

Project Brief

CAPACITY DEVELOPMENT FOR CLIMATE RESILIENT INFRASTRUCTURE

Timeframe: December 2025 – July 2026

Location: Islamabad, Piloting: Khyber Pakhtunkhwa & Punjab, Pakistan

This project is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and supported by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. KnK Japan is implementing this project under the NAP Challenge Fund.

1- Background and Rationale

Pakistan's public schools and health units are exposed to earthquakes, floods and climate extremes. The 2022 mega-floods, recurring earthquakes, droughts and heatwaves show how vulnerable these facilities are. Many are old and poorly built, with building codes updated but seldom enforced. There is no standard process to assess structural safety or climate risk, so hazardous buildings go unnoticed. Engineers lack training in climate and disaster resilient design, and builders use unsafe methods. The project Capacity

Development for Climate Resilient Infrastructure (CD-CRI) tackles these gaps with a Structural Health Assessment (SHA) system and comprehensive capacity development, embedding risk screening into retrofit or rehabilitation planning. Piloted in selective districts (District Charsadda and Peshawar) in Khyber Pakhtunkhwa (KP) and (District Lahore, Muzaffargarh and Multan) in Punjab, the model aims to safeguard facilities nationwide and aligns with national adaptation priorities for resilient outcomes.



2- Objectives & Scope

- **To develop & endorse a unified SHA framework:** Create and standardize a Structural Health Assessment (SHA) methodology and digital platform, aligned with international best practices and Pakistan's 2021 Building Code, Green Building Code for collecting, scoring and mapping building vulnerabilities with DRR compliance.
- **Strengthen institutional capacity:** Train and certify engineers, planners and officials in using SHA tools, climate & disaster resilient design principles, DRR framework, ensuring national and local institutions can apply the methodology effectively.
- **Build artisans' skills:** Equip local masons, carpenters and artisans with techniques like seismic retrofitting, floodproofing, thermal insulation, low-carbon materials, and green infrastructure to improve construction safety and retrofit quality.
- **Embed equality and sustainability:** Mainstream gender equality, social inclusion (GESI) and environmental sustainability and DRR compliance across all activities.



3- Methodology:

The initiative applies a technology-enabled Structural Health Assessment (SHA) methodology rooted in international benchmarks yet tailored for Pakistan. It uses a two-tier process: rapid screening based on Federal Emergency Management Agency (FEMA) Applied Technology Council (ATC) and Simplified Structural Health Assessment (S-SHA) visual inspections to quickly flag structural weaknesses against the 2021 Building Code, followed by a simplified, American Society of Civil Engineers (ASCE) compliant evaluation for buildings classified as unsafe. A digital platform designed that develops scoring, produces hazard maps and categorizes facilities while incorporating environmental safeguards and DRR compliance. This integrated system not only streamlines data collection and analysis but also creates a secure, centrally hosted repository that meets institutional standards and informs investment planning.

4- Sustainability and Scalability:

Sustainability is embedded through institutional ownership. The Structural Health Assessment (SHA) digital tool and knowledge repository will be hosted on National Disaster Risk Management Fund (NDRMF), ensuring secure integration with national risk data. NDRMF will maintain the system, provide user support, and assume full ownership for upgrades and integration with national databases. Pakistan Engineering Council (PEC) will act as the technical authority, endorsing the methodology and guiding quality assurance through its expert committees. KnK Japan will drive scale-up through the National Structural Health Assessment (SHA) Conference and targeted briefings with government and donors, securing commitments, MoUs, and resources for wider rollout. This creates a replicable national model for resilient public infrastructure.

5- Project Results and Key Interventions

The Structural Health Assessment (SHA) based Climate Resilient and DRR compliant infrastructure Initiative integrates technical tools, capacity development, and institutional ownership to deliver measurable results and enable scalable, long-term impact. Each intervention is directly aligned with a defined project result, supported by qualitative and quantitative evidence.

Result 1: 01 National SHA and Climate Risk Screening System Adopted

The project developed, validated, and digitized a standardized Structural Health Assessment (SHA) and climate risk screening tool in a user-friendly digital platform.

Result 2: Resilience Assessments for 12 Schools and 8 Health Facilities

Using the new SHA and screening tool, pilot assessments were carried out in 12 schools (6 boys' and 6 girls' schools) and 8 healthcare facilities across KP and Punjab. Each assessment provided clear, actionable recommendations to enhance protection against floods, earthquakes, and other climate stresses, offering evidence-based improvements for educational and health infrastructure.

Result 3: Digital Platform & 08 Resilient Infrastructure Knowledge Products developed

The project delivered a fully functional digital SHA platform and developed eight knowledge products (manuals, guidelines, training modules, and field guides) on climate-resilient, DRR-compliant infrastructure.

Result 4: 280 Professionals Trained in Climate-Resilient Construction and DRR

A pool of practitioners has been established by training 20 master trainers, 60 engineers/planners, and 200 skilled construction workers (with at least 20% women in each group) in climate-resilient and DRR-compliant construction techniques.