal 2.2 per cent and Sri Lanka 1.2 per cent of their annual GDP to climate change by 2050.²⁰

Like most underdeveloped countries, South Asian economies are primarily dependent on agricultural production to meet both their domestic and export targets. Agriculture is the prime casualty of climate change as rising temperatures and changing precipitation patterns are negatively impacting the region's agricultural production. Climate change has shifted monsoon patterns and regularised tropical cyclones; both being major flood drivers in the region.²¹ Food production is the hardest hit sector as the intensity and frequency of floods has seen a constant increase. As a rise in sea level of 15 to 38 centimetres in the next two decades is expected, the subsequent penetration of saline water inland will exacerbate the situation further, making more and more land uncultivable, leaving approximately 35 million people solely, just in the Bay of Bengal region, with no option other than relocation.²²

From 1950 to 2001, South Western Pakistan and the western part of Afghanistan have witnessed an annual average of 1 to 3 degrees Celsius rise in temperature, while in the colder region of Northern Pakistan, South Eastern India, Eastern Nepal and Western Sri Lanka, the average temperature rise has been noted from 1 to 1.5 degree Celsius. By 2050, climatic models predict a 1.6 degree Celsius increase on average in annual temperatures for the region, under a climate sensitive scenario.²³ Rising temperatures may bring some short-lived benefits for parts of Nepal, Afghanistan and the mountainous regions of India that have colder climates. However, in the longer term, increasing temperatures will reduce glacial reserves as the shrinking flow of streams patently affects the terrain and lifestyle.

¹⁵ Gregory Aftandilian, "Baghdadi Video Shows Evolving Threat from ISIS's 'Virtual Caliphate,'" *The Arab Weekly*, last modified May 5, 2019, <https://the arabweekly.com/baghdadi-video-shows-evolving-threat-isis-virtual-caliphate>.

¹⁶ Dipanjan Roy Chaudhury, "Bangladesh on High Alert after ISIS Threat," *The Economic Times*, last modified April 29, 2019, <https://economictimes.indiatimes.com/news/defence/bangladesh-on-high-alert-after-isis-threat/articleshow/69102511.cms>.

¹⁷ Lauren Ploch Blanchard and Katia T. Cavigelli, "Boko Haram and the Islamic State's West Africa Province," *Congressional Research Service*, last modified June 28, 2018, <https://fas.org/spp/crs/row/IF10173.pdf>.

¹⁸ Jeffrey Gettleman, Dharisha Bastians and Hannah Beech, "We Knew What Was Coming: Sri Lanka Sees ISIS' Hand in Attacks," *The New York Times*, last modified May 3, 2019, <https://www.nytimes.com/2019/05/03/world/asia/sri-lanka-attacks-isis.html>.

¹⁹ Muthukumara Mani, et al., *South Asia's Hotspots: Impacts of Temperature and Precipitation Changes on Living Standards* (Washington: World Bank Group, 2018).

²⁰ Mahfuz Ahmed and Suphachol Suphachalasai, "Assessing the Costs of Climate Change and Adaptation in South Asia," *Asian Development Bank*, last modified June 2014, <https://www.adb.org/publications/assessing-costs-climate-change-and-adaptation-south-asia>.

²¹ Ian Douglas, "Climate Change, Flooding and Food Security in South Asia," *Food Security* 1, no. 2 (2009): 127-136.

²² Aromar Revi, "Climate Change Risk: An Adaptation and Mitigation Agenda for Indian Cities," *Environment and Urbanisation* 20, no. 1 (2008).

²³ Ibid.

The Global Climate Risk Index (CRI) has rated Pakistan among the top three countries that have been most affected by the impacts of weather related catastrophes (storms, floods, heat waves etc.) in 2011 and 2012. Sri Lanka is ranked as the 10th most affected country on the same list.²⁴ In the CRI rating for 2017, Sri Lanka and Nepal were among the countries affected most by climate change because of heavy floods and land sliding in the monsoon of 2017, which displaced approximately 600,000 people. Floods in India, Nepal and Bangladesh the same year affected more than 40 million people, damaging 950,000 houses and displacing millions of people across the region.²⁵

From 1992 to 2011, Bangladesh remains one of the most drastically affected countries by weather related events, without accounting for 1991, the deadliest year for the country. It remains among the top most affected countries in the two decades.²⁶ Although Bangladesh contributes only 0.1 per cent to greenhouse gas emissions, it is vulnerable to natural disasters as it is located in a tropical region. 70 percent of its population resides in a high flood risk region while 26 per cent of it is living under the cyclone radar. The one-fifth of its terrain is lying within one meter of sea level, high population density and poverty threaten it direly.²⁷ Surrounded by a much powerful neighbour, India from three sides, it's only other neighbour Myanmar in the South East has the largest river delta of 25,000 square miles in the South as it merges into Bay of Bengal from there.²⁸

Bangladesh is the third most densely populated country in Southeast Asia and is ranked as one of the most densely populated countries in the world. High population density greatly increases the effects of natural disasters as more and more people are exposed to the risk of a natural calamity, also limiting the opportunities to migrate internally.²⁹ Increasing temperatures, changes in precipitation and weather patterns will have irreversible implications for agriculture that the two-third of Bangladesh depends upon. Approximately 60 percent of the country's population depends on direct and indirect agrarian means of employment and production. Because of climate change, economies based on agriculture suffer; resulting in a massive increase in rural to urban migrations. The migrants move to the already densely populated urban centres, dwelling in slums with no basic services like sewage and running water. They work as part of the labour force as rickshaw pullers, earning minimum daily wages. 35 percent of this poor urban population remains mostly unemployed.³⁰

India, despite its aspiration to become the regional hegemon, faces no less a challenge than the rest of the countries do in the region. Preceded only by Bangladesh, India has the highest population density as it is home to 17.5 per cent of the world's total population, living on only 2.5 per cent of the world area.³¹ One-third of the world's poor population is based in India as more than 40 per cent of the country's population earns less than one dollar a day.³² Population in India is growing at the rate of eight

²⁴ Sönke Kreft and David Eckstein, "Global Climate Risk Index 2014," *German Watch*, last modified November 12, 2013, https://www.raonline.ch/pages/edu/pdfC/Germanwatch_ClimateRIndex2014.pdf.

²⁵ Ibid.

²⁶ Sven Harmeling and David Eckstein, "Global Climate Risk Index 2013," *German Watch*, last modified November 2012, <https://germanwatch.org/sites/germanwatch.org/files/publication/7170.pdf>.

²⁷ Saleemul Huq, "Editorial: Climate Change and Bangladesh," *Science* 294, no. 5547 (2001).

²⁸ Michelle Wallace and Harris Ben, "Anthropology and Development in Bangladesh: Urban Anthropology and Studies of Cultural Systems and World Economic Development," *Anthropological Research in Bangladesh* 18 (1989): 241-264.

²⁹ Shardul Agrawala, et al., "Development and Climate Change in Bangladesh: Focus on Coastal Flooding and the Sundarbans," *Organization for Economic Co-operation and Development*, last modified October 2011, <http://www.asiapacificadapt.net/resource/development-and-climate-change-bangladesh-focus-coastal-flooding-and-sundarbans>.

³⁰ Shahadat Hossain, "Poverty, Household Strategies and Coping with Urban Life: Examining Livelihood Framework," *Bangladesh e-Journal of Sociology* 2, no.1 (2005).

³¹ "World Population Prospects," United Nations – Department of Economic and Social Affairs (Population Division), 2008, www.un.org/esa/population/publications/wpp2008/wpp2008_highlights.pdf.

³² Shaohua Chen and Martin Ravallion, "The Developing World Is Poorer than We Thought, But No Less Successful in the Fight against Poverty," *World Bank Group*, last modified September 2008, <http://siteresources.worldbank.org/DEC/Resources/DevelopingworldispoorerQJE.pdf>.

million people a year which indicates that by the year 2030, India will be adding approximately a billion people to the job market.³³ Apart from having to create job opportunities for this high number, there is a list of challenges that will accompany such high population growth; the decline in resources for reasons as uncontrollable as rainfall patterns, poverty, increasing pollution and lack of basic services as sanitation, clean drinking water and health services.

Pakistan, another major South Asian country, is challenged in its own ways. Apart from being among one of the hardest hit economies by terrorism, internal instability and poverty, climate change is causing irrevocable damage to the already charred socio-political and economic sector of the country. The sixth most populated country in the world with an estimated population of 184.5 million - as per the 2017 Asian Development Bank profile - people with one of the highest fertility rates in the Asia Pacific region, Pakistan's poverty rate is estimated at two dollars per day, while the purchasing power parity exceeds 50 per cent with blatant inequalities between provinces.³⁴ The country's growth is largely dependent on water, being a largely agrarian economy; agriculture is the second largest sector of economy, contributing above 21 per cent of its GDP. Agriculture employs 45 per cent of the labour force but Pakistan is rapidly falling into the category of water deficient states. About 90 per cent of Pakistan's food and fibre production depends on its irrigation system, which is not just the biggest irrigation system in the world, but also dependent on a single river system that is the Indus.³⁵

Afghanistan's environment is not conducive to growth either. Being under siege for more than four decades has left the country in a hopeless place. With fraught governance and dilapidated infrastructure, the country is extremely vulnerable to natural calamities and is classified as the most incapable of mitigating climate change by the United Nations Environment Programme (UNEP) and the Global Adaptation Index 2012.³⁶ The country went through a phase of severe drought from 1998 to 2006 and has been affected, either by floods or droughts, for more than 70 per cent of the time which has impacted 36 per cent of its population.³⁷ By 2030, droughts are likely to be a regular occurrence as it faces a decline in regular precipitation patterns, while the temperature is expected to rise up to four degrees in the next four decades. These changes pose a severe threat to the rain-fed agriculture and livestock that up to 80 per cent Afghans are dependent upon for their livelihood, despite the decline of arable land by 60 per cent. Droughts will result in further degradation and desertification of the only 12 per cent of the land that remains suitable for cultivation.³⁸

The island nation of Sri Lanka is located on the Southwest coast of India. The estimated population of the country is over 22 million, around 50 per cent of which lives in the coastal areas and are highly vulnerable to the rising sea level. The country generates a large sum of its GDP from the services industry. About 46 per cent of the country's population is employed in the tourism industry alone, while nearly a quarter of a million families make their living off of coastal and offshore fishing. Approximately 30 per cent of the island's land is covered in forests forming a natural cover against weather related calamities. However, there has been a fast decline in only one-third of the formerly

³³ S. N. Agarwala, "Population Control in India: Progress and Prospects," *Law and Contemporary Problems* (1960): 577-92.

³⁴ Qamar ur Zaman Chaudhry, "Climate Change Profile of Pakistan," *Asian Development Bank*, 2017, <https://www.adb.org/sites/default/files/publication/357876/climate-change-profile-pakistan.pdf>.

³⁵ "The Environment and Climate Change Outlook of Pakistan," *United Nations Environment Program*, 2013, <http://mocc.gov.pk/moclc/userfiles1/file/ECCO/sectiv-sumervy.pdf>.

³⁶ Farshad Tami, "Afghanistan and Climate Change In The Hindu Kush-Himalayan Region," *Norwegian Afghanistan Committee*, last modified November, 2013.

³⁷ "Afghanistan - National Risk and Vulnerability Assessment 2011-2012," last modified October 26, 2017, <http://www.ilo.org/surveydata/index.php/catalog/1644>.

³⁸ "Climate Change Adaptation Afghanistan," *United Nations Development Program*, accessed November 1, 2019, <http://www.af.undp.org/content/afghanistan/en/home/projects/CCAP-Afghanistan.html>.

covered area of forests due to deforestation. Such rapid decline will lead to faster soil erosion and intensified risks of land sliding while cyclones and coastal erosion are already a major threat to the coastal populations; a further increase in which is expected due to the changing climate.³⁹ Climatic stresses like changes in rainfall pattern and rise in sea level will affect both the tourism and fishing industry in addition to 25 per cent of the country's population, living within one kilometre of the coastline, struggling for the availability of water for agriculture and human consumption.⁴⁰

Above 80 per cent of the Maldives land area is less than one metre above sea level. Its vulnerability therefore is to a degree where it is and will be unable to cope with the adverse impacts of climate change. To the archipelago, climate change induced sea level rise poses an existential threat as the expected one metre rise is in all probability going to cost the loss of the entire area. More than 60 per cent of its inhabited islands and tourist resorts are reporting severe beach erosion which also threatens the limited fresh water resources of the country. The country is under tropical monsoons for most part of the year.⁴¹ Up to 30 per cent of its GDP is generated by tourism, as approximately 800,000 tourists visit the country annually. Most of it is nature based and dependent upon coral reef; the degradation of which poses a threat to the tourism sector.

Nepal, the fourth most vulnerable country to the impacts of climate change, has approximately 25 per cent of its population living below the poverty line. 70 per cent of the population is dependent upon the climate sensitive sector of agriculture for their livelihood that constitutes 32 per cent of the country's GDP. Though being water abundant, 96 per cent of all water withdrawn in the country is consumed by the agriculture sector.⁴² Different climate change models project the expected rise in temperature for the country to be 1 to 4 degrees Celsius by 2060, while annual rainfall is expected to reduce by 10 to 20 per cent simultaneously. The rapidly increasing temperature in the Himalayan region holds severe repercussions for the glacial lakes of the country.⁴³

What could be more ironic than low carbon emissions from a country most vulnerable to climate change? The Kingdom of Bhutan, the world's only carbon negative country is part of the same region and is under threat by the same phenomenon. Though Bhutan has built its national identity around the need for sustainability for its people, it still has to face climate change, being landlocked by its two heavily industrialized neighbours; India and China.⁴⁴ Around two-thirds of Bhutan's area is covered by forests, while 80 per cent of the country's population relies on agriculture and farming for their livelihood, which are among the more climate sensitive areas. A key contributor to Bhutan's GDP is its hydropower production that it sells to India. Climate change may have adverse effects on these resources.⁴⁵

³⁹ "Climate Risk Profile Sri Lanka," *USAID*, November, last modified November 2018, https://www.climatelinks.org/sites/default/files/asset/document/Sri%20Lanka_CRP_Final.pdf.

⁴⁰ Ibid.

⁴¹ Faisal Islam, Hilary Hove and Jo-Ellen Parry, "Review of Current and Planned Adaptation Action: South Asia. Adaptation Partnership," *International Institute for Sustainable Development*, (2011): 108-118.

⁴² Ryan Bartlett, Luna Bharati, et al., "Climate Change Impacts and Adaptation in Nepal," *International Water Management Institute*, 2010, <http://www.environmentportal.in/files/Climate%20Change%20Impacts.pdf>.

⁴³ Regan Sapkota and Kedar Rijal, "Climate Change and its Impact in Nepal, Kathmandu, Nepal," *Institute of Science and Technology*, last modified September 18, 2016, https://www.researchgate.net/publication/319686998_CLIMATE_CHANGE_AND_ITS_IMPACTS_IN_NEPAL.

⁴⁴ Sana Munawar, "Bhutan Improves Economic Development as a Net Carbon Sink," *The Climate Institute*, last modified July, 2016, <http://climate.org/wp-content/uploads/2016/07/Bhutan-Improves-Economic-Development-as-a-Net-Carbon-Sink.pdf>.

⁴⁵ "Strategizing Climate Change for Bhutan," *National Environment Commission and United Nations Environment Program*, last modified January 2009, <http://www.rrcap.unep.org/nsds/uploadedfiles/file/bhutan.pdf>.

Threats to Stability in South Asia

Disasters more often than not, have been followed by political unrest; unrest that the political narrative of South Asia is already abundantly laced with. Disasters bring with them their own set of political pros and cons. They possess the capability to nurture and alter political character and demeanour. Pre-disaster political trends play a vital role in the shape circumstances take post-disasters, mainly because disasters bring up a more critical sense of identity in the affected populations. While disasters redefine and augment grievances, they bring forth a potential opportunity for the political leadership to achieve greater popular legitimacy by enhancing scrutiny of institutions and forging robust disaster management policies.

In developing countries however, disasters often pave ways for violent unrest, as they jeopardize the political structure in multiple ways. In material terms natural catastrophes result in the destruction of infrastructure, types of which are vital for the smooth functioning of states; such as communication infrastructure which is important for governmental territorialisation. In institutional terms, calamities may make space for international interventions in places where governments are not able to respond efficiently which in turn poses questions on national sovereignty.⁴⁶ Apart from indirect risks to stability, crisis situations created by natural disasters affect military capabilities as they enervate military infrastructure and equipment, affecting their supply chain in addition to physical and psychological harm to personnel. Involvement in disaster relief activities may also affect their capabilities elsewhere which can be seen as an opportunity by internal and external adversaries.⁴⁷ Impacts of climate change though will not be limited to the probable and more frequently occurring natural disasters. They will become part of the long-term, permanent scheme of weather patterns.

In South Asian context, changing climate will alter regular rainfall patterns across the region which will result in more frequently occurring droughts and lowered ground water level. As a consequence, the region's dependency on river flows will increase. Almost all countries in the region share some of their major water sources. These transboundary resources have become a source of contention between them. As climate change stresses water reserves and river flows further, risks of armed conflict and violence cannot be ruled out completely. The growing dependence of each party will compel it to attain the most out of these resources, for their population. This is in addition to the possibilities of internal conflicts that water sources have been a cause of for many years. UNEP attributes 40 per cent of internal conflicts to rifts over natural resources; water being a major one.⁴⁸

Pakistan is a case in point. Distribution of water has not just been a transnational issue that Pakistan has had to take up with its two neighbours, India and Afghanistan; it has also been a source of contention among the provinces in Pakistan, where the arid lands of Punjab receive the maximum share of the Indus River System (IRS). The issue is widely politicized as institutional failures enhance the parity, creating an ecological imbalance while affecting means of livelihood in the other provinces.⁴⁹ Pakistan has a 70 year old on-going water dispute with India that keeps re-emerging despite the Indus Water

⁴⁶ Philippe Le Billon and Arno Waizenegger, "Peace in the Wake of Disaster? Secessionist Conflicts and the 2004 Indian Ocean Tsunami," *Transactions of the Institute of British Geographers, New Series* 32, no. 3 (2007): 411-427,

⁴⁷ Ibid.

⁴⁸ David Jensen and Silja Halle, "Natural Resources and Conflict a Guide for Mediation Practitioners," *United Nations Environment Program*, last modified February 2015, https://wedocs.unep.org/bitstream/handle/20.500.11822/9294/-Natural_resources_and_conflic.pdf?sequence=2&%3BisAllowed=.

⁴⁹ "Pakistan's Water Crisis," *Spearhead Research Special Report*, last modified January 6, 2014, <https://spearheadresearch.org/?p=10377>.

Treaty signed between them.⁵⁰ India being well aware of Pakistan's dependence on IRS has exposed Pakistan to risks of floods and aggravated water shortage by building dams on tributary rivers and manipulating the water flow into the country.⁵¹ The long-standing issue of Kashmir also has its roots in the water dispute between the two key players in the region. Apart from Pakistan, Nepal also shares grievances with India. Climatic stresses will only aggravate these grievances as all overpopulated, low income countries rely massively on agriculture for their GDP.

Another major threat emulsifier is climate induced migrations, which is not just a source of domestic contention as rural populations move to the urban centres and stress their fragile infrastructure and job market; it reflects in cross border migrations too.⁵² Migrations further stress countries like Bangladesh which already faces territorial loss to the rising sea level, or Afghanistan where climatic stresses are set to worsen the already fraught and limited livelihood opportunities. States like India and Pakistan, who are also among the most severely vulnerable countries to climate change will be in no position to burden their economies with climate refugees and will be forced to take strict measures to stop or at least reduce the migrant inflow. Population displacements will also trigger ethnic and religious violence as changing demographics will raise insecurities in local communities. For the diverse ethnic profile of countries like Sri Lanka, India and Pakistan it will be an enormous challenge to control inter-communal rifts in that scenario.

The recent Easter Sunday attacks in Sri Lanka, though claimed by ISIS, had support from local religious groups.⁵³ As climate change increases stress on the economy and job market, examples from recent past from other regions depict that masses are more viable to play in the hands of local and international terrorist organizations.

Conclusion

Climate change has transformed the world in many ways unprecedented, from the emission of greenhouse gases resulting in global warming, the effect of which can be seen on rainfall patterns to rise in sea levels to thinning resources. The even more daunting secondary impacts include thinning livelihood means, changing weather patterns, warming temperatures, territorial losses, tertiary impacts of climate induced migrations, resource related violence, stresses on shared resources exacerbating inter-state relations and internal instability leading to favourable recruiting grounds for terrorist organizations etc.

South Asia is home to some of the top most countries vulnerable to the impacts of climate change and therefore, bound to face adverse effects of the phenomenon. The overpopulated, poverty stricken region with high income parity already suffers from socio-political instability. Environmental stresses are only set to further these complications. With Bangladesh and Maldives set to lose shares of their territory to rising sea levels, the fate of their populations who in case of the atolls of Maldives, are trapped in the middle of nowhere and in case of Bangladesh are likely to be pushed back by the hostile neighbour, India, is not desirable. India itself has a mammoth task ahead of it. Its rapidly increasing population is facing food insecurity, inadequate basic facilities, internal and cross border migrations, lack of employment opportunities, climatic calamities, religious and communal tensions that pose a serious

⁵⁰ Uttam Kumar Sinha, "50 Years of the Indus Water Treaty: An Evaluation," *Strategic Analysis* 34, no. 5 (2010): 667-70.

⁵¹ Abdur Rauf Iqbal, "Water Wars And Navigating Peace over Indus River Basin," *Institute for Strategic Studies, Research and Analysis*, Monograph 1, no. 2 (2010).

⁵² Jürgen Scheffran and Antonella Battaglini, "Climate and Conflicts: The Security Risks of Global Warming," *Regional Environmental Change* 11 (Suppl 1): S27 - S39.

⁵³ Ibid.

threat to internal stability and stressed relationships with its neighbours; Bangladesh, China and specially Pakistan, the roots of which also lie in shared resources. Pakistan's depleting water resources are equally worrisome as the country plunges into the list of water stressed nations. Its agriculture based economy sees a constant decline that is to have adverse effects on regional stability as the loss of economic viability may be seen as an opportunity by the terrorist organizations. The risk is only intensified by the fact that the country shares a long border with the disaster prone Afghanistan.

The prospect of the region uniting against the adversaries of climate change that pose a severe threat to the entire region is crippled by the complex nature of their relationship, weakened structures of governance and the lack of competent political leadership in the region as well as foreign interventions. That said, it is necessary for economic and socio-political stability of the region that is home to a large chunk of the world's population, that organizations like South Asian Association for Regional Cooperation (SAARC) be strengthened and joint mitigation and adaptation measures are taken to reduce the impacts of climate change.