

# Building Resilience: Integrating WASH and Vulnerable Communities into City Climate Action Plans, Case of Chennai.

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# Key Challenges in Climate Change-WASH-Vulnerable Communities in Indian Cities

1. **Increasing vulnerability** to Climate change impacts including flooding, droughts, urban heat islands & rising sea levels.
2. **Vulnerable communities** in informal settlements are **disproportionately affected**.
3. **WASH inadequacies** exacerbate health and socio-economic risks.
4. Gender challenges in WASH including lack of **privacy** in sanitation facilities & **safety issues**.

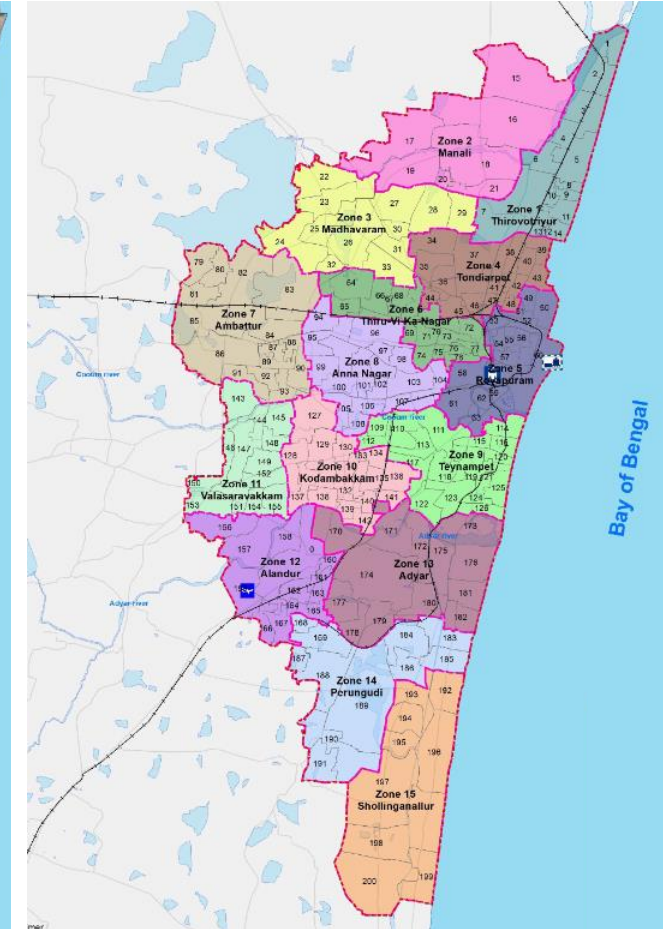
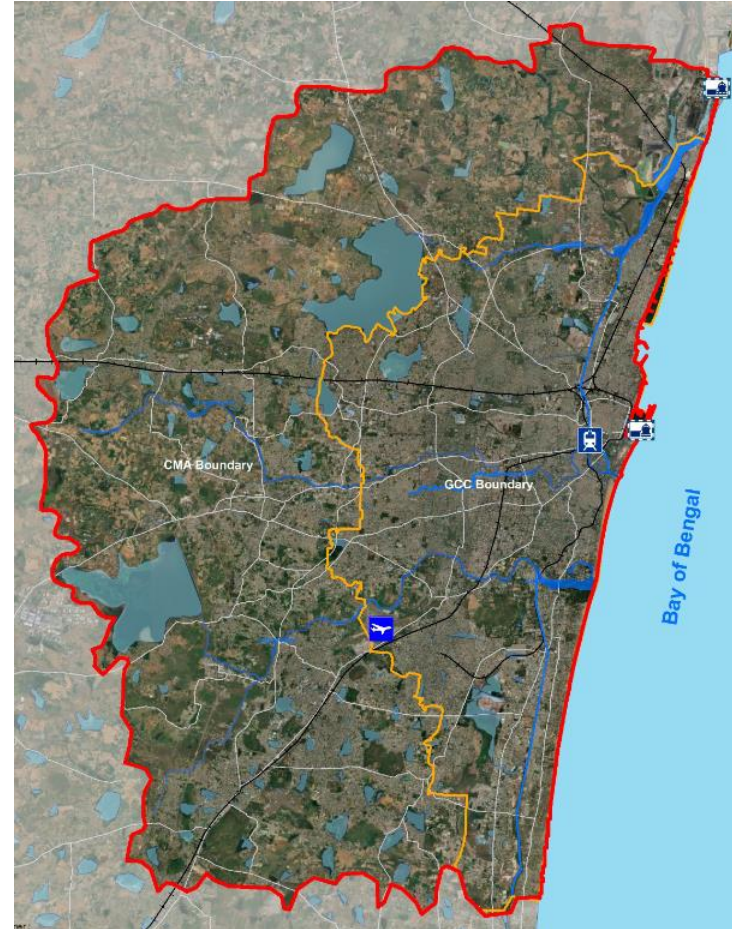
# Chennai Urban Landscape

Greater Chennai Corporation spans **426 sqkm** with **8.9 million residents** (2021 estimate).

**GCC** comprises **15 zones** subdivided into **200 wards**.

Urban Zones and Population Distribution

- 1. Core Areas** (Zones 4–10): High population density and well-established WASH infrastructure.
- 2. Peri-Urban Areas** (Zones 11–15): Rapid growth but comprehensive WASH services are lagging.



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# Priority Sectors

1.

Electrical Grid and Renewable Energy

“All residents have access to reliable, affordable, and zero-emission energy”



2.

Building Energy

“Making all buildings energy efficient”



3.

Transportation

“Moving toward sustainable mobility”



4.

Waste Management

“Efficient, effective, and resilient waste management system”



5.

Urban Flooding and Water Scarcity

“From a water-reactive to a water-proactive Chennai”



6.

Vulnerable Population and Health

“Climate Proofing for All”





# Climate Resilience Building Measures for Vulnerable Communities

## 1. PPE and Mechanisation

- Design and develop waterproof, heat-resistant and breathable PPEs for sanitation workers
- Centralise PPE procurement and decentralised distribution.
- Encourage mechanisation and vehicular waste management services



# Climate Resilience Building Measures for Vulnerable Communities

## 2. Health and Wellbeing

- a. Organise monthly free health camps to address chronic exposure-related illnesses in sanitation workers' neighbourhoods
- b. Conduct hygiene awareness among sanitation workers and their families
- c. Establish worker-driven first aid centres near sanitation hotspots
- d. Link informal & contract sanitation workers with the Tamil Nadu Cleanliness Workers Welfare Board (TNCWWB) for accessing their welfare schemes





# Climate Resilience Building Measures for Vulnerable Communities

## 3. Skilling and Training

- a. Provide climate-responsive skill training to sanitation workers
- b. Conduct camps, skill development and financial literacy programs for sanitation workers
- c. Provide skill-building programs for women sanitation workers to transition into supervisory and technical roles.





# Climate Resilience Building Measures for Vulnerable Communities

## 4. Governance and Monitoring

- a. Formally recognise sanitation work as essential climate resilience labour, ensuring pension benefits and structured wage systems
- b. Equip workers with mobile-based reporting tools to map hazardous work zones, enabling better climate adaptation strategies
- c. Create worker-centric policies that ensure stable employment contracts and hazard pay
- d. Provide climate risk allowances for CSWs working in extreme conditions





# WASH-centric City-Level Resilience Building Measures

## 1. Water Security

- a. Build water security through smart management including grey water reuse
- b. Encourage rainwater harvesting to improve water security

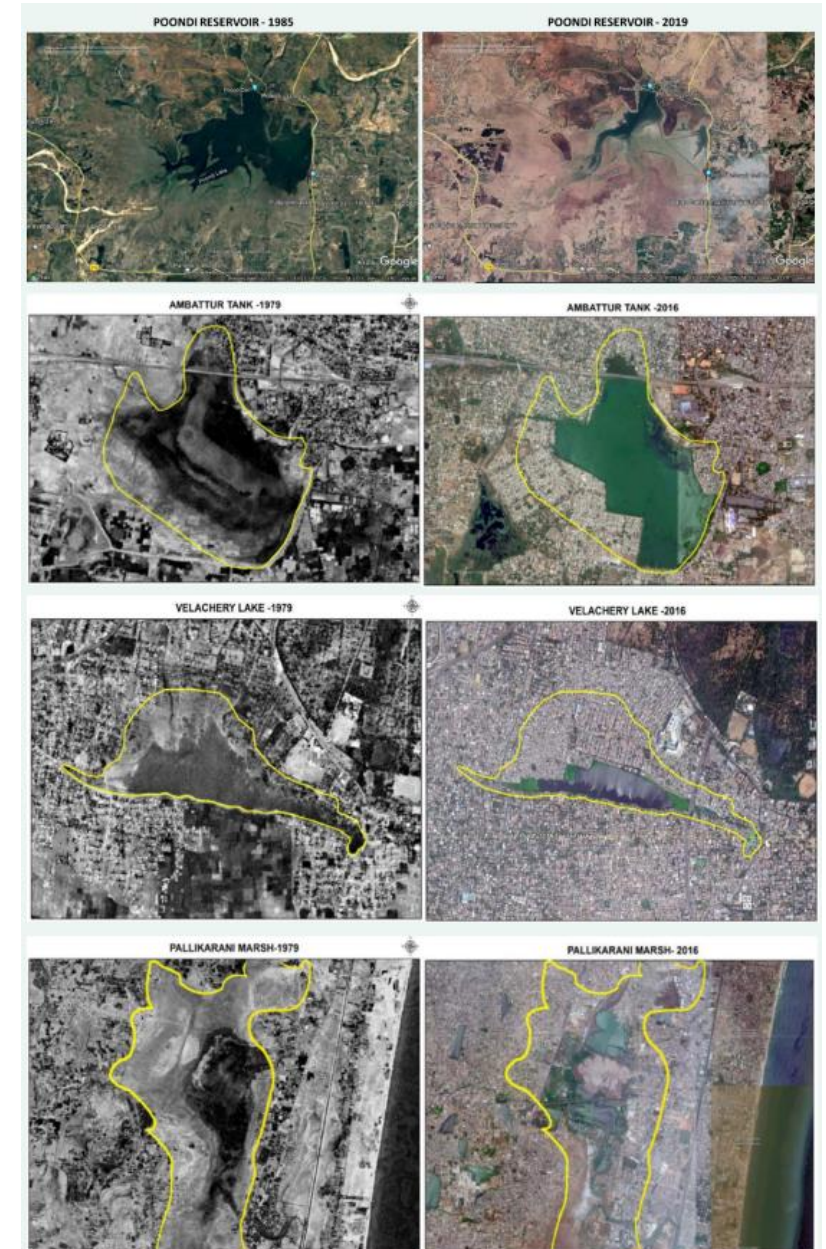




# WASH-centric City-Level Resilience Building Measures

## 2. Public Health Management

- a. Adopt eco-friendly sanitation systems to reduce waterborne disease outbreaks, especially post monsoon.
- b. Adopt decentralised solutions to reduce urban flooding including nature-based solutions and its associated health risks





# WASH-centric City-Level Resilience Building Measures

## 3. Efficiency Improvement and Safe Practices Adoption

- a. Promote worker-run businesses with higher uptake of mechanisation and safe practices to reduce manual waste handling.





# WASH-centric City-Level Resilience Building Measures

## 4. City Planning

- a. Mandate integration of climate adaptive WASH in the city's master plan
- b. Adopt resilient sanitation infrastructure such as elevated flood-resilient WASH infrastructure.
- c. Develop safe and climate resilient housing for slum dwellers – both retrofitting & relocation





# Prime infrastructure affected by Sea Level Rise in Central Chennai



Source: Leading consensus (IPCC 2021) as mapped by [coastal.climatecentral.org](http://coastal.climatecentral.org) for year 2100



# Policy & Regulatory Recommendations for Mainstreaming WASH

Urban Land  
Use Zoning  
for Climate-  
resilient  
WASH

Equitable  
Water &  
Sanitation  
Infrastructure  
planning

Disaster-  
Responsive  
WASH  
Infrastructure

Climate-  
Adaptive  
building  
norms

Sanitation  
Infrastructure  
& Worker  
Safety  
Standard

Green  
Building &  
FSI -  
Incentives,  
Property tax  
- rebates

Gender &  
Vulnerability  
– sensitive  
WASH

Institutional-  
ization of  
WASH &  
Climate  
Resilience

# Thank You

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