

# **ISSUE BRIEF**

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## The Impact of Climate Change on Gwadar: Pakistan's Coastal Regions Growing Crisis

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March 7, 2025

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



### Introduction

In recent years, the consequences of global climate change have become increasingly apparent, manifesting in the form of floods, cyclones, extreme temperatures, and rising sea-levels. Pakistan, despite its relatively minimal contribution to global greenhouse gas emissions, is alarmingly vulnerable to these dangerous impacts. Since 2022, Pakistan has witnessed a surge in extreme weather events, including devastating floods, heatwaves, and unprecedented summer rainfall. Ranked among the 10 most vulnerable and least prepared nation to address climate change, Pakistan is now facing a crisis that can no longer be ignored.<sup>1</sup>

#### Vulnerability of Coastal Communities

Pakistan's coastal regions are home to over 10% of the country's population, many of whom rely on marine life and vegetation for their livelihoods.<sup>2</sup> The Indus Delta, located in southern Pakistan, is one of the largest mangrove ecosystems in the world. These mangroves serve as critical breeding grounds for commercially valuable fish species, which are the primary source of income for local

<sup>&</sup>lt;sup>1</sup> "Helping countries and cities counter the risks of a changing climate" ND-GAIN, Accessed on February 18, 2025, https://gain.nd.edu/

<sup>&</sup>lt;sup>2</sup> Zara Zahid," Impact of Climate Change on Coastal Areas of Pakistan", Paradigm Shift, August 28, 2024, https://www.paradigmshift.com.pk/impact-of-climate-change-on-coastal-areas/

fishermen.<sup>3</sup> However, rising ocean temperatures, sea-level rise, and ocean acidification are threatening the survival of marine life, leading to a significant decline in fish populations.

In the Fisheries Resources Appraisal 2008-2013 in Pakistan (FRAP), 40-70% of fish species in the region have already gone extinct.<sup>4</sup> This diminution not only weakens the economic stability of coastal communities but also threatens their food security.<sup>5</sup> Fish are a staple food for fishermen's families and other coastal residents, making the decline in marine life a direct threat to their survival. The World Bank estimates that over 1.8 million people in Pakistan's coastal regions depend on fishing for their livelihoods, highlighting the scale of the crisis.<sup>6</sup>

#### **Ecological and Environmental Challenges**

The coastal areas of Balochistan and Sindh are exposed to the direct impacts of climate change. Rising sea-levels and increasing temperatures are causing coastal erosion, which is devastating communities and ecosystems alike, areas such as Gwadar, Pasni, and Gaddani are experiencing significant erosion. Rising water temperatures are forcing marine life to migrate to cooler regions or, in the worst cases, leading to mass die-offs.<sup>7</sup>

The loss of marine biodiversity is compounded by the degradation of mangrove forests, which act as natural barriers against storms and tidal surges. According to the International Union for Conservation of Nature (IUCN), Pakistan has lost approximately 70% of its mangrove cover over the past 50 years due to climate change and human activities.<sup>8</sup> As these ecosystems breakdown, coastal communities are left increasingly exposed to the destructive forces of climate change.

#### Socioeconomic Impacts

The socioeconomic consequences of climate change in Pakistan's coastal regions are profound. Fishing, once a thriving industry, is now in decline, leaving many families without a stable source of income. The coastal city of Gwadar, once a vibrant hub for fishing and tourism, is now grappling with

<sup>&</sup>lt;sup>3</sup> Ibid

<sup>&</sup>lt;sup>4</sup> Zareef Baloch, "Climate change danger to Balochistan coast," Heinrich Böll Foundation, May 2, 2022, https://afpak.boell.org/en/2022/05/02/climate-change-danger-balochistan-coast

<sup>&</sup>lt;sup>5</sup> Zara Zahid," Impact of Climate Change on Coastal Areas of Pakistan", Paradigm Shift, August 28, 2024

<sup>&</sup>lt;sup>6</sup> "Pakistan Country Climate and Development Report," WB, November 2022, https://openknowledge.worldbank.org/server/api/core/bitstreams/2d1af64a-8d35-5946-a047-17dc143797ad/content

<sup>&</sup>lt;sup>7</sup> Rising sea levels, extreme weather endangers Gwadar", The Express Tribune, 06 February 2025 https://tribune.com.pk/story/2526931/rising-sea-levels-extreme-weather-endanger-gwadar

<sup>&</sup>lt;sup>8</sup> "Pakistan restores mangroves for economy and ecosystem benefits," IUCN, MAY 14, 2021, https://www.unep.org/news-and-stories/story/pakistan-restores-mangroves-economy-and-ecosystembenefits

the devastating impacts of climate change. A decade of extreme weather events has left the city's future in jeopardy. Reports contend that the situation in Gwadar is "alarming," with many homes already washed away due to increasing tidal actions and rising sea temperatures.<sup>9</sup>

The broader South Asian region, including Pakistan, faces a severe and escalating crisis due to climate change. Despite its vulnerability, there is insufficient awareness and understanding of the issue, as well as inadequate strategies for adaptation. This has left Pakistan's ecosystems, biodiversity, and oceans under constant threat. Balochistan, which covers 42% of Pakistan's land area, is particularly affected, with its coastline bearing the brunt of the climate crisis. The region's vast size and ecological significance make it a critical area for addressing climate change impacts.<sup>10</sup>

#### The Threat to Development Initiatives

Climate change also poses a significant threat to Pakistan's development initiatives, particularly the Gwadar Coast project. Gwadar, a key component of the China-Pakistan Economic Corridor (CPEC), is envisioned as a major hub for trade and economic activity. However, the increasing frequency of extreme weather events and rising sea-levels jeopardize the viability of this project. According to the Asian Development Bank, the cost of climate-related damage to infrastructure in Pakistan could reach \$14 billion annually by 2050 if no mitigation measures are taken. This underscores the urgent need to integrate climate resilience into development planning.<sup>11</sup>

#### Conclusion

The climate change impact on Pakistan's coastal areas is a complicated crisis that needs urgent attention. From ecological degradation and economic decline to social vulnerability and threats to development initiatives, the consequences are far-reaching. As global temperatures continue to rise, the situation is likely to worsen, placing even greater strain on Pakistan's coastal communities and ecosystems. Addressing this crisis requires a comprehensive approach that includes raising awareness, implementing adaptation strategies, and fostering international cooperation to mitigate the effects of climate change. Without immediate action, the future of Pakistan's coastal regions — and the millions of people who depend on them—remains uncertain.

<sup>9</sup> Ibid

<sup>&</sup>lt;sup>10</sup> "Climate Risk Country Profile Pakistan", Asian Development Bank, https://www.adb.org/sites/default/files/publication/700916/climate-risk-country-profile-pakistan.pdf

<sup>&</sup>lt;sup>11</sup> "Climate Risk Country Profile: Pakistan," ADB, May 2021, https://www.adb.org/publications/climate-riskcountry-profile-pakistan