

City Resilience Strategy: Sirajganj

The main city in Sirajganj district is Sirajganj, which occupies an area of 28.49 sq. km. It is located between 24°22'N and 24°37'N and between 89°36' E and 89°47' E, on the banks of the Jamuna River and west of the Brahmaputra River, about 110 km

northwest of Dhaka. The city is named after a landlord, Siraj Ali, who founded Sirajganj city. It comprises a population of 158,913 distributed among 15 wards and 52 mohallas.

The city has a tropical climate with an annual rainfall of around 1,610mm. The average temperature in Sirajganj is 25.5°C. Sirajganj is considered to be a highly flood prone district. Floods are one of the leading causes of death and property loss.



Climate Risks

The two major future climate risks identified through the ICLEI ACCCRN Process (IAP) for Sirajganj are:

Changing Climate Conditions	Climate Scenario Summary Statements
Short duration, high intensity rainfall 	There will be an increase in the amount of run-off and rainfall intensity.
Increased temperature 	Mean temperatures across Bangladesh are projected to increase between 1.4°C and 2.4°C by 2050 and 2100, respectively.

Vulnerability Assessment

The fragile urban systems and their corresponding climate fragility statements for Sirajganj are:

Fragile Urban System	Climate Fragility Statements
	<ul style="list-style-type: none"> May lead to a water deficit and increased concentration of arsenic, which will impact health.
	<ul style="list-style-type: none"> May cause waste to decompose in open dumps creating health hazards; choking of drains can affect drainage causing health hazards and water logging in the rainy season.
	<ul style="list-style-type: none"> May impact agriculture, fishery, fruit cultivation, and thereby economy of the city. Heat stress will impact the daily labourers adversely.
	<ul style="list-style-type: none"> Can exacerbate habitat loss due to impact on biological cycles of species, that will further reduce urban biodiversity.
	<ul style="list-style-type: none"> Can lead to excessive flooding due to clogged drains resulting in health hazards.

Through the vulnerability assessment, the adaptive capacity of the key actors identified in the IAP was scored based on three parameters: capacity to organize and respond, availability of resources, and access to information. Actors who receive a low adaptive capacity score are classified as vulnerable while those who receive medium and high scores are classified as supporting and can aid the local government in resilience building activities. The table below presents an overall analysis of actors across the different fragile urban systems.

Actor Analysis for Sirajganj City

Vulnerable Actors	Supporting Actors
<ul style="list-style-type: none"> ● Citizens ● Department of Forest ● Department of Livestock ● Department of Fisheries ● Department of Agriculture ● Town Level Coordination Committee ● Sanitary Workers 	<ul style="list-style-type: none"> ● Local Government Engineering Department ● District Information Office ● Media ● Department of Health ● City Development Committees ● Department of Disaster Risk Management

Overall the Sirajganj Municipality scored as a vulnerable actor because it lacks trained technical staff who can deal with the

impacts of climate change on their systems. Capacity building of the existing staff is urgently needed.

The adaptive capacities of the fragile urban systems are assessed on the basis of five broad categories – economic, technology/ infrastructure, governance, social, and ecosystem services. Each of these five categories was rated as high/medium/low and averaged across all the urban systems to generate an overall score for each parameter in the city as detailed in the following table.

Overall Adaptive Capacity of Systems in Sirajganj City






Adaptive Capacity Parameters	Adaptive Capacity Score		
	Low	Medium	High
 Technological/ Infrastructural			
 Economic			
 Governance			
 Societal			
 Ecosystem services			



Photo credits: ICLEI South Asia

In Sirajganj, wards 7, 8, 12, and 13 were identified as the vulnerability hotspots and was affected by four urban systems (refer map). Wards 4, 5, 9, 14 and 15 are affected by three urban systems. These wards are mostly located close to the river and have a substantial slum population.

Possible adaptation interventions were identified for the five fragile urban systems in Sirajganj on the basis of their climate risks and vulnerabilities, the vulnerable areas and the vulnerable actors to adapt to the possible impacts of climate change on these systems. These prioritized interventions were inter-linked with ongoing programmes and projects. The way forward for the city to build resilience includes:

- **Inter-departmental coordination:** Building coordination between the Local Government Engineering Department (LGED) and the municipality for better integration of developmental activities with urban resilience.
- **Capacity Building:** Since the municipal staff lacks technical capacity regarding the management and technological issues of different systems, there is a need to build this capacity. Planning for different systems is also essential. Capacity building for the residents to encourage alternate means of livelihood will go a long way to improve resilience in the city.
- **Service level improvement:** Basic urban services in the city are limited and needs substantial improvement. Structural and policy measures can be undertaken as outlined in the resilience interventions to improve, water resource management, sanitation and drainage, and solid waste management. Decentralised systems for water and waste management will be useful for the city to improve redundancy of their urban systems.

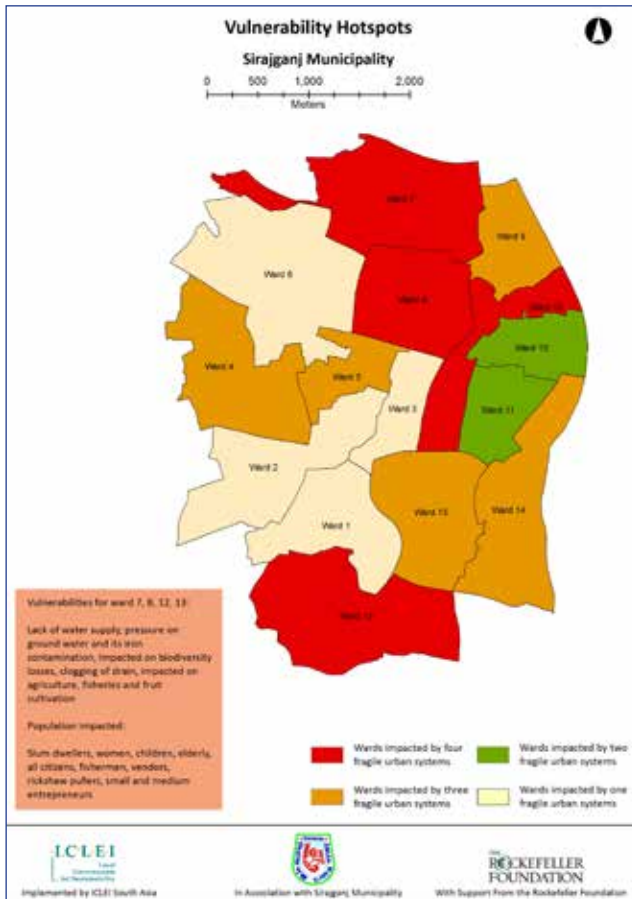


Photo credits: ICLEI South Asia

Key Interventions Identified for Sirajganj City

Infrastructural Measures	Non-Infrastructural/ Policy Measures
Water Supply	
<ul style="list-style-type: none"> Rain Water Harvesting in public buildings. <p>Costs associated (Civil costs, construction costs, labour, materials, meetings, training): USD 10,000 per unit.</p> <p>Co-benefits: Improved health from better water supply.</p>	<ul style="list-style-type: none"> Awareness building programs for the citizens using campaign, rally, placards, announcement in religious institution, billboards, workshops, school programs etc. for water conservation. Capacity building of municipal staff on the same. <p>Costs associated (IEC materials, publishing costs, logistics of meetings, trainings): USD 2,500 per training of 20-25 people.</p> <p>Co-benefits: Can be used for other systems together.</p>
Solid Waste Management	
<ul style="list-style-type: none"> Production of compost from organic solid waste with support from LGED, Department of Public Health and Engineering and the community. <p>Costs associated (Civil costs, construction costs, labour, materials, trainings, staff cost): USD 25,000 per composting facility.</p> <p>Co-benefits: Creation of jobs, material recovery.</p>	<ul style="list-style-type: none"> Preparation of a comprehensive and integrated waste management plan with the help of Department of Public Health and Engineering. <p>Costs associated (Cost of consultant, staff costs, meetings): USD 20,000.</p>
Economy	
<ul style="list-style-type: none"> Development of Tourism based activities on riverside which will generate employment. <p>Costs associated (Cost of planning, construction and civil costs, Labour, Materials, training): A detailed project report is needed for the estimation of costs.</p> <p>Co-benefits: Alternate skill development.</p>	<ul style="list-style-type: none"> Trainings, skill development and provision of incentives for low income earners & community. <p>Costs associated (Cost of training, meetings, logistics, IEC, staff costs): USD 5,000 for each training for 30-50 people.</p> <p>Co-benefits: Alternate skill development.</p>
Biodiversity	
<ul style="list-style-type: none"> Tree plantation drive. <p>Costs associated (Cost of plants, labour, materials, site): USD 10,000 for one plantation drive.</p> <p>Co-benefits: Alternate jobs creation, carbon sinks.</p>	<ul style="list-style-type: none"> Awareness building among the farmers to limit use of chemical fertilizers by arranging councils/advocacy meetings with the help Department of Agricultural Extension, Fishery and Forest. <p>Costs associated (IEC materials, cost of publishing, meetings, trainings, logistics): USD 2,500 per training of 20-25 people.</p> <p>Co-benefits: Can be used for other systems.</p>
Drainage	
<ul style="list-style-type: none"> Removal of encroachment of illegal settlements in Katakhal with support from the District Commissioner office. <p>Costs associated (Policy formulation costs, meetings, trainings, staff cost): USD 2,500 for preparation of policy and ratification.</p> <p>Co-benefits: Land-use implications.</p>	<ul style="list-style-type: none"> Awareness building programs using media (local channel), workshops, billboards, community meetings, <i>potogaan</i>/ cultural programs, religious institutions with CBOs, NGOs. Capacity building of municipal staff. <p>Costs associated (IEC materials, publication costs, meetings, trainings, staff costs): USD 2,500 per training of 30-50 people.</p> <p>Co-benefits: Can be used for other systems together.</p>