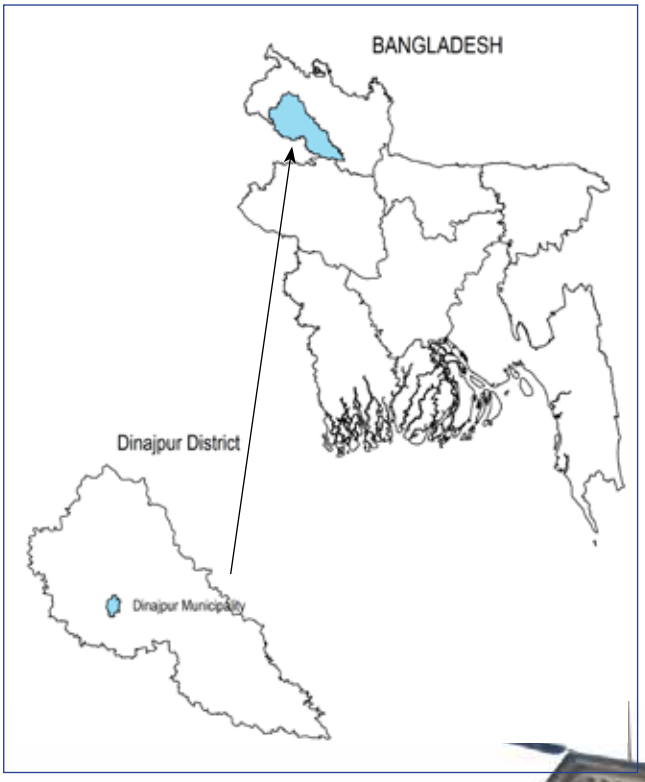
City Resilience Strategy: Dinajpur

Dinajpur city is the largest city of Dinajpur district which is one of the oldest zilas of Bangladesh and is located between 25°28´N and 25°48´N and between 88°34´E and 88°46´E. Dinajpur city consists of Dinajpur *Paurashava* (Municipality) and its adjoining three *mauzas* as other urban areas. The city occupies a total area of 22.39 sq. km where 21.06 sq.km is under the *Paurashava* which consists of 12 wards and 80 *mahallas*. The city is believed to be named after one of its rulers, King Donuj. There are many historical and culturally significant sites like Dinajpur Rajbari and Ramsagar Dighi. The population of the Dinajpur Municipality is around 186,727.

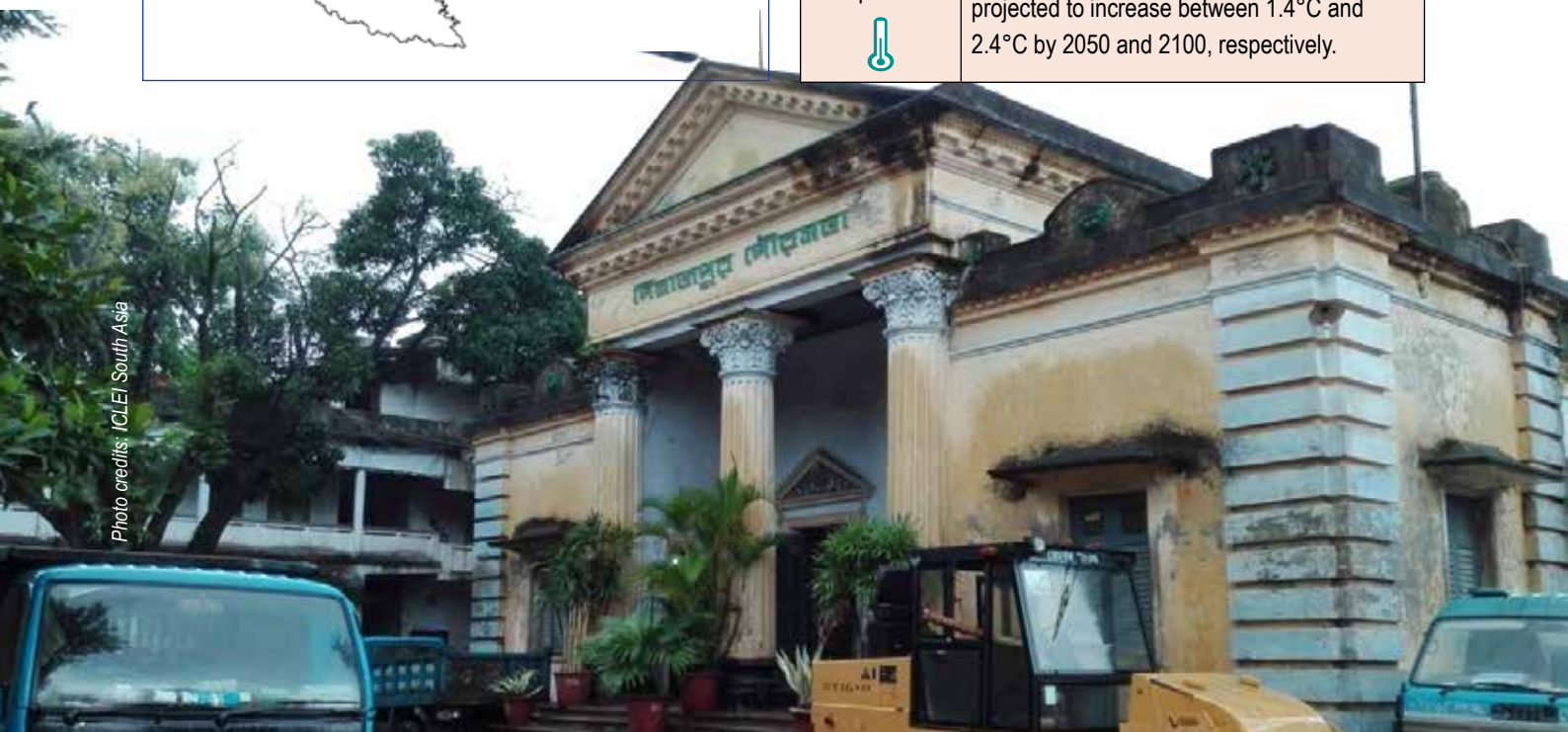


Dinajpur experiences a hot, wet and humid tropical climate. The district has a distinct monsoonal season, with an annual average temperature of 25°C and monthly means varying between 18°C in January and 29°C in August. Average annual precipitation is around 1,728 mm. Dinajpur district faces risks of variability in monsoon rains, flash floods, cyclones and extended droughts.

Climate Risks

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

Changing Climate Conditions	Climate Scenario Summary Statements
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.



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Vulnerability Assessment

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

Fragile Urban Systems	Climate Fragility Statements
	• Water resources in the city will be under greater stress, leading to health impacts and impacts on an economy which is dependent on water such as agriculture.
	• 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.
	• Will impact agriculture, fishery, fruit cultivation, and thereby economy of the city. It can also increase migration to the city from surrounding areas.
	• Can exacerbate habitat loss caused by urbanisation that will further reduce urban biodiversity.
	• 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.

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Actor Analysis for Dinajpur City

Vulnerable Actors	Supporting Actors
• Slum dwellers • Women • Children • Elderly • Citizens • Farmers • Fishermen • Vendors	• Department of Public Health and Engineering • Dinajpur Municipality • Government General Hospital • Private Hospitals • NGOs • Local Government Engineering Department • Town Level Coordination Committee • Chamber of Commerce • Department of Environment • Department of Fisheries • Department of Livestock • Business Associations • Rickshaw Labour Union • Small & Medium Entrepreneurs • Labour Association • Town Federation • Department of Cooperative Societies

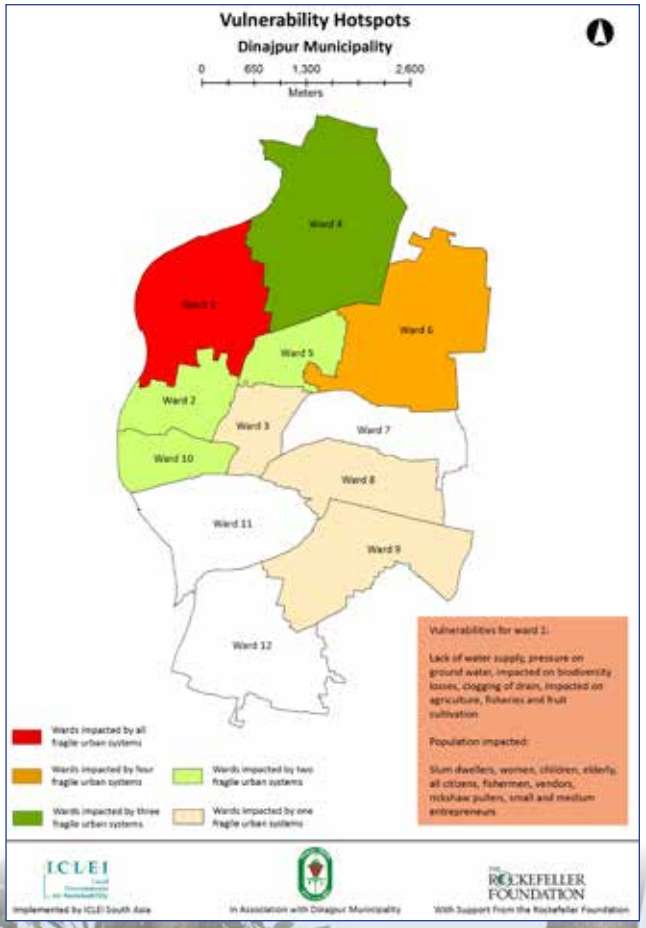
Overall the Dinajpur Municipality scored as a supporting actor because, although the municipality has poor financial resources, it is able to organize and coordinate with other departments to mobilise the necessary logistics and make the necessary arrangements.

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 Dinajpur City

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

In Dinajpur ward 1 was identified as the vulnerability hotspot affected by all five urban systems. Ward 6 is affected by four urban systems followed by ward 4 which is affected by three urban systems (refer map). These wards are located towards the outer boundaries of the city, have poor drainage and a population that is dependent on agriculture for their livelihood.



Possible adaptation interventions were identified for the five fragile urban systems in Dinajpur 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:

- **Awareness and Capacity Building:** The citizens and municipal staff both require capacity building initiatives so that they can work on climate change on relevant sectors.

- **Collaborative action:** Dinajpur Municipality needs to collaborate with local, national and international NGOs as well as civil societies to promote resilience building actions and solicit public support for a resilient city development. This can also help the city procure funds for crucial work that cannot be conducted with municipality's own funds.

- **Service level improvement:** Basic urban services in the city are poor 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.

- **Land use plan:** A good land use plan needs to be established and implemented so that urban service delivery can be improved, as well as natural habitats can be preserved for resource management.

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Key Interventions Identified for Dinajpur City

Infrastructural Measures	Non-Infrastructural/ Policy Measures
Water Supply	
• Rain water harvesting to reduce pressure on groundwater. **Costs associated** (Civil and construction costs, labour, materials, staff costs, training, meeting): USD 10,000 per unit. **Co-benefits:** Can maintain water resources; soil preservation.	• Awareness generation among users like campaigns, messages via NGOs, etc. Municipality can make advertisements and broadcast through local TV channels; capacity building of municipal staff through trainings; campaign on keeping water pollution-free and conservation of water. **Costs associated** (Cost of IEC materials, publications, materials, trainings, meetings, staff costs, logistics): USD 2,500 for technical training of 30-50 people. **Co-benefits:** Can be used for other systems together.
Solid Waste Management	
• Implement a waste collection system throughout the city ensuring 100% door-to-door collection of segregated waste. **Costs associated** (Cost of collection equipment, route planning, cost of vehicles, labour, staff costs, training): A detailed project report needs to be prepared to establish the collection system in the city. **Co-benefits:** Can generate alternate jobs, material recovery.	• Awareness building of citizens to prevent dumping of waste onto roads; capacity building of municipal staff through trainings. **Costs associated** (Cost of IEC materials, publications, materials, trainings, meetings, staff costs, logistics): USD 2,500 for technical training of 30-50 people. **Co-benefits:** Can be used for other systems together. Reduce water logging due to drains blocked by solid waste.
Economy	
• Adoption urban farming especially in slums which use newer technologies. **Costs associated** (cost of trainings, materials, labour, equipment): A detailed project report needs to be made for each slum. Approximate cost is about USD 10,000 per slum and training of 25 people. **Co-benefits:** Food security.	
Biodiversity	
• Afforestation with native tree species. **Costs associated** (Cost of trees, labour, materials, staff costs, training): USD 20,000 per plantation drive. **Co-benefits:** Alternate jobs creation, carbon sinks.	• Development of a land use plan for the urban and peri- urban areas. **Costs associated** (Cost of consultants, materials, meetings, trainings): USD 15,000 to develop the plan.
Drainage	
• Installing covers over all open drains. **Costs associated** (Cost of materials, labour, trainings): A detailed project report is required for assessment of costs. Approximate costs are USD 25 per meter of drain. **Co-benefits:** Better solid waste management.	• Operation and maintenance needs to be improved. **Costs associated** (Cost of training, cleaning equipment, labour, materials): Approx USD 1,500 per drain. A detailed assessment is required for cost estimation. **Co-benefits:** Technically competent staff.

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