



FOR MORE INFORMATION →

Main Campus

University Enclave, University Road,
Karachi - 75270 Pakistan
Phone : +92-(21) 3810-4700

 www.iba.edu.pk

 +92 21 111 422 422

 prc_sess@iba.edu.pk

City Campus

Plot # 68 & 88 Garden / Kayani
Shaheed Road, Karachi - 74400 Pakistan
Phone : +92-(21) 3810-4701

      [ibakhiofficial](https://www.instagram.com/ibakhiofficial)



IBA's Population Research Centre in collaboration with the
Karachi Urban Lab

September 2025

POLICY BRIEF

**Climate, Health, and
Population Vulnerability**

POLICY BRIEF:

CLIMATE, HEALTH, AND POPULATION VULNERABILITY

ACKNOWLEDGEMENT

This policy brief is an outcome of the PRC Climate Dialogue Series on “Climate, Health, and Population Vulnerability,” organized on May 27, 2025, at IBA Karachi by the Population Research Centre – IBA in collaboration with the Karachi Urban Lab.

The dialogue brought together a diverse group of stakeholders from academia, think tanks, civil society, community organizations, and activist networks. The recommendations presented here reflect the collective insights and deliberations of the session. We gratefully acknowledge the valuable contributions of all participants, whose perspectives have informed the analysis and policy directions outlined in this brief.

BACKGROUND

Karachi—home to over 20 million people—faces interlinked pressures of climate variability, water insecurity, and public-health risks.

Rapid urban expansion has increased impermeable surfaces and strained aging drainage, intensifying urban flooding and contaminating water supplies. Variability in inflows from Hub Dam and Keenjhar Lake has widened the gap between water demand (~1,100 MGD) and available supply (~550–650 MGD). The impacts are concentrated in peripheral and low-income areas—notably Malir, Korangi, and Keamari—where shortages, tanker dependence, and post-flood contamination elevate risks of water- and vector-borne diseases.

PRC Climate Roundtable discussions emphasized the need for neighbourhood-level, integrated climate-water-health data to guide preventive, targeted action.

KEY CHALLENGES

URBAN GOVERNANCE FRAGMENTATION

Climate, water, and health information is collected in silos and rarely integrated. With data scattered across PMD, KWSC, and KMC—and no legal mandate for sharing—planners lack a unified risk picture, reinforcing reactive crisis management instead of preventive, targeted action. Routine reporting is not standardized, geocoded, or interoperable across agencies, which constrains both emergency response and longer-term planning.

These institutional gaps inhibit timely, coordinated decisions in the neighbourhoods facing the highest exposure.

DATA DEFICIT FOR CLIMATE-RESPONSIVE URBAN PLANNING

Karachi lacks an integrated platform that consolidates climate, water, and health data for routine operations and emergencies. Critical gaps include:

- Neighbourhood-level flood-risk mapping,
- Water distribution diagnostics (leakages, low-pressure zones, tanker reliance), and
- Health surveillance linked to climate events.

In the absence of a shared, citywide evidence base, risk prioritization is inconsistent, and interventions cannot be targeted effectively at the most vulnerable localities or timed to the dynamics of seasonal hazards.

WATER SCARCITY AND PUBLIC HEALTH RISKS

A persistent demand-supply gap—~1,100 MGD demand vs. ~550–650 MGD supply—combines with monsoon flooding to contaminate drinking water and elevate water- and vector-borne diseases (e.g., diarrhoea, cholera, dengue). Urban flooding leads to water contamination, driving up cases of these diseases.

Impacts are concentrated in peripheral/low-income areas (e.g., Malir, Korangi, Keamari), and women and children in low-income areas face heightened vulnerability due to reliance on unsafe water sources.





POLICY OPTIONS & RECOMMENDATIONS

A Karachi Climate Resilience Task Force—comprising the Karachi Metropolitan Corporation and the Sindh Department of Climate Change, with civil society— should formalize routine data sharing through light MoUs and standard templates (date/time, geocode, indicator list), enabling neighbourhood-level climate, water, and health information to be integrated for equitable, timely action.

1. ESTABLISH KARACHI CLIMATE, WATER & HEALTH DATA HUB

POLICY OPTIONS:

- A. Integrated Digital Data Hub under KMC or DoCC: Centralize feeds from multiple entities for operational, near-real-time monitoring of:
 - Water distribution & shortfalls (pressure by supply zone, planned/unplanned outages, tanker deployments).
 - Urban flood incidents (street/nullah overflows with coordinates, clearance timestamps).
 - Public-health alerts linked to climate events (weekly counts of acute watery diarrhoea, suspected cholera, dengue by facility).
- B. Develop Detailed Climate Risk Maps: Use GIS to identify vulnerable neighbourhoods for pre-monsoon prevention and post-event response (e.g., Korangi/Malir pilot, then expand).
- C. Public Data Dashboards: Provide an open, read-only view (risk maps, incident summaries) for researchers, media, and civil society. to ensure transparency.

RECOMMENDATION: Option A – Integrated Digital Data Hub under KMC or DoCC.

RATIONALE: Centralizing operational data enables evidence-based planning, faster emergency response, and more equitable allocation and aligns with the Karachi Climate Action Plan (KCAP) emphasis on data-driven governance.

2. PILOT COMMUNITY-BASED RAINWATER HARVESTING SYSTEMS

POLICY OPTIONS:

- A. Rooftop harvesting in public buildings (priority): Install roof-to-tank systems in schools and hospitals in high-risk localities (e.g., Malir, Korangi, Karachi Central), with storage designated for non-potable uses (cleaning, flushing, landscaping).
- B. Community-level underground tanks: Where rooftops are unsuitable, build shared storage in parks/public spaces for non-potable supply during shortages.
- C. Mandate for new constructions (longer-term): Include rainwater-ready provisions (downpipes/-first-flush stub-outs) in building approvals. residential & commercial developments.

RECOMMENDATION: Option A – Rooftop harvesting in public buildings.

RATIONALE: Schools and hospitals are practical starting points and allow straightforward verification of benefits. Evidence from comparable low-cost implementations indicates that rooftop harvesting at schools and hospitals can be deployed rapidly, maintained with simple routines, and scaled based on measured yields.

However, a critical barrier in Karachi is the lack of public awareness and engagement on climate-resilient water solutions. Rainwater harvesting is not widely understood or practiced in the city. Therefore, pilot projects must be accompanied by targeted community awareness campaigns—especially in Malir, Korangi, and Karachi Central—using local languages, media, and schoolbased outreach to educate residents about the benefits, usage, and maintenance of rainwater systems. Building public trust and participation is essential for long-term adoption and scalability.

CONCLUSION

Karachi’s water crisis and climate vulnerability are deeply intertwined with public health and social equity. Without robust, integrated data systems, interventions remain fragmented and reactive. The establishment of a Climate, Water & Health Data Hub and pilot rainwater harvesting projects can transform Karachi’s resilience framework, protect health, and ensure equitable resource access for its most vulnerable communities. The PRC urges collaboration among government entities, researchers, and civil society to implement these priorities for a sustainable, healthier Karachi.

REFERENCES

We thank all contributors for their time and perspectives and look forward to continued collaboration on data-driven, equitable resilience in Karachi. Participants from the following organizations joined the dialogue, and we are grateful for their participation:

- Population Research Centre - IBA Karachi
- Karachi Urban Lab
- Population Association Of Pakistan
- NED University Karachi
- Karachi Matters News
- Climate Action Centre
- Aga Khan University of Health Sciences
- University of Karachi
- Caritas Pakistan
- SZABIST Karachi