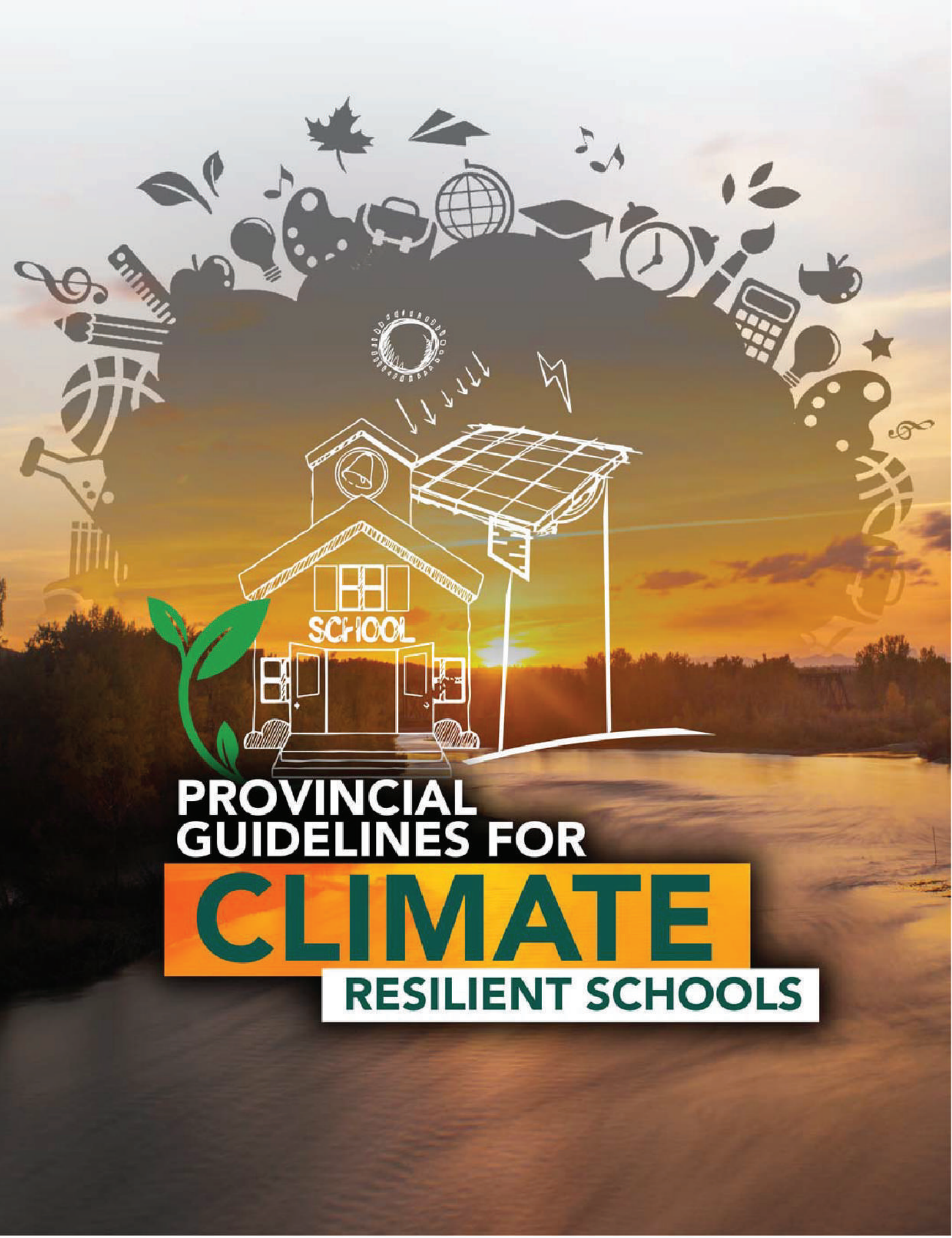

PROVINCIAL GUIDELINES FOR CLIMATE RESILIENT SCHOOLS

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I-SAPS Institute of Social and Policy Sciences
Informing Policies, Reforming Practices

PROVINCIAL GUIDELINES FOR CLIMATE RESILIENT SCHOOLS

Contents

Acknowledgements

The Provincial Guidelines for Climate-Resilient Schools in Punjab are a reflection of the Chief Minister, Punjab's vision for a sustainable and adaptive education system that safeguards students and learning environments from the escalating impacts of climate change. This vision has been realised through the steadfast support of the School Education Department and the esteemed guidance of the Secretary, SED. Throughout the development of these guidelines, the department provided collaboration, cooperation, and support to ensure they are tailored to the specific needs of our schools.

The development of these guidelines has been made possible through the dedicated support of the Foreign, Commonwealth & Development Office (FCDO) and the technical expertise of the Institute of Social and Policy Sciences (I-SAPS). Insights gained through the piloting of School Resilience Plans (SRPs) have provided critical insights into practical, school-level resilience-building measures. These guidelines mark a significant step in integrating climate resilience into Punjab's education sector, ensuring that schools are better prepared to withstand and adapt to climate-induced risks

MESSAGE

As we strive to create a safer and more sustainable future for our children, I am pleased to introduce the Guidelines for Climate-Resilient Schools. These guidelines represent a crucial step towards integrating climate change adaptation and resilience into our education system.

I extend my deepest appreciation to the GOAL-BTAG Team for their tireless efforts in preparing these comprehensive guidelines. Their dedication and expertise have been invaluable in shaping this important initiative.

The Guidelines for Climate-Resilient Schools will serve as a vital resource for educators, administrators, and policymakers, enabling them to create learning environments that are not only safe but also conducive to academic excellence.

As we move forward, I urge all stakeholders to work together in implementing these guidelines and fostering a culture of climate resilience in our schools.

Thank you.

Sincerely,

Rana Sikandar Hayat
Minister of Education, Punjab

MESSAGE

The School Education Department is committed to providing a safe and supportive learning environment for all students. In light of the growing challenges posed by climate change, we recognize the need for climate-resilient schools that can withstand the impacts of extreme weather events and changing environmental conditions.

I am delighted to acknowledge the outstanding contribution of the GOAL-BTAG Team in developing the Guidelines for Climate-Resilient Schools. Their expertise and commitment to this project have been instrumental in creating a comprehensive framework for climate-resilient schools.

These guidelines will serve as a valuable resource for our educators, administrators, and policymakers, enabling them to develop and implement effective strategies for climate change adaptation and resilience.

I encourage all stakeholders to utilize these guidelines and work collaboratively towards creating a climate-resilient education system that benefits our children and communities.

Thank you.

Sincerely,

Khalid Nazir Wattoo
Secretary,
School Education Department, Punjab

ACRONYMS

ADB	Asian Development Bank
ADP	Annual Development Plan
AEO	Assistant Education Officer
AQI	Air Quality Index
ASC	Annual School Census
CEO	Chief Executive Officer
CRI	Climate Risk Index
CRSPF	Climate Resilient Schools Performance Framework
DC	Deputy Commissioner
DEA	District Education Authority
DEO	District Education Officer
DDEO	Deputy District Education Officer
DHA	District Health Authority
EP&CCD	Environment Protection & Climate Change Department
GIS	Geographic Information System
IAQ	Indoor Air Quality
ICT	Information and Communications Technology
IPCC	Intergovernmental Panel on Climate Change
KPIs	Key Performance Indicators
LG&CDD	Local Government & Community Development Department
NCCP	National Climate Change Policy
NDMA	National Disaster Management Authority
PESP	Punjab Education Sector Plan
PECTAA	Punjab Education, Curriculum, Training, and Assessment Authority
PDMA	Provincial Disaster Management Authority
PGDP	Punjab Green Development Program
$PM_{2.5}$	Particulate Matter (2.5 micrometers or smaller in diameter)
PMD	Pakistan Meteorological Department
PMIU	Programme Monitoring & Implementation Unit
PSSPA	Provincial School Safety Plan of Action
RSRS	Roadmap for Safer and Resilient Schools
RWH	Rainwater Harvesting
SDGs	Sustainable Development Goals
SED	School Education Department
SMCs	School Management Councils
SPU	Strategic Planning Unit
SRP	School Resilience Plan
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation, & Hygiene

01

Introduction

Introduction

Climate change represents one of the most pressing challenges that the world is facing today, with far-reaching implications that transcend geographical boundaries and socio-economic strata. Notably, global surface temperatures have risen by approximately 1.1°C since the late 19th century, with the past decade being the warmest on record. This warming trend has triggered a cascade of impacts, including more frequent and intense extreme weather events, sea level rise, biodiversity loss, and disruptions to agriculture and water resources.

Pakistan's unique geographical features, encompassing vast river systems, arid zones, and extensive coastlines, make it susceptible to the adverse effects of climate change. It is ranked as the 5th most vulnerable country to climate change, underscoring the country's high vulnerability to extreme weather events, which are expected to intensify in near future in both frequency and severity.

The most telling example of Pakistan's vulnerability is the catastrophic climate disaster of 2022. In its recent report, the Climate Risk Index 2025 ranks Pakistan as one of the most affected country globally in 2022, due to unprecedented environmental changes. The country suffered from devastating floods, frequent and heavy rainfalls, landslides, and extreme heat waves, collectively impacting an estimated 33 million people and resulting in cumulative economic losses of 15 billion USD.

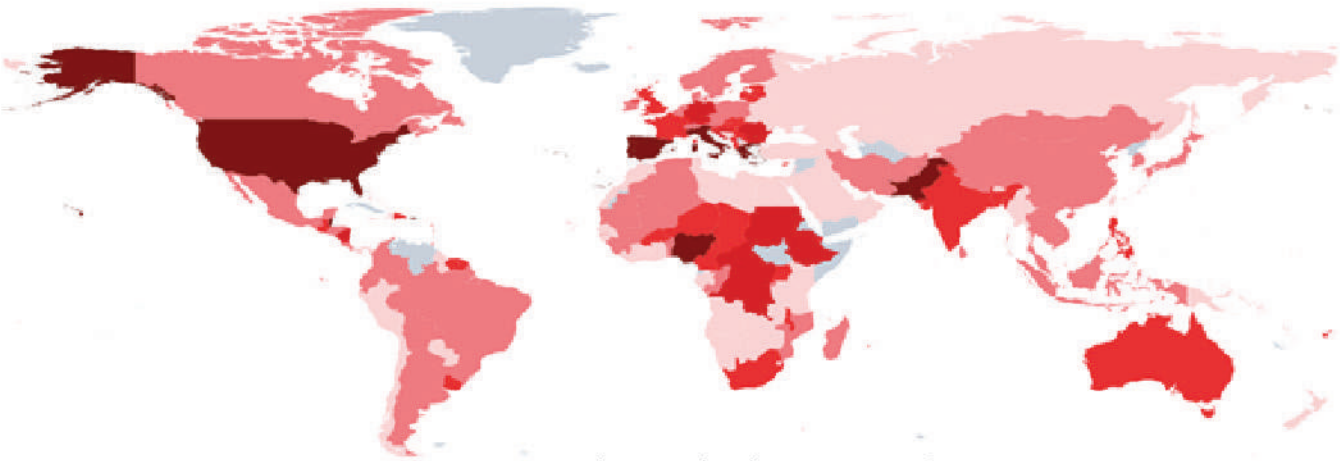
Punjab, Pakistan's most populous province, is experiencing intensifying climate-induced challenges that are disrupting livelihoods, economic stability, public health, and the education sector. The province is particularly vulnerable to rising temperatures, erratic rainfall patterns, prolonged heatwaves, worsening air pollution (notably smog), and increased frequency of floods and droughts. These climate-related stressors pose a significant threat to the continuity of education, particularly in public schools that often lack climate-resilient infrastructure and adaptive response mechanisms.

1.1 PUNJAB'S CLIMATE PROFILE AND RISING CLIMATE RISKS

Punjab's distinctive geography, diverse agro-climatic zones, and intersecting river systems render it particularly vulnerable to the multifaceted impacts of climate change. The province accounts for 58% of Pakistan's total population and contributes nearly 73% of the country's total agricultural output. However, Punjab is experiencing increasing climate-induced vulnerabilities, including an average temperature rise of 0.5°C per decade, extended periods of heatwaves exceeding 45°C, alarming increase in air pollution, and shifting monsoon patterns that have led to irregular rainfall and extreme weather events.

1.1.1 RISING TEMPERATURES AND PROLONGED HEATWAVES

Punjab is experiencing a consistent rise in average temperatures, with projections indicating an increase of 1.5–2°C by 2050. The province recorded its highest-ever temperatures in recent years, with some districts experiencing extreme heat for prolonged periods exceeding 45°C. This increased heat stress is creating severe public health and environmental challenges, including higher energy demands, deteriorating



Source: Climate Risk Index, Germanwatch, 2025

air quality, and intensified urban heat island effects.

1.1.2 WORSENING AIR POLLUTION AND SMOG CRISES

Punjab is experiencing worsening air quality, with smog becoming a seasonal climate crisis with persistent haze recorded across Punjab from November to February, that continues to disrupt daily life, economic activities, and public health. The Air Quality Index (AQI) in major cities like Lahore, Multan, Faisalabad, and Gujranwala has reached hazardous levels, significantly exceeding safe exposure limits set by the World Health Organization, exacerbated by rapid urbanization, rising industrial output, and insufficient regulatory enforcement of emissions controls.

1.1.3 ERRATIC MONSOON RAINS, FLOODING, AND DROUGHTS

Punjab's historical monsoon trends indicate that rainfall variability has increased significantly, with longer dry spells followed by intense bursts of heavy precipitation. The province has witnessed increasingly erratic monsoon patterns, with 45% higher rainfall variations recorded in 2022 alone. Extreme precipitation episodes, driven by changing climate dynamics and monsoonal variability, have resulted in record-breaking rainfall events, causing severe urban inundation, rural flash floods, and prolonged standing water issues. At the same time, certain districts in South Punjab face persistent droughts. The Cholistan Desert region has experienced severe water shortages, significantly impacting livelihoods and the daily lives of its residents.

1.1.4 EXTREME WEATHER VARIABILITY AND INFRASTRUCTURE VULNERABILITY

Punjab is experiencing increasing climate variability, with sudden cold waves, severe windstorms, unseasonal heavy rains, and hailstorms placing significant stress on school infrastructure. Many public schools are not designed to withstand extreme weather conditions, leading to recurrent structural damage, including collapsed roofs, flooded classrooms, and unsafe learning environments. The absence of uniform climate-resilient construction standards has resulted in non-standardized building designs that lack essential reinforcements for storm protection, heat insulation, and flood resistance.

1.2 IMPACT OF CLIMATE CHANGE ON PUNJAB'S EDUCATION SECTOR

Punjab's education sector is facing profound challenges due to climate-induced risks, each presenting distinct challenges to the continuity of learning, student well-being, school infrastructure, and education governance. These challenges demand urgent policy interventions and strategic investments to build climate resilience within the province's education system.

1.2.1 SCHOOL CLOSURES AND LEARNING DISRUPTIONS

The most immediate and recurrent consequence of climate-related hazards in Punjab has been the widespread closure of schools due to extreme weather events. Recurrent heatwaves, smog episodes, torrential rains, and flooding have compelled education authorities to suspend classes, directly affecting learning continuity, academic progression, and student retention. As climate-induced disruptions increase in frequency and severity, the cumulative loss of instructional time has emerged as a significant challenge for Punjab's school education sector. Climate-induced school closures have been strongly correlated with significant academic setbacks, with research indicating that prolonged or recurrent disruptions contribute to learning losses, reduced retention rates, and an elevated risk of student dropouts.

1.2.2 INFRASTRUCTURE DAMAGE

Climate-related disasters have severely impacted Punjab's school infrastructure, posing significant risks to student and staff safety. The 2022 floods had a devastating impact on Punjab's school infrastructure, causing widespread destruction and prolonged closures. An estimated 2,300 schools sustained partial or complete damage, with the collapse of approximately 1,240 boundary walls, extensive damage to 3,540 classrooms, and the demolition of over 4,000 toilets, leaving many schools unsafe and non-operational for extended periods.

Beyond large-scale catastrophic events, the gradual and continuous deterioration of school buildings due to chronic climate exposure is an escalating concern. School infrastructure remains highly vulnerable to flooding and waterlogging, particularly in urban centres with inadequate drainage systems and low-lying flood-prone districts. The absence of climate-resilient drainage infrastructure exacerbates these challenges, as many schools are built in water-sensitive areas without proper drainage planning, resulting in water stagnation, foundation erosion, and long-term structural deterioration.

1.2.3 INCREASED ABSENTEEISM DUE TO CLIMATE-INDUCED HEALTH RISKS

Extreme heat, poor air quality, and smog have resulted in a significant rise in respiratory illnesses, heat-related stress, and dehydration among schoolchildren, with Punjab reporting a 20% increase in heatstroke-related school absences over the past five years. The increasing frequency and severity of climate-induced illnesses not only affect student attendance but also undermine learning retention, cognitive performance, and long-term educational attainment.

Climate-related health challenges disproportionately affect female students, leading to increased absenteeism and school dropouts. Prolonged absences caused by climate-induced illnesses heighten the risk of permanent dropout, particularly among adolescent girls, who are often expected to assume caregiving roles during household health crises.

1.3 LACK OF CLIMATE ADAPTATION PLANNING

Despite growing climate risks, climate resilience planning at the school level remains fragmented. The Punjab Education Sector Plan (2019-24) does not comprehensively integrate climate adaptation. Countries such as Japan and the United Kingdom have implemented climate-resilient school policies by embedding risk reduction, early warning systems, and student-led climate preparedness initiatives into their education governance structures. By learning from global best practices and strengthening local policy mechanisms, Punjab can create a climate-resilient school education system that ensures student safety, infrastructure resilience, and uninterrupted learning amid climate-related disruptions.

1.4 RATIONALE

Given the increasing frequency and severity of climate-induced challenges, Punjab requires a structured and policy-backed approach to ensure its school education system remains resilient, adaptive, and sustainable. The development of Provincial Guidelines for Climate Resilient Schools is an essential step towards embedding climate adaptation strategies.

These guidelines will be informed by key international agreements, national and provincial policy frameworks, and sector plans. The key pillars of the Provincial Guidelines include:

02

Policy and Strategic Framework

Policy and Strategic Framework

Education systems are increasingly incorporated into national climate adaptation and disaster risk management strategies, aligning with global commitments. These frameworks provide strategic direction for integrating climate adaptation, school safety, and risk reduction into education policies. Similarly, the international commitments and national policy imperatives are outlined at the provincial level in several policies, strategies, and plans that contribute to climate adaptation efforts. However, while these policies contribute to specific aspects of resilience, there is no dedicated, structured framework that comprehensively integrates climate resilience into school education planning, infrastructure development, and governance mechanisms.

The Provincial Guidelines for Climate Resilient Schools seek to operationalize these international, national, and provincial commitments through the development of a structured approach to integrating climate adaptation, disaster preparedness, and sustainable school infrastructure in Punjab.

2.1 Linkages with International Commitments

The global policy landscape for climate resilience and disaster risk reduction in education provides critical guidance for integrating climate-responsive planning into Punjab's education sector. International frameworks establish commitments that serve as a reference for national and provincial governments in shaping climate adaptation strategies within education systems.

Key international agreements include:

United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement:
Establishes the foundational global framework for climate action, setting the stage for international efforts to mitigate and adapt to the impacts of climate change. The Paris Agreement explicitly recognizes the role of education in building climate resilience.

Sustainable Development Goals (SDGs):
Emphasizes the intersection between education and climate resilience. SDG 4 on Quality Education includes a specific focus on Education for Sustainable Development (ESD), which calls for the integration of climate change awareness, disaster preparedness, and sustainability into education systems.

Sendai Framework for Disaster Risk Reduction (2015-2030):
Provides a comprehensive global strategy for disaster preparedness and risk reduction, including education sector resilience. The framework highlights the need for reducing the impact of disasters on critical public infrastructure, including schools.

UNESCO Greening Education Partnership:
Advocates for a holistic approach to integrating climate resilience across all levels of education systems, focusing on climate-smart infrastructure, risk-informed curricula, and school-based climate action plans.

World Bank's Roadmap for Safer and Resilient Schools:
Offers an evidence-based framework for enhancing the climate resilience of education systems, highlighting the importance of risk-informed infrastructure planning, vulnerability assessments, and targeted investment strategies.

2.2 National and Provincial Policy Frameworks

The Provincial Guidelines for Climate-Resilient Schools in Punjab align with national and provincial policies on climate adaptation, disaster risk reduction, and education resilience. These policies provide a structured foundation for embedding climate adaptation, school safety, and disaster preparedness into Punjab's education system.

Key national and provincial policies include:

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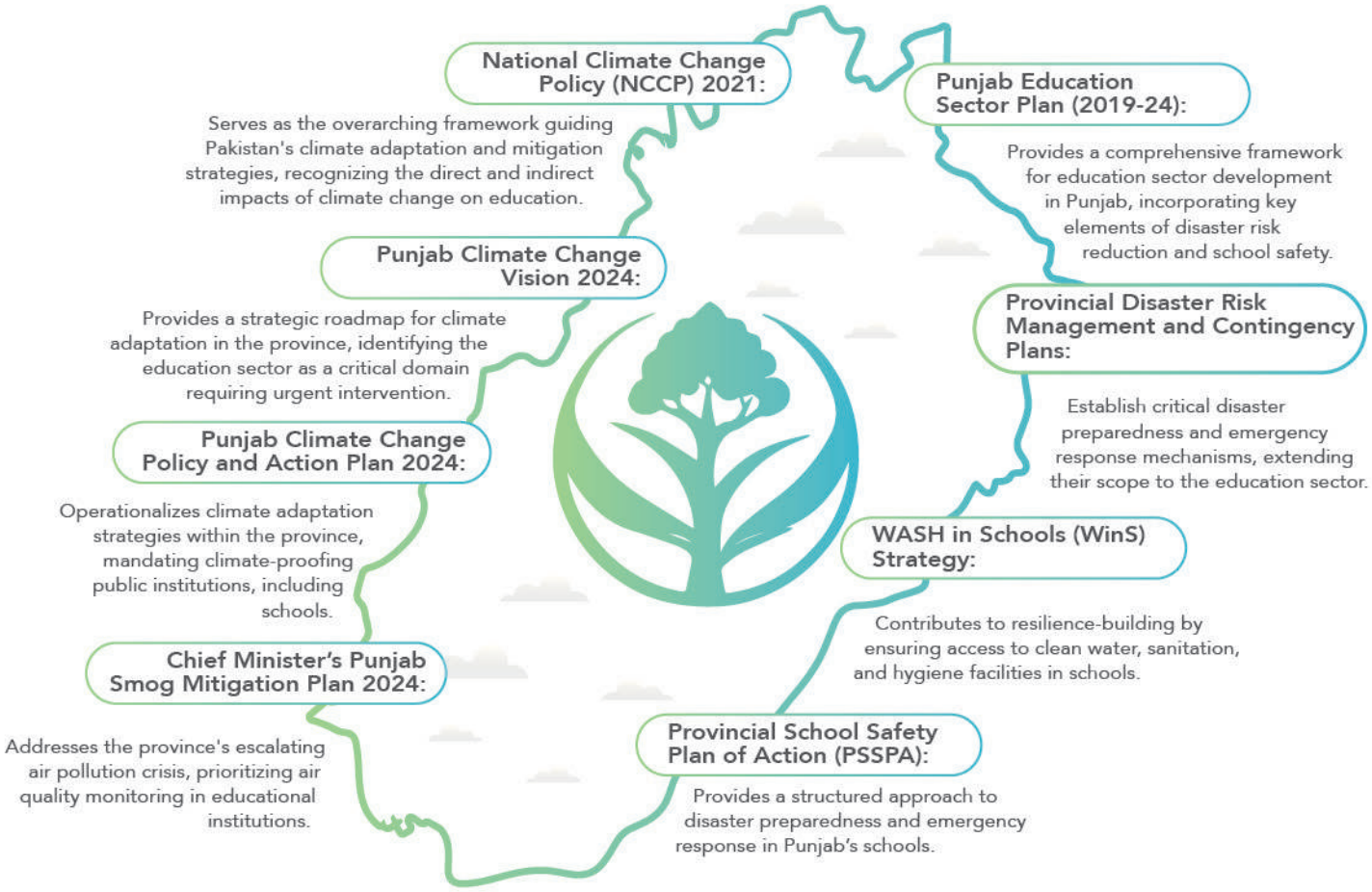
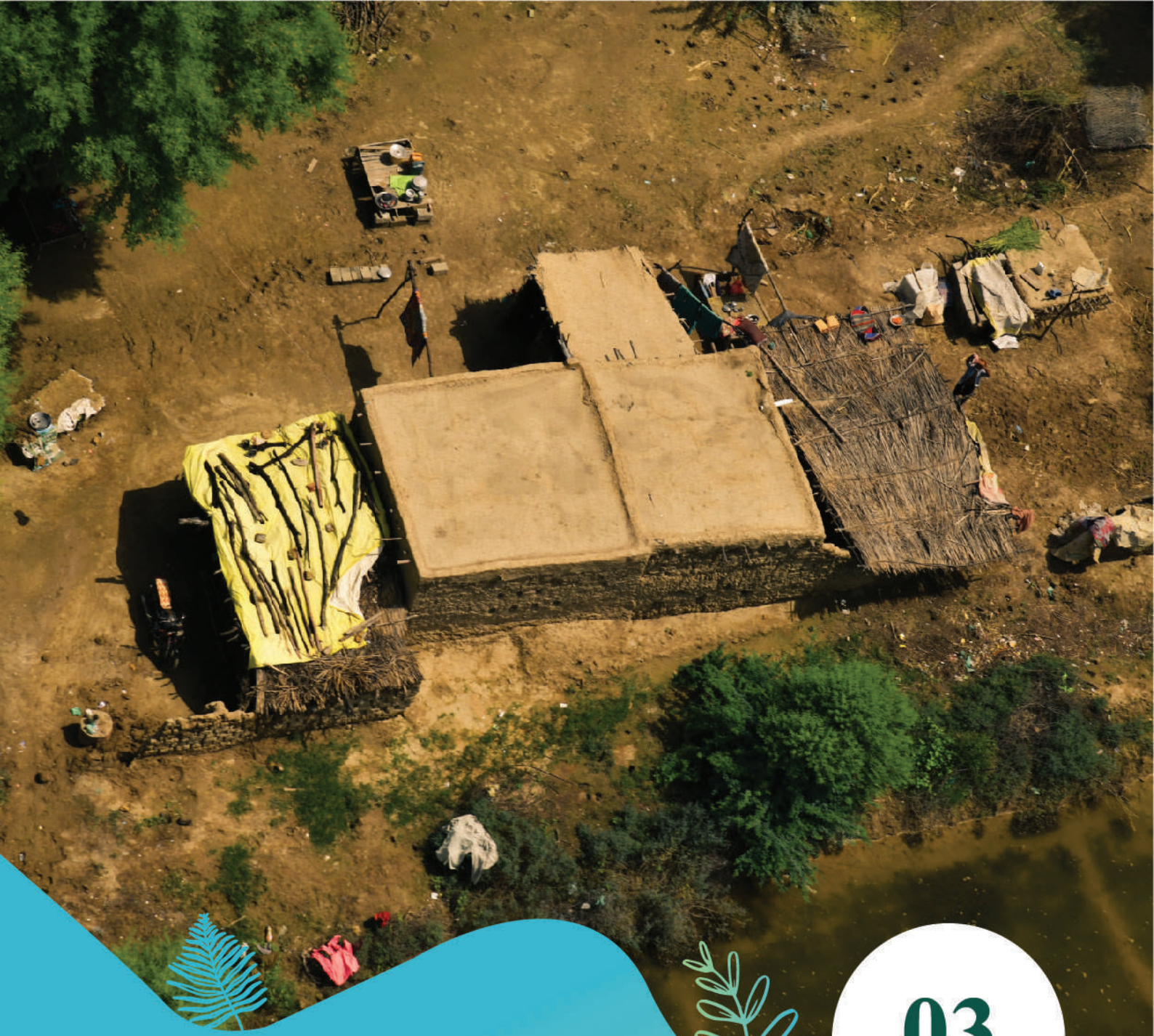




03

Climate Risk Assessment at Provincial, District, and School Levels

Climate Risk Assessment at Provincial, District, and School Levels

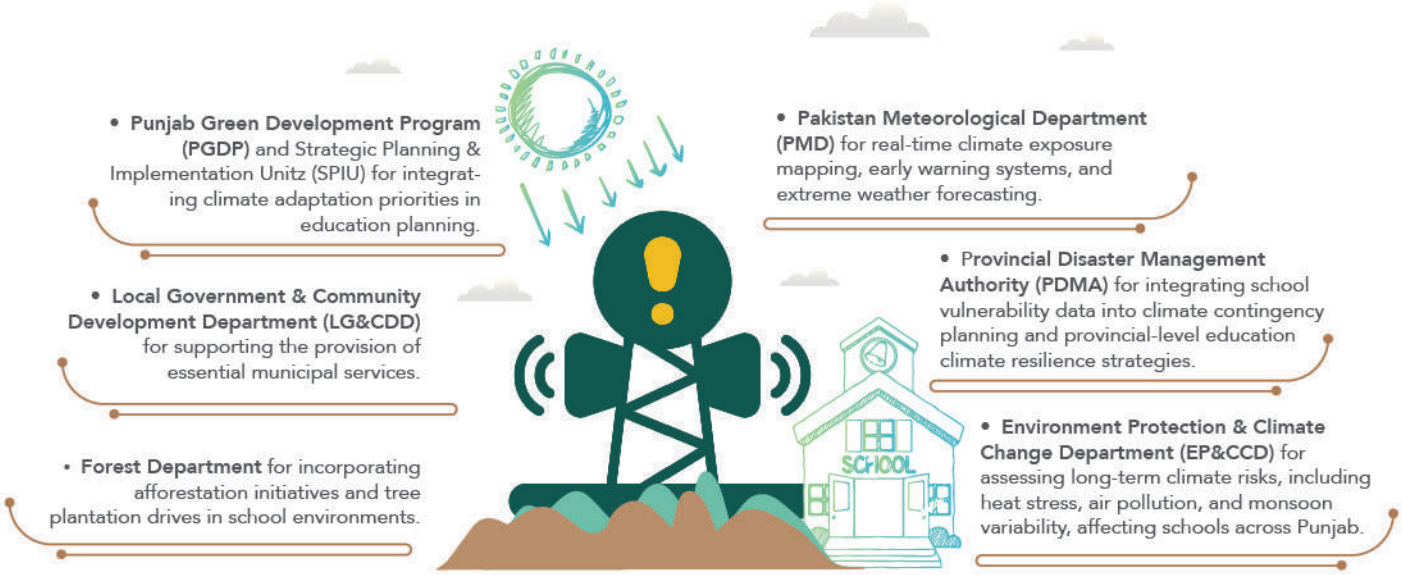
Climate change is increasingly impacting Punjab's school education sector, causing learning disruptions, infrastructure damage, and heightened health risks for students. To ensure a climate-resilient education system, a structured climate risk assessment framework is essential for identifying vulnerabilities, strengthening preparedness, and mainstreaming climate adaptation at multiple levels.

3.1 Multi-Tiered Climate Risk Assessment in Education

A multi-tiered approach will be adopted across provincial, district, and school levels, incorporating risk exposure mapping, climate vulnerability assessments, and early warning mechanisms. This framework will strengthen education sector preparedness and response capabilities. By incorporating risk exposure mapping, climate vulnerability assessments, and early warning mechanisms, this framework will strengthen education sector preparedness and response capabilities.

3.1.1 Provincial-Level Climate Risk Assessment

The School Education Department (SED) will collaborate with various departments to integrate climate risk assessment into education governance. Key partnerships include:



The provincial-level assessment should include:

- Climate Exposure Mapping for Schools, using GIS-based vulnerability mapping to identify schools at risk from heatwaves, floods, smog, and other climate-related hazards.
- Provincial Climate Risk Data Integration, ensuring coordination with PMD, PDMA, and EP&CCD to incorporate scientific climate models into education planning.
- School Infrastructure Resilience Audits, conducting annual assessments of public schools to evaluate structural integrity, ventilation, drainage, and climate preparedness measures.
- Policy Alignment with Climate Action Plans, integrating school risk assessments into Punjab's Climate Change Policy (2024), PDMA Climate Risk Management Plan, and SED's Strategic Education Framework.

3.1.2 District-Level Climate Risk Assessment

District Education Authorities (DEAs) will lead school-based climate risk profiling and resilience planning, in coordination with Deputy Commissioner (DC) Offices. District Climate Resilience Plans for Schools will be developed, categorizing schools based on exposure to climate hazards using PMD district climate data.

3.1.3 School-Level Climate Risk Assessment

Schools will conduct climate vulnerability assessments, implement early warning systems, and develop School Resilience Plans (SRPs). SRPs will include evacuation drills, water conservation strategies, and energy-efficient cooling measures.

International Best Practices in Climate Risk Assessment for Schools

Philippines – School Climate Vulnerability Index (CVI)

The Philippine government developed a School CVI Framework, integrating flood risk mapping and classroom safety audits to categorize schools based on climate hazard levels. Schools in high-risk zones are prioritized for infrastructure retrofitting and climate resilience training. This approach has improved preparedness and reduced school closures due to extreme weather (ADB, 2022).

Bangladesh – Heatwave Resilience in Schools

Bangladesh has implemented a nationwide program to assess classroom ventilation efficiency and student exposure to extreme heat in urban schools. Schools identified with poor ventilation have undergone retrofitting with passive cooling strategies, including increased greenery and shaded structures, significantly reducing classroom temperatures (UNICEF, 2023).

Mozambique – Cyclone-Resilient Schools Index

Mozambique has developed a risk classification system for schools, allowing authorities to implement targeted retrofitting projects and emergency preparedness training. This initiative has strengthened the resilience of schools against climate-induced disasters, ensuring learning continuity during cyclones (World Bank, 2021).

3.2 Climate-Responsive Education Policies & Sector Plans

The integration of climate resilience into Punjab's education system necessitates a strategic policy framework that aligns education sector planning with climate adaptation imperatives. Climate-responsive education policies and plans can help ensure that education systems are better equipped to withstand and recover from climate-related disruptions, ultimately reducing the risk of educational losses and promoting sustainable development. The increasing frequency and intensity of climate-induced challenges underscore the urgency of embedding climate adaptation within education policies, curricula, and institutional governance.

3.2.1 Mainstreaming Climate Resilience in the School Education Sector Plan

The Punjab Education Sector Plan (PESP) will integrate a dedicated climate resilience framework, including:

- Climate risk profiling in education planning
- Climate-smart school infrastructure investments
- Adaptive learning and flexible school calendars
- Climate education and awareness

A. Developing a Climate Resilience Strategy & Action Plan for Schools

A Climate Resilience Strategy and Action Plan will be developed to serve as a guiding document for institutionalizing climate adaptation. The strategy will outline institutional responsibilities, standard operating procedures for climate emergencies, and a financing framework for climate-resilient schools.

i. **Climate Risk Profiling in Education Planning** – Embedding climate vulnerability assessments at the school, district, and provincial levels, ensuring climate risk categorization informs infrastructure investment, curriculum design, and teacher training priorities.

ii. **Climate-Smart School Infrastructure Investments** – Aligning public sector school construction and rehabilitation projects with climate-resilient design principles, ensuring all new school buildings comply with heat-resistant, flood-resistant, and energy-efficient standards.

iii. **Adaptive Learning and Flexible School Calendars** – Institutionalizing climate-responsive academic scheduling, enabling adjustments to school timings during extreme

heatwaves and implementing remote learning strategies during climate-induced school closures.

iv. **Climate Education and Awareness** – Establishing a Climate Change Education and Awareness component within the education sector plan, ensuring structured interventions for climate literacy, sustainability education, and environmental conservation activities across all schools.

v. **Capacity Building of District Education Authorities (DEAs)** – Equipping DEA officials (CEOs, DEOs, DDEOs, and AEOs) with climate adaptation toolkits to lead, guide and implement school-based risk assessments, climate-resilient planning, and teacher preparedness for climate-induced disruptions.

B. Developing a Climate Resilience Strategy & Action Plan for Schools in Punjab

Given the absence of a dedicated policy framework for climate adaptation in Punjab's school education sector, it is imperative to develop a Climate Resilience Strategy and Action Plan to serve as a guiding document for institutionalizing climate adaptation. The proposed strategy should outline:

i. **Institutional Responsibilities for Climate Resilience in Schools:** Defining the role of SED, PMIU, DEAs, Punjab Education, Curriculum, Training, and Assessment Authority (PECTAA), PDMA, EP&CCD, DDMAs, and Local Government Departments in ensuring climate adaptation within schools.

ii. **Standard Operating Procedures (SOPs) for Climate Emergencies in Schools:** Establishing province-wide guidelines for school evacuation, heat stress prevention, air pollution mitigation, and water conservation in response to extreme climate events.

iii. **Financing Framework for Climate-Resilient Schools:** Developing a climate adaptation financing model, ensuring dedicated budget allocations for school climate resilience interventions under the Annual Development Plan (ADP).

iv. **Monitoring and Accountability Mechanisms:** Introducing a School Climate Resilience Scorecard, assessing school compliance with climate adaptation benchmarks, including infrastructure resilience, energy efficiency, and climate literacy integration.

C. Integrating Climate Education into Curricula & Teacher Training

Education is a key driver of long-term climate adaptation. Integrating climate change education into Punjab's curriculum and teacher training frameworks will ensure students develop necessary knowledge and skills.

i. Curriculum Reform for Climate Literacy

The Curriculum & Textbook Wing of PECTAA will integrate climate adaptation themes into school textbooks, embedding climate science, disaster preparedness, and environmental sustainability into subject curricula. Key recommendations include:

- Introducing age-appropriate climate science modules
- Embedding practical environmental education through school-based projects
- Aligning Punjab's school curriculum with international climate education frameworks

ii. Strengthening Teacher Training for Climate Adaptation

Teachers play a critical role in climate education and school resilience planning. The Teacher Training Wing of PECTAA will develop a Teacher Capacity Building Program focusing on climate adaptation skills:

- Providing teacher training modules on climate resilience

- Training school leadership in climate risk mitigation strategies
- Introducing experiential learning methodologies to integrate climate action projects into lesson plans

3.3 Guidelines for Climate-Smart School Infrastructure

Punjab's school education sector faces escalating risks due to climate-induced stressors. Guidelines for climate-resilient school construction and retrofitting will be adopted.

3.3.1 Guidelines for Climate-Resilient School Construction and Retrofitting

These guidelines have been developed in alignment with NDMA's recommendations, emphasizing disaster risk reduction, climate-resilient infrastructure, and emergency preparedness in schools. Drawing from NDMA's insights, the guidelines integrate structural reinforcements, sustainable construction practices, and inter-agency coordination to enhance school safety and educational continuity amid climate challenges.

A. Climate-Resilient Structural Retrofitting & New School Construction

i. Climate Risk-Informed Structural Retrofitting

SED in coordination with relevant departments will conduct vulnerability assessments of existing school infrastructure to identify buildings that require structural reinforcement against climate-induced stressors.

a. Seismic Retrofitting: Strengthening foundations, and shear wall reinforcements, base isolators, and bracing systems in seismic-prone districts (e.g. Rawalpindi, Murree, and Chakwal, etc.) to withstand earthquakes.

b. Storm and Wind-Resistant Structural Upgrades: Installing reinforced roofs, wind-resistant window frames, and impact-resistant shutters to reduce storm-related damage in southern Punjab districts prone to windstorms and cyclonic activity.

c. Flood-Proofing Measures: Raising the plinth level of school buildings, installing waterproof coatings, and using elevated electrical wiring in flood prone districts to prevent damage during floods.

ii. New School Construction: Climate-Resilient Designs

For new school construction, SED will integrate climate-responsive site selection, structural planning, and material sustainability standards.

a. Climate-Smart Site Selection: Schools must be constructed outside flood plains, landslide-prone slopes, and excessive heat zones to minimize climate risks.

b. Wind & Storm Protection: Use of reinforced concrete block structures, wind-resistant roofing, and stormproof windows in areas affected by extreme weather conditions.

c. Integrated Water Management: Adoption of sustainable drainage systems, rainwater harvesting setups, and water-conserving sanitation solutions in all newly constructed schools.

B. Heat & Cold-Resilient School Buildings: Passive Climate Control & Insulation Strategies

i. Heat-Resilient School Infrastructure (For High-Temperature Zones)

With temperatures exceeding 45°C in Punjab's summer months, passive cooling mechanisms must be institutionalized to maintain optimal indoor thermal comfort in classrooms.

a. Cool Roof Technologies: Application of reflective heat-resistant coatings, white-painted rooftops, and rooftop greenery to reduce heat absorption.

b. Ventilated School Designs: Use of cross-ventilated corridors, louvered window placements, and shaded building orientations to enhance airflow and reduce indoor temperatures.

c. Solar-Powered Cooling Systems: Deployment of solar-based air circulation fans, evaporative cooling mechanisms, and battery-backed ventilation units in heat-prone districts.

ii. Cold-Resilient School Infrastructure (For Winter-Prone Districts)

Murree, Rawalpindi, and other high-altitude regions experience sub-zero temperatures and heavy snowfall, requiring targeted insulation-based structural adaptations.

a. Thermal Insulation for Walls & Roofs: Use of double-glazed windows, insulated roof panels, and composite fiber wall materials to prevent heat loss.

b. Eco-Friendly Heating Solutions: Introduction of solar-powered heating systems, biogas-based heating units, and thermal-efficient classroom layouts to reduce reliance on fossil fuel heaters.

c. Snow-Load Resistant Roofing & Drainage Systems: Installation of steep-sloped, load-bearing roof structures, de-icing rain gutters, and water runoff channeling to prevent roof collapses due to accumulated snowfall.

3.3.2 Renewable Energy & Sustainable Infrastructure for Climate-Resilient Schools

Punjab's CM Green Credit Program and Punjab Green Development Program (PGDP) promote solar integration and

renewable energy adoption in public sector institutions. Schools can leverage these initiatives to ensure energy efficiency, self-sufficiency, and carbon footprint reduction.

i. Solar Photovoltaic (PV) Systems & Renewable Energy Solutions

- Deploy on-grid and off-grid solar systems for lighting, fans, and ICT facilities.
- Implement hybrid solar-grids with battery backups and grid connectivity.
- Install solar roof panels and walkway canopies for additional energy generation.
- Use eco-friendly energy-efficient classrooms with LED lighting and smart metering systems.

ii. Passive Solar Heating & Daylight Utilization in New School Construction

- Design classrooms with large south-facing windows for natural heat absorption.
- Use light-colored reflective walls and ceilings to enhance daylight penetration.
- Incorporate solar atriums and skylights for natural lighting.

iii. Climate-Responsive Ventilation & Air Circulation Systems

- Design schools with cross-ventilation oriented designs for natural air circulation.
- Use louvered windows and roof ventilation shafts for improved air movement.
- Establish green walls and tree-shaded courtyards to reduce heat absorption.

iv. Low-Cost Energy Efficiency Solutions for Schools

- Install reflective window films to reduce solar heat gain.
- Use bamboo and straw cooling panels to reduce heat impact.

3.4 Guidelines for Indoor Air Quality (IAQ) and Smog Resilience for Schools

Punjab experiences severe air pollution and smog episodes, impacting school attendance, student health, and learning outcomes.

i. Climate-Responsive IAQ and Smog-Resilience Guidelines

- Implement enhanced natural and mechanical ventilation systems.
- Use air filtration and purification solutions, such as HEPA filters and activated carbon filtration.
- Install smog-resistant windows and protective barriers.

ii. Low-Cost IAQ & Smog Resilience Solutions

- Use passive filtration and natural air purification methods, such as jute curtains and wet fabric screens.
- Implement rainwater-based air cleansing systems.
- Adopt smart school scheduling during smog seasons.

iii: Flood-Resistant School Designs & Drainage Solutions

Punjab's school infrastructure is vulnerable to climate-induced flooding.

a. Flood-Resilient School Design Principles

- Select safe sites for school construction, avoiding

flood-prone zones.
- Design schools with elevated foundations and flood-proofing materials.
- Incorporate emergency flood adaptations and evacuation routes.

b. Retrofitting Measures for Existing Schools
- Implement waterproofing and structural reinforcements.
- Elevate electrical wiring and critical infrastructure.
- Install rainwater harvesting systems.

c. Drainage Solutions for Schools in Flood-Prone Areas
- Develop sustainable urban drainage systems (SUDS) for schools.
- Implement flood-resistant sanitation and wastewater systems.
- Implement rainwater harvesting (RWH) systems.
- Use water-efficient fixtures and greywater reuse systems.
- Conduct regular water safety testing and monitoring.

c. Climate-Smart Sanitation Infrastructure
- Construct flood-resistant latrines and waste disposal systems.
- Implement water quality monitoring and health protection measures.
- Develop eco-friendly school sanitation solutions.

d. Sustainable Sanitation in Schools
- Implement low-cost sanitation solutions, such as bio-composting latrines.
- Provide handwashing facilities and hygiene education.

- Engage community-based water drainage networks.

iv. Clean Drinking Water, Conservation, and Sustainable Sanitation Practices

Punjab faces significant challenges related to water scarcity, poor sanitation infrastructure, and inadequate hygiene facilities.

a. Provision of Clean Drinking Water
- Install water filtration and purification systems.
- Esta blish safe water storage and distribution mechanisms to prevent contamination.
- Conduct regular water quality testing to monitor and maintain hygiene standards.

b. Water Conservation Strategies for Schools
- Integrate menstrual hygiene management (MHM) facilities and education.

e. Waste and Wastewater Management in Schools
- Implement solid waste management and recycling programs.
- Develop school-based wastewater treatment and disposal systems.
- Engage community-based waste management initiatives.

v. Greening of Schools, Schoolyards, and Afforestation Efforts

Greening school environments is vital for enhancing climate resilience, improving air quality, reducing heat stress, and

promoting environmental consciousness.

a. Climate-Responsive Tree Plantation Strategies for Schools

- Select indigenous and climate-resilient tree species.
- Establish school-based micro-forests and urban afforestation models.
- Integrate tree plantation with CM Green Credit Program and afforestation initiatives.

b. Greening of Schoolyards and Eco-Friendly Landscaping

- Implement permeable pavements and green walkways.
- Establish shaded outdoor learning spaces and green roofs.
- Use vertical gardens and climbers for urban schools.

vi. Community Engagement & Student-Led Afforestation Initiatives

To promote inclusive and community-driven greening of schools, the following initiatives will be implemented:

a. School Afforestation Drives & Green Clubs

- Form student-led "Green Clubs/Climate Clubs" to oversee tree planting, waste management, and school greenery initiatives.
- Host annual afforestation drives, engaging students and parents in tree planting activities.

b. Parent-Teacher Collaboration for Long-Term Maintenance

- Engage School Management Councils (SMCs) in developing localized tree care and watering plans.
- Involve parents and students in adopting trees and supporting their growth through seasonal care and protection.

c. Integration with Punjab Green Development Program (PGDP)

- Collaborate with PGDP, Forest Department, and EP&CC to mobilize funding for large-scale urban greening projects.
- Conduct awareness campaigns on climate resilience, sustainable landscaping, and biodiversity conservation as part of schools' annual activity calendars.

3.5 Risk Assessment for Epidemic Preparedness

This assessment is aimed at identifying potential risks and vulnerabilities in schools across Punjab, related to epidemic outbreaks. It will provide a comprehensive framework for schools to prepare for and respond to epidemics. Key components of this framework will include:

- School Infrastructure: Availability and condition of school buildings, classrooms, and facilities.
- Student and Staff Health: Availability of healthcare facilities, student and staff health awareness, and vaccination coverage.
- Hygiene and Sanitation: Availability and maintenance of clean water, sanitation facilities, and waste management.
- Communication and Coordination: Effectiveness of communication systems, emergency response plans, and coordination with local health authorities.
- Student and Staff Behavior: Awareness and adherence to epidemic prevention measures, such as hand hygiene and social distancing.

Based on the risk assessment, the following measures will be put in place to mitigate the risks and ensure a safer and healthier learning environment for students and staff.

- Develop School Epidemic Preparedness Plans: Create and regularly update plans outlining procedures for epidemic prevention, response, and recovery.
- Promote Student and Staff Health: Organize health awareness campaigns, provide vaccination facilities, and ensure access to healthcare services.
- Improve Hygiene and Sanitation: Ensure availability and maintenance of clean water, sanitation facilities, and waste management.
- Establish Communication and Coordination Systems: Develop effective communication systems, emergency response plans, and coordination with local health authorities.

04

School-Based Climate Resilience Plannning and Preparedness

School-Based Climate Resilience Plannning and Preparedness

Schools serve as the foundation of a climate-resilient education system, playing a crucial role in equipping students, educators, and communities with the knowledge, preparedness, and institutional capacity to respond to climate challenges. As spaces of learning, safety, and social cohesion, schools must be climate-adaptive, ensuring uninterrupted learning, infrastructural resilience, and proactive engagement in risk reduction efforts. The School-Based Climate Resilience Planning and Preparedness Framework establishes a structured mechanism for integrating climate risk assessments, emergency response protocols, and community-based adaptation strategies within school operations. It provides schools with a systematic approach to assessing vulnerabilities, developing preparedness measures, and fostering institutional coordination, ensuring that climate resilience is embedded at all levels, from policy planning to classroom implementation.

Climate adaptation and resilience in schools will adopt a multi-tiered approach, integrating the roles of the School Education Department (SED), District Education Authorities (DEAs)/CEOs, District Education Officers, Assistant Education Officers (AEOs), Headteachers/Principals, School Management Committees (SMCs), and local communities. The Provincial Guidelines for Climate-Resilient Schools establish an institutional framework where schools are embedded into district and provincial-level climate adaptation strategies. The guidelines position the schools not only as beneficiaries of climate resilience strategies but as active agents in shaping sustainable, risk-informed education systems.

4.1 Developing School Resilience Plans

Schools serve as the first line of defence against climate-induced disruptions, necessitating a structured approach to risk assessment, emergency preparedness, and resilience planning. School Resilience Plans (SRPs) provide a systematic framework for integrating climate risk awareness, adaptive operational strategies, and participatory preparedness measures within school governance structures. The formulation of these plans is to be led by the respective Headteachers, supported by the Assistant Education Officers (AEOs) with oversight from District Education Officers (DEOs) and Chief Executive Officers of (DEAs). The School Resilience Plan (SRP) will be a structured framework designed to assess, mitigate, and respond to climate risks at the school level. It will serve as a guiding document for schools to integrate climate preparedness, response strategies, and recovery mechanisms into daily operations.

4.1.1 Key Components of a School Resilience Plan

Each School Resilience Plan (SRP) will include:

i. School Based Climate Risk Mapping and Hazard Identification: Under the overall guidance of District Education Authorities (DEAs), the DEOs with relevant AEOs, will conduct school-level climate risk mapping with Headteachers/Principals to assess exposure to hazards such as heatwaves, floods, smog, and extreme weather events. Assess school infrastructure vulnerabilities, including risks associated with structural safety, waterlogging, indoor air quality, and energy sufficiency. The assessment will also utilize district-level climate risk data from PDMA and the Environment Protection & Climate Change Department (EP&CC).

ii. Emergency Preparedness and Evacuation Protocols: Each school will develop context-specific emergency preparedness plans, detailing evacuation routes, assembly points, fire safety measures, flood response actions, and first-aid protocols. AEOs will coordinate with DEOs to ensure alignment with district-level disaster preparedness strategies.

iii. Early Warning Systems and Communication Strategies: Early warning dissemination will be channeled through the DEAs, which will coordinate with:

a. Deputy Commissioner Office/DDMA, and Punjab Disaster Management Authority (PDMA) for climate alerts.
b. Rescue 1122 for emergency response coordination.
c. Environment Protection and Climate Change Department and PMS for heatwave and air quality warnings.
d. Training of teachers and students in basic first aid, emergency response coordination, and risk-informed decision-making
e. Local Government & Community Development (LG&CD) Department for drainage and sanitation support.

Schools will receive climate risk advisories through SMS alerts, official circulars, and SMC meetings, ensuring that administrators, teachers, and students are informed of impending climate threats.

iv. Climate-Adaptive School Timetables & Learning Continuity:

a. As per the policy guidance from SED, adjusting school hours during extreme climate events to reduce student exposure to heatwaves, smog, and flooding hazards.
b. Implementation of hybrid learning strategies, including remote learning and the establishment of emergency education centres in collaboration with local authorities, ensuring continuity of learning during school closures.
c. Provision of flexible attendance policies and alternative curriculum delivery modes (recorded lessons, community learning spaces) to mitigate learning loss.

v. Community Engagement and Role of SMCs: SMCs will play a crucial role in integrating local knowledge and resources into school resilience plans. AEOs will establish markaz-level coordination with SMCs, parents, and community members to:

a. Organize climate awareness campaigns.
b. Conduct parent-teacher climate preparedness workshops.
c. Mobilize local resources for school retrofitting, tree plantation, and water conservation initiatives.

vi. Establishing Climate/Green Clubs in Schools: Each school will establish a Climate/Green Club, led by teachers and student volunteers, to:

a. Conduct regular school risk assessments.
b. Implement eco-friendly school initiatives such as tree planting, waste reduction, and rainwater harvesting.
c. Organize climate resilience drills to familiarize students with emergency procedures.

vii. Periodic Review and Simulation Drills: School Resilience Plans will be annually reviewed under the supervision of DEOs, AEOs, and SMCs. Schools will conduct:

a. Annual climate resilience audits.
b. Bi-annual emergency response drills (for floods, heatwaves, smog, and earthquakes).
c. Feedback sessions with students, parents, and community members to update and refine school resilience strategies.

viii. Institutionalizing School Resilience Planning in Punjab: School Education Department (SED), Punjab, will issue an official School Resilience Planning Framework, aligning school-based climate resilience efforts with:

a. The Punjab Climate Change Policy and Action Plan (2024).
b. The Punjab School Education Sector Plan.

c. PDMA's Provincial Disaster Risk Management Framework.
d. International commitments under the Sendai Framework and Paris Agreement.

By embedding climate resilience planning at the school level,

Punjab's education system will ensure proactive adaptation, enhanced preparedness, and greater institutional resilience, thereby safeguarding students, teachers, and learning environments from climate-induced disruptions. A model, school-specific Climate Resilience Plan is enclosed at **Annexure-A**

4.2 Early Warning Systems and Communication Strategies

Efficient communication and early warning dissemination play a critical role in ensuring school safety and preparedness. Schools must be integrated with district-wide early warning systems (EWS) and maintain internal communication mechanisms to provide timely alerts and ensure swift response coordination.

i. Integration of Schools into Provincial and District Early Warning Systems

a. DEAs and Schools shall be linked with DDMAs/DC Office, PMD and PDMA to receive real-time climate alerts.
b. DEAs will be responsible for disseminating warnings to school leadership through AEOs, ensuring timely action.
c. Integrating school climate risk indicators within Punjab's provincial disaster risk management framework, enabling proactive closure advisories and contingency planning.

ii. School-Level Communication Protocols for Climate Emergencies

a. Implementation of school-based emergency broadcast systems such as mobile alerts through WhatsApp groups, and public address systems to ensure real-time dissemination of safety instructions.
b. Establishment of climate risk notice boards and information boards within school premises to ensure continuous awareness and preparedness.
c. Development of response protocols for SMCs and parental engagement, ensuring that parents, caregivers, and local communities remain informed and actively contribute to school safety efforts

4.3 Strengthening School Management Committees (SMCs) and Parent Engagement in Climate Resilience, Preparedness, and Response

School Management Committees (SMCs) serve as the cornerstone of school governance and community engagement, playing a critical role in ensuring that schools are adequately prepared for climate-induced risks. As mandated by the SMC Policy 2024, SMCs hold responsibility for school planning, infrastructure maintenance, and resource utilization, making them key stakeholders in implementing climate resilience strategies at the school level. Given their role, SMCs will play a key role in integrating climate adaptation, preparedness, and emergency response measures into school governance frameworks to enhance the resilience of learning environments.

i. Role of SMCs in Climate Adaptation Planning

a. SMCs in consultation with the Headteacher integrate climate risk assessments, school safety planning, and adaptation strategies in the annual school development plans

b. Ensuring that maintenance budgets prioritize climate-smart interventions, including infrastructure retrofitting, flood mitigation measures, improved ventilation for indoor air quality, and enhanced water conservation mechanisms.

c. Facilitating community participation in energy efficiency projects, including solar energy adoption, water conservation efforts, and implementation of rainwater harvesting systems.

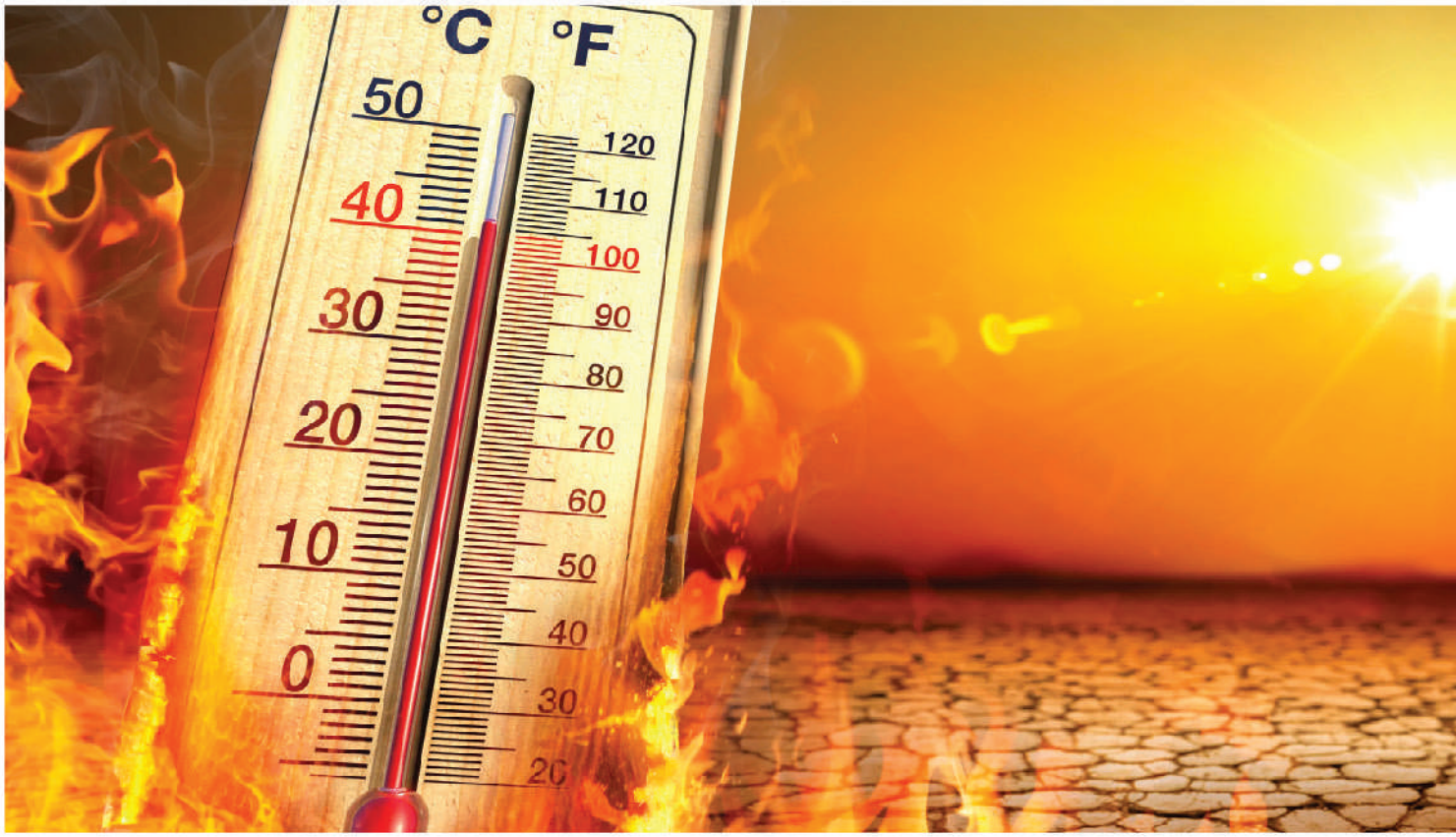
ii. Role of SMCs in Climate Preparedness and Emergency Response

a. Headteachers in consultation with SMCs must develop and periodically update School Resilience Plans, in coordination with Assistant Education Officers (AEOs) and relevant district authorities.

b. Support school leadership for climate preparedness drills, including heatwave response measures, flood evacuation protocols, and smog-related school closure contingency planning.

c. Ensuring that early warning as and when received are effectively responded to and communicated in the community.

d. Coordinating with parental networks to establish community-led school safety and climate adaptation initiatives, including school-based first aid response teams, emergency



shelter preparedness, and contingency learning spaces for displaced students.

e. Facilitating rapid response coordination with local government authorities, particularly for waste management, water-logging prevention, and emergency evacuation measures.

iii. Community Engagement in Climate-Smart School Governance

a. Enhancing parental awareness of climate change impacts on education through structured information sessions, school-based awareness campaigns, and parent-teacher collaboration on climate action strategies.

b. Encouraging volunteer-based community projects in schools, such as afforestation drives, green infrastructure maintenance, and sustainable waste management initiatives.

c. Advocating for local resource mobilization, including public-private partnerships to improve climate adaptation infrastructure, school retrofitting, and access to sustainable energy solutions.

A climate-resilient school system in Punjab necessitates a comprehensive, proactive, and structured approach to climate adaptation and preparedness at the school level.

Through the development of School Resilience Plans (SRPs), the integration of early warning systems, and the empowerment of School Management Committees (SMCs) and parental networks, schools will be positioned as critical nodes in the province's climate resilience strategy.

The School Education Department (SED), Punjab, in coordination with the Punjab Disaster Management Authority (PDMA), the Environment Protection and Climate Change Department (EP&CC), and other relevant stakeholders, will ensure that schools are fully integrated into climate risk management systems. By embedding climate-responsive school governance, risk-based infrastructure planning, and community-driven adaptation strategies, Punjab's schools will not only be protected from climate-induced disruptions but will also serve as hubs for climate resilience and community preparedness.

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05

Governance And Implementation

Governance And Implementation

Governance and institutional coordination ensure a structured and collaborative approach to climate resilience by aligning policies, enhancing interdepartmental cooperation, and integrating climate adaptation into the education sector's planning and decision-making processes.

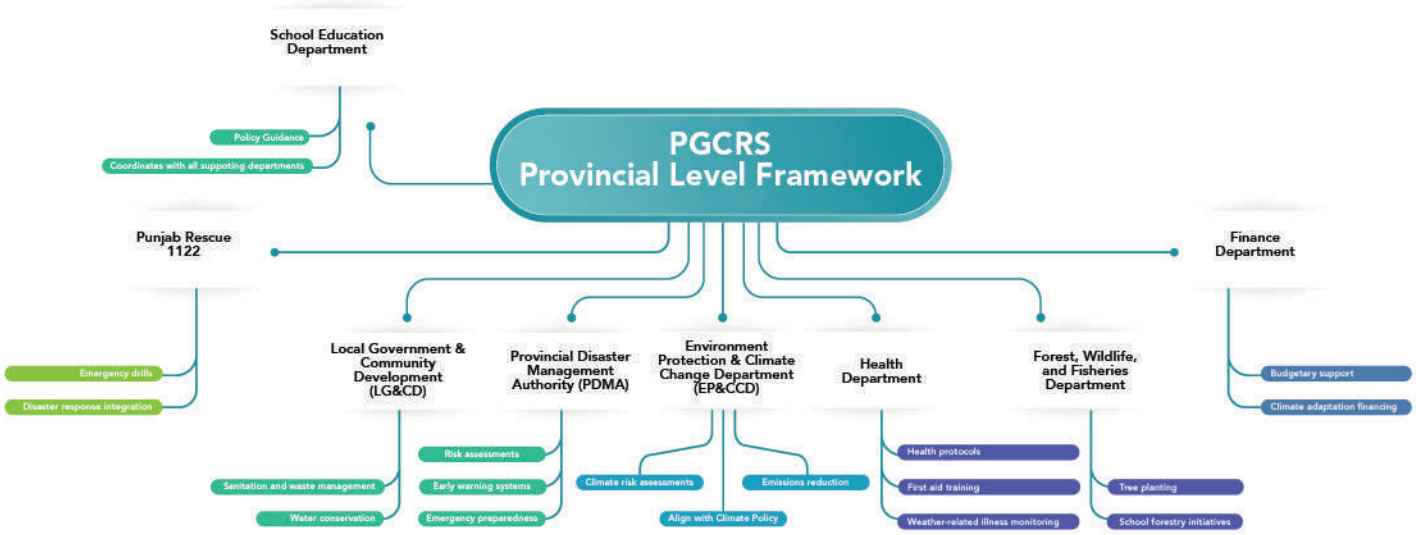
5.1 Provincial and District-Level Roles and Linkages

Ensuring climate resilience in Punjab's school education system requires a structured approach.

A. Provincial Level Framework

i. School Education Department (SED): Lead implementing department, ensuring climate resilience strategies are integrated into the Punjab Education Sector Plan. SED will provide policy guidance, develop capacity-building programs, and engage with key government departments.

ii. Environment Protection & Climate Change Department (EP&CCD): Provide technical guidance on climate risk assessment, green infrastructure, and emissions reduction strategies. EP&CCD will also support alignment with Punjab Climate Change Policy & Action Plan (2024).



iii. Provincial Disaster Management Authority (PDMA): Collaborate on climate risk assessments, early warning systems, and emergency preparedness. PDMA will also provide technical support in emergency preparedness and school resilience planning.

iv. Local Government & Community Development (LG&CD) Department: Ensure proper sanitation, drainage, and solid waste management in school premises. LG&CD will also facilitate water conservation and rainwater harvesting initiatives.

v. Health Department: Provide medical assistance, first aid training, and health advisory protocols for extreme weather conditions. The Health Department will also support school-based health monitoring for heat stress, respiratory illnesses, and vector-borne diseases.

vi. Forest, Wildlife, and Fisheries Department: Support afforestation and tree-planting initiatives in and around schools. The department will provide technical guidance on tree plantation drives and integrate school-based forestry initiatives under Punjab's afforestation programs.

vii. Punjab Rescue 1122: Provide emergency response training, facilitate emergency drills, and integrate schools into district-level disaster response planning.

viii. Finance Department: Ensure financial sustainability for climate adaptation in schools, incorporating climate resilience financing within the provincial education budget.

B. District Level Framework

i. Deputy Commissioner (DC) Office: Provide overarching supervisory and operational guidance for district and school-based climate resilience efforts. The DC will supervise climate emergency preparedness planning, ensure interdepartmental coordination, and issue district-level advisories.

ii. District Education Authorities (DEAs): Lead implementing body for school-based climate resilience planning and preparedness. DEAs will develop District Climate Resilience

Plans for Schools, ensure development of School Resilience Plans, and coordinate with sectoral departments for technical assistance.

iii. Assistant Education Officers (AEOs) & School Leadership: Supervise development and implementation of School Resilience Plans, guide Headteachers and School Management Committees, and ensure Climate Clubs remain active.

iv. Environment Protection & Climate Change (EP&CC) District Offices: Provide technical support and guidance on air quality management, pollution control, and sustainable infrastructure.

v. Local Government & Community Development (LG&CD) Department/Municipal Administration: Ensure sustainability of municipal services impacting school environments, provide sanitation, drainage, and solid waste management services, and support afforestation and school greening efforts.

vi. Health Department, (District Health Authorities): Support DEAs through school-based medical screenings, first aid kits, and health advisories.

vii. Rescue 1122 (Emergency Response Services): Ensure schools are prepared for climate-induced emergencies, providing emergency response training and facilitating emergency drills.

5.2 Institutional Coordination Framework

A formalized coordination structure is necessary to align efforts across provincial and district tiers.

A. Provincial Climate Resilient Schools Steering Committee (PCRSSC)

Constituted to provide policy direction, inter-departmental coordination, and strategic oversight of climate resilience in the School Education sector. The committee will include representation from key departments.

B. District Climate Resilient Schools Coordination Committee (DCRCC)

Established under the leadership of the Deputy Commissioner (DC), with the CEO, DEA as Secretary. The committee will ensure implementation of school-based climate resilience plans, localized risk assessments, disaster preparedness, and adaptation strategies at the district level.

5.3 Monitoring and Evaluation Mechanisms

A robust Monitoring and Evaluation Framework is necessary to track the integration of climate resilience interventions in Punjab's schools. This framework will facilitate continuous assessment, performance benchmarking, and refinement of climate resilience efforts.

5.3.1 Indicators for Measuring Climate Resilience in Schools

A Climate Resilient Schools Performance Framework (CRSPF) will be developed, focusing on key performance indicators (KPIs) to assess climate adaptation and risk mitigation efforts at the school level. These indicators will facilitate evidence-based planning, resource allocation, and performance benchmarking across the province.

i. School Infrastructure Resilience Indicators

- Proportion of schools retrofitted with climate-resilient infrastructure, including elevated foundations, reinforced structures, and flood-resistant designs
- Implementation of indoor air quality (IAQ) measures and smog resilience strategies, including improved ventilation and air purification mechanisms
- Availability of safe drinking water and functional sanitation facilities, incorporating climate-proofing measures
- Percentage of schools implementing rainwater harvesting (RWH) systems and water conservation initiatives

ii. Climate Preparedness & Response Indicators

- Proportion of schools with operational School Resilience Plans (SRPs) integrating climate risk assessments, hazard mapping, and emergency drills
- Percentage of schools integrated with provincial and district-level Early Warning Systems (EWS)
- Schools conduct annual climate emergency drills, including heatwave, flood, smog, and earthquake response drills
- Number of climate emergency preparedness training sessions conducted for school leadership and staff

iii. School Governance & Institutional Preparedness Indicators

- Percentage of schools with functional School Management Committees (SMCs) actively engaged in climate adaptation planning
- Establishment and activity level of Climate/Green Clubs in schools, promoting student-led climate action initiatives
- Integration of climate resilience indicators into school performance evaluation criteria

iv. Community Engagement & Awareness Indicators

- Proportion of schools conducting parental awareness campaigns on climate adaptation and emergency preparedness
- Participation rate of students and parents in school-level climate resilience activities, fostering community engagement and ownership

5.3.2 Data Collection, Reporting, and Transparency in Climate Adaptation Efforts

The Programme Monitoring & Implementation Unit (PMIU),

SED, will be the central body for data collection, analysis, and reporting on climate resilience indicators. The Annual School Census (ASC) will be expanded to include climate risk indicators, enabling a data-driven approach to climate resilience planning.

i. School-Level Data Collection

- Headteachers and Assistant Education Officers (AEOs) will oversee school-level data collection and submit reports to respective District Education Officers (DEOs)
- District Education Authorities (DEAs) will aggregate school climate risk data and prepare district performance reports

ii. District & Provincial-Level Data Aggregation & Reporting

- DEAs will consolidate climate resilience data at the district level and submit periodic reports to SED and PMIU
- PMIU will establish a centralized digital reporting platform to track climate adaptation strategies across Punjab's schools
- The Provincial Climate Resilient Schools Steering Committee (PCRSSC) will conduct bi-annual review of school climate resilience performance and approve annual province-wide progress reports

iii. Transparency

- Annual Climate Resilient Schools Status Report will be published by SED Punjab to ensure transparency in adaptation efforts
- Development of District School Resilience Scorecards in the first implementation phase, followed by school-level scorecards in the second phase, to facilitate informed decision-making and performance benchmarking.

06

Capacity Building and Awarness

Capacity Building and Awarness

Ensuring climate resilience in school education sector requires a comprehensive approach to capacity building, training, and awareness-raising. Education managers at all levels, school leaders, and teachers must be equipped with knowledge, skills, and resources to integrate climate-responsive learning and preparedness into daily school operations.

6.1 CAPACITY BUILDING AND UPSKILLING FOR EDUCATION MANAGERS AND SCHOOL LEADERS

District education managers and school leaders play a pivotal role in shaping school-based climate adaptation strategies.

i. Training for Education Managers

Education managers will be trained on:

- Understanding climate risks and education sector impacts, including the effects of extreme weather events on school safety and learning outcomes
- School education and climate change, focusing on Punjab's Climate Change Policy and Action Plan (2024)
- Climate-informed school planning and policy implementation, ensuring that climate adaptation is embedded within education sector planning
- Climate-resilient infrastructure planning, including retrofitting strategies to enhance school buildings' heat resistance and flood resilience
- Leadership and management in climate adaptation, strengthening interdepartmental coordination and response mechanisms

ii. Training for School Leaders

School leaders will be trained on:

- Climate-smart school management, integrating climate resilience measures into school development planning
- Disaster preparedness and emergency response, conducting school-based climate risk assessments and developing School Resilience Plans (SRPs)
- Student and community engagement, establishing Climate/Green Clubs and fostering environmental stewardship among students
- School climate data and reporting, tracking climate resilience indicators through school-based monitoring systems

6.2 TEACHERS PROFESSIONAL DEVELOPMENT FOR CLIMATE RESILIENCE

Teachers play a fundamental role in fostering climate awareness and equipping students with the scientific knowledge, problem-solving skills, and environmental responsibility required to address climate challenges.

i. Climate Change Awareness and Pedagogical Training

Teachers will receive training on climate science, adaptation strategies, and the critical role of schools in fostering climate resilience. The training will equip educators with practical classroom strategies for integrating climate education into their teaching methodologies.

ii. Climate-Responsive Teaching Methods

Teachers will be trained in experiential learning approaches, including field-based activities, nature walks, and school garden initiatives, enabling students to engage with climate concepts in a hands-on manner.

iii. Integration of Climate Change into Subject-Specific Pedagogy

Grade	Key Climate Change Topics
Grades 1-3	Basics of weather, seasons, and environmental responsibility.
Grades 4-5	Impact of pollution, deforestation, and conservation practices.
Grades 6-8	Climate zones, greenhouse gases, and disaster preparedness.
Grades 9-10	Climate adaptation strategies, renewable energy, and sustainable cities.
Grades 11-12	Global climate policies, economic impacts, and mitigation strategies.

Teachers will be trained to deliver age-appropriate climate education, integrating climate change concepts into subject-specific pedagogy across different grade levels.

iv. Climate Adaptation and School-Based Initiatives

Teachers will be trained to lead climate-resilient school projects that promote sustainability and resource conservation, including waste reduction strategies, water conservation techniques, and the adoption of solar energy solutions within schools.

6.3 Capacity Building Implementation Strategy

The capacity-building framework will be implemented in a phased approach to ensure systematic integration of climate education and resilience-building measures across Punjab's education sector.

The framework is proposed to be sequentially, in three distinct phases, as outlined below:

Proposed Phased Implementation Plan

Phase	Timeline	Key Implementation Actions
Phase 1: Short-Term	2025-26	Development of climate change training modules for teachers and school leaders. Pilot implementation of teacher training programmes focused on integrating climate education into classroom instruction. Initial s ensitization of school leadership on climate-smart school management and governance.
Phase 2: Medium-Term	2026-27	Expansion of teacher training programmes across Punjab, ensuring climate education is systematically integrated into professional development initiatives. Strengthening of climate resilience indicators within school governance frameworks. Institutionalization of school-level adaptation measures, including risk assessments and resilience planning.
Phase 3: Long-Term	2028 & Beyond	Comprehensive revision of the national curriculum and textbooks to embed climate change themes across subject areas. Establishment of a sustainable teacher training programme on climate adaptation, ensuring ongoing professional development in climate-responsive teaching methodologies. Consolidation of school and district-level climate resilience mechanisms for long-term sustainability.

6.4 Climate Change And Curriculum

The integration of climate change education into Punjab's school curriculum is essential for equipping students with the knowledge, critical thinking skills, and adaptive strategies necessary to respond to climate challenges.

i. Core Climate Change Integration in Curriculum & Supplementary Materials

The Curriculum Wing of PECTAA will identify key climate change topics for structured inclusion across core subjects, including climate science, disaster preparedness, and environmental sustainability.

a. Foundational Climate Change Concepts

The following core themes are recommended for inclusion in Punjab's school curriculum:

1. Climate Science & Fundamentals

(i) Understanding weather vs. climate, global warming, and the greenhouse effect.

(ii) Causes and consequences of rising global temperatures.

(iii) Punjab's climate trends, historical changes, and future projections.

2. Punjab's Climate Challenges & Local Environmental Risks

(i) Smog, air pollution, and its effects on health & education.

(ii) Heatwaves, temperature rise, and its impact on school safety & learning outcomes.

(iii) Water scarcity, floods, and climate-induced disasters affecting schools & communities.

3. Sustainable Resource Management & Climate Action

(i) Water conservation (rainwater harvesting, sustainable sanitation practices).

(ii) Afforestation, urban greening, and tree plantation initiatives in schools.

(iii) Introduction to renewable energy & energy-efficient school infrastructure.

4. Climate Adaptation & Individual Responsibility

(i) Community-based climate resilience and local adaptation strategies.

(ii) The role of students in waste reduction, afforestation, and sustainable practices.

(iii) Integrating eco-friendly habits into daily school life (recycling, reducing carbon footprint).

b. Supplementary Materials

In order to enhance learning, PECTAA will also develop supplementary materials such as:

(i) Student-friendly climate guides and interactive workbooks.

(ii) School-based project modules on climate adaptation & green initiatives.

(iii) Audio-visual learning aids (animations, short documentaries on Punjab's climate resilience).

(iv) Experiential learning projects such as waste management, school greening, and urban farming.

ii. Framework for Climate Change Integration in Curriculum

The curriculum revision will be implemented progressively to align with national education reforms while ensuring the immediate integration of climate education through supplementary materials.

The implementation will be executed in three phases, as outlined below:

6.5 Awareness Campaigns, Co-Curricular Activities, and Climate Clubs

i. Awareness Campaigns

Schools will conduct awareness campaigns under the guidance of Head Teachers, AEOs, and SMCs to engage students, teachers, and communities on climate change issues. These campaigns will include:

- Poster & Slogan Competitions focusing on themes such as air pollution reduction, afforestation, and climate resilience
- Environmental Quizzes and Games on climate science, sustainability, and disaster preparedness to educate students and promote critical thinking

Phase	Timeline	Key Implementation Actions
Phase 1: Immediate Implementation	2025-2026	Development of supplementary materials aligned with the existing curriculum to introduce foundational climate concepts. Training programmes for teachers on integrating climate topics into lesson plans, ensuring their effective delivery in classrooms. Pilot implementation of climate awareness initiatives in select school s to assess engagement and learning outcomes.
Phase 2: Medium-Term	2027-2029	Gradual incorporation of core climate topics into Science, Geography, and Social Studies textbooks, embedding climate education within the mainstream curriculum. Capacity-building initiatives for curriculum designers and textbook authors to ensure pedagogical coherence and subject integration. Development of digital learning tools and classroom resources to support interactive and technology -driven climate education.
Phase 3: Long Term	2030 & Beyond	Full-scale curriculum revision to embed climate education as a core cross -cutting theme across all relevant subject areas. Integration of experiential learning and project -based sustainability initiatives to promote hands-on, practical engagement with climate issues. Development and institutionalization of Punjab's first 'Climate-Resilient Schools Education Framework' to establish long-term policy direction and systemic implementation of climate-responsive education.

• Tree Plantation & Clean-Up Drives in collaboration with the Forest Department and Local Government to promote environmental stewardship
• School-Based Recycling & Composting initiatives with the support of the LG&CD Department to reduce waste and promote sustainability
• School Energy Conservation Programs to reduce energy consumption and promote sustainable energy practices
• Climate Leadership and Student Engagement:
• Student-Led Climate Awareness Workshops to educate students on climate change issues and promote leadership skills

• Environmental Exhibitions and Science Fairs organized by DEAs to showcase student-led sustainability projects and climate adaptation innovations

ii. Co-Curricular Activities on Environmental Sustainability

Co-curricular activities will provide hands-on engagement opportunities, reinforcing climate resilience through practical environmental initiatives:
• School-Based Sustainability Initiatives:
• Eco-Friendly School Gardens & Greenhouses to promote biodiversity and sustainable gardening practices
• Water Conservation & Sanitation initiatives to reduce water waste and promote hygiene awareness
Community Engagement & Public Awareness initiatives to engage parents, local communities, and stakeholders on climate change issues
• Inter-School Climate Resilience Competitions to promote healthy competition and innovation in climate resilience initiatives

iii. Climate Clubs in Schools

Climate Clubs will provide a unique opportunity for students to take ownership of climate action and become leaders in sustainability:
• Conducting energy audits, implementing recycling programs, and designing sustainable gardens to promote

hands-on learning and innovation

- Raising awareness about climate change, organizing events and campaigns, and collaborating with local communities to promote sustainability and environmental stewardship
- Fostering a sense of community and social responsibility, empowering students to become climate champions and drive positive change in their schools and beyond.

07

Financing Climate-Resilient Schools

Financing Climate-Resilient Schools

Provincial funding for climate adaptation in schools is essential for supporting climate-resilient infrastructure, education, and community engagement initiatives. Ensuring climate resilience in Punjab's schools requires a sustainable financing strategy integrating public sector allocations, climate finance mechanisms, private sector investment, and support from development partners.

i. Funding Mechanisms

Provincial funding can be provided through various mechanisms, including:

- Budgetary Grants for schools and provincial education departments to support climate adaptation initiatives
- Subsidies for schools to support the design, construction, and maintenance of climate-resilient infrastructure
- Punjab Green Development Program (PGDP) for financing renewable energy integration, water conservation projects, and afforestation initiatives in schools
- CM Punjab Green Credit Program (PGCP) for creating incentives for schools to implement carbon sequestration, tree plantations, and water conservation measures
- Low-interest Loans for schools and provincial education departments to support climate adaptation initiatives

ii. Eligibility Criteria

Eligibility criteria for provincial funding may include:

- School location in climate-vulnerable areas or areas with high climate-related risk
- Climate adaptation plans or strategies in place, demonstrating a commitment to climate resilience
- Community engagement and participation in climate adaptation initiatives, ensuring a collaborative approach to climate resilience
- Institutional capacity to plan, implement, and monitor climate adaptation initiatives, demonstrating effective governance and management

iii. Public-Private Partnerships (PPPs) and Innovative Financing Models

The mobilization of private sector resources will play a pivotal role in expanding climate finance for schools. SED will pursue innovative financing models, corporate partnerships, and blended finance solutions, including:

- Private Sector Engagement in Climate-Smart School Initiatives, leveraging Corporate Social Responsibility (CSR) contributions for solar energy installation, water conservation initiatives, and afforestation projects
- Sustainable Impact Investments & Climate Bonds, mobilizing long-term capital for climate-smart school infrastructure
- Green Bonds & Climate Resilience Bonds, financing climate-resilient school infrastructure and promoting sustainable development
- Voluntary Carbon Market Initiatives, facilitating carbon offset projects in schools through afforestation and solar energy integration
- Outcome-Based Financing, structuring climate resilience projects with performance-linked financing models.

Annexures

Annexure-I

GLOSSARY OF TERMS

Adaptation:
Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects which moderates harm or exploits beneficial opportunities (UNFCCC).

Air Pollution:
A standardized measurement system used to assess and communicate air pollution levels based on the concentration of key pollutants, including particulate matter ($PM_{2.5}$ and PM_{10}), ground-level ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide. The AQI is typically categorized into different levels, ranging from Good (0-50) to Hazardous (301-500), indicating the potential health impacts of air quality conditions (US EPA).

Air Quality Index (AQI):
A standardized measurement system used to assess and communicate air pollution levels based on the concentration of key pollutants, including particulate matter ($PM_{2.5}$ and PM_{10}), ground-level ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide. The AQI is typically categorized into different levels, ranging from Good (0-50) to Hazardous (301-500), indicating the potential health impacts of air quality conditions (US EPA).

Biodiversity:
Biodiversity or biological diversity means the variability among living organisms from all sources including, among other things, terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems (IPCC).

Climate:
Climate in a narrow sense is usually defined as the average weather, or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The relevant quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system (IPCC)

Climate Change:
A change in the climate system which is caused by significant changes in the concentration of greenhouse gases as a direct or indirect consequence of human activities and which is in addition to natural climate change that has been observed during a considerable period (IPCC).

Climate Ready Education Systems:
(i) teach transformative climate literacy and green skills across education subsectors; (ii) operate climate-resilient school facilities and operations that have been adapted to climate risks; (iii) operate sustainable and low-carbon school facilities and operations that minimize carbon emission and pollution; and (iv) promote climate-oriented research and development, entrepreneurship, and incubation that foster innovations in climate technologies. Thereby, education systems are adapted to climate change and the human development needs of low-carbon and climate-resilient economies and societies (ADB).

Climate Resilience:
Ability of social, economic, and environmental systems to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate change. This encompasses the capacity to absorb impacts, adapt to changing conditions, and maintain essential functions (IPCC).

Climate Resilient Education:
Educational practices and systems designed to withstand, adapt to, and recover from the impacts of climate change, ensuring the continuous delivery of quality education (IPCC).

Climate Resilient Schools:
Schools having the infrastructure as well as institutional and human capacity, such as trained school staff and emergency plans, to withstand, adapt to, and recover from extreme weather events (e.g., heat wave, floods) thereby maintaining learning continuity, a conducive learning environment, and student and school personnel safety (ADB).

Disaster Risk:
The likelihood within a specific time period of disaster (IPCC).

Disaster Risk Reduction (DRR):
Denotes both a policy goal or objective, and the strategic and instrumental measures employed for anticipating future disaster risk; reducing existing exposure, hazard, or vulnerability; and improving resilience (IPCC).

Global Warming:
Global warming refers to the increase in global surface temperature relative to a baseline reference period, averaging over a period sufficient to remove interannual variations (e.g., 20 or 30 years). A common choice for the baseline is 1850-1900 (the earliest period of reliable observations with sufficient geographic coverage), with more modern baselines used depending upon the application (IPCC).

Global Surface Temperature:
The global surface temperature is an estimate of the global mean surface air temperature. However, for changes over time, only anomalies, as departures from a climatology, are used, most commonly based on the area-weighted global average of the sea surface temperature anomaly and land surface air temperature anomaly (UNFCCC).

Heat Wave (also referred to as extreme heat event):
A period of abnormally hot weather. Heat waves and warm spells have various and, in some cases, overlapping definitions (IPCC).

Mitigation (of disaster risk and disaster):
The lessening of the potential adverse impacts of physical hazards (including those that are human-induced) through actions that reduce hazard, exposure, and vulnerability (IPCC).

$PM_{2.5}$:
Particulate matter. Mixture of solid particles and liquid droplets found in the air, with diameters that are generally 2.5 micrometers and smaller. These fine particles can penetrate deep into the respiratory system, reaching the alveoli in the lungs, and may enter the bloodstream, posing significant health risks (US EPA).

Resilience:
The capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation (IPCC).

Smog:
Air pollution characterized by a combination of smoke and fog, resulting in a dense, hazy atmosphere that can have harmful health effects. Smog forms when pollutants like nitrogen oxides (NOx) and volatile organic compounds (VOCs) react in the presence of sunlight. These pollutants come from various sources, including vehicle exhaust, industrial emissions, and burning fossil fuels (US EPA).

Vulnerability:
The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity (UNFCCC).

Annexure-II

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Annexure-III SCHOOL RESILIENCE PLAN TEMPLATE

SCHOOL EDUCATION DEPARTMENT
SCHOOL RESILIENCE PLAN

Basic School Information

No.	Category	Details to be Filled
1.	School Name	
2.	EMIS Code	
3.	District	
4.	Tehsil	
5.	Union Council	
6.	Circle/Markaz	
7.	Year of Establishment	
8.	Total School Area (in Kanals/Marlas/Sq. Ft.)	
9.	Covered Area (in Kanals/Marlas/Sq. Ft.)	
10.	Uncovered Area (in Kanals/Marlas/Sq. Ft.)	
11.	Total Enrolled Students	
12.	Enrolled Students with Disabilities (*Children with Disabilities-CWDs)*	
13.	Sanctioned Strength of Teaching Staff	
14.	Filled Positions (Teachers)	
15.	Sanctioned Strength of Non-Teaching Staff	
16.	Sanctioned Strength of Non-Teaching Staff (Security Guard, Janitorial Staff, etc.)	
17.	Total Number of Rooms in the School Building	
18.	Number of Office Rooms	
19.	Non-functional / Dilapidated Rooms or Sections of the Building	
20.	Total Number of Toilets (Functional/Non-Functional)	
21.	Does the School Have a Playground?	
22.	Number of Lawns/Green Spaces in the School	
23.	Total Number of Trees and Plants in the School	
24.	Annual Non-Salary Budget (Past 3 Years)	
25.	Existing Climate Resilience Plan (Yes/No - Last Updated Date)	

PART 1: CLIMATE RISK ASSESSMENT FOR SCHOOLS

A. School Building, Infrastructure, and Facilities

a) Building Condition

1. When was the school building approximately constructed, and what is its current condition?
2. Is the building constructed using materials that are compatible with local climatic conditions (e.g., bricks or stone masonry/concrete/mud construction)? Does it have the capacity to withstand extreme weather conditions?
3. Are there any existing structural weaknesses in the school's infrastructure that need to be addressed? (e.g., cracks in the building/walls, deteriorating conditions, etc.)
4. Has the school experienced structural issues due to changes in the surrounding terrain, such as soil erosion, land subsidence, or shifting foundations?
5. Is there visible dampness, water stains, or mold formation on classroom walls that could indicate water seepage issues?
6. Does the school's perimeter wall face structural risks due to water pressure from surrounding areas?
7. Are there any roof leakage problems that disrupt learning during rainfall?
8. Has the school undergone structural safety assessments in the last five years? If yes, provide details of the findings and any recommended interventions.
9. Are there any measures in place to strengthen the school building against earthquakes, floods, or high winds (e.g., reinforced walls, elevated foundations, anchoring structures)?

b) Geographical Features

1. Is the school located within or near a natural water channel? (e.g., river, seasonal stream, drainage canal – mention the distance)
2. What type of land use surrounds the school? Agricultural land, residential, or commercial buildings?
3. Is the school situated in an area prone to floods, earthquakes, landslides, or other natural disasters?
4. Is the school in proximity to deforestation-prone areas or barren lands that exacerbate dust storms or increase exposure to extreme heat?
5. Are there government-identified high-risk climate vulnerability zones nearby that require additional mitigation measures?
6. Has the school ever been affected by flash floods due to rapid urbanisation or construction around the area?
7. Are there any waste disposal issues around the school?
8. Are there any nearby stagnant water sources that could contribute to vector-borne diseases such as malaria and dengue?
9. Is the school located in an area prone to extreme heatwaves? What mitigation measures (e.g., shaded areas, green spaces, ventilation improvements) are in place?
10. Are there natural wind corridors that could increase vulnerability to dust storms or extreme cold weather?
11. Does the school have a history of tree-root damage affecting buildings, pavements, or underground pipelines?
12. Are there any industrial sites, major roads, or other pollution sources near the school that could pose an environmental or health risk to students?

c) Energy & Efficient Use of Lighting

1. What is the primary energy source for the school? Does the school frequently experience power outages?
2. Is the school connected to the national electricity grid? If not, are there alternative electricity sources available?
3. Has the school implemented any energy conservation strategies, such as daylight optimisation or LED lighting?
4. Does the school have environmentally friendly or renewable energy sources such as solar panels? (Yes/No)
5. Are there energy-saving measures in place, such as LED lighting, energy-efficient fans, or motion sensor lighting?
6. Does the school have a backup power source (e.g., generator, battery storage, or hybrid energy solutions) in case of prolonged power failure?

d) Water Management

1. What are the sources of water supply within the school? Is clean and safe drinking water available for use?
2. Is safe drinking water provided for students, teachers, and staff?
3. Does the school have a water storage system (e.g., water tanks)? If yes, is it regularly cleaned?
4. What is the wastewater drainage system in the school? Are functional sewage systems and proper wastewater disposal arrangements in place?
5. Are there flood protection barriers or embankments available in case of heavy rainfall or flooding?
6. Does the school have a rainwater harvesting system, and if yes, is it functional and adequately maintained?
7. Is water conservation actively promoted within the school? (e.g., awareness campaigns, usage monitoring, leak detection and repairs)

8. Is there a system for monitoring water pressure in school washrooms to ensure consistent water availability?
9. Is the underground or piped water supply free from brackish or contaminated sources?
10. Has the school ever faced drought-related water shortages? If so, what alternative arrangements were made?
11. Does the school have contingency measures in case of water shortages or contamination? (e.g., alternative supply arrangements, filtration systems, bottled water storage)

e) Airflow & Temperature Regulation in the Building

1. Is the school building designed to allow natural ventilation?
2. Are there adequate windows, ventilators, and shaded areas within the school premises?
3. Is there a mechanism to reduce indoor air pollution caused by external factors such as vehicular emissions or industrial pollution?
4. Has the school adopted cooling interventions such as insulated roofs, shaded walkways, or heat-reflective paint?
5. Does the school have a tree plantation strategy to improve natural cooling and air quality within the premises?
6. Have any indoor air quality assessments been conducted to monitor dust, pollution, or humidity levels? If yes, provide details.

f) Waste Management

1. Does the school have a system for collecting and recycling materials such as used paper, glass, plastic, etc.?
2. Is the school equipped with a composting system to manage organic waste effectively?
3. Is there an effective waste collection and disposal system in place?
4. Are there enough dustbins placed across the school to facilitate waste segregation?
5. Are students and staff encouraged to participate in waste reduction and segregation activities?

B. Emergency Preparedness & Planning

a) Climate Change & Disaster Risk Assessment

1. Has the school ever conducted an assessment of climate-related risks and identified potential hazards?
2. Has the school developed a hazard mapping document indicating high-risk areas (e.g., flood-prone spots, heat-exposed classrooms)?
3. Have frequent climate change-related disasters or hazards been identified in the school's locality? (e.g., extreme heatwaves, unexpected rainfall, flooding, overflowing drainage channels, etc.)
4. Does the school maintain a record of all past climate-related disruptions for improved future planning?
5. Recent impacts of floods/ torrential rains: Provide details of any damage sustained by the school infrastructure and the number of instructional days lost due to recovery efforts.
6. Recent impacts of windstorms, hurricanes, tornadoes, or hailstorms: Has the school building suffered any damage? Provide details of days lost in recovery efforts.
7. How frequently has the teaching and learning process been disrupted in recent years due to climate-induced disasters? (Mention duration of disruption days/weeks/months)
8. Is there a system to track student and teacher absenteeism due to climate-induced illnesses such as heat exhaustion, respiratory infections, or smog-related health issues?
9. Are mosquito-breeding sites regularly identified and eliminated to reduce vector-borne diseases?
10. Has the school's water supply system been affected due to climate-related disasters? Mention any additional damage if necessary.
11. Has the school experienced indoor air quality issues (e.g., smog, excessive dust, poor ventilation) affecting student health and attendance? If yes, what mitigation measures are in place?

b) Disaster Preparedness & Response Planning

1. Does the school have an emergency preparedness plan for extreme weather conditions (e.g., extreme heat/cold waves, fog, smog, heavy rainfall, floods, etc.)?
2. Has the school ever been used as a shelter for disaster affected people, and was the school administration consulted before making such arrangements?
3. Are students and teachers provided with awareness sessions and training on emergency protocols? Are emergency drills conducted?
4. Are students trained to recognise and respond to climate-related health risks such as heatstroke, dehydration, or air pollution?
5. Has the school conducted an air quality assessment to identify necessary interventions for smog-prone months?
6. Does the school maintain an emergency stock of first aid supplies, medicines, and lighting?
7. Does the school have an emergency water supply contingency plan in case of drought or disruption in municipal supply?
8. Are classrooms equipped with emergency ventilation

options, such as mechanical air purifiers, during high-pollution periods?
9. Are alternative learning arrangements (such as online or flexible scheduling) in place for extreme weather events?
10. At the village/union council level, is there an emergency stockpile of disaster response equipment?
11. Does the school or the community have a volunteer group trained in emergency response?
12. Are emergency evacuation routes and assembly points clearly marked within the school premises?

c) Emergency Communication & Coordination

1. How does the school administration communicate emergency alerts and information to students, teachers, and parents?
2. Does the school have a list of emergency contacts (e.g., Rescue 1122, Fire Brigade, CEO Office, local government, Health Department, district administration, rescue services) displayed in a visible location for teachers and students?
3. Are emergency drills tailored to specific climate risks (e.g., flood evacuations, heatwave response, smog-related indoor safety protocols)?
4. Is there a defined protocol for informing parents about school closures or emergencies due to climate events?
5. Does the school have an emergency PA system or siren for mass communication during an emergency?

C. Community Involvement & Awareness

a) Stakeholder Involvement

1. Are community members involved in disaster response and recovery planning for the school?
2. Does the school actively engage local disaster management authorities (DDMA, Fire Brigade, Municipality, etc) in planning and training exercises?
3. Does the school collaborate with local government, NGOs, community representatives, and public officials for disaster preparedness?
4. Is the School Council/School Management Committee (SMC) active? (Yes/No)
5. Are parents and community members engaged in planning for climate-related disasters? (Yes/No)
6. Is there a formal coordination mechanism with health departments for climate-induced health issues (e.g., heatstroke first aid, respiratory illness treatment)?
7. Does the health department conduct medical check-ups for students in the school? If yes, provide details of the most recent session.

b) Awareness & Training Programmes

1. Does the school organise workshops or seminars on climate change awareness and preparedness?
2. Does the school contribute to local climate adaptation efforts (e.g., tree plantations, climate awareness campaigns, agricultural impact discussions)?
3. Are students and teachers well-informed about climate risks and response measures?
4. Are teachers trained to integrate climate change education into different subjects beyond science [e.g., social studies, languages (English, Urdu, etc.)]?
5. Does the school provide awareness campaigns on the importance of conserving water, energy, and other natural resources?
6. Are students encouraged to take part in public advocacy campaigns related to climate resilience?
7. Are there refresher courses or capacity-building sessions for teachers on climate resilience strategies?
8. Has the school hosted joint training sessions with the health department on heatwave protection and smog-induced illnesses?

D. Educational and Instructional Process

a) Textbooks and Teaching Materials

1. Are climate change-related topics included in the curriculum?
2. Are there special classroom sessions or activities focused on climate change awareness?
3. Are there interactive learning sessions where students can develop climate action projects?
4. Are students encouraged to research local climate challenges and propose solutions as part of school projects or coursework?
5. Does the school integrate climate change into STEM education?

b) Co-Curricular & Extracurricular Activities

1. Are student clubs or groups formed to address environmental and climate challenges?
2. Does the school conduct climate resilience competitions such as essay writing, poster-making, or innovation challenges?
3. Does the school participate in local, provincial, or national environmental programmes or competitions?
4. Does the school celebrate environment-related days to raise awareness about climate change, natural disasters, etc.?

c) Policy Considerations

1. Has the school integrated climate resilience into its

School Development Plan?

2. Are there defined policies for sustainable procurement and eco-friendly construction?
3. Is there a dedicated budget allocation for school-level climate adaptation initiatives?
4. Does the existing Parent-Teacher Committee (PTC) policy cover climate change issues?
5. What financial resources are available at the school level for addressing climate-related challenges and disaster risk reduction?
6. Does the school have the capacity to mobilise local resources from individuals, businesses, or organisations?

PART 2: SCHOOL RESILIENCE- ACTION PLAN

1. Infrastructure and Facilities

Activity	Category	Status / Required (Yes/No)	Responsibility	Time Frame Monthly, Quarterly, Biannual, Annual
Building- (Repair/Retrofitting)	Walls			
	Windows			
	Classrooms			
	Roof Repair & Insulation			
	Lighting			
	Boundary Wall			
Furniture & Fixtures	Desks & Chairs			
	Storage Cabinets & Whiteboards			
Water Management	Safe Drinking Water			
	Source Cleaning			
	Rainwater Storage Reservoir			
	Drainage Systems			
	Water Conservation Measures			
Waste Management	Collection and Disposal			
	Sanitation			
	Group Latrines			
Energy Source	Power and Electric			
	Solar System			
	Natural Light			
Others	Emergency Disaster Management tool kit/First Aid Kit			
Greening	Tree Plantation			
	Garden/Green Area			
	Miyawaki Forest (Compact Tree Plantation for Urban Areas)			
	Availability of water			

2. Emergency Preparedness and Response Planning

Activity – Action	Status	Responsibility	Time Frame: Monthly, Quarterly, Biannual, Annual
Periodic Risk Assessment for School			
Development and Maintenance of a School Resilience Plan			
Preparation of a Checklist for Emergency Response Measures/SOPs			
Notification of SMC/SC			
Establishment of a Student-Led Climate & Environmental Awareness Club within the School			
Conducting Annual Emergency Drills for Floods, Earthquakes, and Heatwaves			
Identification and Training of Community Volunteers to Respond to Climate Challenges			
Establishing a localised Early Warning System (EWS) for Extreme Weather Alerts			
Displaying an Emergency Contact List in a Prominent Location within the School			
Arranging Climate, Natural Disasters, etc. Awareness Sessions and Training with: *PDMA/DDMA, Rescue 1122, Health Department, Social Welfare Department,* Fire Brigade, *Boy Scouts,* Others			

3. Capacity Building for Climate Resilience

Activity – Action	Status	Responsibility	Time Frame Monthly, Quarterly, Biannual, Annual
Nomination of a School Climate/DRR Focal Point (Teacher)			
Identify and train a team of teachers to effectively disseminate climate-related information, including safety procedures and protocols, to all students in the school.			
Training of students in First Aid and Emergency Response Techniques.			
Train school safety focal points and teachers on climate resilience and safety protocols, and ensure uninterrupted education during emergencies.			
Providing teachers with training in psychosocial support for children affected by emergencies			
Training of SC/SMCs on climate resilience and climate-related disasters.			
Conduct awareness programmes/sessions for students using various methods like walks, speech competitions, drawing and Arts competitions to educate them about climate challenges, local hazards and risk reduction.			

4. Community Engagement and Awareness

Activity – Action	Current Status	Responsibility	Implementation Timeline *(Monthly, Quarterly, Biannual, Annual)*
Engaging SMC, Parents and Community Members in Climate Resilience Activities, such as Tree Plantation Drives, Awareness Walks, and Speech Competitions.			
Organising Events to Commemorate Environmental and Climate Awareness Days			
Community engagement in climate-related risks and resilience measures			
Establishing a Community-Based Group Comprising Parents, Key Local Figures, and Public Representatives to Address Environmental and Climate Challenges (Using Social Media/WhatsApp)			
Establishing Local Resource Mobilisation Mechanisms through SMC for Climate Resilience (Engaging Local Businesses/Philanthropists)			

5. Educational and Instructional Activities

Activity – Action	Current Status	Responsibility	Implementation Timeline *(Monthly, Quarterly, Biannual, Annual)*
Head Teachers to include Climate change as an item in weekly/monthly meetings with teachers.			
Physical Education Teachers, in Collaboration with the Designated Focal Person, Regularly Organise Activities on Climate Change, Tree Plantation, and Hygiene.			
Mark Key Environmental, Disaster Preparedness, and Tree Plantation Days in the Academic Calendar and Organise Regular Awareness Activities			
Review and Update the School Climate Resilience Plan at the Beginning of Each Academic Year.			
Integrate the School Climate Resilience Plan into the School Development Plan			

Signatures _____

Name & Designation: _____

Dated:

Approved by:_____

Dated:

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