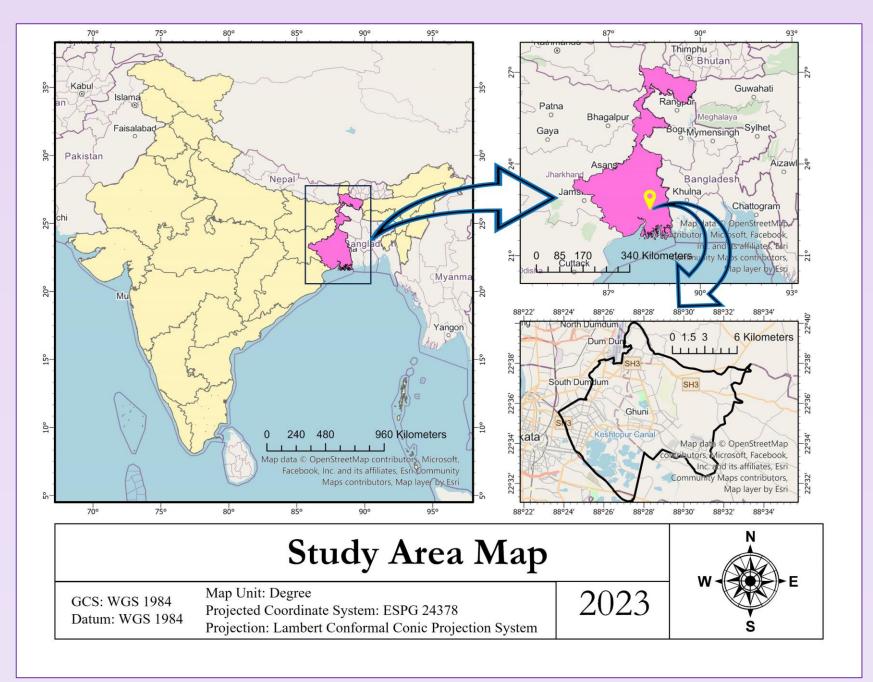
# Harnessing Nature: Integrated Management For Urban Flood Mitigation **Using Nature-based Solutions In East Kolkata Wetlands, India.**



# **1. Aim**

This research aims to assess "the potential realization of" area-specific NbS to reduce the impacts of urban floods due to the depletion of wetlands in east Kolkata, incorporating the perspectives of stakeholders.



East Kolkata Wetlands, Salt Lake Sector-V. Source: Frontline- The Hindu, 2023



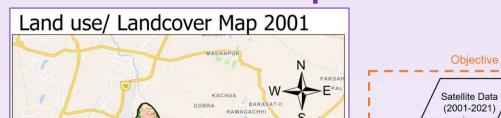
Waterlogging in Salt Lake, Kolkata. Source: The Telegraph, 2019

Location of the study area. Source: Author, 2023

# 2. Results

**Objective 1: To Determine the relationship between urban** 

### expansion and urban flooding

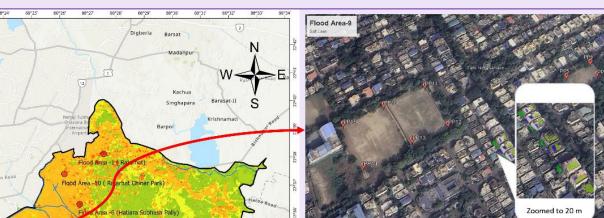




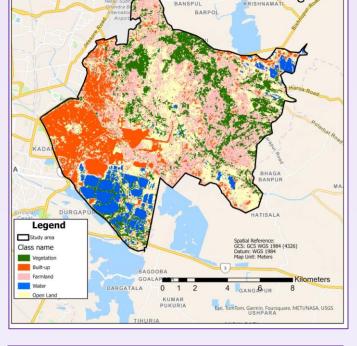
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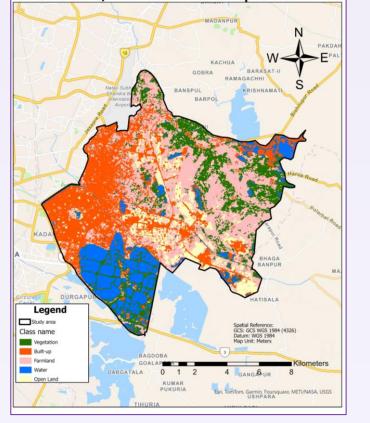
NbS interventions for Flood area-3. Source: Author, 2024

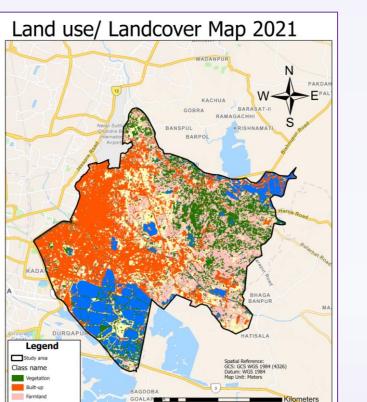


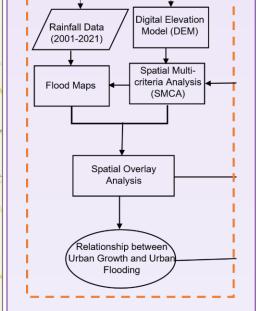


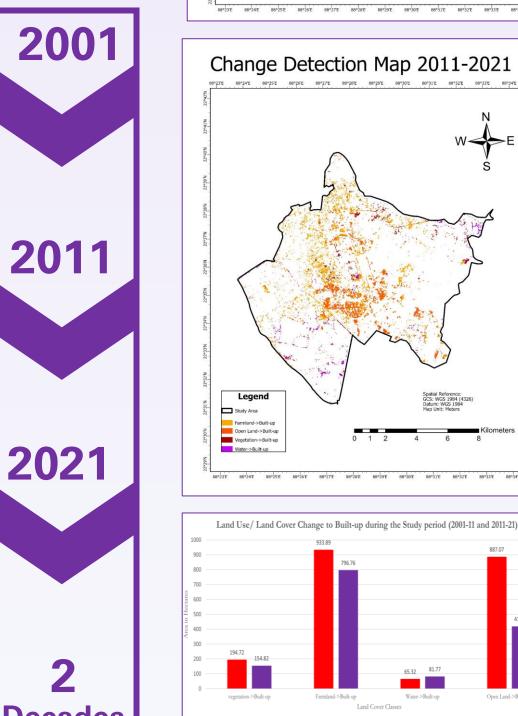


Land use/ Landcover Map 2011



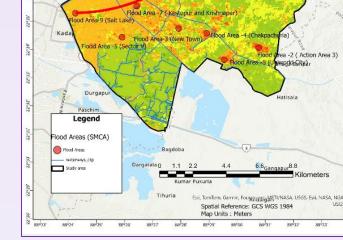






**Decades** 

Land use/Land cover change to Builtup. 2001-2021. Source: Author, 2024



Polarhar	22434 32435 2	Google harth	PP10	
i Area 3)	Z SEcZZ	NbS Intervention	Typology	Stakeholders
	.ZE0ZZ	Percolation Pits	'Iype-3	Government, Engineers and Municipality
	'iEbzz D	Rooftop Gardens (only for flat concrete roofs)	Type- 3	Local inhabitants
eters	DEaZZ	Rain Gardens	Type- 2	Municipality and Local inhabitants
i, NASA, NGA, USGS 88 <sup>4</sup> 33 88 <sup>4</sup> 34		Rainwater Harvesting System	Туре-3	Local inhabitants and Municipality

NbS interventions for Flood area-9. Source: Author, 2024

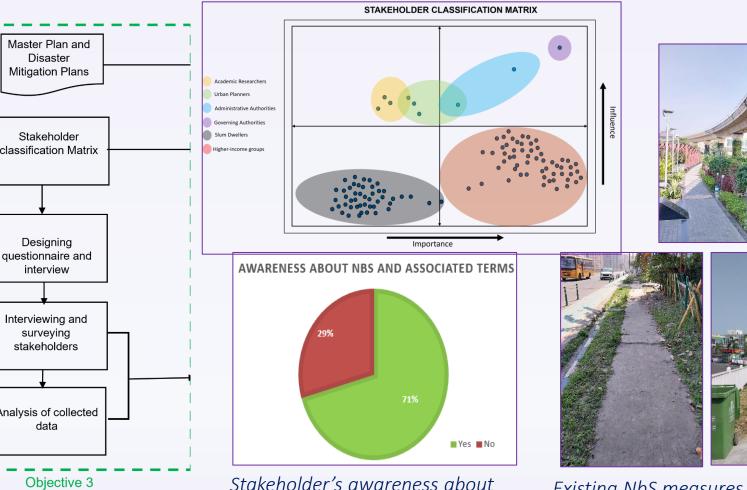




Photos from Flood area 9. Source: Author, 2024

## **Objective 3: To investigate the awareness of the stakeholders about NbS and**

#### their willingness to invest in it.



Stakeholder's awareness about NbS. Source: Author, 2024

Existing NbS measures in New Town and Salt Lake. Source: Author, 2024



→ Land use/ Land Cover Maps 2001-2021. Source: Author, 2024

#### **Objective 2: To explore suitable NbS measures for the target areas**

### based on their socio-physical characteristics

Objective 2				
Weighted Overlay Criteria Maps Vegetation Cover	WIZZ WIJZ WIJZ WIJZ WIJZ WIJZ WIJZ WIJZ	Plod Area Plod Plod Plod Area Plod		
NbS Target Areas		NbS Intervention	Typology	Stakeholders
	Parties Party Hattes	-B Bioswales and Porous Pavements	Турс-3	Government, Engineers and Municipality
	Flood Areas (SMCA)	- Rooftop Gardens	Турс- 3	Local Inhabitants
SMCA and Land use analysis outcomes for NbS Target areas	Ref - esteware_do   Bit - esteware_do   Dargetable0 1.1 2.2 4.4 6.6.6.angapu.8   Mumar Pulsuria - esteware_do - esteware_do - esteware_do - esteware_do   Tithuria - esteware_do - esteware_do - esteware_do - esteware_do - esteware_do	Kilometers Kain Gardens	Type- 2	Local Inhabitants and Municipality
	Esri, TemTon, Garmir, Fouggyangy HTI/NASA,			



- 1. Increase in impervious surfaces is causing urban floods.
- 2. NbS measures for the flood-prone areas were suggested based on stakeholder inputs.
- Stakeholders with higher socio-economic status had more awareness and willingness to 3. invest on NbS.



