



Enhancing Climate Adaptation for Women in Delhi's High Heat Conditions

Policy Brief

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1. Introduction

Delhi lies in the semi-arid zone experiencing longer summers with maximum temperatures reaching 45°C. Climate change is resulting in higher temperatures and an increased number of days with high temperatures in the city. The number of days recording maximum temperature equal or more than 44°C increased from 18 in 2019 to 31 in 2022. Not everyone can change their lifestyles and activity patterns because of weather conditions.

People still need to travel during high temperature conditions exposing them to harmful health impacts. It is often stated that women travel less than men. This myth results in ignoring women travel needs required for caregiving, household, societal, and self-maintenance activities. Mothers, especially of school going children, may have more interdependencies, higher needs to travel during daytime, and limited capacity to change their travel choices, exposing them to high temperatures.

This study helps in understanding the travel activity pattern of mothers of school going children and the levels of travel choice adaptations pursued by them during high temperatures. Methods and toolkits were also designed to codesign mitigation and adaptation strategies with multiple stakeholders (practitioners, community, and government) and with school parents.

This policy brief consolidates findings from the project “Gendered Approaches for Addressing Adaptation Capacity to Hot Weather Conditions” funded through High Volume Transport Programme under UKaid. The brief outlines key strategies derived from data-driven analysis and participatory workshops, emphasizing individual, community, and government-led actions to reduce exposure and build adaptive capacity.

2. Study design

The study included physical audit of streets including documentation of shading devices, availability of green infrastructure, abutting built environment, and recording ambient temperature and humidity levels using thermal sensors. CCTV footage provided temporal variation in pedestrian and traffic volumes between two seasons. Response from parents of school going children from three schools were collected in a questionnaire-based survey to understand travel behaviour and potential adaptation choices.

The school represented diverse socio-economic background of parents. Except for street infrastructure audit, all other data was collected for two seasons. Except for street infrastructure audit, all other data was collected for two seasons – 1) March - Comfortable season (Season – 1) and 2) May – Hot season (Season – 2).

Mitigation and adaptation strategies are needed to improve thermal comfort on road, reduce exposure and enhance resilience to high temperatures. Two sets of workshops were conducted to define strategies. A workshop was conducted with multiple stakeholders to understand the relevant and acceptable heat mitigation and adaptation strategies. Second set of workshops were conducted with school parents using the toolkit developed as part of the study - **AMBI-KIT**. It is a play-based method that helped engage with diverse participants to visualize and prioritize mitigation and adaptation measures.

3. Key findings

Busting the myth – How much and why women travel?

- Women incur 3.5 trips per day per person, this is similar to the number of trips incurred by men.
- Women travel more for pick-up/drop-off children to school and for other after school activities (38%) followed by shopping (25%) and work, while men travel most for work (45%) followed by shopping (18%) and pick-up drop off/drop-off children to school and for other after school activities (17%).

Identified challenges

- **Infrastructure gaps:** Streets in Delhi lack appropriate infrastructure to ensure safe, walkable, and thermally comfortable environments for pedestrians. Walkability scores across 20 streets range from 0.3 to 0.7, where 1 represents ideal walking conditions. The majority of footpaths are poorly maintained or encroached by parked vehicles, garbage, and construction material. Maximum temperature varied by 8°C between different types of streets with the lowest maximum temperature of 30°C recorded in a lane of Munirka and highest on a collector road in Vasant Kunj. Even between lanes, the maximum temperature varies by 5°C. Lanes (< 10m wide) do not have green infrastructure but are shaded by abutting buildings. The green infrastructure availability is higher on roads which are more than 30m wide.
- **Gendered vulnerabilities:** Women are more dependent on walking (65%) to meet their travel needs for various purpose. 41% of their trips are incurred between 10:00 AM and 4:00 PM. This is the time of the day, when we observe maximum temperature. They are unable to change either their travel time or mode of transport even during high temperatures because of their multiple roles and restricted access to other modes of transport. Their trips increase during midday in May, when schools remain open despite temperatures exceeding 40°C, compared to March, when schools are closed. This, along with inadequate infrastructure, exposes them to high level of thermal discomfort.
- **Restricted adaptation capacity:** Low-income women face significant challenges in adapting to high temperatures due to limited access to resources and lack of flexible mobility options. They rely only on walking (86%), which increases their exposure to extreme heat, especially during midday hours.

4. Recommended strategies

The workshop led to identification of key strategies classified as individual-led, community-led and government-led initiatives.

Category	Proposed Strategies	Expected Impact
Individual-Led Actions	Stay hydrated	Reduce exposure and enhance personal resilience to high heat exposure.
	Wear weather-appropriate clothing	
	Carry umbrellas for shade	
	Using a DIY adaptation kit	
	Responsibility sharing at household level	
Community Initiatives	Establish shaded rest areas	Foster collective action and improve local conditions for thermal comfort.
	Conduct awareness campaigns	
	Provide drinking water in public areas	
	Responsibility sharing at community level	
	Setting up emergency kits in communities	
Government Policies	Develop shaded pedestrian pathways	Reduce urban heat island effects, enhance pedestrian safety, and promote sustainable mobility.
	Expand green infrastructure	
	Public cooling amenities	
	Deployment of additional para and public transport	
	Water misting stations at transit stops	
	Change work and school hours	
	Issuing heat advisories	

5. Policy recommendations

Addressing the issue of rising temperatures in cities would require a multidisciplinary approach.

Inclusive heat action plan: Proactive heat action plans developed using participatory approaches are needed that shall focus on mitigating rising temperatures and enhancing adaptation capacity. It should guide urban and transport planning to protect vulnerable populations focussing on improving infrastructure, empowering communities, and integrating gender-sensitive approaches. Interventions related to awareness generation, issuing health advisories, provisioning emergency kit, and changing work and school hours need to be considered.

Urban planning interventions: Strategies should address mitigating high temperatures at street and neighbourhood levels using data-driven approaches. The potential strategies related to greening spaces, shading streets, and using heat-resistant materials need to be incorporated in the development plans.

Transport action plans: These plans need to incorporate both mitigation and adaptation strategies. Street infrastructure should provide safe, walkable, and thermally comfortable experience. Water misting stations and cooling amenities along streets and at public transport stops shall reduce impacts of prolonged exposure to high temperatures while travelling. Provisioning additional para transit and public transport services shall reduce exposure levels.

Community support systems: Awareness generation and capacity building of community members like schools, hospitals, residents' welfare associations, and market associations is needed to implement community-level strategies.

6. Conclusion

Not everyone, and especially low-income women, or a mother of school going children can change their time or mode of travel even during high temperatures. Mitigation and adaptation strategies are needed to beat the rising temperatures in Delhi, requiring collaborative efforts across individuals, communities, and government agencies.

This policy brief calls for immediate action to protect vulnerable populations, especially women, from the adverse effects of extreme heat. Authorities need to improve green infrastructure availability and provide appropriate shaded footpaths. This would require street level heat index and infrastructure mapping to identify priority locations for interventions.

Policy makers need to consider changing work and school hours during high temperatures which would require building consensus with establishments and community. Communities should provide emergency kits and drinking water and foster responsibility sharing to reduce exposure and improve adaptations. Citizens should carry umbrellas and stay hydrated to reduce health impacts of prolonged exposure to high temperatures.

A multi-sectoral and multi-actor approach using participatory and codesign methods is needed that can help in reducing exposure to high temperatures and enable better adaptations.

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