

CLIMATE CHANGE & GROUNDWATER IN URBAN AREAS

Key Risks, Adaptation Strategies & Resilience Measures for Cities

5 MAJOR RISKS TO URBAN GROUNDWATER

- FLOODING**
 - Increased storm intensity overwhelms drainage systems.
 - Groundwater table rises, causing urban flooding.
- DROUGHTS**
 - Reduced recharge from prolonged dry periods.
 - Greater pressure on groundwater resources.
- GROUNDWATER DECLINE**
 - Over-extraction combined with climate stress.
 - Falling water tables threaten long-term supply.
- WATER QUALITY DETERIORATION**
 - Pollutant infiltration during extreme weather.
 - Higher risk of contamination.
- INFRASTRUCTURE PRESSURE**
 - Aging systems face climate-related stress.
 - Increased maintenance and adaptation costs.

4 ADAPTATION STRATEGIES

- SPONGE CITY CONCEPT**

Capture, store, and infiltrate rainwater through permeable urban design to reduce flooding and enhance groundwater recharge.
- NATURE-BASED SOLUTIONS**

Green roofs, wetlands, bioswales, and urban vegetation improve infiltration, reduce runoff, and enhance groundwater recharge and quality.
- STAKEHOLDER ENGAGEMENT**

Collaboration between governments, utilities, researchers, businesses, and communities for shared ownership and action.
- INTEGRATED WATER MANAGEMENT**

Connect groundwater, stormwater, land-use planning, and climate adaptation policies for coherent and resilient water systems.

6 URBAN SUCCESS STORIES

- STUTTART**

Groundwater stabilization through sustainable water management.
- MILAN**

Aquifer recharge through infiltration basins and managed urban spaces.
- JAWORZNO**

Flood risk reduction via retention basins, early warning, and land management.
- NOVY BYDZOV**

Rainwater reuse programs for non-potable use and groundwater recharge.
- VARAŽDIN**

Groundwater quality protection through monitoring and pollution prevention.
- LJUBLJANA**

Resilient drainage systems with green infrastructure and smart management.

5 STEPS FOR IMPLEMENTATION

- ESTABLISH LEGAL FRAMEWORKS**

Develop regulations and policies that support sustainable groundwater management and climate resilience.
- MAP RESOURCES**

Assess groundwater availability, recharge zones, pollution sources, and vulnerabilities.
- BUILD ACADEMIC PARTNERSHIPS**

Leverage scientific expertise, data, and innovation for effective decision-making.
- ENGAGE STAKEHOLDERS**

Promote cross-sector cooperation and active community participation in planning and action.
- MONITOR CONTINUOUSLY**

Track groundwater quantity, quality, and climate impacts using monitoring systems and data analytics.

KEY TAKEAWAY
Climate-resilient cities protect groundwater through integrated planning, nature-based solutions, stakeholder collaboration, and continuous monitoring.
STRONGER GROUNDWATER. RESILIENT CITIES. SUSTAINABLE FUTURE.

URBAN GROUNDWATER RESILIENCE FRAMEWORK



This integrated approach strengthens water security, reduces climate vulnerability, and supports sustainable urban development.

See more:

[MAURICE Strategy and Action Plans](#)