Enhancing Risk-informed Planning, Data-Driven Decision Making and Early Warning System for Disaster-Resilient Urban Infrastructure in Bhutan

Location
Thimphu, Phuntsholing, Samtse

Period
2025 - 2027

Funding
$640,812

Beneficiaries
275,000

Implementing Partner

Nodal Government Agency

- Ministry of Finance, Bhutan

About Urban Infrastructure Resilience Programme (UIRP)

With cities generating 80 percent of global Gross Domestic Product and rapid urbanization expected to bring 70 percent of the world's population into urban areas by 2050, the need for resilient infrastructure has never been more critical. Extreme climatic events increasingly threaten urban systems, making proactive adaptation essential. CDRI's UIRP helps member countries integrate disaster and climate resilience into infrastructure planning, operation and maintenance, augmenting investments, ensuring sustainable and resilient urban growth.

Context and Background

- By integrating economic, social, environmental, and technological benefits—such as green infrastructure, disaster-resilient housing, and job creation—the project directly benefits over 18,000 vulnerable people and supports the effective rollout of the $20 million GEF/LDCF-UNDP programme.
- The project complements Bhutan's upcoming national urban resilience initiative by addressing critical gaps in data-driven planning, vulnerability assessments, and climate-proof infrastructure, ensuring sustainable urban development in Thimphu and Phuentsholing.
- It offers strategic policy guidance to safeguard key infrastructure like stormwater systems and housing, while enhancing early warning systems, resilient master plans, and technical capacities of local institutions.

Objective and Outputs

- Conduct vulnerability assessments and mapping of critical urban infrastructure—particularly water and stormwater systems—in Thimphu and Phuentsholing to inform risk-resilient planning, design standards, and infrastructure upgrades.
- Improve flood forecasting and management systems to ensure reliable operation of urban infrastructure utilities during extreme climate events, reducing loss and service disruption.
- Train planners, engineers, and disaster managers in resilient infrastructure design, monitoring, and operation, while promoting inclusive community engagement, especially among women and vulnerable populations.
- Produce six technical reports and four policy documents, including disaster resilient infrastructure guidelines, resilient housing standards, flood mitigation design standards, and green urban space master plans for four thromdes and 60 urban centers.

Impact

- Real-time early warning and forecasting systems will ensure uninterrupted services for 275,000 urban residents across three cities, including 48 percent women, 24 percent youth, and 13 percent vulnerable individuals.
- Seventy-five city planners and professionals, including 18 women, will gain enhanced technical expertise in risk-informed planning and resilient infrastructure management using data-driven systems.
- The project will safeguard approximately $101 million worth of critical infrastructure assets and help avoid $84 million in annual operation and maintenance costs from climate-related disasters.

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