

Green Growth Challenges for a Climate-Vulnerable Pakistan



Introduction

Environmental stress in Pakistan has reached a scale where it has become a constraint for economic performance, social stability, and long-term development. Pressures arising from water scarcity, climate variability, food insecurity, disaster risk, and ecosystem degradation increasingly impact across agriculture, energy, urban systems, public finance, and trade. These interconnected strains create self-reinforcing cycles that hinder growth, increase fiscal burdens, and undermine the country's overall economic resilience.

Pakistan has entered a phase of absolute water scarcity, with per capita water availability declining to approximately 930²⁷ Cubic meters per year, well below the internationally recognized scarcity threshold of 1,000 m³, and this risk is magnified by the country's limited water storage capacity. Pakistan's ability to store water is limited to around 30 days, compared with approximately 190 days in India, about 900 days in the United States, nearly 1,000 days in Egypt, and multi-year storage capacity in China, reflecting decades of earlier policy action and sustained investment in water infrastructure. Combined with a heavy dependence on climate-sensitive agriculture, these constraints leave Pakistan far more exposed to climate variability, resulting in production volatility, income instability, and rising pressure on public finances and water-dependent sectors.

²⁷ World Wildlife Fund-Pakistan (WWF-P). https://www.wwfpak.org/our_work/water/

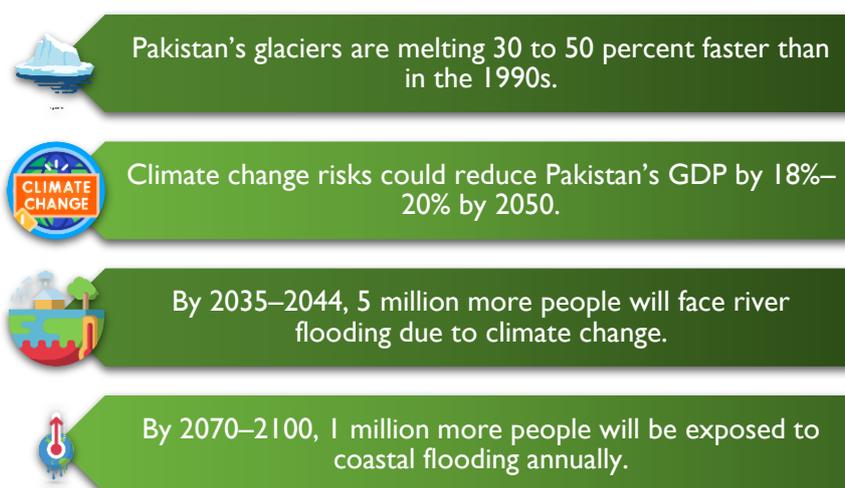
Table 7: Comparison of Pakistan's Water Storage Capacity

Country	Year of First National Water Policy	Water Storage Capacity
Pakistan	2018	30 days
India	1978	190 days
United States	1948 amended 1972	900 days
Egypt	1975	1,000 days
China	1988	Several years

Data Source: Khan, K. and Khan, A.A. (2022)

Climate change risks could further aggravate Pakistan's vulnerability, potentially reducing the country's GDP by 18%-20% by 2050 (World Bank, 2022). Furthermore, environmental stress will lead to significant population exposure, with 5 million more people projected to face river flooding by 2035-2044 due to increased rainfall, glacier melt, and extreme weather events. By 2070-2100, one million more people are expected to be exposed to coastal flooding annually, driven by sea-level rise, storm surges, and cyclones (WB & ADB, 2021). These projected impacts underscore the urgency of addressing environmental challenges, as they will only compound the existing stresses on Pakistan's agriculture, water resources, and public finances.

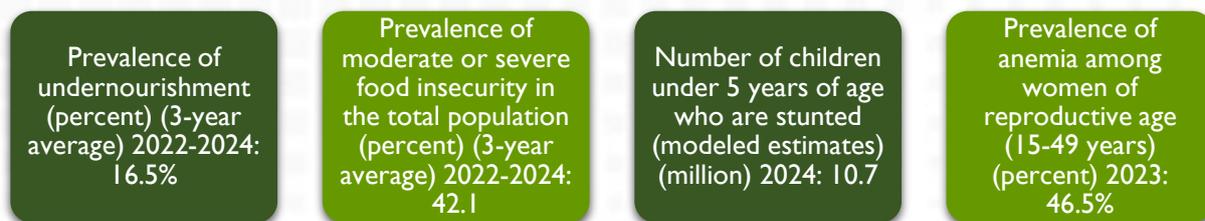
Figure 39: Impact of Climate Change on Pakistan's Environment and Economy



Data Source: World Bank & ADB 2021

The food insecurity and malnutrition in Pakistan underscore the significant impact of environmental and climate change pressures on societal well-being and economic stability. Between 2022 and 2024, approximately 16.5% of the population is reported as undernourished, with 42.1% facing moderate to severe food insecurity. These issues are further intensified by high rates of malnutrition, with an estimated 10.7 million children under the age of five experiencing stunted growth due to inadequate nutrition. Moreover, nearly half (46.5%) of women of reproductive age are affected by anemia, a condition linked to poor dietary intake and aggravated by food insecurity and limited access to nutritious food. Environmental challenges, such as water scarcity, climate change, and ecosystem degradation, are contributing to increased vulnerability to food insecurity.

Figure 40: Nutritional Challenges and Food Insecurity in Pakistan (2022-2024)



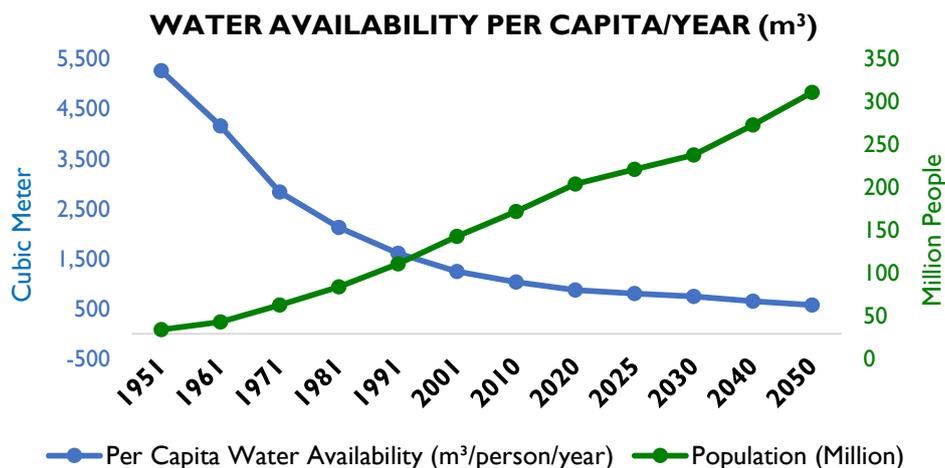
Data Source: FAO

This chapter integrates analysis across water security, food systems, climate change, disaster risk management, and forestation within a unified analytical framework.

Priority I: “Build a Water-Secure Future for Pakistan”

Pakistan's water resources are facing critical challenges. Annual per-capita water availability has drastically decreased from approximately 5,600 m³ in 1947 to a mere 930²⁸ m³, falling below the threshold of 1,000 m³, which is considered the point of absolute water scarcity (Falkenmark, 1992).

Figure 41: Population & Declining Per Capita Water Availability (m³/year)

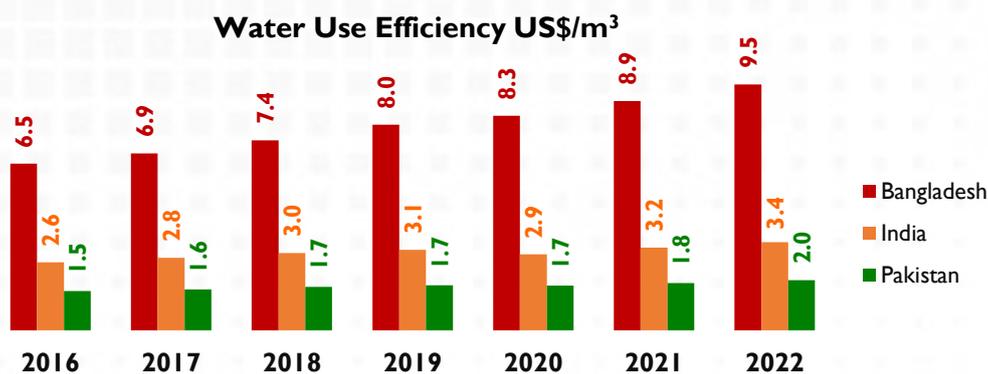


Data Source: Pakistan Engineering Congress. *Integrated Water Resource Management in Pakistan*

The nation's water demand far exceeds its supply, while storage capacity is limited to approximately 30 days, well below the international benchmark of 120 days. (Nazli, Liu, Wang, & Soomro, 2024). Climate change aggravates these pressures, as unprecedented heatwaves accelerate evaporation from reservoirs and rapid glacial melt poses a growing threat to the Indus River flows that sustain up to 80% of the country's agricultural land (Khizar et al., 2025). These developments jeopardize agricultural productivity, which relies on approximately 75% of the nation's blue water for major crops such as wheat, rice, sugarcane, and cotton, and places urban water supplies at significant risk (Muzamil et al, 2020). Projections from International Organization for Migration (IOM) indicate that, without urgent action, Pakistan could face absolute water scarcity by 2035. Moreover, Pakistan's water-use efficiency has shown gradual improvement but continues to trail behind that of both Bangladesh and India from 2016 to 2022.

²⁸ World Wildlife Fund-Pakistan (WWF-P). https://www.wwfpak.org/our_work/water/

Figure 42: Comparison of Water Use Efficiency



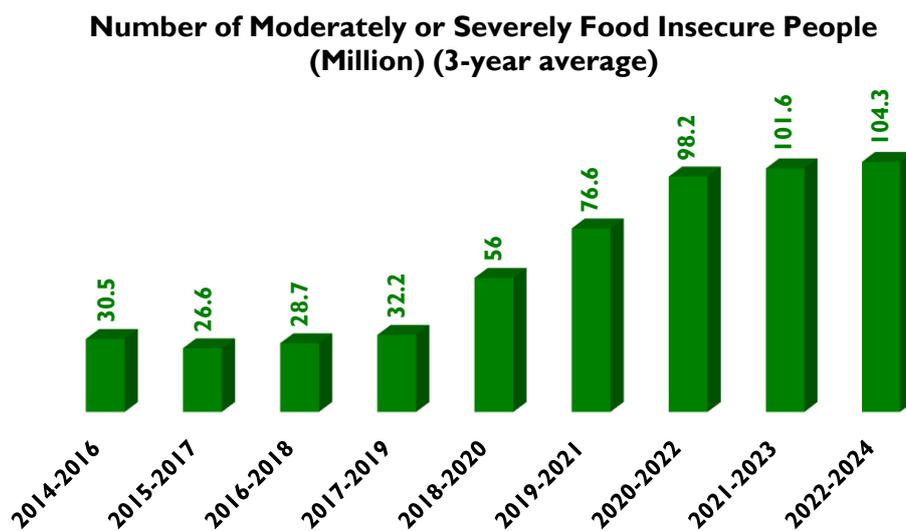
Data Source: AQUASTAT, FAO

Priority 2: “Enhance Food Security”

National food security is linked to the sustainability of the agriculture sector. Despite having the Indus Basin Irrigation System (IBIS), the largest contiguous irrigation system in the world, Pakistan's agricultural productivity remains suboptimal. This shortfall is evident in the country's poor performance in achieving Sustainable Development Goal (SDG)-2: Zero Hunger, which aims to eradicate hunger, food insecurity, and malnutrition by 2030. The decline in self-sufficiency, particularly in staple crops like wheat, has led to increased reliance on imports and higher domestic food costs.

According to the Global Food Security Index (2022), Pakistan is among the least food-secure countries in Asia. The National Food Security Policy of 2018 was introduced to address these challenges, but its inadequate implementation has failed to prevent declines in critical crop production. The number of moderately or severely food-insecure people in Pakistan has risen from 56 million during 2018-2020 to 104 million during 2022-2024.

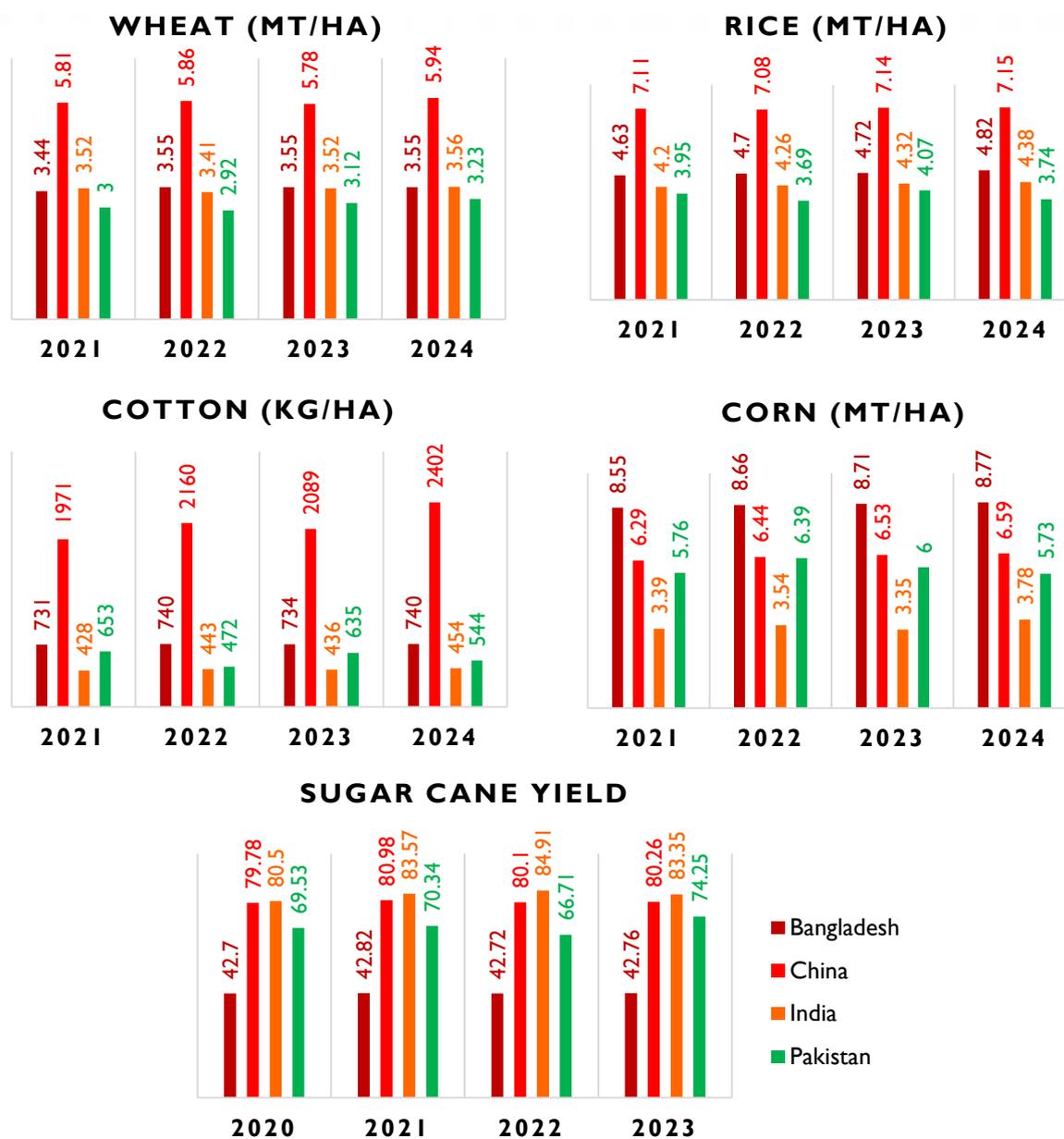
Figure 43: Trend of Moderate and Severe Food Insecurity



Data Source: FAO

The 2025 Global Hunger Index ranks Pakistan 106th of 123 countries. Approximately 16.5% of Pakistan's population is undernourished and about 33.6% of children under 5 are stunted.²⁹ Rural poverty and recurring climate shocks are intensifying this crisis, with nearly half of Pakistani households spending most of their income on food even before the recent floods (Shabnam et al., 2023). Extreme weather has already devastated vast areas of cropland, with the floods of 2022 and 2025 serving as stark examples. In 2022 alone, nearly one-third of the country was submerged, destroying millions of hectares of crops overnight. Record-high food and fuel prices, aggravated by climate-driven supply disruptions, have further eroded affordability. Adding to this challenge, Pakistan's major crops, including wheat, rice, and cotton, consistently yield less than regional peers such as India and China, limiting the domestic food supply and intensifying vulnerability.

Figure 44: Major Crop Yield Comparison by Peer Countries



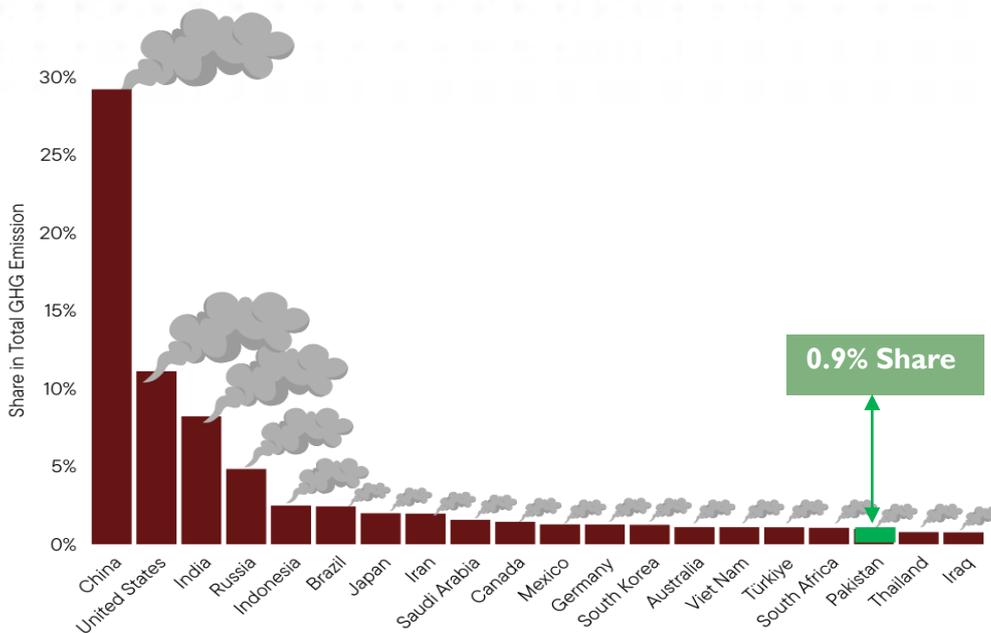
Data Source: USAD & FAO

²⁹ FAOSTAT

Priority 3: “Combat Climate Change”

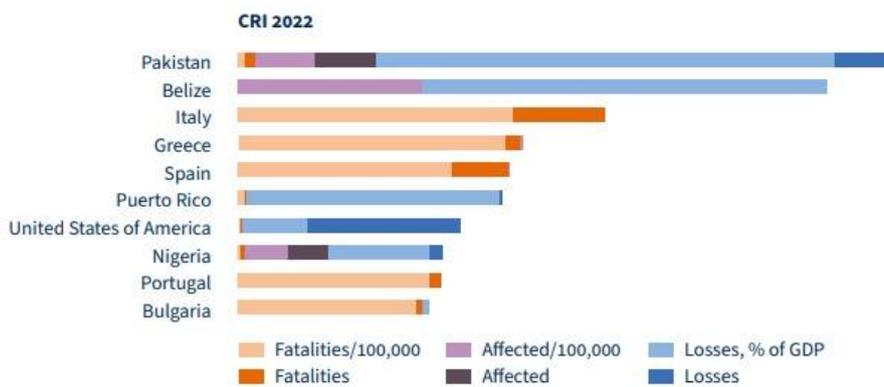
Pakistan accounts for approximately 0.9% of global greenhouse gas emissions and 0.5% of CO₂ emissions; however, it is among the world’s most climate-vulnerable countries (Ali and Mujahid, 2024). Historical climate records indicate that Pakistan’s average temperature has increased by nearly 0.6 °C over the past century, accompanied by a gradual rise in sea level along the Karachi coast, from roughly 1.1 mm per year historically to about 3.6 mm per year in recent decades (MoCC, 2022; ADB, 2017; IFRC, 2021)

Figure 45: Global GHG Emissions Share by Selected Countries (2024)



Data Source: EDGAR - Emissions Database for Global Atmospheric Research

Figure 46: Countries Most Affected in 2022 (HDI-corrected) - Climate Risk Index 2025



Data Source: German Watch

Pakistan’s exposure to climate extremes has translated into escalating human and economic losses. Recurrent floods, heatwaves, and droughts have cumulatively cost the country an estimated US\$29.3 billion between 1992 and 2021, equivalent to roughly 11% of GDP, through damage to infrastructure, agriculture, and livelihoods (World Bank, 2022). Notable climate events included the 2010 floods, which inundated nearly one-fifth of the country, prolonged

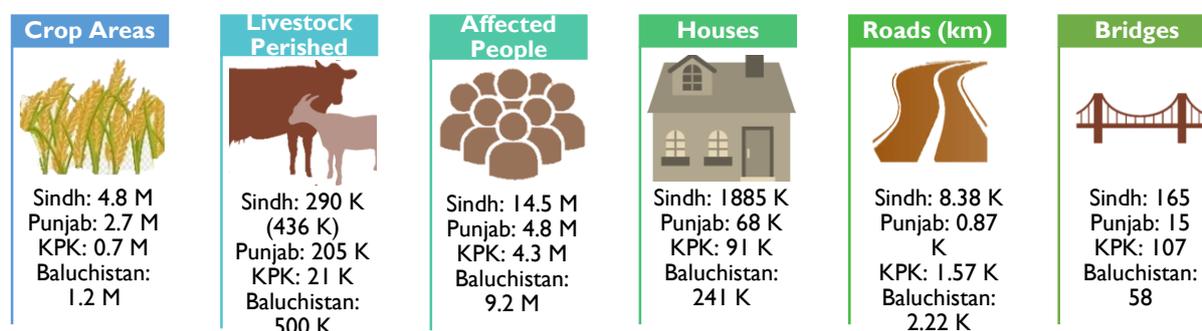
drought conditions, and the 2015 heatwave, which led to widespread hospitalizations (WB & ADB, 2021). Moreover, Extreme heat has emerged as an equally critical threat; even during the flood year, heatwaves remained the leading cause of climate-related mortality, particularly in large urban centers such as Karachi, highlighting growing urban heat vulnerability (Amnesty, 2025). These repeated shocks underscore Pakistan’s high structural vulnerability to climate change.

The scale of risk intensified dramatically in 2022, when record monsoon rainfall combined with accelerated glacier melt triggered unprecedented nationwide flooding. The majority of Pakistan’s population was affected, economic damages exceeded US\$30 billion, about 2.2% of GDP, while agricultural losses alone reduced output by around 0.9% of GDP (World Bank, 2022). The cumulative impact culminated in Pakistan being designated the world’s most climate-impacted country in 2022, according to the Global Climate Risk Index 2025. Regardless, Pakistan has articulated increasingly ambitious climate commitments. Its Third Nationally Determined Contribution (September 2025) pledges a 50% reduction in economy-wide emissions by 2035 relative to a business-as-usual pathway, with a strong emphasis on renewable energy expansion and energy efficiency improvements. To support this transition, Pakistan has identified about US\$565.7 billion in required climate investments, signaling recognition that climate mitigation can also advance development objectives such as improved air quality and green job creation (NDC, 2025).

Priority 4: “Mitigate and Adapt to Climate Change”

Climate change poses a severe threat to Pakistan's agriculture. Rising temperatures, erratic rainfall, heat waves, and shifting wind patterns strain crops, while inadequate R&D hinders the development of climate-resilient solutions, worsening food security risks. The World Bank's 2021 Climate Change Report highlights Pakistan's significant vulnerability to climate-induced challenges, with conditions expected to worsen by 2050. Among the various climate-related issues, floods have become a major concern, with both their frequency and severity increasing. In 2022 alone, flood-related losses in Pakistan soared to an estimated USD 30 billion, resulting in the loss of 1 million livestock, damaging 9.4 million acres of crop areas, and destroying 21.6 thousand animal shelters³⁰. These devastating effects underscore the urgent need for effective disaster management and mitigation strategies.

Figure 47: 2022 Flood Impact



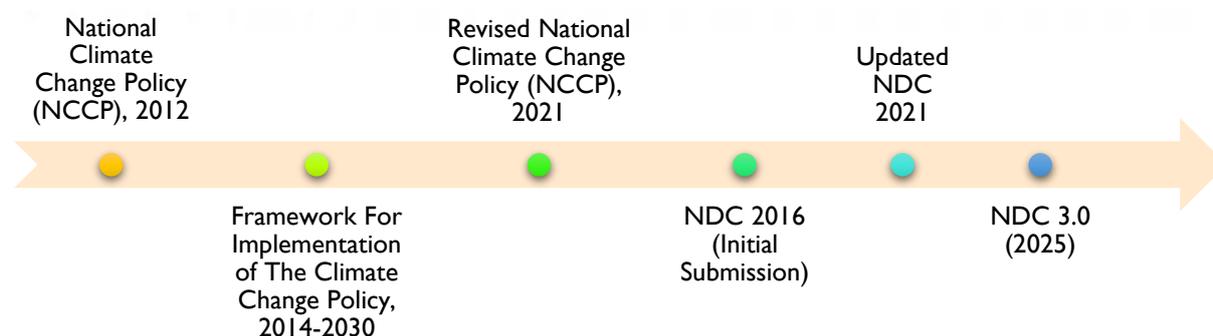
Data Source: FAO

Policy Evolution and Mitigation Commitments

³⁰ PRAC. (2024). *Probing the factors impacting food security* (Policy brief). Policy Research & Advisory Council, Karachi, Pakistan.

Pakistan has developed and revised its climate policy framework through a sequence of national strategies, including the National Climate Change Policy (NCCP) 2012, its Implementation Framework (2014-2030), and the updated NCCP 2021. The revised policy places greater emphasis on cross-sectoral priorities such as water-energy-food security and the role of nature-based solutions. In parallel, Pakistan’s international mitigation commitments have evolved. The Updated Nationally Determined Contribution (2021) sets a target of a 50% reduction in greenhouse gas emissions by 2030, comprising 15% unconditional and 35% conditional components, supported by sectoral objectives such as achieving 60% renewable energy in the power mix and 30% electric vehicles. These commitments were further extended under NDC 3.0 (2025), which adopts a 50% economy-wide emissions reduction target by 2035.

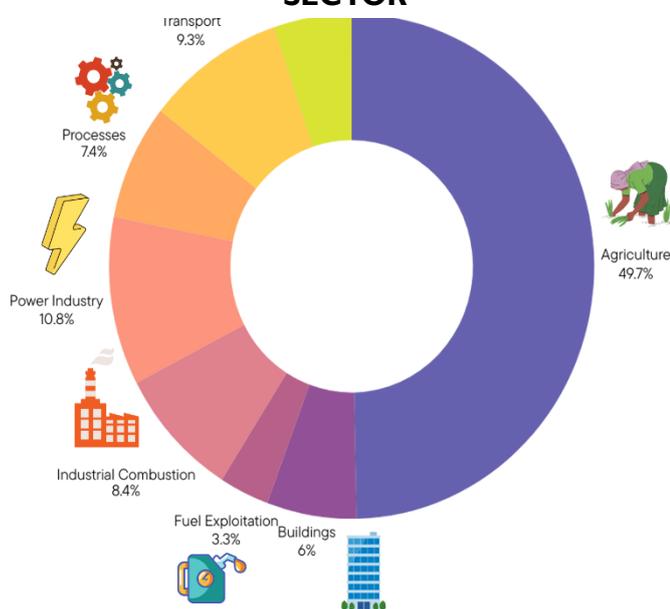
Figure 48: Climate Policy Evolution and NDC Commitments



Mitigation remains centered on the energy and agriculture sectors, which together account for the majority of national emissions. While hydropower, solar, and wind expansion feature prominently in policy plans, implementation has been uneven, with solar deployment advancing more rapidly than other technologies (WRI, 2025).

Nature-based mitigation has also gained visibility through large-scale afforestation and restoration initiatives, including the Ten Billion Tree Tsunami Programme, which is frequently cited in international assessments (Nature4Climate, 2019). Nevertheless, Pakistan’s Climate Change Performance Index (CCPI) 2026 ranking of 15th globally indicates a mixed performance, characterized by relatively low emissions intensity but ongoing challenges in policy implementation and institutional capacity.³¹

GHG EMISSION SHARE OF PAKISTAN BY SECTOR



Data Source: EDGAR

³¹ <https://ccpi.org/country/pak>

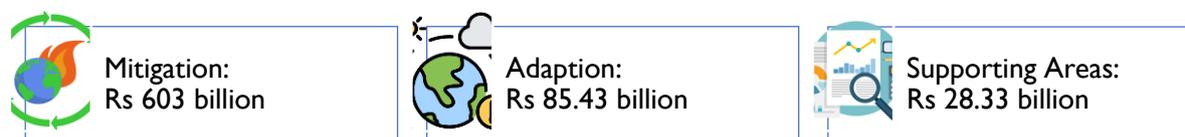
Adaptation as a Development Imperative

Adaptation has become a core development priority in Pakistan in response to escalating climate risks and repeated disaster losses. The National Adaptation Plan 2023 provides the overarching framework for strengthening resilience across key sectors, while disaster-focused instruments address specific risk dimensions. The 2022 floods triggered the Resilient Recovery, Rehabilitation and Reconstruction Framework, which identified at least USD 16.3 billion in priority recovery and resilience needs, and reinforced the direction of the Disaster Risk Reduction Strategy 2025-2030 with its focus on multi-hazard preparedness and early-warning systems. Moreover, Seeds, housing, and cropping systems must also adapt through climate-resilient seeds, safer housing, and climate-aligned cropping patterns to reduce losses. The recently launched national green taxonomy represents a promising step toward mobilizing climate finance and systematically integrating adaptation into development planning, provided it is widely adopted and utilized.

Financing the Climate Transition

Financing gaps fundamentally constrain climate action in Pakistan. During FY 2025-26, climate-related spending accounted for 6.9% of current expenditure and 8.2% of PSDP allocations in Pakistan's federal budget. The climate budget is distributed across adaptation (Rs85.43 billion), mitigation (Rs603 billion), and supporting areas (Rs28.33 billion), including capacity building and research (GOP, 2025-26). Despite these allocations, financing requirements remain substantially higher, with estimated climate investment needs of USD 348 billion during 2023-2030, of which around USD 152 billion relates to adaptation.³² Considering the financing gap, Pakistan's NDCs explicitly separate climate actions feasible within domestic fiscal capacity from those that depend on international financial and technological cooperation.

Figure 49: Allocation of Budget 2025-26 by Climate Action



Data Source: Budget in Brief

Priority 5: “Develop an Integrated and Coordinated Disaster Risk Management Framework”

Pakistan is highly prone to flooding, including riverine, and flash, as well as droughts, and extreme temperatures. Between 2015 and 2024, floods were the most frequent disaster with 44 occurrences, followed by storms and extreme temperatures. In 2022, unprecedented flooding caused over US\$ 30 billion in loss and damage, highlighting the scale of vulnerability.

Over the past three decades, Pakistan has experienced a marked increase in climate-related disasters, with floods showing a consistent and sharp rise, indicating growing hydrological risk under changing climate conditions.

³² <https://www.dawn.com/news/1888837>

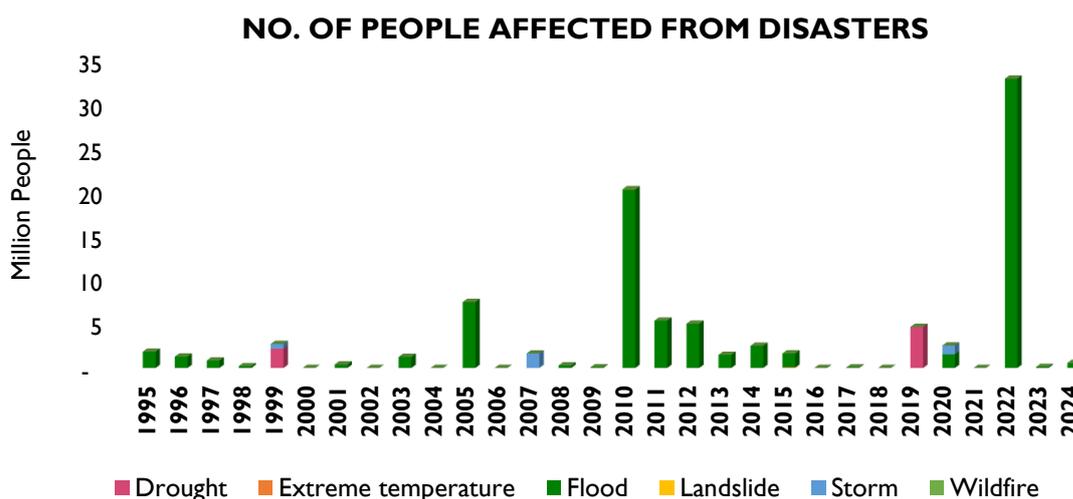
Table 8: Patterns of Disaster Frequency Over Time

Number of Disasters	1995-2004	2005-2014	2015-2024
Drought	1	0	1
Extreme temperature	8	3	6
Flood	18	35	44
Landslide	5	9	3
Storm	8	4	11
Wildfire	0	0	1

Data Source: EM-DAT

Floods account for the largest share of people affected, with certain years experiencing exceptionally high impacts due to widespread inundation and displacement. Other hazards, such as storms, extreme temperatures, and droughts, affect comparatively fewer people but still contribute to cumulative human vulnerability. Overall, the pattern signals a shift toward more frequent and severe hydrometeorological hazards, demanding stronger climate-resilient planning and disaster risk reduction.

Figure 50: Number of People Affected Due to Climate-Related Disasters (Million)



Data Source: EM-DAT

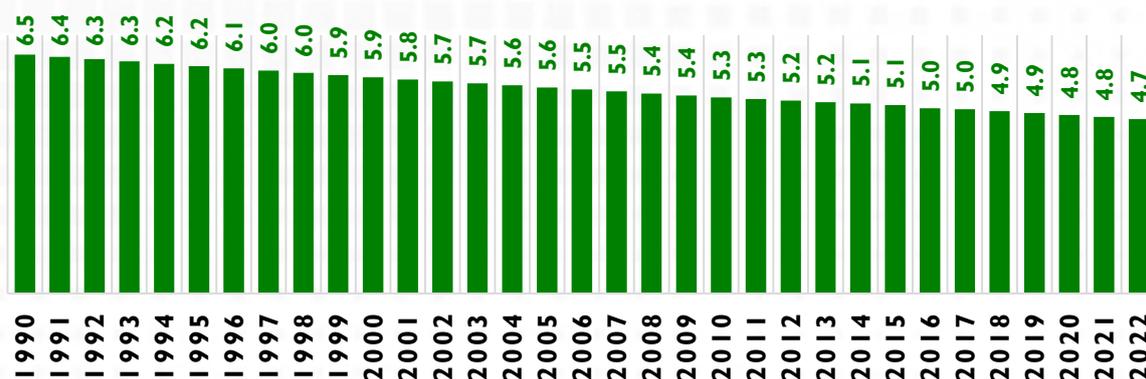
Priority 6: “Promote Reforestation and Protection of Wild Fauna”

Pakistan’s forest cover remains critically low when compared with regional neighbors. In 2022, only 4.7% of Pakistan’s land area was under forest. This is far below Indonesia’s 48%, Vietnam’s 47.2%, India’s 24.4%, and Bangladesh’s 14.5%. The country continues to lose approximately 27,000 hectares of forest annually, driven by illegal logging, land conversion for agriculture and housing, and heavy reliance on biomass for energy, with 52.72% of households using wood fuel.³³

³³ Propakistani (2024). Over Half of Pakistan’s Population Uses Wood for Cooking. Available at <https://propakistani.pk/2024/07/19/over-half-of-pakistans-population-uses-wood-for-cooking/>

The News (2025). Dealing with de-forestation. Available at <https://www.thenews.com.pk/tns/detail/1278202-dealing-with-de-forestation>

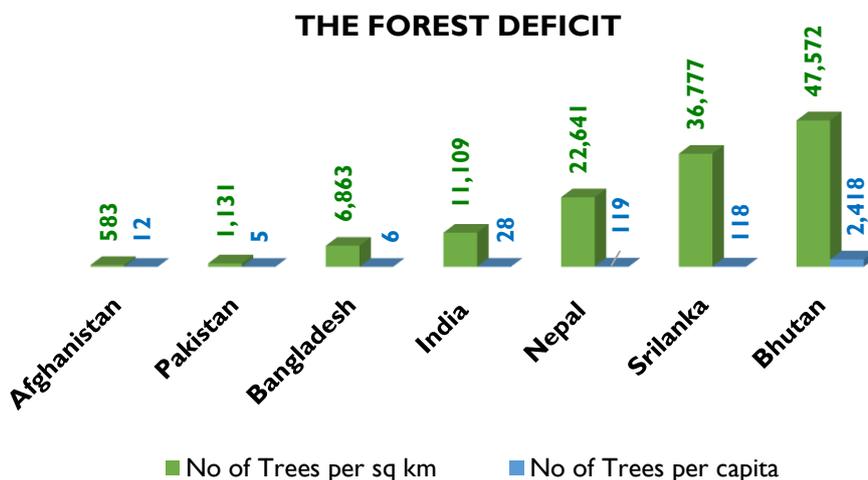
Figure 51: Pakistan's Forest Cover (% of Land Area) Trend



Data Source: WDI

Despite its land area and population size, Pakistan's forest cover remains comparatively low, especially when benchmarked against Nepal, Sri Lanka, and Bhutan, which have markedly higher tree density and per-capita forest resources.

Figure 52: Comparison of Forest Deficit Across Countries



Data Source: Maqbool, 2024

Pakistan's forests and wildlife face mounting pressures from deforestation, poaching, and habitat loss. The snow leopard population is now just 167 individuals, according to a national survey by the Snow Leopard Foundation and the Ministry of Climate Change. The Indus River Dolphin, once near extinction, has rebounded from 1,200 in 2001 to about 2,100 recently³⁴. The Markhor, Pakistan's national animal, has similarly rebounded thanks to community-driven trophy-hunting programs: its population has risen from under 2,500 in the 1990s to an estimated 5,000 in 2023³⁵. However, conservation remains fraught with challenges, and weak enforcement, habitat fragmentation, and illegal poaching continue to undermine these efforts.

³⁴ WWF. Saving the Indus River Dolphins. Available at

https://www.wwf.org/knowledge_hub /success_stories /saving_the_indus_river_dolphins

³⁵ Anadolu Agency. (2023). Markhor: Population of Pakistan's national animal on the rise. Anadolu Agency.

<https://www.aa.com.tr/en/asia-pacific/markhor-population-of-pakistan-s-national-animal-on-the-rise/3039954>

Policy Recommendations

Priority 1: “Build a Water-secure Future for Pakistan”

- **Achieve National Water Policy Targets by 2030:** To strengthen water security and meet policy targets by 2030, the proposed measures are:

Accelerate Diamer-Bhasha and other reservoirs construction to enhance national water storage, supported by transparent oversight from CCI.

Establish a nationwide system for well registration, groundwater metering, and aquifer mapping under provincial authorities.

Scale up precision irrigation, laser land-levelling, and adoption of water-efficient crops through targeted provincial incentives.

Deploy real-time river, canal, and reservoir monitoring dashboards to enhance transparency in water allocations and enable early flood-warning capabilities.

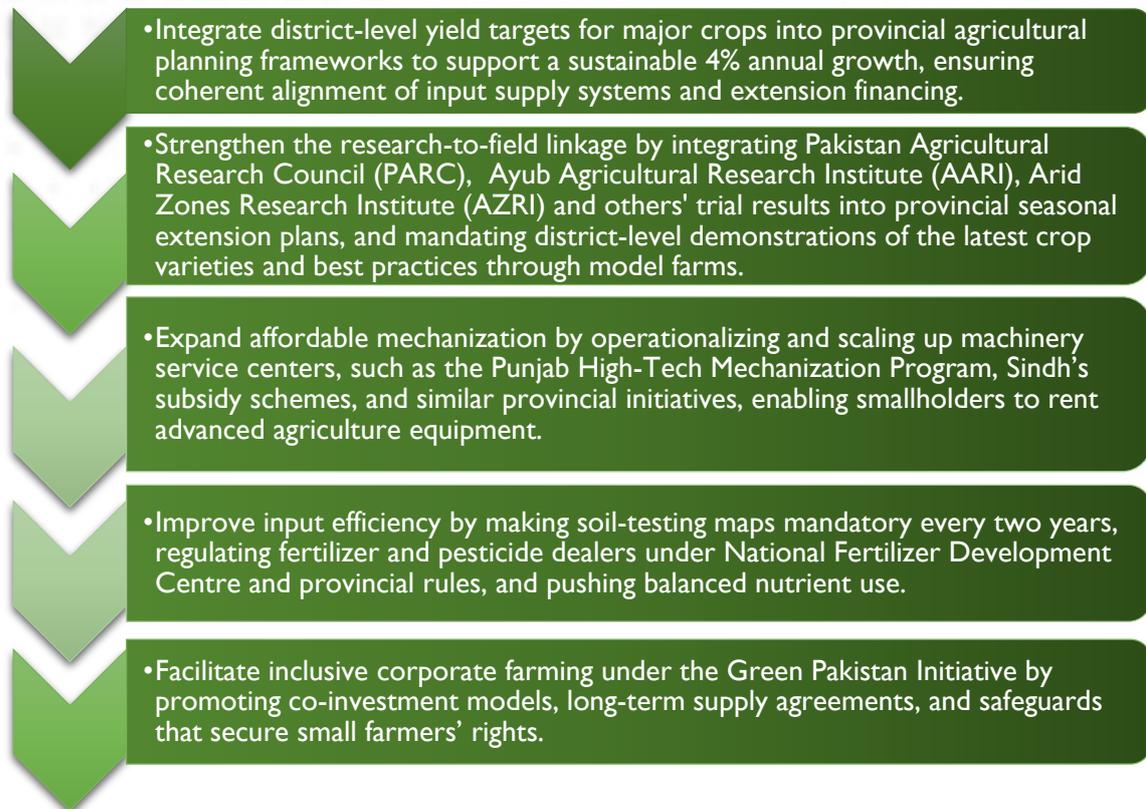
Integrate wastewater treatment and reuse into municipal development plans to supply industry and peri-urban agriculture, and expedite strategic bulk-water projects such as Karachi’s K-IV scheme.

Priority 2: “Enhance Food Security”

- **Revise the National Food Security Policy:** It is proposed that the National Food Security Policy be revised. This revision should include transforming the policy into an Act, thereby providing a stronger, legally binding framework. The policy should also be updated to address the evolving climate risks and resilience challenges. To ensure effective coordination and alignment at both federal and provincial levels, it is essential to establish and empower the National Food Security Council with greater authority and responsibility.
- **Protect Agricultural Land:** Adopt a Requisition Compensation Balance Framework (RCBF), drawing on China’s model, to ensure that agricultural land acquired for development is fully offset by land of equal or higher productive capacity.
- **Promote Electronic Receipt Systems:** Scale awareness and adoption of e-warehouse receipt platforms, integrated with reliable digital inventory systems, to broaden financial inclusion for farmers, improve access to affordable credit, and support more efficient market functioning.
- **Food Processing:** It is recommended to implement the ‘Agriculture Transformation Through Cluster Development’ program, aimed at enhancing value-chain coordination, aggregation, and market linkages. Additionally, there is a need to expedite the establishment of Agricultural Industrial Parks (AIPs) under the China-Pakistan Economic

Corridor (CPEC) in strategically located zones to foster agribusiness expansion and stimulate industrial growth.

- **Improving Productivity and Coordination:** Recommendations for enhancing productivity and coordination in agriculture include:



- **Expanding Credit for Small Farmers:** Expand small farmers' access to finance by scaling collateral-free, digital agricultural credit under SBP-backed schemes such as Asaan Digital Zarai Qarza/ Zarkhez-e through commercial banks and microfinance institutions.

Priority 3: "Combat Climate Change"

- **Climate-Smart Agriculture:** To enhance climate resilience in agriculture, the proposed measures are:

Expedite the evaluation, multi-location testing, and registration of heat, drought, and flood-tolerant, as well as early- and late-maturing varieties under Pakistan's National Seed Policy 2024 through coordinated efforts among PARC, and provincial research institutes.

Improve farmer access to certified seeds, fertilizers, and digital advisory tools by expanding certified input networks and integrating agri-tech platforms into extension services.

Strengthen field-level capacity through climate hubs and farmer field schools offering practical training in efficient irrigation and climate-smart production, drawing on GIZ's and FAO's models.

- **Climate Strategy and Energy Transition:** Ensure full implementation of the Updated National Climate Change Policy 2021 and Pakistan’s NDC commitments through coordinated federal-provincial action. Leverage the National Climate Finance Strategy 2024 to mobilize climate bonds, concessional loans, and blended finance, while exploring carbon pricing through emissions-trading mechanisms and global carbon market engagement.
- **Drive Green Industrial & Export Value Chains:** It is recommended to promote climate-smart practices in key export-oriented sectors by providing technical support through TUSDEC and similar agencies, facilitating access to resource-efficient technologies through tariff rationalization and joint ventures. Strengthen compliance standards by enhancing the National Compliance Centre's facilitation services, offering targeted compliance training, and enabling businesses to obtain internationally recognized green certifications.
- **Invest in Energy Efficiency:** It is proposed to enforce stringent energy-efficiency standards for buildings, appliances, and street lighting, alongside undertaking systematic retrofits across government and industrial facilities. Additionally, expanding green mass transit solutions, such as the People Bus Service and BRT systems, is recommended to reduce urban emissions.

Priority 4: “Mitigate and Adapt to Climate Change”

- **Public Awareness and Capacity Building:** To build a climate-resilient future, it is recommended to:
 - Strengthen NDMA’s capacity with clear multi-hazard SOPs and dedicated budgets.
 - Enhance urban flood resilience by upgrading stormwater systems, enforcing flood-resistant building standards, and expanding green infrastructure.
 - Enhance local preparedness through NDMA-style training, localized response plans, and community readiness with training, pre-positioned supplies, and household anticipatory actions under the 4RF framework.
 - Strengthen climate literacy by integrating climate change into school curricula and launching nationwide awareness campaigns, inspired by the Clean Green Pakistan model.
- **Mainstream Adaptation Planning:** Actions for mainstream adaptation planning focus on:

Integrate climate adaptation across national and provincial planning by finalizing provincial climate strategies and embedding climate criteria into public investment decisions.

Incorporate lessons from the 4RF by ensuring that reconstruction/restoration of housing, agricultural land, and transport infrastructure consistently adheres to resilient design standards.

Priority 5: “Develop an Integrated & Coordinated Disaster Risk Management Framework”

- **Integrated Flood Risk Management:** Fully implement National Flood Protection Plan (NFPP-IV) using an IFRM approach by mapping riverine and flash-flood hazards, upgrading

embankments, restoring floodplains, and integrating these insights into infrastructure design, zoning, and urban land-use plans through comprehensive flood risk assessments.

- **Enhanced Early Warnings:** To ensure timely response, the recommended measures are below

Expand Early Warning System coverage to all high risk districts and community networks.

Align improvements with the National Disaster Risk Reduction Strategy 2025–2030 through advanced Early Warning Systems, anticipatory action, and community-based preparedness.

Deploy hazard-specific sensors, feedback mechanisms, and private sector collaboration to reach vulnerable populations.

- **Coordinated Recovery & Financing:** Recommendations for advancing coordinated recovery and financing comprise:

Operationalize the 4RF as the federal-provincial framework for coordinated post-disaster reconstruction.

Ensure all infrastructure, development, and reconstruction investments meet ‘build back better’ standards as mandated by the National Disaster Risk Reduction Strategy 2025.

Prioritize Green Climate Fund and other international climate finance for vulnerable districts and strengthen the Climate Finance Wing to prepare bankable projects and maintain transparent, accountable fund management.

Priority 6: “Promote Reforestation and Protection of Wild Fauna”

- **Scale National Afforestation:** National afforestation efforts should be scaled up by completing the Ten Billion Tree Tsunami, and other similar afforestation programmes for Pakistan programs, strengthening community nurseries, and enforcing strict measures against illegal tree-felling and forest encroachment.
- **Restore Mangroves & Wetlands:** Pakistan should accelerate mangrove and wetland restoration by expanding nurseries, scaling up Indus Delta initiatives, and Implementing the National Climate Change Policy 2021 Wetlands policy guidelines. Public-private partnerships, such as the Indus Delta Carbon Project, should be reinforced, expanded, and replicated to strengthen coastal resilience and deliver ecological and economic benefits.
- **Wildlife Protection & Enforcement:** Key recommendations for wildlife protection and enforcement include:

Strengthen anti-poaching and habitat protection laws by fully resourcing wildlife protection units, enhancing enforcement on the ground, and expanding monitoring of high-risk species.

Integrate biodiversity safeguards into all major infrastructure planning and apply advanced monitoring tools to protect priority habitats and ensure restoration efforts deliver measurable ecological gains.

Policy Matrix

TARGETS/ OBJECTIVES	CURRENT STATUS	CRITIQUE/ GAP
NATIONAL FOOD SECURITY POLICY 2018		
<ul style="list-style-type: none"> Extend social protection to 20 million vulnerable people without stable livelihoods. 	<ul style="list-style-type: none"> Social protection programs currently cover 9.87 million beneficiaries (2025) (PES 2024-25). 	<ul style="list-style-type: none"> Agricultural growth remains well below targets. Absence of the NFSC has stalled federal–provincial coordination. Limited progress on dietary diversity and integrating nutrition with health programs. Horticulture trade shows uneven performance, with vegetables improving but fruit exports declining. Social protection covers less than half the intended population.
<ul style="list-style-type: none"> Achieve 4% annual agricultural growth. 	<ul style="list-style-type: none"> Agriculture growth stands at 0.56 percent in 2025. Major crops show a 13.5 percent decline in output (PES 2024-25). 	
<ul style="list-style-type: none"> Hold regular National Food Security Council meetings. 	<ul style="list-style-type: none"> The National Food Security Council (NFSC) was not established. 	
<ul style="list-style-type: none"> Strengthen Agri-trade with a focus on horticulture. 	<ul style="list-style-type: none"> Vegetable exports rose to USD 404 Mn, while fruit exports fell to USD 328 Mn over the same period (Trade Map). 	
<ul style="list-style-type: none"> Promote safe, nutritious, and diverse diets integrated with health and sanitation programs. 		
<ul style="list-style-type: none"> Build partnerships across government, farmers, investors, academia, and civil society. 		
NATIONAL WATER POLICY 2018		
<ul style="list-style-type: none"> Reduction of 33 percent in the 46 MAF river flows that are lost in conveyance. 	<ul style="list-style-type: none"> Current canal head water availability is 97.5 MAF, with annual losses of 50 MAF FY24 (PES). 	<ul style="list-style-type: none"> Losses continue to be high. Storage has remained stagnant, with limited progress on key projects like Diamer-Bhasha. Limited progress in water use efficiency. Limited progress since 2018 makes it difficult to meet the water policy targets reiterated in URAAN by 2030.
<ul style="list-style-type: none"> Increase water storage by 10 MAF (e.g., Diamer-Bhasha 6.4 MAF). 	<ul style="list-style-type: none"> Water storage capacity remains stuck at 13.5 MAF, below target.³⁶ 	
<ul style="list-style-type: none"> Improve water-use efficiency by 30% (“More Crop per Drop”). 	<ul style="list-style-type: none"> Water-use efficiency increased modestly from 1.5 to 2 USD per cubic meter over the period 2018–2022 (FAO). 	
<ul style="list-style-type: none"> Modernize irrigation infrastructure to reduce losses. 	<ul style="list-style-type: none"> Key irrigation projects delayed, including canal modernization (paused in Aug 2025). 	
<ul style="list-style-type: none"> Establish real-time river flow monitoring by 2021 via IRSA. 	<ul style="list-style-type: none"> Telemetry 2.0 delayed, completion by 2027.³⁷ 	
NATIONAL CLIMATE CHANGE POLICY 2021		
<ul style="list-style-type: none"> Achieve 60% renewable energy in the national power mix by 2030. 	<ul style="list-style-type: none"> Renewable energy currently accounts for approximately 36.2% (FY24) of the national power mix (PES 2024-25). 	<ul style="list-style-type: none"> Pakistan commits to a 50% reduction in projected emissions against BAU, initially by 2030 and extended to 2035 under NDC 3.0, despite contributing only 0.9% of global emissions, making its target relatively more
<ul style="list-style-type: none"> Reach 30% electric vehicle (EV) penetration by 2030. 	<ul style="list-style-type: none"> Electric vehicle (EV) penetration remains below 1% as of June 2025. 	
<ul style="list-style-type: none"> Complete the plantation of 10 billion trees under national afforestation initiatives by 2023. 	<ul style="list-style-type: none"> A total of 2.2 billion trees has been planted nationwide since 2019.³⁸ 	

³⁶ <https://dnd.com.pk/wastage-of-monsoon-water-and-water-scarcity-in-pakistan/327266/>

³⁷ <https://www.dawn.com/news/1924889>

³⁸ <https://www.thenationalnews.com/climate/2025/10/13/why-pakistan-is-planting-10-billion-trees-to-tackle-climate-change-and-economic-challenges/>

TARGETS/ OBJECTIVES	CURRENT STATUS	CRITIQUE/ GAP
<ul style="list-style-type: none"> Reduce national greenhouse gas (GHG) emissions by 20% by 2030. 	<ul style="list-style-type: none"> Pakistan recorded a modest reduction in greenhouse gas emissions, falling from 526.95 MtCO₂-eq in 2021 to 525.88 MtCO₂-eq in 2024 (-0.2%) (EDGAR). 	<p>ambitious than those of the top emitters.</p> <ul style="list-style-type: none"> Forest target (6%) is unrealistic given NCCP-2021's unresolved gaps in land availability, financing, and provincial coordination. Overall, URAAN inherits NCCP-2021's core weaknesses: fragmented institutions, poor enforcement, and weak implementation capacity.

NATIONAL SEED POLICY OF PAKISTAN 2024

<ul style="list-style-type: none"> Ensure the timely availability of adequate quantity and quality seed to farmers. 	<ul style="list-style-type: none"> Quantity: Available Seeds: 4,000 tonnes. Requirement: 68,000 tonnes³⁹. Quality: Closure of 392 companies providing substandard seeds.⁴⁰ 	<ul style="list-style-type: none"> Weak implementation roadmap (no clear timelines, targets, accountability). Closure of substandard firms risks short-term supply disruption.
<ul style="list-style-type: none"> Biotechnology institutes/universities to conduct private-sector sponsored research. 	<ul style="list-style-type: none"> Pakistan has launched its first public-private genomics venture to boost local agricultural and healthcare research capacity. 	<ul style="list-style-type: none"> Outdated research infrastructure (labs, equipment, testing facilities).
<ul style="list-style-type: none"> Facilitation of private-sector infrastructure for high-tech and hybrid seed production. 	<ul style="list-style-type: none"> A joint assessment with China identified chronic underinvestment, outdated laboratory infrastructure, weak research commercialization, and persistent brain drain as key challenges facing PARC. 	<ul style="list-style-type: none"> Weak research commercialization and industry linkages.
<ul style="list-style-type: none"> Use biotechnology to Improve productivity Enhance nutritional quality Develop stress-tolerant varieties. 		<ul style="list-style-type: none"> Limited private-sector incentives for hybrid/high-tech seed production. Inter-agency coordination gaps between federal, provincial, and private actors.

³⁹ Profit Today (2025). Punjab halts seed supply to Balochistan as national shortage deepens, NA panel intervenes. <https://profit.pakistantoday.com.pk/2025/10/23/punjab-halts-seed-supply-to-balochistan-as-national-shortage-deepens-na-panel-intervenes/>

⁴⁰ <https://www.dawnnews.tv/news/1255988>

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