ISSUE BRIEF

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THE TRANSITION FROM GLOBAL WARMING TO GLOBAL BOILING: AN URGENT CALL FOR MITIGATION

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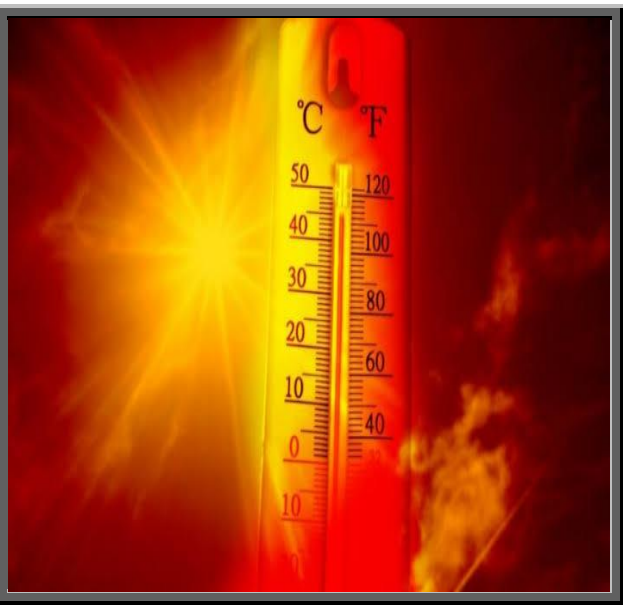
(Views expressed in the brief are those of the author, and do not represent those of ISSI)



"The era of global warming has ended" and "the era of global boiling has arrived."

UN Secretary-General António Guterres

The transition from 'global warming' to 'global boiling' refers to the increasing severity and intensity of climate change impacts, particularly related to rising temperatures. The term "global boiling" has been used by the United Nations to emphasize the urgent and alarming nature of the situation.[1] This transition (from global warming to global boiling) represents a critical juncture for humanity. The impacts of global boiling include extreme heatwaves, changes in precipitation patterns, loss of biodiversity, and threats to human health.[2]

The phenomenon of global warming has been a pressing environmental concern for several decades. However, recent scientific evidence suggests that the Earth is rapidly approaching a tipping point, beyond which global warming will transition into a more severe state known as global boiling. According to the World Meteorological Organization (WMO) and the European Commission's

1 "Hottest July Ever Signals 'Era Of Global Boiling Has Arrived' Says UN Chief," United Nations, July 27, 2023, https://news.un.org/en/story/2023/07/1139162

2 "The U.N. warns 'an era of global boiling' has started. What does that mean?, Washington Post, July 29, 2023, https://www.washingtonpost.com/climate-environment/2023/07/29/un-what-is-global-boiling/

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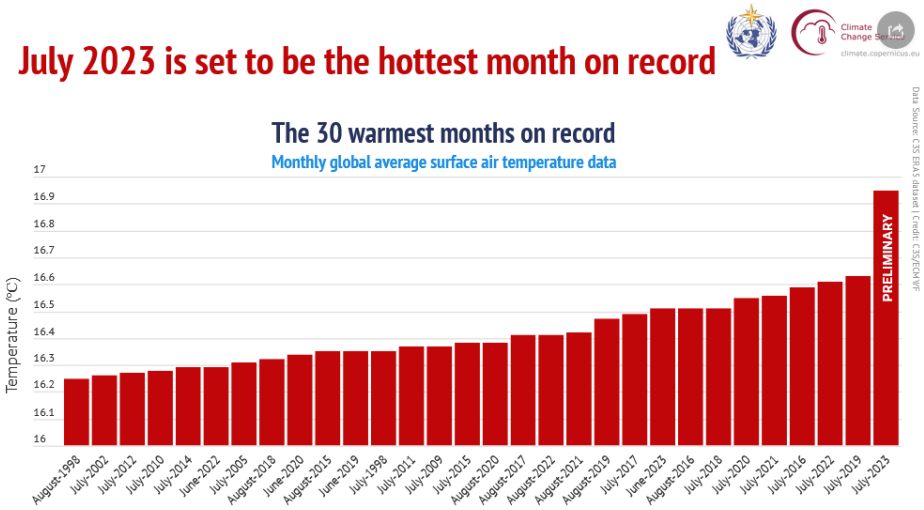
Copernicus Climate Change Service, July 2023 has seen the hottest three-week period ever recorded and the three hottest days on record.[3]



Source: *World Meteorological Organization and Climate Change Service*[4]

This transition is characterized by irreversible changes in the climate system that will have far-reaching consequences for human societies and ecosystems. The tipping point refers to the critical threshold at which abrupt and irreversible changes occur in the climate system. It is now widely accepted that human activities, particularly the burning of fossil fuels and deforestation, have pushed the Earth's climate system dangerously close to this tipping point. Once crossed, the climate will undergo self-reinforcing feedback loops that amplify warming and trigger irreversible changes, such as the melting of polar ice caps and the release of vast amounts of methane from thawing permafrost.

WMO predicts that there is a 98% likelihood that at least one of the next five years will be the warmest on record and a 66% chance of temporarily exceeding 1.5°C above the 1850-1900 average for at least one of the five years.[5]

3 "Hottest July Ever Signals 'Era Of Global Boiling Has Arrived' Says UN Chief," United Nations, July 27, 2023, https://news.un.org/en/story/2023/07/1139162

4 "Hottest July Ever Signals 'Era Of Global Boiling Has Arrived' Says UN Chief," United Nations, July 27, 2023, https://news.un.org/en/story/2023/07/1139162

5 "July 2023 Is Set To Be The Hottest Month on Record," World Meteorological Organization, July 27, 2023, https://public.wmo.int/en/media/press-release/july-2023-set-be-hottest-month-record

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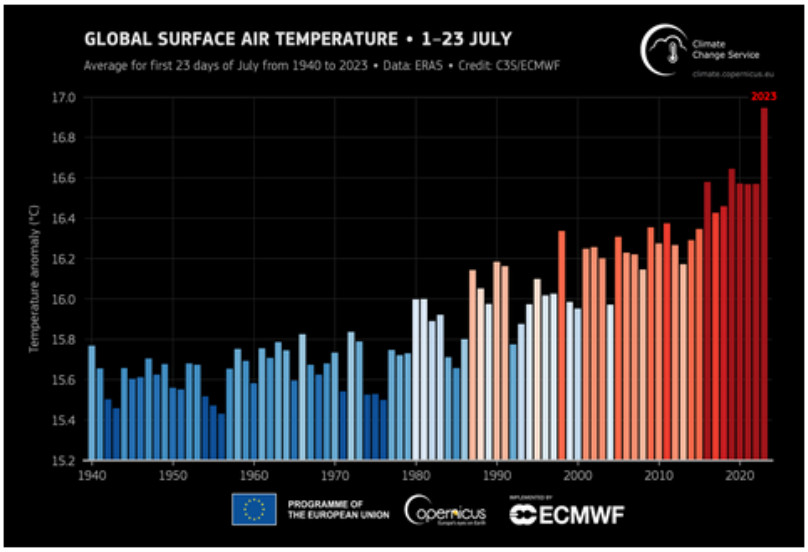

Source: *World Meteorological Organization*[6]

Global Boiling; a New Reality:

The recent trends indicate that the global climate is rapidly progressing beyond the anticipated pattern, leading to unprecedented heatwaves, extreme weather events, and other catastrophic consequences. The most recent records were set in South Asia in April and May 2023, when an exceptional heatwave hit the region. Several national records were broken, including in Thailand (45.4°C), Vietnam (44.2°C) and Laos (43.5°C).[7] Alarmingly, July 2023, officially became the hottest month ever recorded in the past 120,000 years with the average temperature climbing approximately 1.5°C higher than pre-industrial levels.[8]

6 "July 2023 Is Set To Be The Hottest Month on Record," World Meteorological Organization, July 27, 2023, https://public.wmo.int/en/media/press-release/july-2023-set-be-hottest-month-record

7 Anna Fleck, "World Sees Record Heat Waves," Statista, July 11, 2023, https://www.statista.com/chart/27403/global-heat-waves/

8 "Will July Record Heat Spur Ambitious Climate Action," UN Climate Summit, July 27, 2023, https://unclimatesummit.org/will-julys-record-heat-spur-ambitious-climate-action/?utm_source=google&utm_medium=cpc&utm_campaign=traffic-july%20hottest%20month%20act&utm_content=typ-text__adn-ad%201__aud-7.1&utm_term=extreme%20heat&gclid=CjwKCAjwt52mBhB5EiwA05YKoxD4QxHUgrMVQo5Q5-ZbTSsWfwFXSb1u2PZokNmuAJ487dxQrdsoLhoCfoMQAvD_BwE

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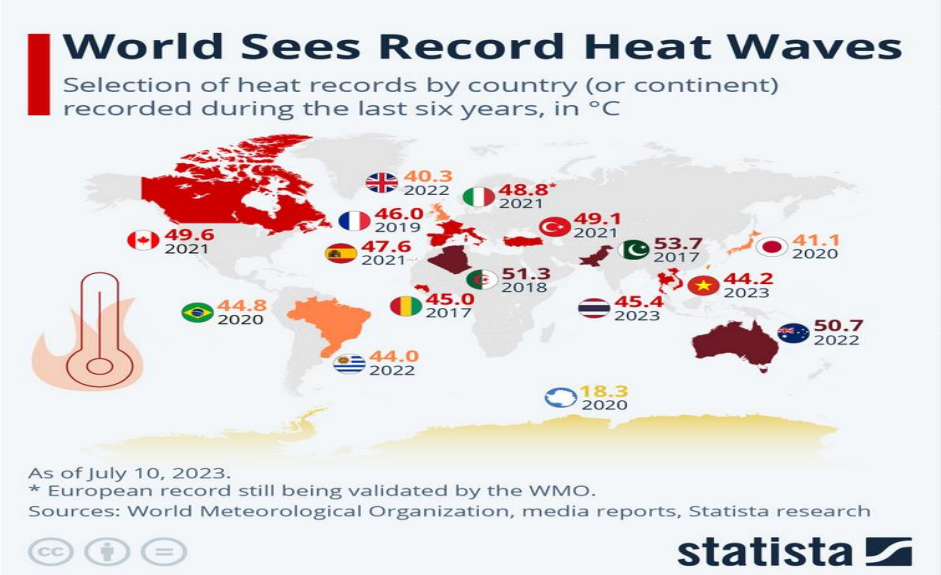
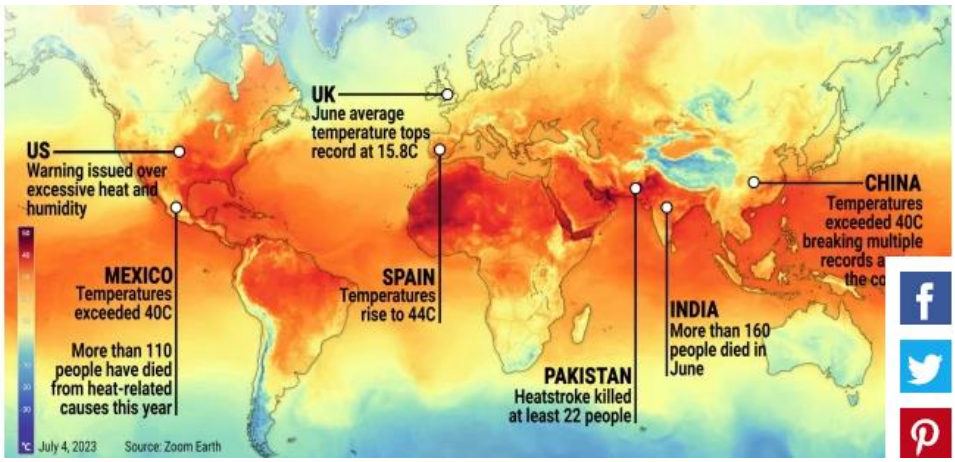


Source: *Global Heat Waves*[9]

Pakistan, like many other countries, is not immune to the impacts of global boiling, also known as the escalating climate crisis. The nation faces a range of challenges stemming from rising temperatures, extreme weather events, and other climate-related phenomena. In 2022 the hottest city on earth was recorded in Pakistan - Jacobabad, where the temperature climbed upto 51 Celsius.[10] The heatwave across the globe has claimed many lives as the temperature soared at unprecedented levels claiming 22 lives in Pakistan alone.[11]



Source: *Anadolu Agency*[12]

9 Anna Fleck, "World Sees Record Heat Waves," Statista, July 11, 2023, https://www.statista.com/chart/27403/global-heat-waves/

10 "Northern Hemisphere Feeling the Heat as Pakistan Hits Staggering 51 C," The Weather Network, May 15, 2022, https://www.theweathernetwork.com/en/news/weather/severe/northern-hemisphere-feeling-the-heat-as-pakistan-hits-staggering-51-c

11 Katherine Fidler, "Striking Map Charts Deadly Heatwaves Killing People Around The World," Metro UK, July 5, 2023, https://metro.co.uk/2023/07/05/climate-change-map-heatwaves-record-temperature-19071249/

12 Anadolu Agency, https://twitter.com/anadoluagency/status/1676270920330092551

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Pakistan's rising temperatures, droughts, and flooding threaten health, agriculture, and water supplies. To address this threat the Government of Pakistan made public country's first National Adaptation Plan 2023 unanimously approved by the federal cabinet. The government through the document has pledged to reduce emissions by 2030, and proposed 10 essential guidelines including: integrating climate adaptation, strategic thinking, evidence-based decision-making, promoting nature-based solutions, acting locally, leaving no one behind, thinking ahead and staying flexible, addressing inequity, fostering coordination and collaboration, and building capacity and knowledge.[13]

Impacts of Global Boiling on Pakistan:

1. *Heatwaves and Temperature Extremes:* Pakistan experiences frequent and severe heatwaves, particularly in its southern and central regions. High temperatures during summer can reach dangerous levels, leading to heat-related illnesses and even fatalities, especially among vulnerable populations.

2. *Water Scarcity and Glacial Melt:* Water scarcity is a significant concern in Pakistan, exacerbated by the melting of glaciers in the Hindu Kush Himalayan region. These glaciers serve as a crucial source of freshwater for the country's major rivers, and their rapid retreat has implications for agriculture, energy production, and drinking water supplies. Due to rising temperatures, glaciers in Pakistan are melting rapidly, adding to the already formed 33 ice-dammed vulnerable lakes, creating more than 3,000 lakes; out of which 33 are considered at risk of bursting, putting some 7.1 million people at risk of glacial lake outburst floods (GLOF).[14]

3. *Floods and Extreme Precipitation:* The changing climate has intensified the monsoon season in Pakistan, leading to more frequent and intense rainfall events. This has resulted in devastating floods that cause loss of life, damage infrastructure, and disrupt livelihoods, particularly in low-lying areas.

4. *Agriculture and Food Security:* Agriculture is a vital sector in Pakistan's economy, and climate change poses a threat to food security. Erratic rainfall patterns, prolonged droughts, and extreme weather events can adversely affect crop yields, leading to food shortages and economic hardships for rural communities. Food security has become one of the most

13 Zain-ul-Abideen Siddiqui, "Pakistan's First Ever Climate Change Plan Unveiled," Tribune, July 26, 2023, https://tribune.com.pk/story/2427999/pakistans-first-ever-climate-change-plan-unveiled

14 "Melting Glaciers, Growing Lakes And The Threat Of Outburst Floods," Relief Web, August 26, 2023, https://reliefweb.int/report/pakistan/melting-glaciers-growing-lakes-and-threat-outburst-floods

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pressing issues for Pakistan due to rising temperatures and unprecedented weather patterns. In Pakistan, nearly 10.5 million people (29%) are experiencing high levels of acute food insecurity between April 2023 to October 2023; approximately 2.1 million people (6%) will be in emergency phase, and around 8.4 million people (23%) will be in crisis phase.[15]

5. *Rising Sea Levels and Coastal Vulnerability:* Pakistan's coastal areas are at risk due to rising sea levels, which can result in coastal erosion, loss of land, and increased salinity in freshwater sources. This jeopardizes the livelihoods of communities dependent on coastal resources and infrastructure. Pakistan has been suffering with the impact of climate change, with its coastal and marine ecosystem identified as one of the most vulnerable areas in the country; the coastal communities stretching on 1,046 km coastline are severely exposed to climate change risks, especially sea-level rise, coastal erosion, flooding, saltwater intrusion, and biodiversity loss.[16]

Addressing the Challenge:

Despite being a developing nation, Pakistan has continuously recognized the need to address and mitigate the impacts of climate change and now global boiling. Some of the short-term and immediate steps Pakistan can take to mitigate and adapt to the changing climate and the phenomenon of global boiling are:

1. *National Adaptation Plan:* In order to cope up with the growing threat of climate change, government of Pakistan recently launched its National Adaptation Plan 2023. The document lays out an adaptation strategy and priorities in seven key areas: the agriculture–water nexus; natural capital; urban resilience; human capital; disaster risk management; and gender, youth, and social inclusion.[17] The plan has been unanimously passed by the cabinet reflecting the seriousness and ownership of the challenge as well as climate change threat at the national level.

2. *National Climate Resilience and Adaptation Plan:* Pakistan has developed a guiding document for its National Climate Resilience and Adaptation Plan 2023 process for building

15 Pakistan: IPC Acute Food Insecurity Snapshot [Balochistan, Khyber Pakhtunkhwa & Sindh] (April 2023 - January 2024), Relief Web, June 5, 2023, https://reliefweb.int/report/pakistan/pakistan-ipc-acute-food-insecurity-snapshot-balochistan-khyber-pakhtunkhwa-sindh-april-2023-january-2024

16 "Pakistan Country Report – 2023," UNHABITAT, https://unhabitat.org/sites/default/files/2023/06/4._pakistan_country_report_2023_b5_final_compressed.pdf

17 Zain-ul-Abideen Siddiqui, "Pakistan's First Ever Climate Change Plan Unveiled," Tribune, July 26, 2023, https://tribune.com.pk/story/2427999/pakistans-first-ever-climate-change-plan-unveiled

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resilience to climate change in cohesion with the guidelines laid out by UNFCCC. The document focuses on: (i) laying the groundwork and addressing gaps; (ii) addressing preparatory elements; (iii) developing implementation strategie; and (iv) reporting, monitoring and review.[18]

3. *Climate Policy and Legislation*: Pakistan has formulated national policies, such as the National Climate Change Policy, to guide its efforts in combating climate change. The country has also established legislative frameworks to promote sustainable practices and reduce greenhouse gas emissions.

4. *Net Zero Goals:* As urged by the UN Secretary-General all countries including Pakistan must push to reach net zero emissions by mid-century. This requires expediting the transition from fossil fuels to renewable energy fairly and equitably, while concurrently halting the expansion of oil and gas industries and phasing out coal by 2040. By embracing sustainable energy alternatives, Pakistan can contribute significantly to global efforts in combating climate change and securing a sustainable future for all,[19] while stopping oil and gas expansion and phasing out coal by 2040.

5. *Investment for Adaptation:* With the alarmingly growing climate crisis it is becoming increasingly vital for Pakistan to significantly increase its investment in adaptation and build resilience in vulnerable communities to minimize the impacts of climate change. As global temperatures rise and extreme weather events become more frequent, adaptation measures are necessary to protect ecosystems, infrastructure, and livelihoods.

6. *Renewable Energy Initiatives*: Pakistan has invested in renewable energy projects, including solar and wind power, to diversify its energy mix and reduce dependence on fossil fuels. These initiatives not only mitigate emissions but also improve energy access and security.

7. *Reverse Deforestation*: The government has launched tree plantation campaigns to increase forest cover and combat deforestation. Initiatives like the "Billion Tree Tsunami" aim to restore degraded lands and enhance carbon sequestration.

18 "National Climate Resilience and Adaptation Plan 2023-2030," Ministry of Climate Change, Government of Pakistan, 2023, https://docc.sindh.gov.pk/files/DoCC/Documents/NAP%20Final%20Draft-edited.pdf

19 "UN Secretary-General Issues New Global Roadmap To Secure Clean Energy Access For All By 2030 And Net Zero Emissions By 2050," https://www.un.org/en/desa/un-secretary-general-issues-new-global-roadmap-secure-clean-energy-access-all-2030-and-net-zero

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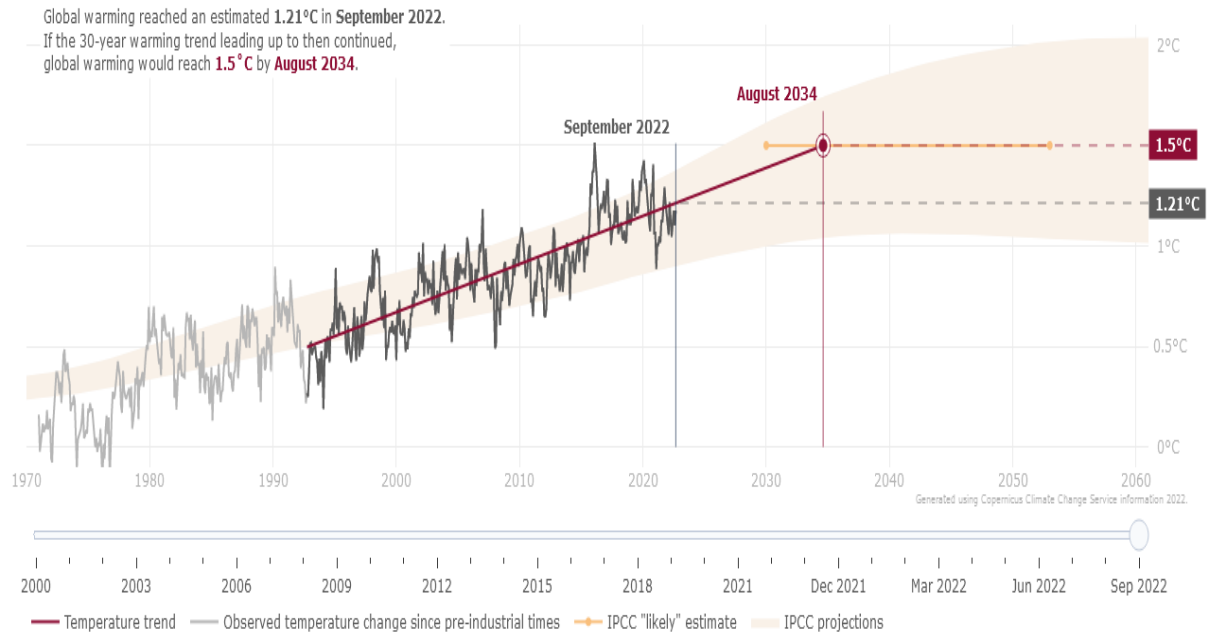
8. *Water Conservation*: Pakistan is working on improving water management and conservation practices to cope with water scarcity. Measures include efficient irrigation techniques, rainwater harvesting, and raising awareness about water conservation.

9. *Climate Resilience and Disaster Preparedness:* The country is focusing on building climate resilience and disaster preparedness measures to reduce the impacts of extreme weather events. This includes early warning systems, disaster response planning, and infrastructure development that consider climate risks.

Conclusion:

Reaching 1.5˚C of global warming - a limit agreed upon under the Paris Agreement - felt like a distant reality, and is at the cusp of the reality of today as experts suggest it is likely to happen between 2030 and the early 2050s.[20] Immediate action and global collaboration are necessary to secure a sustainable future in the face of global boiling.



Source: *Copernicus*[21]

20 "How Close Are We To Reaching A Global Warming Of 1.5˚C?" Copernicus, https://cds.climate.copernicus.eu/cdsapp#!/software/app-c3s-global-temperature-trend-monitor?tab=app

21 "How Close Are We To Reaching A Global Warming Of 1.5˚C?" Copernicus, https://cds.climate.copernicus.eu/cdsapp#!/software/app-c3s-global-temperature-trend-monitor?tab=app

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Mitigation strategies, such as reducing greenhouse gas emissions, and adaptation strategies, like building resilience in communities, are essential in addressing these challenges.[22] To mitigate the effects of global boiling, urgent action is required on a global scale. The reduction of greenhouse gas emissions is of paramount importance. This can be achieved through the adoption of cleaner and more sustainable energy sources, such as solar and wind power. Global cooperation is also crucial in addressing this global challenge, as no single country can tackle it alone. International support is also crucial to reinforce national efforts. The climate finance – Loss and Damage Fund – should be operationalized with greater part going to developing most vulnerable nations. Moreover, efforts should be made to promote energy efficiency and conservation practices.

Reflecting on the recent climate crisis throughout the globe the term "global boiling" is a more accurate and alarming description of the crisis the world is facing. Pakistan has already experienced the devastating consequences of global boiling in the form of heatwaves, floods, and unprecedented rains. Despite being a 'fractional emitter' (less than 1%), Pakistan is among the 10 most vulnerable countries in the world. To meet this crisis, UN Secretary-General, António Guterres, has called upon all countries, including Pakistan, and especially the G20 to reach net zero emissions by mid-century and transition to renewable energy sources. This ambitious target requires a collective effort to reduce greenhouse gas emissions and invest in clean and sustainable technologies.

In a nutshell, the shift from global warming to global boiling signifies the urgency and severity of the climate crisis for a country like Pakistan, which is at the forefront of experiencing the devastating impacts of global boiling. Immediate action, including reducing greenhouse gas emissions, transitioning to renewable energy, and investing in adaptation measures, is crucial. Global collaboration and support are needed to address the range of challenges that Pakistan and other nations face due to global boiling. Only through concerted efforts can we mitigate the worst impacts of climate change and build a sustainable future for all.

22 "Smart Growth and Climate Change," United States Environmental Protection Agency, https://www.epa.gov/smartgrowth/smart-growth-and-climate-change

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