

Rooting Resilience in ODDS

Asian Cities Climate Change
Resilience Network
(ACCCRN) - Gorakhpur



Gorakhpur Environmental Action Group

City Characteristics

- Population: 0.67 million
- Poor population: 33 percent
- Primary economic activity: Wholesale and retail trade
- Climate dominated by monsoon, average annual rainfall 1228mm
- City context: Terai bounded on the north by the Himalayas, river Rapti to the west and Ramgarh lake to the south.
- Elevation: 79 m above msl

Complex rural-urban amalgams and poor urban amenities have driven Gorakhpur city to the brink. In India's middle-Gangetic plain, the city, situated on the river Rohin's confluence with the Rapti, is one of the fastest growing in Uttar Pradesh. It spread from 38 sq. km in 1981 to 147 sq.km in 2011. Its present 0.67 million population is projected to rise to 1.15 million by 2031.

The development of basic urban systems has lagged behind Gorakhpur's growth. The city's water supply, sanitation and drainage are over-stretched, impacting adversely the quality of life of its residents, particularly the poor. Flooding, waterlogging, temperature extremes, power shortages, poor water quality and water and vector borne diseases are already major problems. The urban poor are unable to meet basic food and livelihood needs. Climate changes will exacerbate such challenges in the future.

The Asian Cities Climate Change Resilience Network (ACCCRN)

The ACCCRN, a pioneer initiative of the Rockefeller Foundation, seeks to enhance the resilience of the people, institutions, systems and structures in 10 Asian cities to current and future climate risks and improve the lives of the poor and the vulnerable. In India, along with Surat and Indore, Gorakhpur was included in the network due to its vulnerability, governance structure and climate hazards. The Gorakhpur Environmental Action Group (GEAG) leads the process in the city.

ACCCRN Gorakhpur is helping the city to:

- Identify current climate vulnerabilities across sectors and population and map how these will change over time.
- Engage citizens in urban climate resilience planning.
- Build capacities to analyse climate change impacts.
- Develop local resilience strategies.



- ## Participatory vulnerability assessment

People centric resilience approach

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graph TD
    CC[Climate Change] --> CA[CAUSES]
    CA --> N[Natural]
    CA --> B[Behavioral]
    N --> P[Action required]
    N --> PP[Policies & Political Processes]
    B --> SW[Solid Waste]
    B --> S[Sewerage]
    SW --> E1[Effects]
    S --> E2[Effects]
    E1 --> W[Waterlogging]
    W --> E3[Effects]
    E3 --> I[IMPACTS]
    I --> PR[Problems & Responses]
    PR --> A2[Action required]
    A2 --> AD[Adaptation]
  
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Figure - 1: Risk framework of Gorakhpur city

The outer bigger circle in (Figure-2) emphasises people's behaviour and prioritises actions. The physical, infrastructural and governance issues will be addressed and the systems made more responsive, transparent and accountable.

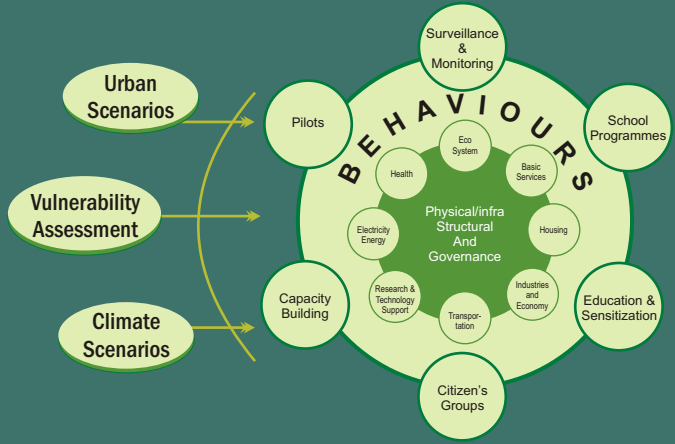


Figure - 2: Resilience Approach

Priority sectors

In keeping with the felt needs of the citizens, GEAG identified the following sectors which need attention:

- **Basic Services:** Sanitation, hygiene, drainage and safe drinking water;
- **Housing:** Appropriate houses for vulnerable communities and designs for water logged situations;
- **Industries and Economy:** Industrial development, pollution free environment, safe workplaces for home-based livelihood activities, housing for industrial workers;
- **Health:** Health services, preventive health and surveillance mechanisms;
- **Energy/Electricity:** Energy for living, production/livelihood and public purposes especially during the monsoon and post monsoon periods, alternate energy;
- **Transport:** Effective transportation mitigating climate change impacts and reducing pollution;
- **Ecosystems:** Conservation of public land and water bodies.



Civic Challenges of Gorakhpur

Water Logging

Most of the city, being below the river bed, faces rampant water logging. The southern and western parts are severely affected, but the entire city's drainage system is stressed. Water logging is increasing due to rising sedimentation of local water bodies. Some areas remain inundated for four months annually.

Solid waste

Gorakhpur generates 300 tonnes of solid wastes daily but lacks an organised solid waste management system. The Gorakhpur Municipal Corporation (GMC) supposedly collects 240 tonnes daily. The rest accumulates on the roadside and is supposed to be removed by the GMC weekly. But during the week the accumulated muck flows into the open drains and clogs them.

Sewage

Only 22 percent of the city (30 sq.km) has a 55 km. Underground, overloaded and choked, sewer network. The five decade old pipes have collapsed in many places, contaminating the drinking water. The city's six pumping stations dispose the untreated sewage into the drains and subsequently into the Ramgarh Lake and the Rapti, killing these water bodies. There is no sewage treatment plant in Gorakhpur. Just 20 percent people have access to proper sanitation.

Drinking water

Water quality is a major concern due to the water logging and poor solid waste management. GMC provides water to 65 percent of the city while the rest is served by handpumps. People drink contaminated water from shallow handpumps and end up with bacterial and gastro intestinal disorders.

Health

Water logging and insanitary conditions lead to malaria and encephalitis. Jaundice, diarrhoea, amoebiasis, gastro-intestinal disorders and cholera are common. The public health care infrastructure is weak.

Energy

The city faces 10-12 hours of power cuts daily. Polluting diesel generators are the common alternative energy source. During the monsoons, 50 electric pumps drain the water logged areas, further draining the city's energy.



Institutional challenges

- Inter- departmental convergence
- Mainstreaming climate change in the city's master plan
- Sensitising policy makers and planners
- Lack of data

Implementation actions

GEAG has introduced two projects to build Gorakhpur's resilience:

- Developing, testing and institutionalising ward level resilience planning incorporating climate risks and vulnerabilities of key infrastructure like drainage, potable water, sanitation system and housing.
- Developing an adaptive peri-urban agriculture model to diversify urban livelihoods and increase the city's flood buffers.

The ACCCRN-Gorakhpur will:

- Enable the development of a resilience strategy and interventions to increase resilience.
- Build a replicable base of lesson for engaging stakeholders.
- Mainstream climate resilience in city planning and operation.
- Evolve strategies to support the city's most vulnerable groups in tackling climate change.
- Disseminate lessons learnt to other cities.
- Engage practitioners and policy makers to support urban climate resilience for the poor and vulnerable people.



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