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Working in the Heat: Home-Based Workers and Climate Justice in Delhi

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SEWA Delhi trade committee member Babita Ben – photographed in her home that doubles as a workplace in July 2025. Photo credit: Ruhani Kaur

Key Findings

Delhi is highly vulnerable to climate change impacts, with heat stress an escalating challenge. This policy brief presents findings from action research conducted with the Self Employed Women's Association (SEWA) Delhi to understand the impacts on home-based workers in Delhi.

1. **Heat impacts on work and health:** Women workers reported widespread livelihood disruptions. Seventy-four percent experienced reduced demand for their services, 84% reduced their working hours, and 88% reported declining productivity due to heat – changes that together eroded already low earnings. Health impacts were severe: 85% missed at least one day of work a month because of heat-related illness affecting themselves or family members, often requiring medical treatment and increasing unpaid care responsibilities.
2. **Household vulnerability and coping:** Over 80% of workers reported earnings below INR5,000 per month (less than a third of Delhi's statutory minimum wage), and six in ten said their income was insufficient to meet basic household needs. Two-thirds reported cutting back on food consumption to cope with the heat. Reported debt rates doubled between survey rounds, rising from 35% to 70%.
3. **Infrastructure deficits:** Infrastructure mapping and survey results show acute and widespread shortfalls in water, sanitation, electricity, and housing quality across settlement types. These deficits intensify heat exposure, reduce productivity, increase time burdens – particularly for women – and undermine both short- and long-term coping and adaptation.
4. **Early warning systems and social protection access:** Fewer than half of respondents reported receiving timely weather alerts, even during peak heat. Across both survey rounds, four in ten respondents did not have ration cards, which provide subsidized food grains and act as the gateway to other welfare schemes. For those who do have ration cards, benefits are insufficient to cope with climate-related disruptions.
5. **Policy gaps and priorities:** Policy analysis highlights significant gaps in labour, social and climate protections. Key to addressing these is recognizing homes as workplaces and extending climate-responsive social protection, income security and health services to home-based workers. Strengthening housing, basic services and neighbourhood-level cooling, alongside planning reforms that enable home-based work, is essential to reduce heat exposure and economic loss. Embedding worker organizations in climate and just-transition governance will help ensure that adaptation measures protect and strengthen livelihoods rather than undermine them.

Introduction

Globally, an estimated 260 million workers produce goods or provide services in or around their homes (Bonnet et al. 2021:1). In India, about 74 million people work as home-based workers, accounting for 14% of total employment (Raveendran 2024:5). More women than men work as home-based workers globally (Bonnet et al. 2021:2); in India, 29% of urban women's employment in 2022–2023 was in home-based work (ibid). Home-based workers are present across sectors, supplying low-cost goods and services and playing key roles in domestic and global supply and distribution chains. Because homes also serve as workplaces, housing conditions and infrastructure directly shape exposure to environmental risks such as extreme heat.

India is among the countries most vulnerable to extreme heat, with heatwaves projected to increase in frequency and severity (Pillai and Dalal 2023). The summer of 2024 was the hottest on record, with large parts of the country experiencing prolonged heatwaves and temperatures exceeding 45°C. The summer of 2026 is predicted to surpass that of 2024. Policy attention on heat impacts and heat-related occupational risks is increasing (Pillai et al. 2025; WHO 2025). However, policy and research have tended to focus on formal workplaces and outdoor workers (some of whom are informally employed), leaving a gap in understanding heat impacts on people who work inside their homes. This research builds on and contributes to the small but growing evidence base on the impacts of heat on home-based workers (HNSA 2022; Meade et al. 2025; Jabeen 2019; Saithwaite et al. 2018).

This research builds on WIEGO's long-term collaboration with the Self-Employed Women's Association (SEWA), Delhi. SEWA Delhi has organized women workers since 1999 and has over 100,000 members, including 20,000 home-based workers. Fieldwork began in March 2025 with infrastructure mapping across seven home-based work clusters in Delhi. In late March and early April 2025, the research team surveyed over 300 home-based workers across those clusters using mobile-based surveys. Delhi recorded temperatures exceeding 46°C in June 2025. To assess summer heat impacts, the team surveyed the same cohort again in mid-July 2025. This policy brief presents the primary findings, starting with a review of policies and programmes relevant to home-based workers, synthesizing the infrastructure mapping and survey results, and concluding with intervention priorities.

The Policy Landscape for Home-Based Workers

The International Labour Organization's Home Work Convention 177 of 1996 (C177) was a watershed policy for subcontracted home-based workers (also called homeworkers) in industrial supply chains, providing them recognition as workers. C177 calls for governments to produce, implement and periodically review national policies to improve conditions for homeworkers, including fair remuneration, occupational safety and health standards, statutory social security protections, and the right to establish or join organizations. Despite the large number of home-based workers in the country and pressure from worker organizations, India has still to ratify C177.

HomeNet South Asia and SEWA initiated a process, informed by C177, involving worker leaders, lawyers and key state officials that resulted in a National Policy

on Home-based Workers for India. The draft and subsequent revisions provide a roadmap to secure legal recognition and fair remuneration, improve working conditions, homes and surrounding environments and provide social security. For sub-contracted workers, it suggests establishing tripartite mechanisms with worker representatives, employers/contractors and government and for self-employed home-based workers addressing issues related to access to credit and markets. Yet, despite pressure from worker organizations, the policy has not been adopted or even finalized. WIEGO along with SEWA Delhi and other local partners continue to advocate for adopting a country-wide and holistic policy on home-based work and have revised the draft to include climate-related issues. In the absence of a national policy, the next section reviews the current laws that are relevant to home-based workers.

Minimum wage and social protection

India's Minimum Wages Act (1948) has long empowered states to set, review and revise minimum wage rates for designated industries. With advocacy from worker organizations, some trades, such as stitching and *bidi* (cigarette) and *agarbatti* (incense) rolling where home-based workers operate, have been included in certain states. Many other home-based trades remain excluded, leaving large groups of home-based workers without coverage. For those who are covered, enforcement is weak since there is often no recognized employer–employee relationship, the home doubles as the workplace, and labour departments frequently lack the orientation and capacity to enforce the law.

Largely through civil-society efforts, tripartite boards have emerged in sectors such as *bidi* and *agarbatti* manufacturing. These boards include representatives of government, employers and workers. Sector-specific legislation has provided statutory backing for welfare structures that benefit home-based workers. Where tripartite boards have functioned effectively, they have helped secure upward revisions of piece rates (the way most home-based workers are paid) and expanded social security benefits, including healthcare, childcare and housing for home-based workers – providing a useful reference point for progressive policy.

The Government of India has introduced four new labour codes – the Code on Wages (2019), the Code on Occupational Safety, Health and Working Conditions (2020a), the Code on Social Security (2020b) and the Code on Industrial Relations (2020c) – merging 29 existing labour laws. This codification helps ensure that workers in informal employment – often referred to as unorganized workers – receive recognition and welfare. While the codes were passed by Parliament in 2019 and 2020, they were only notified in November 2025 and analysis suggests that they leave critical gaps for home-based workers.

The Occupational Safety, Health Working Conditions Code 2020 and the National Policy on Occupational Safety, Health and Environment at Workplace (2009) together outline India's approach to occupational safety and health. The policy states that "the rise in self-employment, greater sub-contracting, outsourcing of work, homework etc. pose problems to management of occupational safety and health risks at workplaces" and notes that the policy extends "even to" unorganized workers. The policy and the subsequent code however are designed for formal

establishments, with the code only covering establishments with 10 or more workers, thus excluding home-based workers. Risks specific to heat and home-based work, including ergonomic hazards, poor ventilation, indoor heat exposure and broader climate-adaptation needs remain unaddressed.

The Code on Wages universalizes minimum wages for all workers, potentially addressing minimum wage gaps for home-based workers. But since it fixes a wage floor and allows for a five-year freeze in revision, it could construct a framework where the price of labour continues to fall below the cost of living (Korada 2026). The Code on Social Security integrates laws on provident funds, insurance, maternity benefits, and pensions, and includes home-based workers as a category within the unorganized workers, signifying formal recognition. Section 109 of this code mandates central and state governments to frame welfare schemes for unorganized workers. Life and disability cover, health and maternity benefits, and old-age protection are mentioned, as well as provident funds, employment injury benefits, housing, educational schemes for children, upgrading of skills for workers, funeral assistance and old-age homes. This suggests the creation of a social security fund specifically for unorganized workers. Advocates for home-based worker rights note that the Unorganised Workers' Social Security Act (2008) provided a similar mandate to the social security code, but was poorly implemented.

The digital portal E-Shram, launched by the Government of India in 2021, serves as the central database for unorganized workers and aims to improve social security service delivery. Workers face several challenges in both registering for and benefitting from the platform. Foundational and digital literacy levels among workers are low, and many workers lack reliable internet access or data. In addition, many home-based workers go unrecorded as the portal does not include a "place of work" identifier or recognize home-based work as a distinct category. SEWA's (2025) mapping of occupational categories in its database of nearly 70,000 home-based workers found that only 27 of the 68 categories of home-based work were listed. Even where occupations are identified, the portal does not distinguish between different work contexts – a tailor working in a garment factory and a tailor working from home are both registered as "tailor".

If E-Shram is to serve home-based workers effectively, these issues must be addressed through portal reforms, localized outreach, and clearer accountability frameworks for scheme implementation. Without addressing these gaps and introducing comprehensive last-mile delivery guidelines, the promise of expanded social security coverage for home-based workers risks remaining unrealized.

Workers' need for minimum wages and social protection becomes critical during prolonged heat, when earnings drop and health risks rise. Yet the minimum wage and social protection landscape has gaps in coverage, identification, registration and benefit delivery. Although new measures like national boards and social security funds could benefit home-based workers, they have not yet been translated into worker-centred, accessible plans. Without resolving these issues, heat-related livelihood losses will push home-based workers deeper into poverty.

Urban Planning, Policy and Infrastructure

Because their home is their workplace, home-based workers are uniquely affected by urban planning approaches and infrastructure delivery. City-wide planning,

codified in master plans, infrastructure and housing policies, often results in evictions, relocations and peripheral resettlement (Bhan 2013). This threatens livelihoods by separating workers from markets and clients. Displaced workers often face permanent loss of income, clientele and social networks built over years (Sinha et al. 2022). Eviction drives are amplified in city beautification processes and in the run-up to hosting mega-events.

At the settlement level, home-based workers have long called for a stop to evictions and for the city to instead focus its efforts on providing decent water and sanitation services across settlement types and for *in situ* upgrading of existing slum settlements (HNSA 2017:8-9). A critical issue is the revision of restrictive zoning regulations that prohibit commercial activities in residential areas and limit mixed-use development. These criminalize home-based work and render workers vulnerable to harassment (Lall et al. 2025). Home-based workers' productivity would be significantly enhanced by the provision of community and workspace along with childcare centres in areas with a concentration of home-based workers. With climate pressures, the delivery of these services is urgent.

Under the Pradhan Mantri Awas Yojana (PMAY) scheme, the government has revised the guidelines for low-cost housing to incorporate climate-resilient construction standards and disaster-resistant design norms, including improved structural strength, flood-resistant foundations, heat-resilient roofing, and energy-efficient materials for affordable housing. The guidelines encourage eco-friendly construction technologies, rainwater harvesting systems and natural ventilation to reduce environmental impact and enhance sustainability. However, serious concerns have been raised about the lack of implementation (Choudhury et al. 2023; CSE 2020; UNEP). In addition, the guidelines make no mention of the home as a workplace. This omission is especially significant given the scale of the housing backlog: according to one estimate, more than half of the urban housing stock India needs by 2070 has yet to be built (World Bank 2025). Building and design norms therefore need to be adjusted both to reflect climate and sustainability goals and to accommodate workspace within housing design.

Heat advisories and climate action plans

With rising heat and recurrent heatwaves, many cities and some states have introduced Heat Action Plans (HAPs) to help prepare for, respond to and recover from heatwaves. The National Disaster Management Authority first introduced national heatwave guidelines and advisories in 2016. The exact number of HAPs in India is unknown, but one estimate suggested there were well over 100 (Pillai and Dalal 2023:4). HAPs typically include heatwave warning systems, public awareness campaigns and immediate actions, such as changing working hours. Some include longer-term adaptations, such as investing in cooling centres, cool roofs and water-harvesting infrastructure. Pillai and Dalal's analysis of 37 HAPs found that they were underfunded and that, although most identify outdoor workers and residents of informal settlements as vulnerable, few include interventions to protect these groups (2023:1-2). Across HAPs, indoor heat exposure is largely unrecognized, alongside an implicit assumption that homes are "safe" from heat.

In 2025, the National Disaster Management Authority issued an Advisory on Protecting Informal Workers during Heatwaves (2025). The advisory recommends measures such

as mapping informal work, adjusting work timings, ensuring access to water, shade and rest spaces, and considering compensation mechanisms. Importantly, it recognizes that for workers in informal employment work is often outdoors but may also take place in poorly ventilated urban spaces. Home-based workers are explicitly identified among the vulnerable occupational groups. Despite this national recognition, implementation remains a challenge. While Delhi's Disaster Management Authority developed a Heat Action Plan for 2025 and 2026,[1] this has a strong focus on public health – targeting hospitals, schools and vulnerable groups such as older people – and has no strategies to protect the livelihoods of workers in informal employment. This suggests a critical gap between national policy frameworks and state-level implementation.

The Delhi State Action Plan on Climate Change has remained nascent and focuses on sectoral goals – improving energy efficiency, promoting renewable energy and expanding low-emission transport systems – rather than on workplace adaptation measures for vulnerable workers.

These frameworks also lack vulnerability criteria that capture the specific risks faced by workers in the informal economy. While vulnerability is often assessed in terms of physical infrastructure or climate exposure, there is little consideration of the socio-economic dimensions of vulnerability, such as lack of social protection, insecure livelihoods, dependence on weather-sensitive work and limited access to public services.

The policy landscape analysis suggests that, while some advances have been made in recognizing workers in informal employment in India, home-based workers face significant gaps in coverage, enforcement and implementation and thus continue to be in the shadows. Labour, social and climate protections are unlikely to make a material difference until the government explicitly recognizes home-based workers and provides targeted interventions. These can best be derived through active engagement with workers and worker organizations. Home-based workers' organizations in turn need to collectively organize and meaningfully engage with the state to put forward their demands.

Home-Based Work in Delhi – Size, Contributions and Spatial Location

In Delhi, an estimated 513,000 people engage in home-based work, accounting for 7% of total employment.[2] Twenty-three percent of women who are employed in Delhi are home-based workers, in contrast to only 4% of men. (Raveendran 2024:6). WIEGO's previous research, in partnership with SEWA Delhi, shows the diversity of work among home-based workers and the location of home-based work clusters (**Figure 1**). The activities of home-based workers have a wide range, for example, manufacturing, packaging, repair and food processing. Tasks range from garment stitching and embroidery, bead and accessory making, garland and bindi making, and toy assembly to packaging and food-related work like spice packaging and vegetable processing. Work is often organized

[1] Although titled the Delhi Heat Action Plan 2025, the plan is still in effect in 2026 and has been referenced accordingly throughout this document.

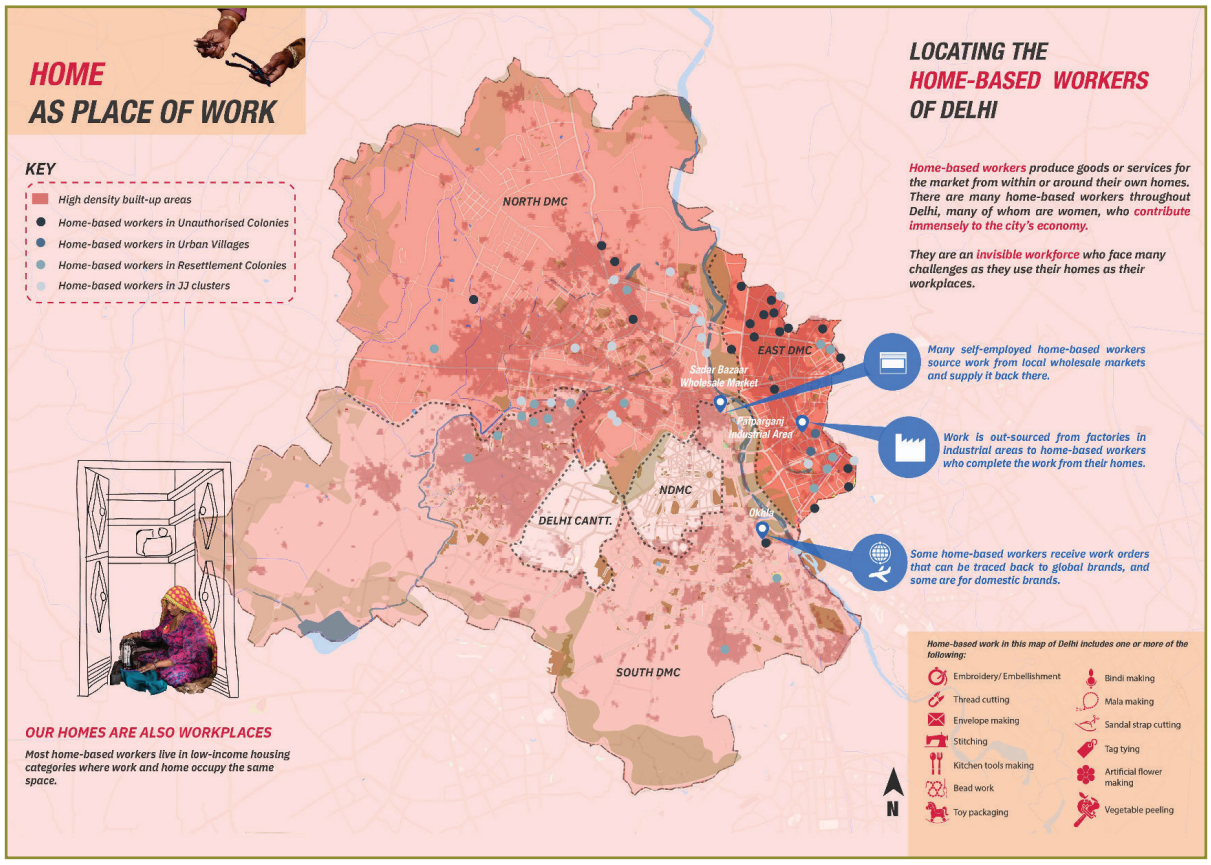
[2] In these and the national figures, there is likely undercounting. Enumerators are often not trained to recognize women home-based workers and women home-based workers often do not report themselves as workers. As a result, home-based workers are often listed as doing unpaid domestic work.

through subcontractors who distribute raw materials to workers' homes and collect finished goods. Many home-based workers are linked to industrial supply chains – finishing or assembling products that are sold in domestic and global markets (WIEGO 2021). Home-based work plays a key role in the city economy.

The map suggests that home-based work is predominantly located in high density settlements, to the north but also to the east of the city where industry is located. Mukhopadhyay and Kunduri (2019) show the complex interlinkages between planned and unplanned industrial areas and surrounding residential neighbourhoods from which labour is sourced. Work often moves back and forth across these spaces, and proximity is particularly important for women workers, who rely on nearby production and sourcing networks to balance income generation with household responsibilities.

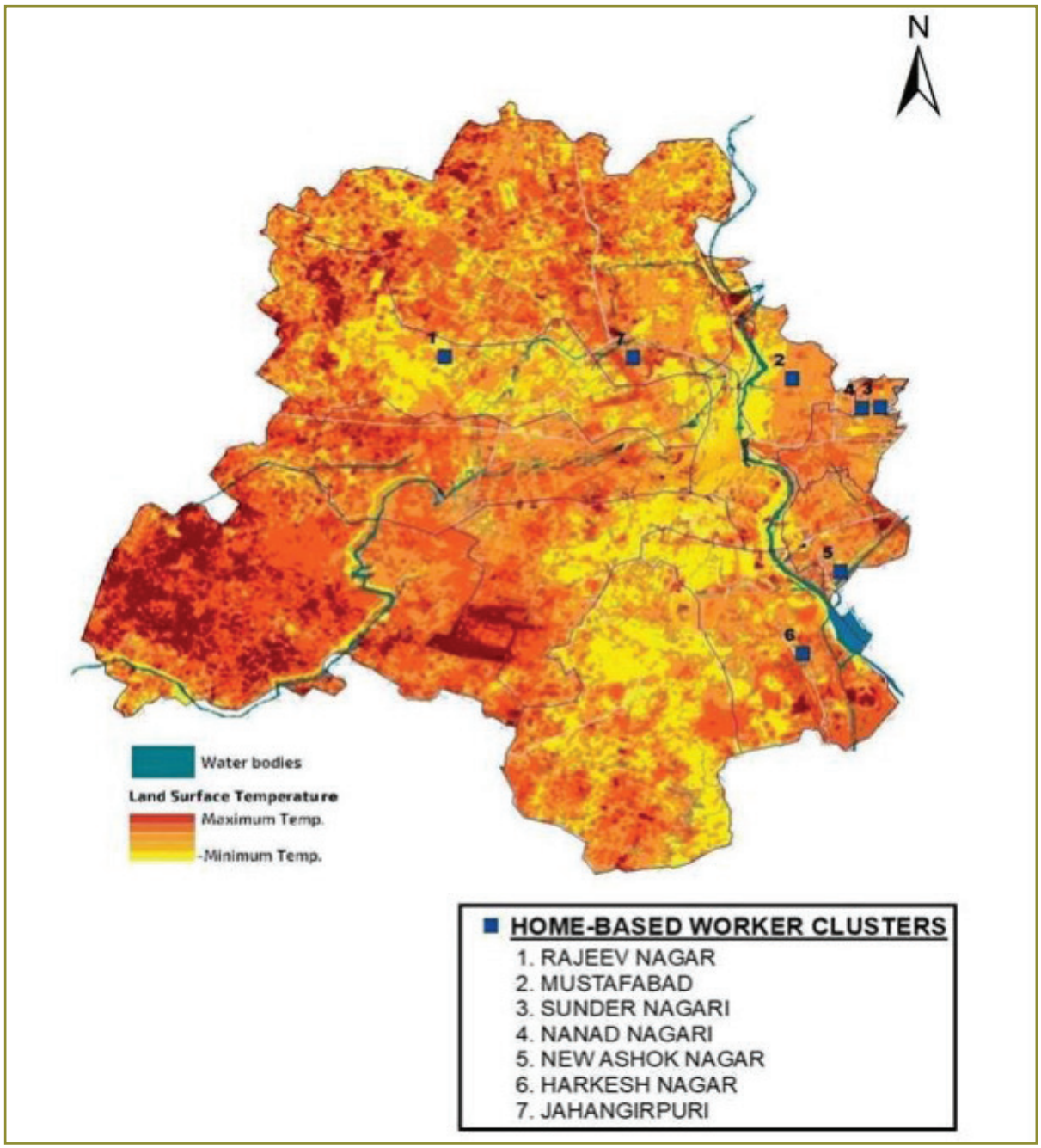
Climate research shows how impacts of extreme heat on health, quality of life and economic productivity are unevenly distributed within and across cities (Dodman 2022). Mitchell et al. (2021) note that, in Delhi, rapid population growth combined with the expansion of informal settlements shapes patterns of heat vulnerability. Singh and Grover (2016) show that parts of Delhi, notably the east of Delhi where there is predominance of both industry and density of settlement, are subject to a heat island effect. This is also where there is a predominance of home-based work clusters.

Figure 1: Spatial location of home-based work clusters across Delhi, 2021



Source: SEWA Delhi and WIEGO, 2022:19

Figure 2: Location of survey sites mapped onto land surface temperature data, Delhi, June 2023



Source: United States Geological Survey, 10 June 2023

Figure 2 maps land surface temperature in the height of the summer of 2023 and shows the seven study sites. These sites are spread across the northern and eastern parts of the city and the map suggests they often correspond with higher land surface temperatures. Home-based work clusters are largely located in high density settlements characterized by haphazard buildings often constructed out of materials that absorb and amplify heat, providing minimal thermal comfort. The clusters also lack access to water and sanitation and communal and green spaces. These are all factors that increase vulnerability to climate-related hazards.

Infrastructure Mapping

The research team conducted infrastructure mapping in all seven settlements. During the survey, the team spent time in each settlement observing the settlement design, macro and micro infrastructure, and also interviewed organization leaders and workers. The findings are summarized in **Table 1**.

Table 1: Infrastructure mapping of study sites

Area & Settlement Type	Settlement Observations	Access to Water	Access to Sanitation	Monthly Rental (average or range)	Average Size of Dwelling
New Ashok Nagar – authorized colony	Dense, 2 or 3-storey tenement structures characterized by single-room dwellings and shared facilities	Individual household connection; water available for only a few hours each day	Single toilets shared by 8-12 families per floor	INR2,000-8,000	9m^2 single-room units
Harkesh Nagar – resettlement colony	Dense, multi-storey tenement structures characterized by single-room dwellings and shared facilities	Shared water points through public provision and submersible pumps	Single toilets shared by 8-12 families per floor	INR3,000	19m^2 single-room units
Jahangirpuri – resettlement colony	Formal housing, with tin roofs and no or very poor ventilation	Individual household connection; water available for only a few hours each day	Community toilets	INR2,500-3,000	21m^2 single-room units
Nand Nagri – resettlement colony	Old housing units, poor construction quality, structural defects and inadequate infrastructure	Shared connection through public provision, but acute water shortages	Shared toilets and community toilets	INR2,500-7,000	14m^2 single-room units
Sunder Nagri – resettlement colony	Formal houses but affected by poor construction quality, structural defects and poor maintenance	Individual household connection, water available for only a few hours each day	Sewer-connected private toilets	INR2,500-7,000	21m^2 single-room units
Mustafabad – unauthorized colony	Semi-formal dense housing	Shared connection, dependent on submersible pumps	Private toilets connected to septic tanks	INR5,000	29m^2 or more, single-room units
Rajiv Nagar – unauthorized colony	Dense housing and narrow lanes, no windows and heightened vulnerability due to being in a flood-prone, ecologically sensitive area	Shared connection through public provision, water available for only a few hours each day	Private toilets connected to septic tanks	INR3,000-5,000	9m^2 single-room units

Settlement type and tenure security

Exclusion from formal urban planning leads to settlement design and infrastructure deficits that directly impact general and climate-related resilience. It also constrains residents' individual and collective adaptive capacity. Without settlement and tenure security, communities limit their own investments in housing improvements and infrastructure upgrades (Satterthwaite et al. 2018).

Ashok Nagar is the only authorized colony in the sample. As a planned settlement within Delhi's urban planning framework, it benefits from legal recognition, planned layouts and comparatively more stable access to infrastructure and services. Home-based workers in the area, however, still face constraints related to housing quality and access to water. Four clusters in the sample – Harkesh Nagar, Jahangirpuri, Nand Nagri and Sundar Nagri – are resettlement colonies. Since the 1960s, the Delhi Development Authority has established resettlement colonies to accommodate communities evicted from other parts of the city. In principle, resettlement colonies should benefit from relatively clearer regulatory frameworks and better infrastructure than informal settlements. However, home-based workers in these clusters faced poor housing conditions and inadequate services. Those in housing constructed by the state, such as Sundar Nagri, lived and worked in dwellings with structural defects and seepage due to poor construction. The final two clusters – Rajiv Nagar and Mustafabad – were developed without formal approval in the city's planning framework so are unauthorized. They are characterized by insecure tenure, limited access to basic services and low-quality construction. Public infrastructure and services are particularly inadequate.

Settlement recognition and tenure security protects residents from relocation, evictions and demolitions. Relocations and evictions impact home-based workers in multiple ways, including severing their links to clients, suppliers and local production networks. While tenure security varies across and within the settlements included in the study, the greater the degree of authorization, the more likely residents are to have secure tenure. Residents of Rajiv Nagar are most vulnerable to evictions since it is an unauthorized settlement. Also, it is located in a flood-prone zone in an ecologically sensitive area designated for conservation.

According to worker leaders, most home-based worker members rent rather than own their homes. This means that even in settlements where tenure is secure, home-based workers' tenure is not. The estimated rentals range from INR2,000 to INR8,000 per month, with the highest in Ashok Nagar. Given that most home-based workers in this study reported earning less than INR10,000 per month, housing consumes a substantial share of household income.

Access to water, sanitation and electricity

Lack of access to adequate water and sanitation combined with environmental hazards common in informal settlements – including poor waste management and polluted water bodies – have direct implications for the health and productivity of home-based workers (Chen and Sinha 2019). The need to address these issues is longstanding but acute during periods of heat.

Access to drinking water is particularly important given its role in preventing heat-related illness. Water access across the clusters varied, with individual household connections available to

home-based workers in only three of the seven sites. Even in these cases, water was available for only a few hours a day and was not necessarily potable. The other four settlements had communal taps with water supplied by the municipality or submersible tanks. Many households, especially those in unauthorized colonies, rely on water tankers or bottled water, often at additional cost and effort. Workers in Mustafabad and Rajiv Nagar are estimated to spend between INR300 and INR1,000 per month on water, depending on availability and household size, which is a significant share of income for low-income households. It is the work of women to carry water, often some distance and up multiple floors. For women workers, the time they spend collecting water is time away from their work so it has an opportunity cost. For home-based workers with irregular earnings, recurring water costs directly reduce disposable income and affect the viability of home-based production.

During the hot season, when water needs increase, supply at all sites became more irregular, with no fixed timing, limited volume and considerable deterioration in quality. This substantially increased the time women spend collecting water. With the quality of water deteriorating, more residents have to buy drinking water, with cost, time and health implications.

Among the study sites, only Sundar Nagari has sewer-connected private toilets. In New Ashok Nagar and Harkesh Nagar, single-unit toilets are shared between eight and twelve families, while in Jahangirpuri and Nand Nagari there are overcrowded community toilets. In addition to overcrowding, hygiene problems and the time and cost of cleaning shared facilities were raised as concerns. Residents in the informal settlements of Rajiv Nagar and Mustafabad have access to private toilets that are connected to septic tanks or drains. Most households in Rajiv Nagar lack individual water connections and rely instead on communal taps that supply water for only a few hours each day and less reliably in summer. The settlement's location on a floodplain further compounds these challenges. Again, the high costs of maintenance are borne by users. In several locations, bathing is in the open. Overcrowded, unsafe or distant toilets and lack of privacy particularly affect women. These longstanding concerns are all amplified during periods of increased temperatures.

Electricity plays a role in making homes cooler and more habitable. Many home-based workers need electricity to generate light and for work tools like sewing machines. In summer as temperatures rise, so does the demand for electricity due to increased use of cooling (extra fans, water coolers) and other appliances. This, combined with overheating within the system, generates power outages. The infrastructure mapping suggests that intermittent supply and power outages are spread unevenly across the city. The most reliable electricity was reported in New Ashok Nagar, the only authorized colony in the sample, and Mustafabad, an unauthorized colony. In Nand Nagari, cuts of two to three hours daily are common. The situation is more severe in Jahangirpuri and Rajiv Nagar, where regular outages can last one to two days. In many cases, tenants pay significantly higher rates for electricity than homeowners. Electricity connections are typically registered in the name of property owners, who benefit from government subsidies – such as free electricity up to 200 units – while tenants pay higher per-unit rates through landlords.

Workplace constraints

Jabeen's (2019) analysis of women's differentiated access to and use of public spaces (such as streets), parochial spaces (where people form networks around shared environments, such as neighbourhoods or workplaces) and private spaces (the household) illuminates the gendered nature of climate-risk exposure and adaptability. She finds that very few public spaces are accessible to women within the study sites, and that women are consequently more confined to parochial and private spaces than men.

Private spaces in the study area are very small – on average 10m^2 in New Ashok Nagar and Rajiv Nagar, with slightly larger average unit sizes in the other settlements. The largest units, in Mustafabad, measured only 30m^2. These are mostly single rooms shared with families that function simultaneously as sleeping, cooking, living and working areas. Women, therefore, spend considerable time and effort every day rearranging living and working spaces. The limited home size, together with storage space that is either unavailable or improvised and insecure, constrains the ability to take on bulk orders or buy bulk raw material at cheap rates.

With no formal storage, materials are kept in corners or under beds and are frequently damaged by rats, water leaks, or children, causing rework and loss of earnings. Poor housing quality further increases the risk of damage to equipment, raw materials and finished goods, reinforcing financial insecurity and reducing overall work efficiency. Many units also suffer from limited ventilation – few or no windows – and some structures are built from heat-trapping materials, contributing to extreme indoor heat. Insufficient lighting, whether due to power cuts or efforts to reduce electricity costs, reduces productivity. When workers are forced to operate outdoors, they face greater exposure to air pollution and other hazards, including harassment.

The infrastructure mapping reveals acute, widespread deficits in water, sanitation, electricity, housing quality and tenure security that undermine home-based workers' health, wellbeing and productivity. These deficits amplify vulnerability to extreme heat: irregular and non-potable water supply limits heat-illness prevention; overcrowded toilets and lack of privacy disproportionately affect women; intermittent power outages reduce cooling capacity and work capacity; and small, poorly ventilated single-room dwellings built with heat-trapping materials create extreme indoor temperatures. Combined with high rental costs that consume a substantial share of low incomes, these infrastructure shortfalls constrain residents' ability to invest in housing improvements or adapt to extreme weather, reinforcing financial insecurity and reducing overall work efficiency.

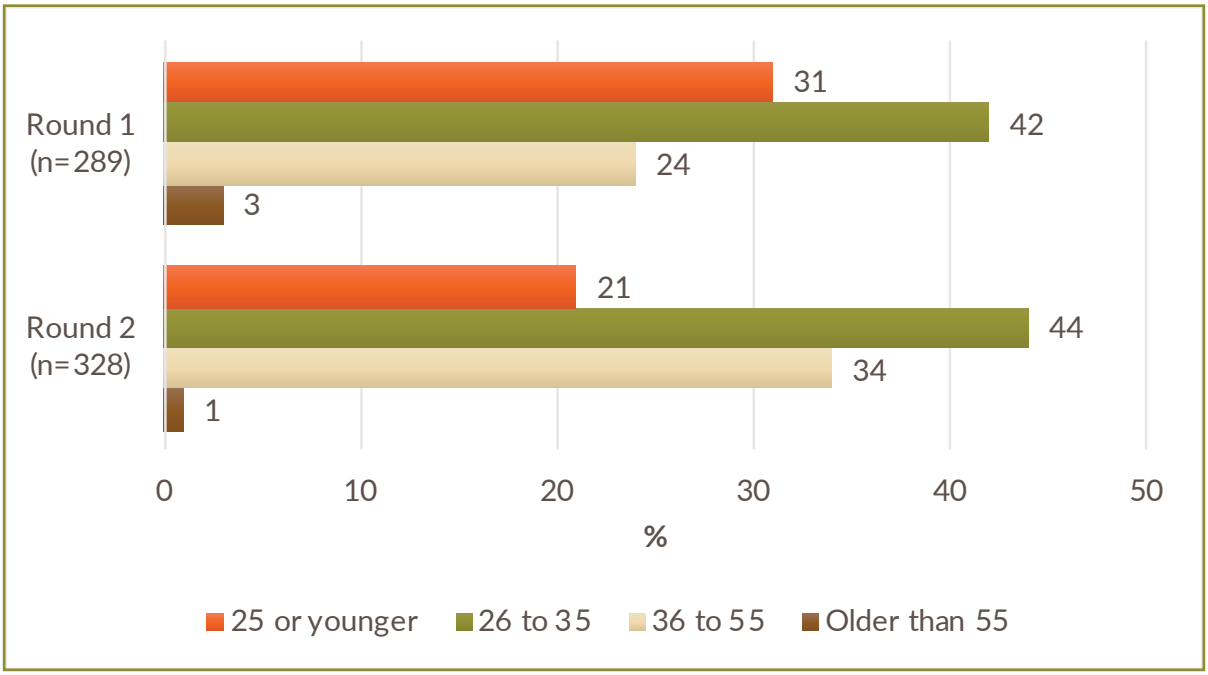
Home-Based Workers and their Households

As noted in the introduction, over 300 surveys were conducted with home-based workers at two points in time. WIEGO partnered with &Wider, who specialize in direct worker engagement using mobile-phone-based surveys. In the first round of the survey, conducted between 25 March and 9 April 2025 before the summer heat, 314 home-based workers participated, with 289 completing all 20 questions. In June 2025, Delhi recorded temperatures exceeding 46°C and a real-feel peak of 48.9°C on 9 June, leading the Indian Meteorological Department to issue an orange alert (The Hindu 2025). To assess the impacts of the heat, the same clusters were revisited between

8 and 18 July 2025. In this round, 328 of the 356 workers who participated completed the survey. Only complete surveys were considered in the analysis. Comparisons between round 1 and round 2 of the survey reflect aggregate patterns and changes between the two rounds rather than tracking specific individuals – cohort analysis.[3] Since the fieldwork was facilitated by SEWA, the sample is biased to women and organized workers.

Those interviewed were all women. **Figure 3** reflects the age of respondents in both rounds, showing that most were between 26 and 35 years old. In round 1, the next largest group was 25 or younger (31%), while in round 2 it shifted to 36-55 (34%), suggesting the second cohort consisted of older women. Workers over 55 made up less than 5% in both rounds. This suggests that home-based work is concentrated among women in their prime working years, particularly during periods characterized by greater care responsibilities.

Figure 3: Age distribution



Household type and size

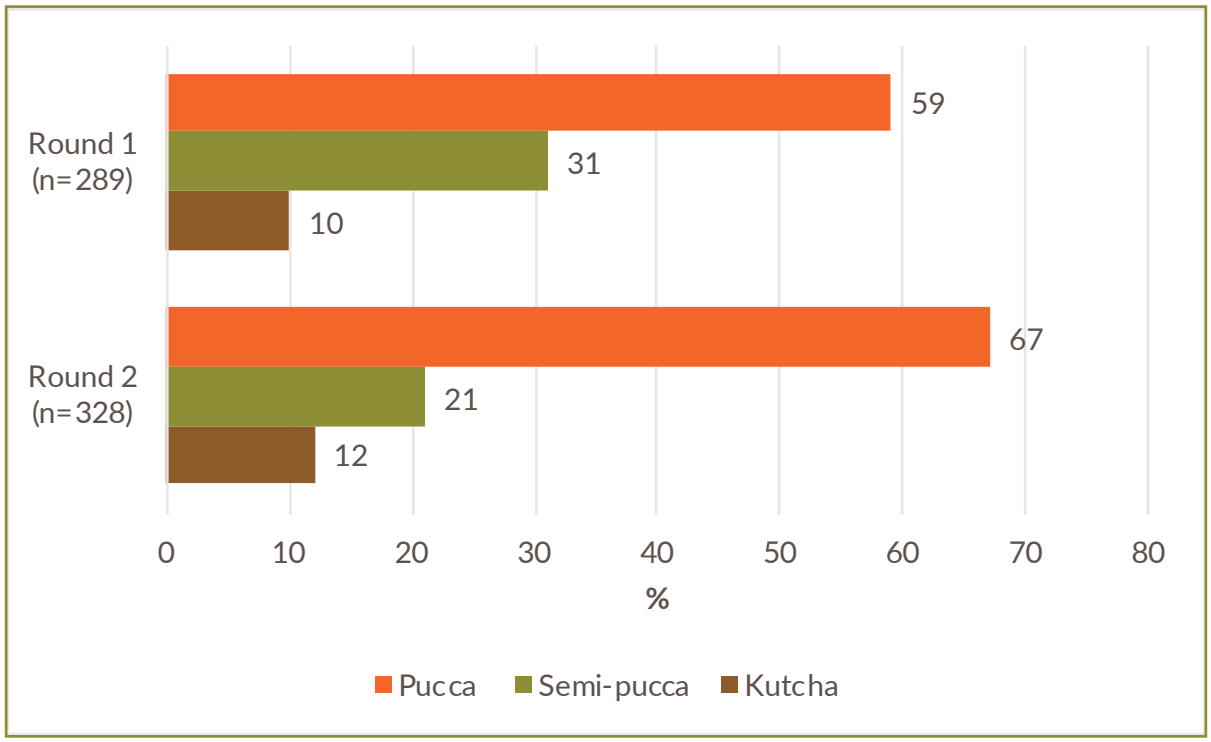
Existing research suggests construction materials and housing design can significantly worsen heat exposure. Mahadevia et al.'s (2020) study of 860 low-income households in Ahmedabad, for example, shows that residents living in informal structures experienced significantly higher temperatures compared to those in formal structures – with an average temperature difference of 7.6°C. (2020:45-7). Nix et al.'s (2020) study of households in a Delhi resettlement colony found that, for informal dwellings, the indoor temperatures were often higher than outdoor temperatures. Another study of 392 households across heat hotspots in Indian cities found that, even in formal dwellings, commonly used construction materials such as cement

[3] Since there is no census data for all home-based workers in Delhi and thus no sampling frame, the findings are indicative rather than representative.

and slate significantly contributed to heat retention (IRADe 2020). Meade et al. (2025) note that homes that remain dangerously hot well into the night limit opportunities for physical recovery.

Respondents were asked what type of house they lived in and given options of *pucca, kutcha or semi pucca*. *Pucca* houses refer to those with durable walls and roofs, such as concrete or brick; *kutcha* houses refer to those made of non-durable materials like mud or bamboo; and semi-*pucca* houses combine *pucca* walls with non-*pucca* roofs. These are colloquial terms but align to the housing types used by census enumerators. Findings are summarized in **Figure 4**.

Figure 4: Housing type

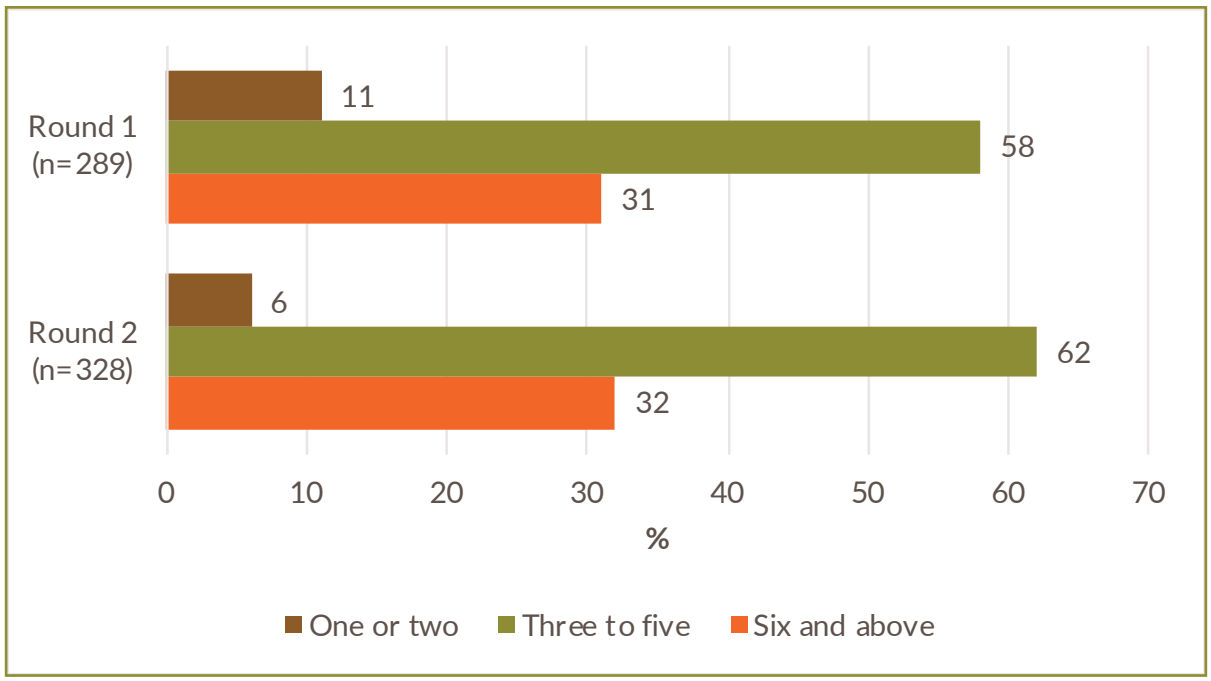


The majority of respondents in both cohorts lived in *pucca* housing – 59% in round 1 and 67% in round 2. The infrastructure mapping shows that *pucca* housing can still leave residents vulnerable due to poor design, maintenance and lack of services. Thirty-one percent of respondents reported living in semi-*pucca* houses in round 1 and 21% in round 2. About one in ten respondents lived in *kutcha* houses. Housing types vary by location, with home-based workers living in Jahangirpuri having a higher-than-average concentration of *kutcha* houses (25%), while those in Mustafabaad show a higher concentration of *pucca* housing (84%).

Previous research has also suggested that overcrowding intensifies heat stress (IRADe 2020). To assess this and proxy for dependency ratios, respondents were asked how many people, including themselves, lived in their household. The findings for both rounds are reflected in **Figure 5**. For both cohorts, around six in every ten respondents lived in households with between three and five people, while nearly one-third lived in households of six

members or more. This indicates that many home-based workers are part of large family units, suggesting that their earnings and care work likely support multiple dependants. These household sizes are notable when considered alongside the infrastructure mapping, which found that many respondents lived in single-room dwellings of approximately 10-20m^2, with the largest units rarely exceeding 30m^2. Together, this points to overcrowded living conditions that may intensify heat stress. Small living spaces shared by large families may also lead to competing demands on the same space, which can intermittently disrupt home-based work.

Figure 5. Number of people living in the household



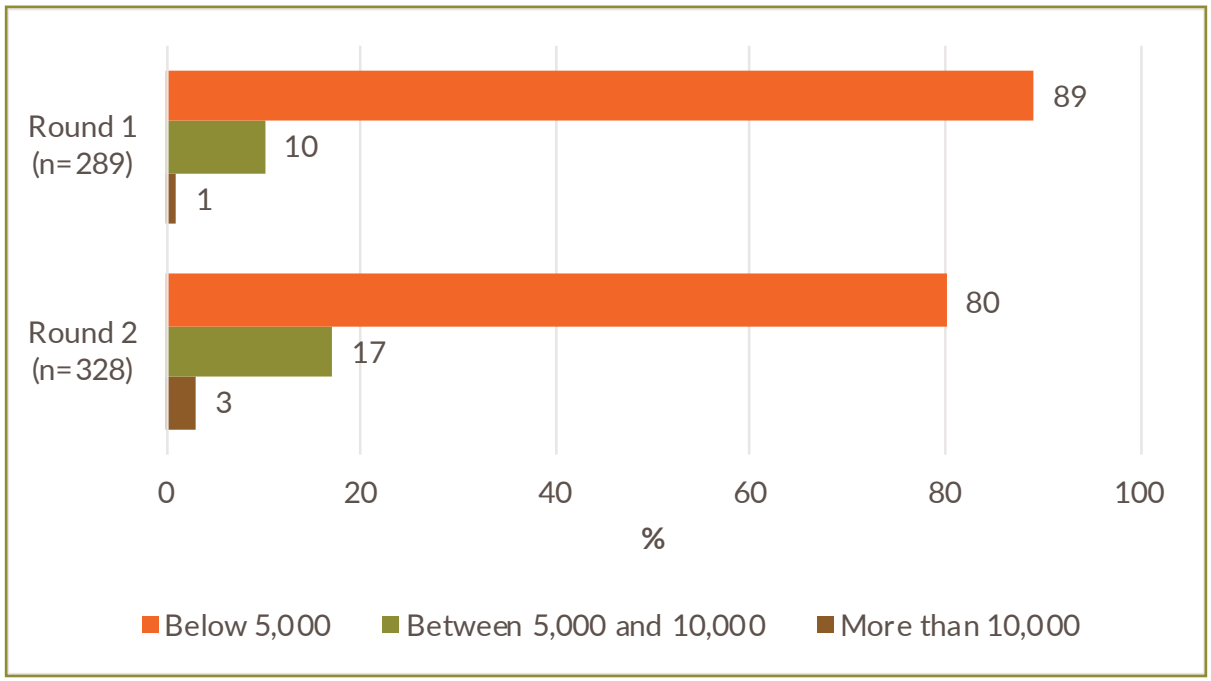
Goods produced

Women home-based workers in the sample are primarily engaged in sewing, with 77% reporting this as their primary work activity in both survey rounds. Between 18% and 20% were engaged in other tasks, including toy and lime-powder packing, screw and rubber cutting, envelope making, and making jewellery and accessories. Less than 5% were involved in food processing. Certain localities show especially high concentrations of sewing, notably Harkesh Nagar (97%) and New Ashok Nagar (92%). Harkesh Nagar is located near industrial zones associated with fabric segregation and related activities. In New Ashok Nagar, while many men work in nearby factories – particularly in the garment sector – women are engaged in the production of women's clothing for surrounding markets (Yumnam, Singh and Pathak 2025). These patterns show the interconnections between residential and industrial areas and interdependencies between formal and informal production.

Basic needs and income

Respondents were asked if, in the last month, their household earned enough to cover basic needs, such as housing, food, water and energy. In round 1, 51% said their income did not cover their household's basic needs, while in round 2 this increased to 63%. Respondents were also asked how much they typically earned from their work as a home-based worker per month. As **Figure 6** shows, 89% and 80% of the sample reported earning less than INR5,000 per month in round 1 and round 2 respectively. Less than 20% reported earning between INR5,000 and INR10,000, and in both rounds only a few workers reported earning more than INR10,000. As a point of comparison, Delhi's statutory minimum wage in 2025 was INR18,456 per month (Government of NCT of Delhi 2025). These findings thus show that most home-based workers' earnings are insufficient to cover their household's basic needs.

Figure 6: Monthly income (in rupees)



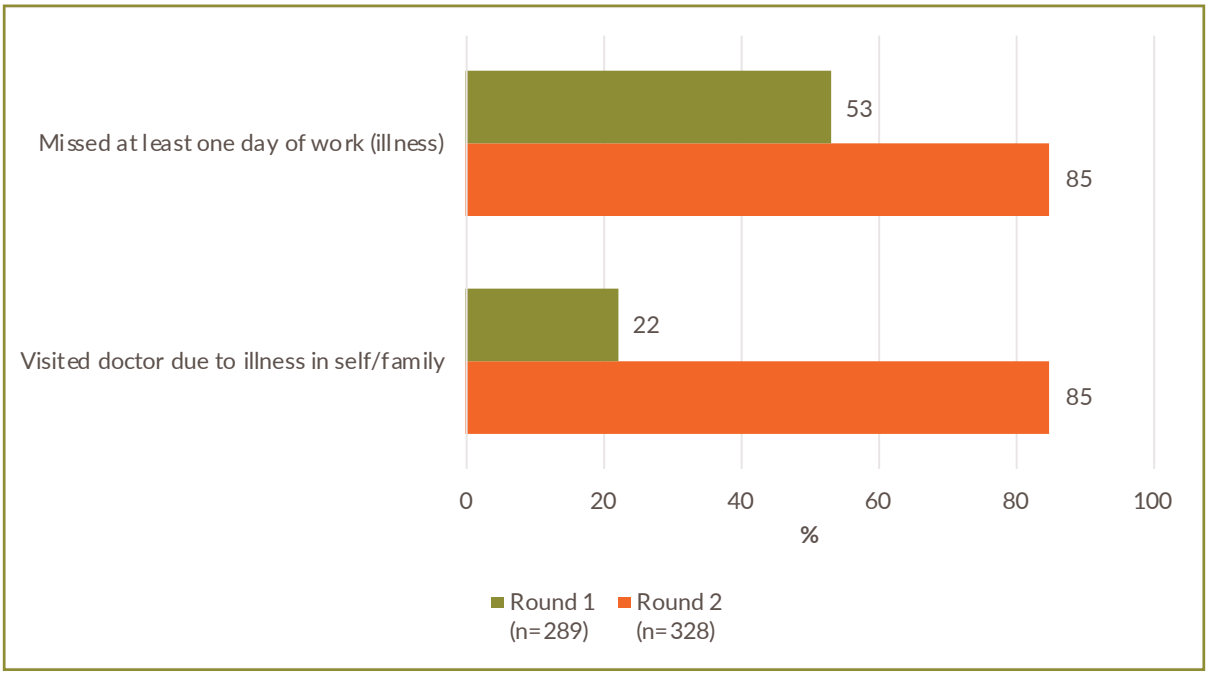
Impacts of Heat

The bulk of the questionnaire focused on the impacts of heat on workers' health and their care and work responsibilities, and their access to services critical to coping. It also examined the implications of heat periods for meeting household basic needs and for household indebtedness.

Impacts on health and care responsibilities

Heat-related illness led to both missed workdays and more frequent visits to medical facilities (**Figure 7**).

Figure 7: Impacts on health



In round 2, 85% of workers reported missing at least one day of work per month due to illness, from 53% in round 1. During round 2, more than half of respondents who missed work (58%) reported missing more than three days. It is worth noting that, even during milder temperatures, more than half of the sample (53%) reported missing at least one day of work due to illness. As previous research (Chen and Sinha 2016) and the infrastructure mapping findings suggest, slum-related health and environmental conditions, including inadequate basic services, pose particular challenges for home-based workers, who both live and work in these environments. These conditions are likely to contribute to poor health outcomes and work disruptions over time.

Home-based workers in *kutcha* dwellings reported higher numbers of days missed than those in *pucca* housing. While differences between housing types were more pronounced during the baseline period, they narrowed during the heat period, when absenteeism rose substantially across both groups, suggesting that heat acts as a levelling stressor.

Women often place lower priority on their own health, while spending considerable time caring for sick or vulnerable family members (Sinha et al. 2024). This dynamic is visible in the data: in round 2, workers living in larger households (more than six members) were more likely to miss work due to illness – 68% missed more than three days, compared with only 30% among those living in smaller households (one or two dependants).

Nearly nine in ten home-based workers (85%) sought medical attention for themselves or a family member – nearly four times higher than in round 1 (22%). Health impacts were slightly higher among those in poorer housing. In round 2, 90% of residents in *kutcha* houses and 93% in semi-*pucca* houses reported increased doctor visits, compared with

82% among those in *pucca* dwellings. Doctor visits rose sharply across all sites, peaking in Rajiv Nagar, where 91% of respondents visited a doctor.

Impacts on demand, hours worked, productivity and costs to keep cool

Figure 8 reflects responses to whether, due to heat, workers experienced lower demand for their products, had to reduce their working hours or took more time to finish their work.

Home-based workers are often inserted into markets or value chains on unequal terms, facing fluctuating demand for work orders, irregular supplies of raw materials, and delayed payments (Chen and Sinha 2016). In round 1, four in ten workers (39%) reported that suppliers had offered them less work in the past month; by round 2, that share had nearly doubled (74%). Several factors may explain this increase. Where middlemen deliver work, they may be reluctant to travel in extreme heat. Home-based does not necessarily mean "home-bound": workers frequently need to travel to collect work orders or raw materials, and extreme heat can therefore disrupt their ability to secure work. Small, cramped workspaces can also prevent workers from taking on large orders because they lack sufficient space to store raw materials – a problem that may worsen during periods of extreme heat. Previous research (Sinha 2013) has shown that unfulfilled orders or rejections can lead to future cancellations, creating a precarious cycle in which lower productivity and reduced working hours further depress demand for work.

In round 1, one in five workers reported reduced hours and lower productivity even during relatively milder temperatures. In round 2, 84% of surveyed workers reported reduced working hours while 88% reported lower productivity. Heat impacts are mediated by housing type – workers in *kutcha* houses report lower demand, productivity and greater reductions in working hours than those in *pucca* houses, even during cooler periods. However, during hot seasons, even *pucca* houses offer little respite as impacts remain high across all housing types (**Figure 9**).

Respondents were also asked if they had to pay extra money to keep themselves cool so that they could work. Again even in milder temperatures, one in four workers said that they incurred costs to stay cool while working, but this increased to 85% in round 2. Increased costs are likely due to increased consumption of water and electricity, and investments in cooling devices. In round 1, workers living in *kutcha* houses were more likely to report incurring costs (24%, compared to 18% in *pucca* houses). By round 2, this trend reversed, with a greater portion of those in *pucca* houses reporting costs incurred (88%, compared to 79% in *kutcha*). Counterintuitively, a higher share of *pucca* households reported higher electricity expenses, likely because they have metered connections and pay based on actual consumption.

Figure 8. Heat-related work impacts

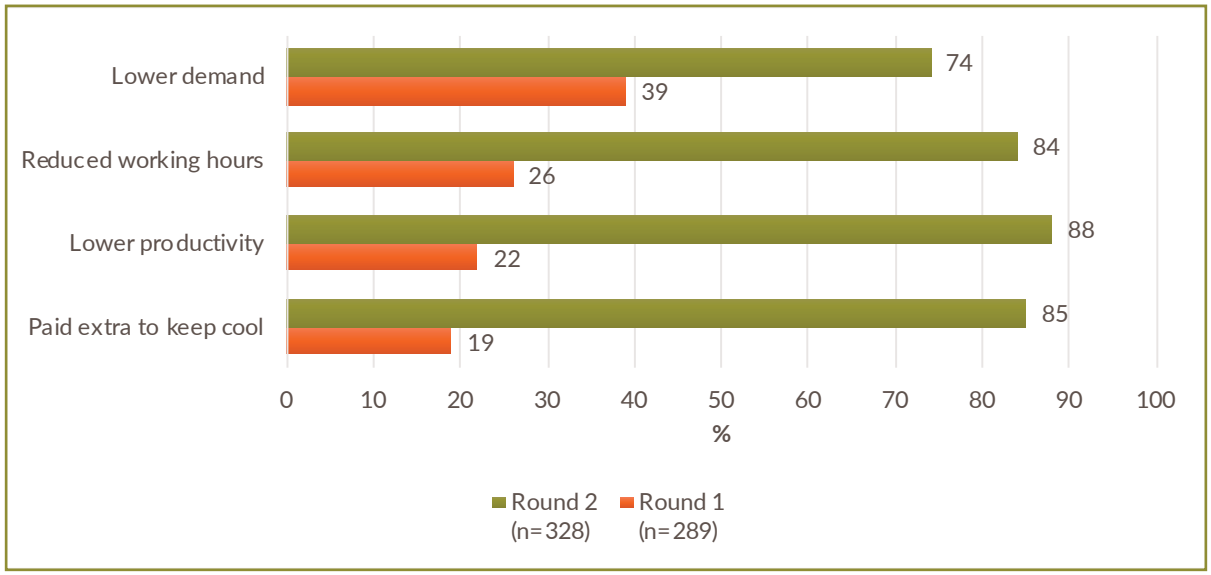
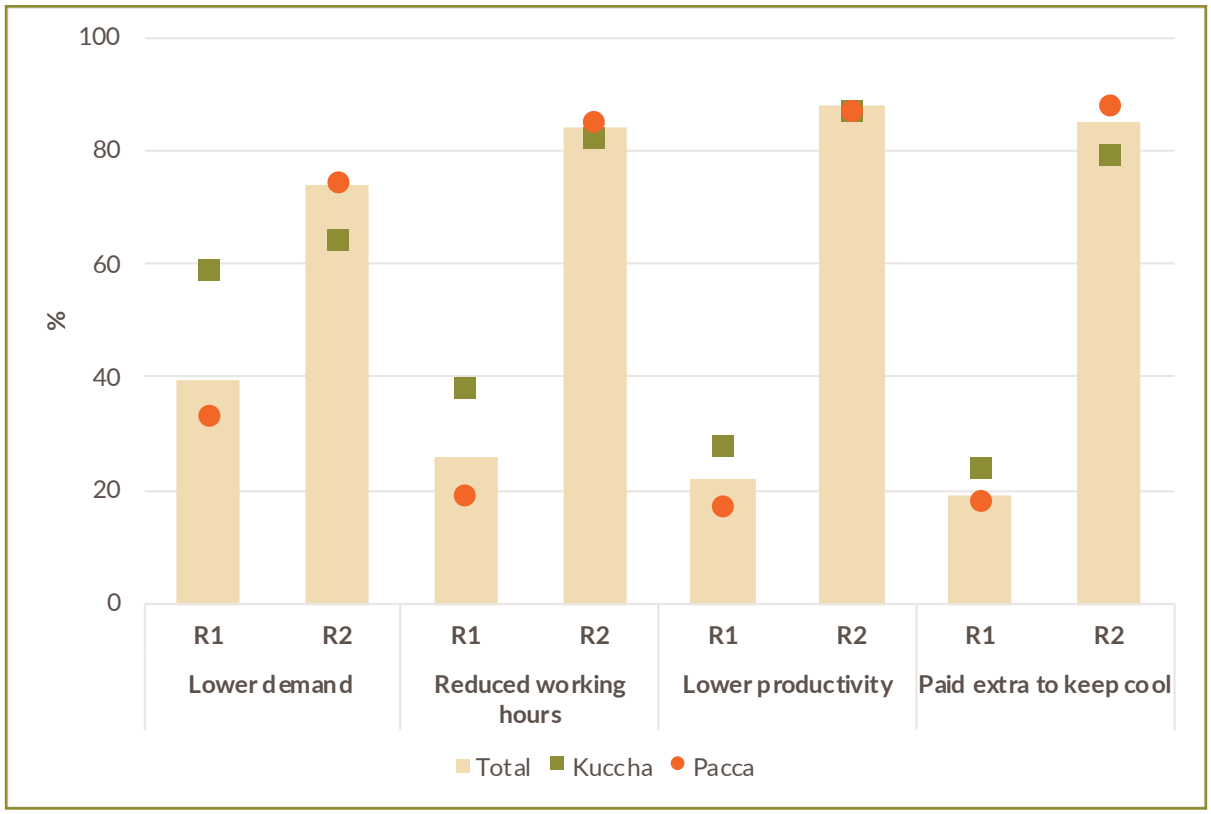


Figure 9. Heat-related work impacts by housing type



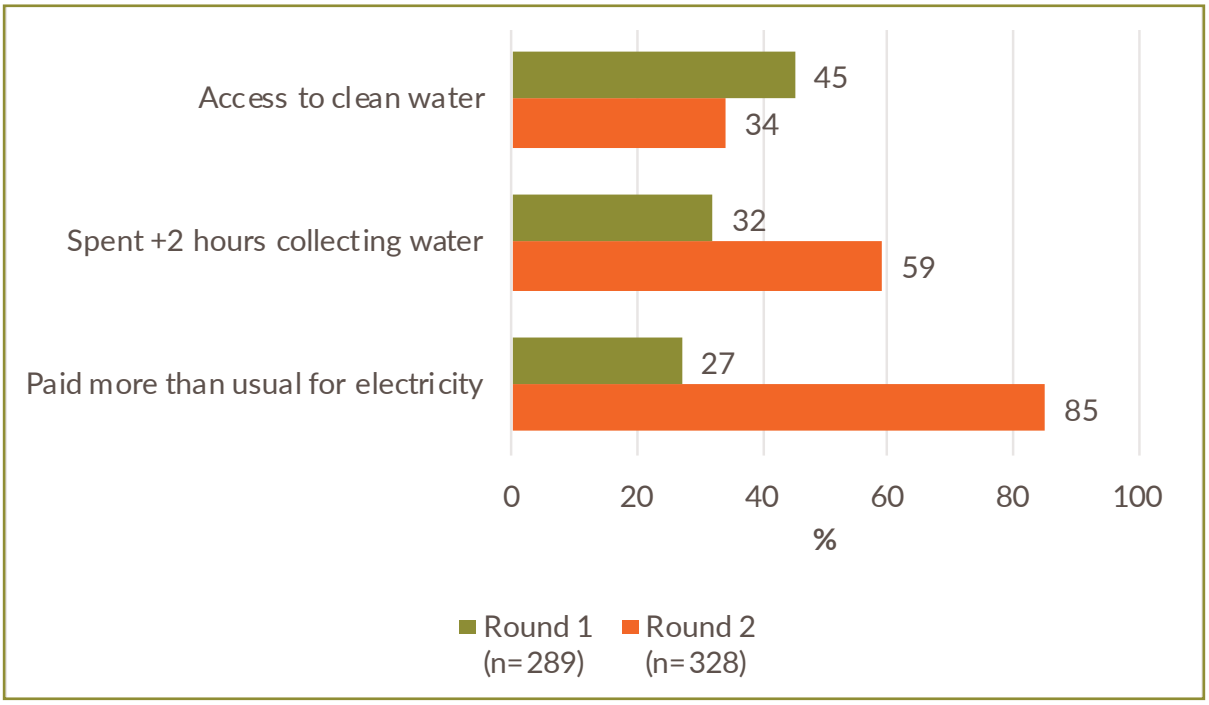
Access to water and electricity

Access to water is always critical, but it is particularly so during periods of heat since hydration is essential for thermoregulation, enabling the body to regulate temperature through sweating. In all the study sites, women noted how important water was in their managing of heat. Water is used for preparing summer beverages such as lemonade, Glucon-D, *chaas* (butter milk) and *aam panna* (raw mango drink) and for frequent bathing to try to reduce their and their household members' body temperatures. As well as for washing bedding and clothing, water is needed for sprinkling on the floor to help regulate indoor heat. Women are primarily responsible for all these cooling-related tasks.

The infrastructure mapping highlighted issues with the quantity, quality and reliability of water supply across study sites. In the survey, respondents were asked both whether they had access to clean water and if they had spent more than two hours collecting water on any one day in the past week. The findings are reflected in **Figure 10**.

The data suggests that access to clean water dropped between rounds (from 45% to 34%), likely due to problems with supply but also increased demand. This leads to households spending more on water, which becomes more expensive as demand increases. Poorer households, and especially the women in them, may restrict their water intake, leading to health problems. Some households have no choice but to drink poor-quality water, which also leads to illness. The survey data also suggests that women spent considerable time collecting water. In round 2, six in ten workers (59%) reported spending more than two hours a day collecting water, about twice the share observed in round 1 (32%).

Figure 10. Access to water and electricity



Similarly, access to electricity is needed for cooling devices, especially fans and coolers. Respondents were asked if, in the past month, they had to pay more than usual for electricity. As reflected in **Figure 10**, in round 2, 85% of workers reported paying more for electricity, nearly three times the share reported in round 1 (27%). Increases were highest among those living in *pucca* housing, likely due to their metered connections and billing based on actual consumption. Those living in formal rented housing often pay a fixed lump sum for electricity and, in some cases, their electrical connection cannot bear the load of extra devices. As noted in the infrastructure mapping, electricity cuts also affect women's ability to work.

Together, these findings underscore how heatwaves intensify vulnerability, reducing working days and productivity while driving up household and operational costs, such as water and electricity. In addition, women bear a disproportionate share of the unpaid labour required to secure water and maintain cooler living conditions. This reduces the time available for paid work and rest, suggesting time poverty under heat stress, compounded by underlying infrastructure deficits.

Basic needs, consumption and debt

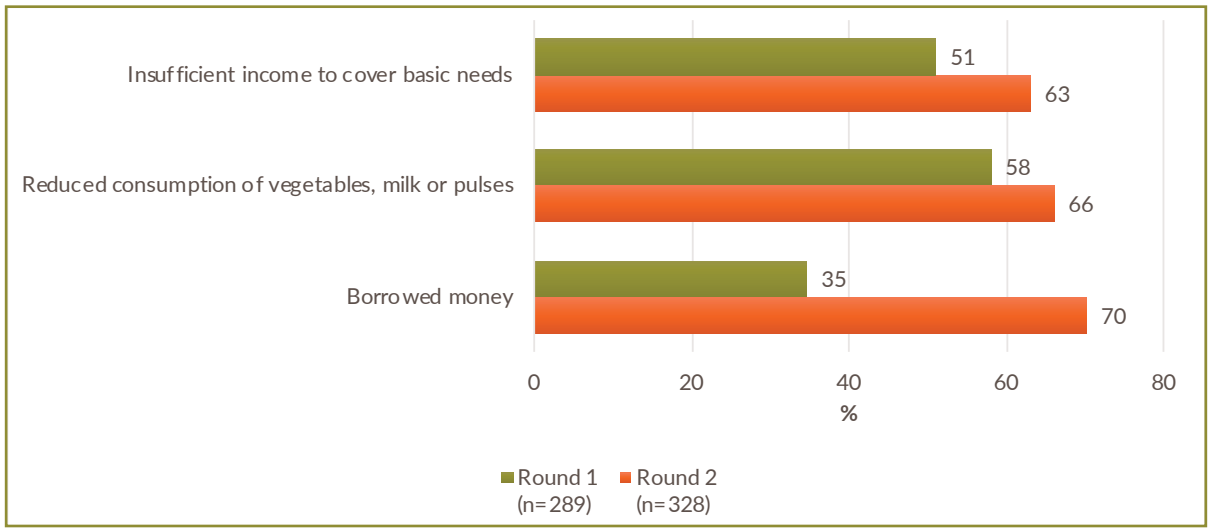
To assess the impact of heat on household economic security, respondents were asked whether their income in the past month was sufficient to cover basic needs (including food, water, housing and energy), whether they had reduced essential food consumption, and whether they had to borrow money due to heat-related income loss or increased costs.

The ability of households to meet basic needs was already limited in round 1 and deteriorated further in round 2. In round 1, 51% of respondents reported that their income was insufficient to cover basic needs, rising to 63% in round 2. This indicates that, even in the comparatively milder period, a majority of home-based workers were unable to meet essential household expenses – experiencing income insecurity that the heat compounded.

A similar pattern is observed in consumption behaviour. In round 1, more than half (58%) of respondents reported reducing consumption of essential foods, such as vegetables, milk and pulses, increasing to two-thirds (66%) in round 2. These findings suggest that negative coping strategies were already present in the baseline period, with households intensifying reductions in food consumption and dietary quality as economic pressure increased. This amplifies nutritional deficiencies, especially for women in the household.

Heat also increased reliance on borrowing. The share of households reporting that they had to borrow money because heat reduced income or increased costs doubled from 35% in round 1 to 70% in round 2. Heat exposure in round 2 seemed to amplify existing constraints, deepening income insufficiency, reinforcing consumption cuts and increasing debt. Together, these findings suggest that climate shocks are layered onto existing worker vulnerabilities, producing compounding patterns of vulnerability.

Figure 11. Impacts on basic needs and food consumption

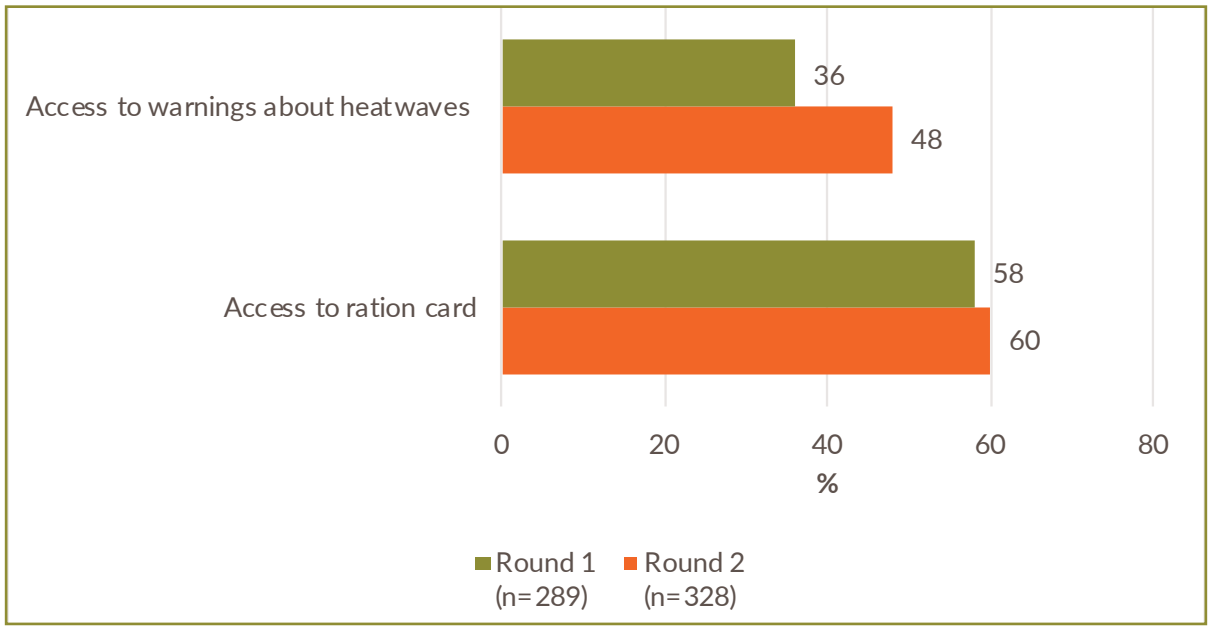


Access to Heat Warnings and Social Protection

Early warning systems help workers anticipate and respond to heatwaves before they become crises. Less than half of all workers (48%) reported receiving timely alerts about heatwaves or pollution in round 2, up from 36% in round 1. Access to early warning systems was uneven: in Sunder Nagari, less than a third of workers received warnings, compared with two-thirds in Rajiv Nagar.

Workers were also asked about access to ration cards – a key entitlement under the Public Distribution System that provides subsidized food grains and serves as an important proof of residence and socio-economic status. For workers, holding a ration card is often a gateway to multiple welfare schemes. Across both rounds, six in ten respondents reported having a card.

Figure 12. Access to heat warnings and ration cards



The survey findings show women home-based workers earned far below the minimum wage and already struggled to cover basic needs; a situation that worsened during extreme heat.

Conclusion and Policy Priorities

The findings show how heat exacerbates existing structural inequalities for home-based workers in Delhi. In a context of major infrastructure deficits, poor housing conditions and uneven access to basic public services, extreme heat reduces productivity and working hours, often due to heat-related illness affecting workers or their family members. Heat also increases production costs and the time devoted to care responsibilities – both caring for sick household members and coping with infrastructure shortages – eroding already low earnings and increasing household debt. The policy analysis showed significant gaps for home-based workers in Delhi and across India. Policy responses will remain patchy and uncoordinated until there is country-wide home-based worker policy. Critically, homes must be recognized as workplaces across labour, housing and climate policies. The findings have implications for social protection, urban infrastructure and planning, and climate policy and plans. Key to reforms are home-based worker collectives. Each is considered in turn.

Protecting livelihoods through climate-responsive social protection

Home-based workers require climate-responsive social protection regardless of tenure or employment status. Effective responses should combine heat-specific interventions with reform and full implementation of existing social protection schemes.

Early warning systems must be accessible to home-based workers: heat alerts, health guidance and preparedness information should be provided in regional languages, through multiple formats and via trusted local outreach channels. Indoor heat exposure should be recognized explicitly as an occupational hazard in labour, occupational safety and climate adaptation policies. Strengthening community health infrastructure, establishing heat-related medical protocols and deploying mobile or community-based clinics during heat waves would address acute health risks. Public health insurance programmes such as Ayushman Bharat should be extended to cover heat-related outpatient care.

Food and income security mechanisms must be adapted for heat shocks. Expanding and universalizing ration-card coverage and improving benefit portability would bolster household food security during periods of extreme heat. Temporary measures such as subsidized meals or targeted food packages should be deployed during heat events. Income-protection mechanisms are also necessary to compensate for heat-related work loss, whether through health insurance, livelihood-loss insurance or wage-replacement schemes that cover both employed and self-employed home-based workers. Access to affordable, climate-linked credit products tailored to home-based workers is critical to prevent households from falling into debt during climate shocks.

The Code on Social Security commits the state to extending critical social protections – including health, maternity, accident, old-age and related benefits – to unorganized and home-based workers, along with the welfare funds required to finance them. Yet these commitments have not been translated into accessible, worker-centred delivery mechanisms that explicitly reach home-based workers. The

code should be amended to incorporate climate-responsive protections, such as heat-stress safeguards and income support during climate-related shocks. For any current or future benefits to be effectively administered, the e-Shram portal must formally recognize "home-based work" as a distinct occupational category. This recognition should be paired with localized, non-digital outreach mechanisms to overcome barriers created by low digital literacy, limited internet access and uneven state capacity.

In sum, the concerns of home-based workers must be incorporated into emerging policy and practice around climate-responsive social protection, promoting social protection as both a tool for a just transition and a means of building resilience.

Strengthening resilience through urban infrastructure and planning

The infrastructure mapping showed acute infrastructure deficits across the study sites – inadequate water, sanitation, electricity, poor housing, and insecure tenure undermining home-based workers' health and productivity while amplifying their vulnerability to extreme heat. High rental costs and these shortfalls constrain residents' ability to invest in housing or adapt to extreme weather.

Improving housing quality, workplace infrastructure and access to basic services is essential to protect home-based workers and reduce economic losses during heat waves. Housing programmes should promote work-friendly, heat-resilient design – cool roofs, passive cooling and ventilation, shade and heat-resistant materials – and provide retrofit subsidies so households that double as workplaces can upgrade safely. This must include renters and other insecure-tenure households. Local governments can pilot "productive home" design standards in public housing and retrofit programmes, and financial instruments such as small grants or low-interest loans tied to simple community or worker verification should be made available to fund these upgrades without onerous documentation. Poor households rarely upgrade all at once; they improve their homes as and when they can afford to. Financial instruments must therefore be designed to support phased, incremental investments with flexible loan sizes and disbursements so that each small improvement builds toward a safer, more heat-resilient home and workplace.

Reliable, equitable access to water, sanitation, electricity, community health services and childcare is critical. Delivery of programmes such as Swachh Bharat and Jal Jeevan Mission[4] must be accelerated, with clusters of home-based workers explicitly included as targeted beneficiaries. In informal settlements, community-managed sanitation projects and expanded sewer connectivity should be fast-tracked. Regularized, subsidized and equitable electricity supply will support dignified livelihoods; and neighbourhood interventions – tree planting, shaded walkways, and community cooling centres – can further reduce ambient temperatures and direct heat exposure.

Urban planning and land-use rules must explicitly recognize and enable home-based work by permitting productive activities in residential and mixed-use zones and by avoiding single-use norms that criminalize livelihoods. Zoning reforms should simplify permit processes for small-scale enterprises and allow mixed uses in

[4] The Swachh Bharat Mission (launched in 2014) commits the state to constructing household and community toilets and to providing sanitation free of charge, while the Jal Jeevan Mission (launched in 2019) aims to ensure every household has a functional water connection.

low-income settlements. To coordinate implementation, labour, housing, health and urban planning departments must collaborate to integrate interventions. Together, these measures will strengthen adaptive capacity and economic resilience for home-based workers, while protecting their health and livelihoods.

Centring livelihoods in climate and heat action plans and just-transition policies

Heat action plans at city and state levels should explicitly recognize home-based workers as a distinct vulnerable group. Effective implementation requires dedicated budgets, clear institutional responsibilities and robust monitoring to ensure interventions reach the most marginalized workers.

Urban climate-risk assessments must map clusters of home-based workers and promote neighbourhood-level resilience strategies – green infrastructure, local cooling measures and emergency response systems – to reduce heat exposure where work and home overlap. Embedding livelihood-sensitive indicators within city climate action plans, and ensuring housing upgrades, settlement redevelopment and service-delivery schemes account for home-based work, will create resilience that is both socially just and economically sustainable.

Just-transition policies should include home-based workers to prevent their exclusion from the green transition. Many already contribute through repair, reuse and recycling, yet risk marginalization as these sectors formalize. Policies must support skills development, education and access to new green jobs, while protecting and strengthening the green livelihoods home-based workers currently perform.

Institutionalizing participation and strengthening worker collectives

Climate governance must institutionalize the participation of home-based worker collectives in planning, implementation and monitoring. Worker organizations have demonstrated capacity to negotiate better wages, improve market access and mobilize resources; in the context of climate change they can also co-create occupation-specific Heat Action Plans, scale up local adaptation strategies, monitor impacts and lead awareness campaigns. City and state governments should support these collective platforms through legal recognition, regular city-level forums and targeted funding or capacity-building programmes. Doing so will enable home-based workers to shape adaptation measures that directly affect their health, productivity and livelihoods. Organizations of home-based workers in turn need to collectively organize and meaningfully engage with the state to put forward their demands.

In conclusion, social protection, urban development and climate adaptation strategies must address the longstanding invisibility of home-based work and the specific vulnerabilities created when homes also serve as workplaces. Building climate-resilient cities requires a change in approach: recognize home-based workers as legitimate economic actors, include them in the design, implementation and monitoring of climate and urban policies, and tailor interventions to the realities of home-based livelihoods. Integrating labour rights, climate resilience and just-transition measures into urban planning is essential to ensure home-based workers share the benefits of the transition to climate-resilient cities.

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About WIEGO

WIEGO
Women in Informal Employment: Globalizing and Organizing

WIEGO is a global network supporting the movement of workers in informal employment, especially women and people living in poverty. We believe all workers should have equal economic opportunities, rights and protections. Our mission is to improve their working conditions and to challenge the systems that cause poverty, inequality and injustice, to build a fairer world of work. We believe data in the hands of workers is power. WIEGO develops statistics, research and policy analysis that workers can use for advocacy. Our values, which centre respect, solidarity, care and inclusivity, inform the way we support workers in informal employment and serve the wider labour movement.

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