

Informality and Resilience: Bidhannagar

Purpose Statement

This city specific problem statement will present an overview of the current situation of informal settlements and analyse their vulnerability through a climate lens. It intends to generate discussion that will enable the formulations of solutions aimed at more inclusive decision making.

Rationale

Informal settlements are situated in highly vulnerable locations and the conditions of its residents are worsened by their inability to adequately meet the basic needs due to their socioeconomic status. Their informal status makes it difficult for them to gain access to government service. This reality does not only aggravate their situation to cope with daily survival but also deprives them of the opportunity to enhance their capacity to respond to the potential impacts of climate change in their areas. They are thus the

Box 1: Within the context of this study the following are the definitions that have been adopted

Informal Settlements are residential areas where 1) inhabitants lack security of tenure 2) the neighbourhoods usually lack, or are cut off from, basic services and city infrastructure and 3) the housing may not comply with current planning and building regulations, and is often situated in geographically and environmentally hazardous areas¹.

Slums are heavily populated urban informal settlement characterized by poverty and large agglomerations of dilapidated housing often located in the most hazardous urban land².

The term '**Climate Resilience**' describes the ability of a system to bounce back or recover from a climate imposed hazard³. The resilience of an informal settlement increases and the risk of disruption decreases if it has benefited from investment in robust infrastructure that is adapted to local conditions and built to anticipate future climate threats⁴.

most vulnerable section requiring the most support. Building resilience within Informal Settlements will raise the city bottom line which will in turn lead to a more comprehensive city development.

Approach

The study adopted a mix of qualitative and quantitative techniques to capture data. Secondary review of literature, Key Personnel Interviews, Participatory Learning Appraisals in the settlements and collection of primary data from the municipality was conducted.

Slums in India and their Context within the Policy Framework

India has a total of 108,227 slums (Census 2011) with largest number being in the state of Maharashtra (21, 359). Indian cities with 46 million plus population had 38% of households within slums⁵. The National Sample Survey Office (NSSO) classifies slums in India into notified and non-notified. A survey conducted by the same (2011) on living conditions, found that a higher percentage of non-notified slums lack basic facilities as compared to notified slums. 31% of slums had no latrine or drainage facility, 27% of slums had no garbage disposal arrangement and 71% of the slums used a public tap standpost for drinking water.

For two decades (1970-1990) slum policies focused on the notion of 'slum free cities' which ended up translating into forced or voluntary resettlement of slums in central cities. The shortcomings of such an approach then led to a greater focus on slum upgrading and rehabilitation programs. The 12th schedule of the 74th Constitutional Amendment Act passed in 1993 initiated specific programmes that could be applied to address slum dwellers' needs⁶. While many poverty programmes are driven and funded by the Central Government, States are given the option of determining how to implement them or develop their own. Urban local bodies are further empowered to identify, formulate, implement and monitor local developmental and welfare programmes.

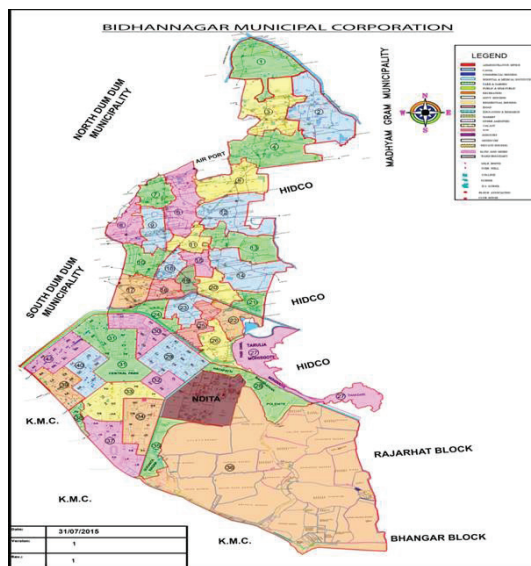
There is a rich and diverse policy landscape in India with both, a centralized and decentralized approach.

1. Derived from UN-Habitat (2003), The Challenge of Slums; UN-Habitat (2013), The State of the World Cities Report 2012/13. Refer to Issue Paper No. 9 on Land for 'security of tenure' definition.
2. World Bank (2008), Approaches to urban slums; UN-Habitat (2015), Streets as tools for urban transformation in slums; Cities Alliance (2010), Building Cities; Cities Alliance, World Bank and UN-Habitat (2002), Cities without Slums
3. Holling, Crawford Stanley (1973), "Resilience and stability of ecological systems", Annual Review of Ecology and Systematics Vol 4, pages 1-23
4. Seeliger, Leanne and Turok, Ivan (2013), 'Averting a downward spiral: building resilience in informal urban settlements through adaptive governance'. Environment & Urbanization, International Institute for Environment and Development (IIED). Vol 26(1): 184-199. DOI: 10.1177/0956247813516240
5. <http://www.globalurban.org/GUDMag07Vol3Iss1/Buckley.htm>
6. Loughhead, S., et. al, 2001. Urban Poverty and Vulnerability in India. DIFD's experiences from a social policy perspective. DIFD.

In essence, government poverty programmes aimed at economic development and social justice of the marginalized sector can be categorized as: 1) Urban Poverty Alleviation Schemes, 2) Other poverty programmes and 3) Empowerment and Safety Nets.

City Introduction: Bidhannagar

Bidhannagar is located on the north and north eastern edge of the city of Kolkata, West Bengal. It was built on reclaimed salt lakes to accommodate the growing population of Kolkata. Subsequently the town grew to occupy an area of 65.5 sq km. It is administered by Bidhannagar Municipal Corporation which was notified on 18th June 2015 by amalgamating two municipal areas and one gram panchayat, namely, Bidhannagar, Rajarhat-Gopalpur and Mahisbathan-II respectively and has a total population of 6, 34,107 (Census, 2011). Each of these areas has distinctly different characteristics. Rajarhat-Gopalpur and Mahisbathan-II GP being densely populated



suburbs with only basic infrastructure facilities and Bidhannagar mainly a planned township with advanced infrastructure. The average literacy rate is 90.44% which is higher than the national average of 74%. The city benefits from employment opportunities generated by various IT companies established around it.

There are around 202 slums in Bidhannagar with a population of 179,581⁷ making up 29% of the total city's population.

Situation Analysis

Three slums were surveyed each belonging to a different part of the newly formed BMC however data from only two slums (One notified, one non-notified) is presented here.

7. USHA and BMC data

8. <http://www.ibnlive.com/news/india/kolkata-1-dead-150-shanties-gutted-in-dum-dum-park-fire-1182116.html>

Box 2: Notified and Non notified slums- NSSO 2011

Notified slums: These are areas notified as slums by the concerned State governments, municipalities, corporations, local bodies or development authorities.

Non-notified slums: Any compact settlement with a collection of poorly built tenements, mostly of temporary nature, crowded together, usually with inadequate sanitary and drinking water facilities in unhygienic conditions, provided at least 20 households live there.

Harichandpally is a non notified slum occupying 47,850 sq m area on land belonging to the Public Works Department (PWD) and a private college – IIBRAD in the Prafulla Kanan-West area of the newly formed BMC. The slum was formed approximately 20 years ago and is located very close to a canal- Kestopur Khal. There are 320 families residing in the slum who are mostly permanent migrants from surrounding areas like the Sunderbans and Bangladesh. Majority of the households are Tribal and Dalit Hindus who fall in the Below Poverty Line (BPL) category. The monthly family income averages between 3000-4000 INR, however some families are barely able to make 1000 INR per month. Municipal services within this slum are largely absent and the situation of the slum is reflected in its surroundings. Unhygienic conditions and utter poverty prevails. Presently there is no NGO or CBO active within the slum, however in the past an NGO called Searchlight used to work with the women and children on livelihood. A major fire in the slum destroyed 68 hutments in December 2015⁸. Since the incident, there has been a greater interest shown by municipal authorities to connect the slum to basic services starting with piped water supply and construction of paved roads. The slum may soon be the beneficiary of the Housing for All and the Integrated Low Cost Sanitation Schemes.

Udayanpally is a notified slum occupying around 85,000 sq m area on land belonging to the Irrigation Department in the old Bidhannagar area of the newly formed BMC. The slum is located on the banks of Krishnapur Khal occupied by 800 households who are mostly migrants from surrounding areas of West Bengal like Murshidabad, Medinipur, Sunderbans, Burdwan, Howrah and some parts of Bangladesh. Majority of the households belong to the Scheduled Caste (SC) category. The houses in the slums are mostly given on rent to temporary or city migrants. Average family size is large and the monthly family income averages 7000-8000 INR. Municipal services within this slum are poor, however, a number of interventions have been planned, and some initiated by

the BMC to improve the slum based on prevailing and current government schemes. The slum is marked by unhygienic conditions and poverty. In the past, there was some work being done on health and schooling by an NGO however presently there is no NGO or CBO active within the slum. The BMC has started to plan for road, street lighting, water and sanitation works with the slum and the local ward councillor is working towards availing the re-settlement of some families via Housing for All scheme. Figure 1 represents the current scenario.

Institutional Support

It was found that while there were a number of urban poor programmes and schemes being initiated and implemented by the government within the city of Bidhannagar (Table 1) the slums surveyed were yet to benefit from them. A major hurdle to the

outreach of these schemes, as seen through our slum level interactions, was the data available with the municipality. The information on the slums that were studied proved to be outdated, in-comprehensive and did not reflect the ground realities.

Looking at informal settlements through lens of climate change

Past Hazards

























West Bengal is prone to a suite of hazards such as earthquakes, flooding, storm surges, cyclones and drought. The city of Bidhannagar is prone to water logging. In the year 2009, the severe cyclone 'Aila' hit the State of West Bengal with 120km/hr wind speed and around 2m high storm surge, devastating extensive areas in the state, killing people and flooding rural and urban areas.

Table 1: Current schemes implemented by Bidhannagar Municipal Corporation











Scheme/Programme/Mission	Highlight of Scheme	Outreach so far
Pradhan Mantri Awas Yojana	Housing for all by 2022	A detailed survey has been carried out and families have already been identified.
Integrated Low Cost Sanitation Scheme	Sanitation	Construction of sanitary latrines in slum areas
Basic Services to the Urban Poor (BSUP)	Provision of basic services including affordable housing, provision of land tenure and social security to the poor. Reservation of 25% of developed land in all housing projects, public or private, critical for slum improvement.	Rehabilitation of 9 slums and 16 units of G3 apartments have been built up
National Health Mission (NHM)	Health	Campaigns around health and hygiene
Atal Mission for Rejuvenation and Urban Transformation (AMRUT)	Urban infrastructure	The residents of Harichandpalli and Udayan palli slum will benefit from proposed services such as water supply and sewerage
Kanyashree Prakalpa	Girl child welfare	Financial assistance given to girl child for education in schools



Figure 1: Current scenario of slums surveyed

				CURRENT		
		UDAYANPALLY- Notified:- 85000sq m	HARICHANDPALLY - Non-notified:-47850sq m	UDAYANPA Notified:- 8500		
 <p>SOCIAL</p>	POPULATION	 3000-3600	 1500-2000	 <p>PHYSICAL</p>	HOUSING	 <p>Mixed housing of houses made of brick and temporary structures.</p>
	HEALTH (Common disease outbreaks)	 Vector and water borne diseases are common. There were outbreaks of chicken pox in the slum.	 Vector borne diseases like Dengue and Malaria and Water Borne diseases are seasonally recurrent.		WATER SUPPLY	 <p>Hand pumps are the main source of water. Public water stands also provide water source. There are 2 additional water sources in the summer.</p>
	EDUCATION (Literacy rates)	 Low levels of literacy especially in women. Many residents drop out after primary schools due to their economic status.	 Literacy rates of 30-40%, high rates of school drop outs attributed to the economic condition of the family.		SANITATION	 <p>Illegally constructed latrines. No connection to sewers. Black water is dumped into Khal.</p>
	CRIME	 High levels of crime. Gang wars and theft are common.	 Criminal activities like Gang wars, Hooliganism and Racketeering especially around land were prevalent.		SOLID WASTE MANAGEMENT	<p>No Bins. Waste is dumped in designated spaces from where municipal staff collects it or into the Khal.</p>
	ADDICTION	 Tobacco is commonly consumed. A small proportion consumes alcohol.	 Tobacco consumption is prevalent. Alcohol and narcotics are also consumed.		STORM WATER DRAINAGE	 <p>Absent except for individual household drains.</p>
	LEADERSHIP	 No informal leaders. Residents meet with the ward councilor or ward officer directly.	 Unlike the past, slum leaders are now actively concentrating on the development of the slum to ensure better conditions.		ELECTRICITY	 <p>Conditional supply from the grid to majority of transformers.</p>
	VOTING RIGHTS	 Most of the residents have voter ID cards	 Official records state only 2-3% of the total population has voting rights		LIGHTING	 <p>Absent</p>
						PUBLIC DISTRIBUTION SYSTEM
				GAS CONNECTIONS	 <p>90% HH use kerosene and LPG.</p>	
				CONNECTIVITY	 <p>Semi-pucca roads. Good connectivity of the city.</p>	

SCENARIO

<p>Area: 100sq m</p> <p>Construction: 80% made of bamboo and other temporary materials.</p>	<p>HARICHANDPALLY - Non-notified:-47850sq m</p> <p> 20% houses made of permanent materials. Rest are made of Bamboo and tin sheets</p>
<p>Water supply: Public tap 1km away. Drinking water is sourced from public taps 1km away. Many buy water at Rs.2/l. Public water tanks supply water on special requests.</p>	<p> 6 Hand Pumps. No piped water supply. Drinking water is sourced from public taps 1km away. Many buy water at Rs.2/l. Public water tanks supply water on special requests.</p>
<p>Toilets: Negligible toilets. No connection to sewers. 12 seats available in community toilet. Black and grey water is let into the canal.</p>	<p> Negligible toilets. No connection to sewers. 12 seats available in community toilet. Black and grey water is let into the canal.</p>
<p>Waste: Waste is dumped in the surroundings and the Khal. No collection of waste occurs.</p>	<p> Waste is dumped in the surroundings and the Khal. No collection of waste occurs.</p>
<p>Storm water: No storm water drains are present. Slum gets water logged during rains.</p>	<p> No storm water drains are present. Slum gets water logged during rains.</p>
<p>Electricity: Electric connections that are mostly legal have come up in the last 2-3 years.</p>	<p> Electric connections that are mostly legal have come up in the last 2-3 years.</p>
<p>Lighting: One High Powered Sodium Vapour light is present in the entire slum</p>	<p> One High Powered Sodium Vapour light is present in the entire slum</p>
<p>Ration: Barely 5% have a ration card and can access government services and schemes.</p>	<p> Barely 5% have a ration card and can access government services and schemes.</p>
<p>Energy: 75% of families use LPG for cooking. The rest use kerosene and wood.</p>	<p> 75% of families use LPG for cooking. The rest use kerosene and wood.</p>
<p>Road: The road in the slum is very narrow and is semi-pucca. The approach road is made of concrete and there is good connectivity to the rest of the city.</p>	<p> The road in the slum is very narrow and is semi-pucca. The approach road is made of concrete and there is good connectivity to the rest of the city.</p>




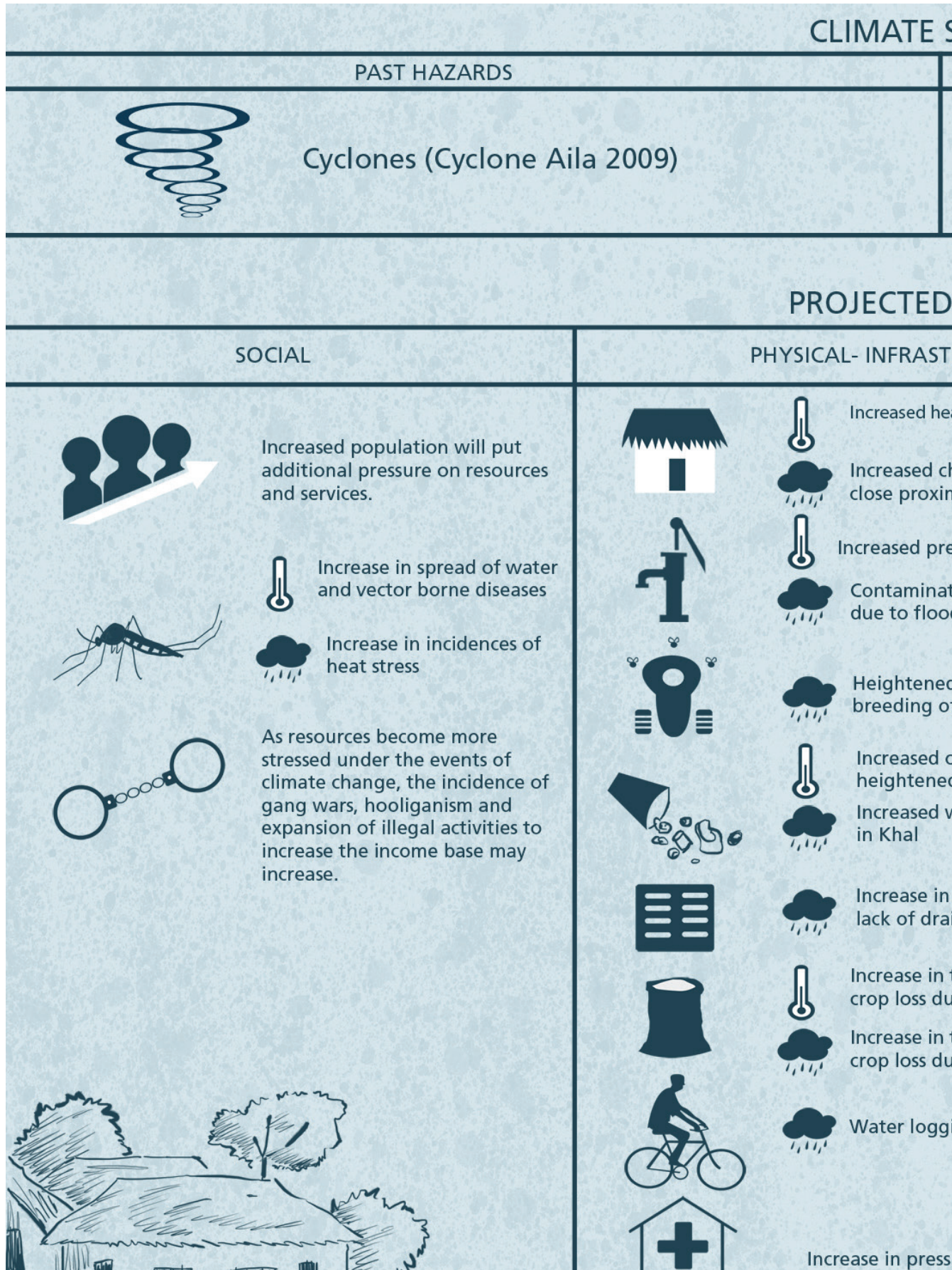
 <p>ECONOMIC</p>	<p>UDAYAN-PALLY-</p>	<p>HARICHAND-PALLY</p>
	<p>WORKFORCE</p> <p> Daily Wage workers, Rickshaw pullers, Bus drivers and domestic help.</p>	<p> Rickshaw pullers, fish mongers, van drivers and domestic help.</p>
	<p>MICROFINANCE</p> <p>Residents with voting ID cards can access microfinance and credit schemes by the government</p>	



Figure 2: Future projections and vulnerabilities of slums in Bidhannagar



SCENARIO

FUTURE PROJECTIONS



Increased temperature



Increased precipitation

SCENARIO

STRUCTURE & SERVICES

Living in temporary houses.

Increases of flooding in houses situated in proximity to the khal and temporary houses

Pressure on water supply system

Reduction of potable water and ground water logging

Increased unhygienic conditions facilitating the spread of vectors and diseases

Increases of fires in waste piles and unhygienic conditions.

Water logging due to waste disposal

Increases of water logging due to drainage

Increases of the price of grains and may affect quota, due to drought.

Increases of the price of grains and may affect quota, due to water-logging.

Washing and washing away of roads

Pressure on limited health services

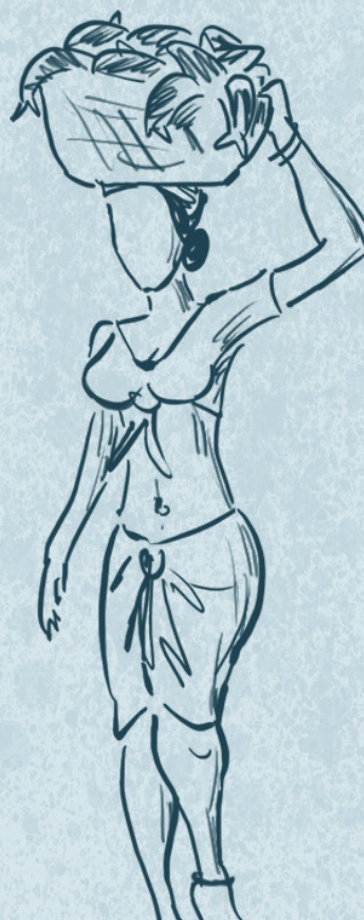
ECONOMIC



Those dependent on pisciculture will be affected



Daily wage earners and pisciculturalists will be affected by flooding events



Climate Projections

In the absence of downscaled climate impacts for the city of Bidhannagar, regional level projections for the Gangetic West Bengal were reviewed⁹. It was found that the following impacts could be expected:

- Projected mean temperature may show a net increase in 2015-2044 with respect to the mean temperature of 1969-2005 by 0.83° C.
- Projected precipitation may show a net increase in 2015-2044 with respect to the simulated rainfall of 1971-1999 by 0.6 mm/day.

In addition a review of the existing literature as well as city level interactions with officials and slum residents were undertaken to capture the perceptions

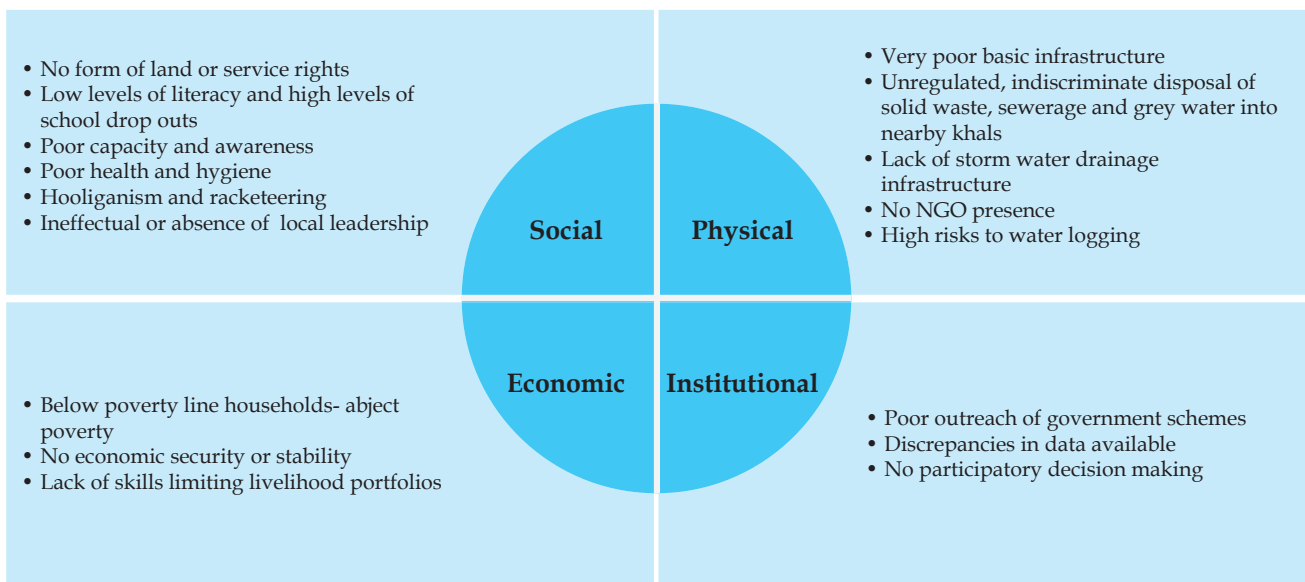
on climate change impacts at the city level. It was found that Bidhannagar has been experiencing hotter days and an increase in heavy rainfall. These trends are aligned with the regional level projections. The city is thus vulnerable to flooding as an effect of water logging and extreme heat events in the future.

Climate Change and the Informal Settlements

Taking into account the climate projections and the current state of the social, physical and economic systems within the slums, major vulnerabilities are summarized in Figure 2.

Problem Statement

Summarizing the situation of slums within the city, the following is the problem statement for Bidhannagar.



Slums in Bidhannagar fare poorly irrespective of their legal status. Lack of any form of service or land rights and awareness levels on the same has resulted in not just poor basic physical infrastructure, but also poor social infrastructure. High poverty levels, no economic security and limited livelihood options drive down literacy and education levels in the slum and vice-versa. The minimal service infrastructure like water supply, sanitation, drainage and solid waste will be further compromised by climate shocks affecting health, livelihood and quality of life. Existing barriers to institutional support, if not rectified, will restrict resilience building and adaptation within these slums.

9. ICLEI South Asia (2013). AsianCitiesAdapt - City of Howrah's Communication Strategy for Climate Change Adaptation