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Role of Vulnerability in Transition to Clean Cooking: A Case of Chikhli Slum in Nagpur, Maharashtra

—
Assessment Report

CLEANER **AIR** &
BETTER **HEALTH**
PROJECT

Authors: Dr. Sanjay Patil, Department of Civics and Politics, University of Mumbai, Dr. Chandrasheel Tambe, CHM College, Ulhasnagar, Thane and Ms. Ankita Bhatkhande, Asar.

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The Project: Cleaner Air and Better Health (CABH) is a five-year (2021 to 2026) project supported by the United States Agency for International Development (USAID). It aims to strengthen air pollution mitigation and reduce exposure to air pollution in India by establishing evidence-based models for better air quality management. The project is being implemented by a consortium led by the Council on Energy, Environment and Water (CEEW) and includes Asar Social Impact Advisors (Asar), Environmental Design Solutions (EDS), Enviro Legal Defence Firm (ELDF), and Vital Strategies (VS).

Contact:

Neha Saigal

Director of Programme, Gender and Climate
Asar Social Impact Advisors
P +91 77609 68772 | E neha.saigal@asar.co.in

Om Prakash Singh

Chief of Party, Cleaner Air and Better Health Project
Council on Energy, Environment and Water
P +91 978200 88007 | E omprakashsingh@ceew.in

Soumitri Das

Team Lead (Environment)
United States Agency for International Development (USAID)
American Embassy, Shantipath, Chanakyapuri New Delhi 110 021, India
P +91 11 24198000 | E sodas@usaid.gov

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List of Acronyms

ASHA	Accredited Social Health Activist
CABH	Cleaner Air and Better Health
CEEW	Council on Energy Environment and Water
CFSD	Center for Sustainable Development
COPD	Chronic Obstructive Pulmonary Disease
FGD	Focus Group Discussion
HAP	Household Air Pollution
IEC	Information, Education and Communication
IPCC	Intergovernmental Panel on Climate Change
LPG	Liquefied Petroleum Gas
MIHAN	Multi-Modal International Cargo Hub and Airport at Nagpur
NGO	Non-Governmental Organization
NIT	Nagpur Improvement Trust
NMC	Nagpur Municipal Corporation
NT	Nomadic Tribes
PMUY	Pradhan Mantri Ujjwala Yojana
SC	Scheduled Castes
SHG	Self-Help Groups
ST	Scheduled Tribes
OBC	Other Backward Classes
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene

Executive Summary

Biomass burning, mainly for cooking at the household level is a key contributor to Household Air Pollution (HAP) and poses huge health risks, especially for women and children as they are directly exposed to it for prolonged periods. It also produces Black Carbon which is a huge contributor to global warming. Despite Government initiatives like the Pradhan Mantri Ujjwala Yojana (PMUY), access to and sustained use of Liquefied Petroleum Gas (LPG) continues to remain a challenge in India due to several social, cultural and financial factors. Various vulnerabilities pose barriers in the transition to clean cooking in the country, further reinforcing the health and gendered impacts of HAP.

This Assessment Report is based on a Situational Analysis conducted in the Chikhli slum of urban Nagpur, Maharashtra using a Compounding Vulnerability Framework. It was undertaken in order to understand the key barriers in sustained usage of LPG in these slums and to inform policy-makers to adopt a multi-faceted approach in the transition to clean cooking as the issue is deeply embedded in the socio-economic realities of these communities.

Households in the slum colonies of Chikhli are primarily engaged in informal and insecure occupations and are trapped in a cycle of vulnerability that is further exacerbated due to their use of biomass for cooking. Addressing the issue of clean cooking is thus, not only vital for combating climate change but also intricately linked with the overall health and well-being of women in these communities. Therefore, it is imperative to coordinate policy efforts across local and national levels to facilitate a just transition of households that continue to burn biomass. This Assessment Report suggests some possible ways in which the Nagpur Municipal Corporation and relevant government agencies could support this transition by recognizing and addressing these compounding vulnerabilities, providing mechanisms to cope with the challenges and finally, by increasing demand for clean cooking within households.

Introduction and Background

Household Air Pollution (HAP) presents a significant yet often overlooked challenge in India's battle against air pollution. Stemming from the combustion of biomass for cooking, HAP poses health risks ranging from mild to severe, particularly for women who are disproportionately affected due to their high exposure to *chulhas*¹ while cooking. When solid fuels such as wood are burned incompletely in inefficient stoves for cooking, they produce Black Carbon along with other pollutants such as Carbon Monoxide, Particulate Matter and Volatile Organic Compounds. Black Carbon can penetrate deep into the lungs when inhaled leading to various respiratory and cardio-vascular health problems such as Chronic Obstructive Pulmonary Disease (COPD). Black Carbon is also a potent climate forcer, contributing to global warming by absorbing sunlight and heating the atmosphere.

Despite government initiatives like the Pradhan Mantri Ujjwala Yojana (PMUY) aimed at promoting LPG, challenges such as affordability, access to refills, and entrenched cultural norms continue to hinder its widespread adoption in many parts of the country. Moreover, the situation is exacerbated in urban areas where cramped living conditions further intensify exposure to the toxic fumes emanating from the *chulha*. Addressing challenges with respect to clean cooking fuel access and its sustained use in such a context requires a nuanced understanding of the socio-economic, cultural, and occupational factors influencing household energy choices to ensure that marginalized communities are not left behind in efforts to transition to cleaner cooking fuels.

Numerous studies have focused on the role of various vulnerabilities such as caste, class, income, gender, and occupation, in intensifying the repercussions of air pollution in India. Studies have repeatedly pointed out the impact that socio-economic vulnerabilities play in access to clean cooking fuel in India (Patnaik and Jha, 2020; Dutta and Sahu, 2024). Therefore, a need was felt to examine the role of these factors in the transition to cleaner fuels such as LPG in the context of urban slums in Nagpur.

1. Inefficient cooking stoves made of bricks, mud or stone typically fuelled by wood or coal.

Purpose of the Study

Under the Cleaner Air and Better Health (CABH) Project supported by USAID, Asar, along with the local NGO—Center for Sustainable Development (CFSD), has been working on improving access to and sustained use of clean cooking among poor and vulnerable women who are primarily waste pickers in the urban slum of Chikhli in Nagpur. This Assessment Report was prepared in collaboration with the Department of Civics and Politics, University of Mumbai. A situational analysis was conducted to understand the barriers in clean cooking by adopting the framework of Compounding Vulnerability and to provide appropriate recommendations based on findings that will support decision makers to intervene and improve the transition to cleaner cooking fuels to vulnerable populations in this context. The framework could be applied to other contexts in India to understand barriers and provide relevant recommendations to policy makers in those areas.

The objectives of the analysis are as follows:

- 1** To understand the role of socio-demographic and occupational barriers in access, affordability, acceptance and awareness towards clean cooking fuels (mainly LPG).
- 2** To examine the role played by lack of clean cooking access and its sustained use in compounding vulnerabilities of the urban poor in Chikhli slums, Nagpur.
- 3** To assess the impact of Compounding Vulnerability on women's adaptation and resilience to Household Air Pollution in Chikhli slums, Nagpur.
- 4** To provide policy recommendations to the Nagpur Municipal Corporation (NMC) and relevant stakeholders in designing and implementing interventions at scale to the city's poorest and needy households in the context of clean cooking.

Three peri-urban slum colonies in Chikhli, on the outskirts of Nagpur city falling under the jurisdiction of the NMC were selected for the study. Profiles of the slums are given below:

- **Pangul Vasti**, with 373 households, is predominantly inhabited by the Pangul community,² which is engaged mainly in waste picking and other informal occupations. Established as a rehabilitation project in 2000, the residents of this colony still lack official property ownership documents.
- **Rahul Gandhi Nagar**, housing 284 households, primarily consists of migrants from Chhattisgarh and Madhya Pradesh, settled on railway and private land.
- **Mata Mandir Nagar**, with 156 households, is situated on land owned by the Nagpur Improvement Trust (NIT), with residents involved in manual labor and loading activities.



2. The Pangul sub-caste also called the 'Pingla' is a Nomadic Tribe in Maharashtra. It is named Pangul after the time of the day (dawn) as members of the Pangul community are engaged in fortune telling and traditionally venture out of their homes before dawn, visiting people's homes and predicting their futures in return of alms. A large number of respondents settled in Pangul Vasti belong to this sub-caste (which is where the slum colony gets its name from). The Pangul community members are nomads and often migrated from village to village in search of new households to get alms from. However, with time, they started facing hardships in continuing their traditional occupation as most residents termed it begging and refused to give alms. Because of the poor financial returns and humiliation associated with the work, most members of the community have left their traditional occupation and are now engaged in different occupations. In case of the Pangul Community in Chikhli, most of them are engaged in waste picking and segregation activities.

Conceptual Framework for the Situational Analysis



For the situational analysis, a Compounding Vulnerability framework was developed to understand the barriers to access and sustained use of clean cooking fuels among women in Chikhli, Nagpur. After conducting a review of existing literature specifically on HAP, a need was felt to focus on the role that vulnerability plays in households using biomass and in exacerbating the impact of biomass burning on women's health and well-being.

In the discourse of Climate Change, vulnerability generally refers to susceptibilities or fragilities of the exposed elements; i.e., the likelihood to be affected, but is also related to the lack of resilience or lack of response capacities of the society and environment (European Commission of Environment, 2011).

The framework of Compounding Vulnerabilities for this analysis was developed by identifying specific variables against the determinants of vulnerability listed by the Intergovernmental Panel on Climate Change (IPCC):

- **Susceptibility:** Gender, social background, educational background, economic status, occupation, spatial location, cultural norms.
- **Exposure:** Access to LPG, use of *chulha*, exposure to smoke and health impacts, exposure to toxic/hazardous conditions at work due to informal occupations and the resultant health impacts
- **Coping Mechanism:** Awareness about and access to various social security schemes and benefits, documents for availing various schemes and benefits, access to basic services, membership of labor unions/SHGs, financial liabilities, political and bureaucratic access and support.

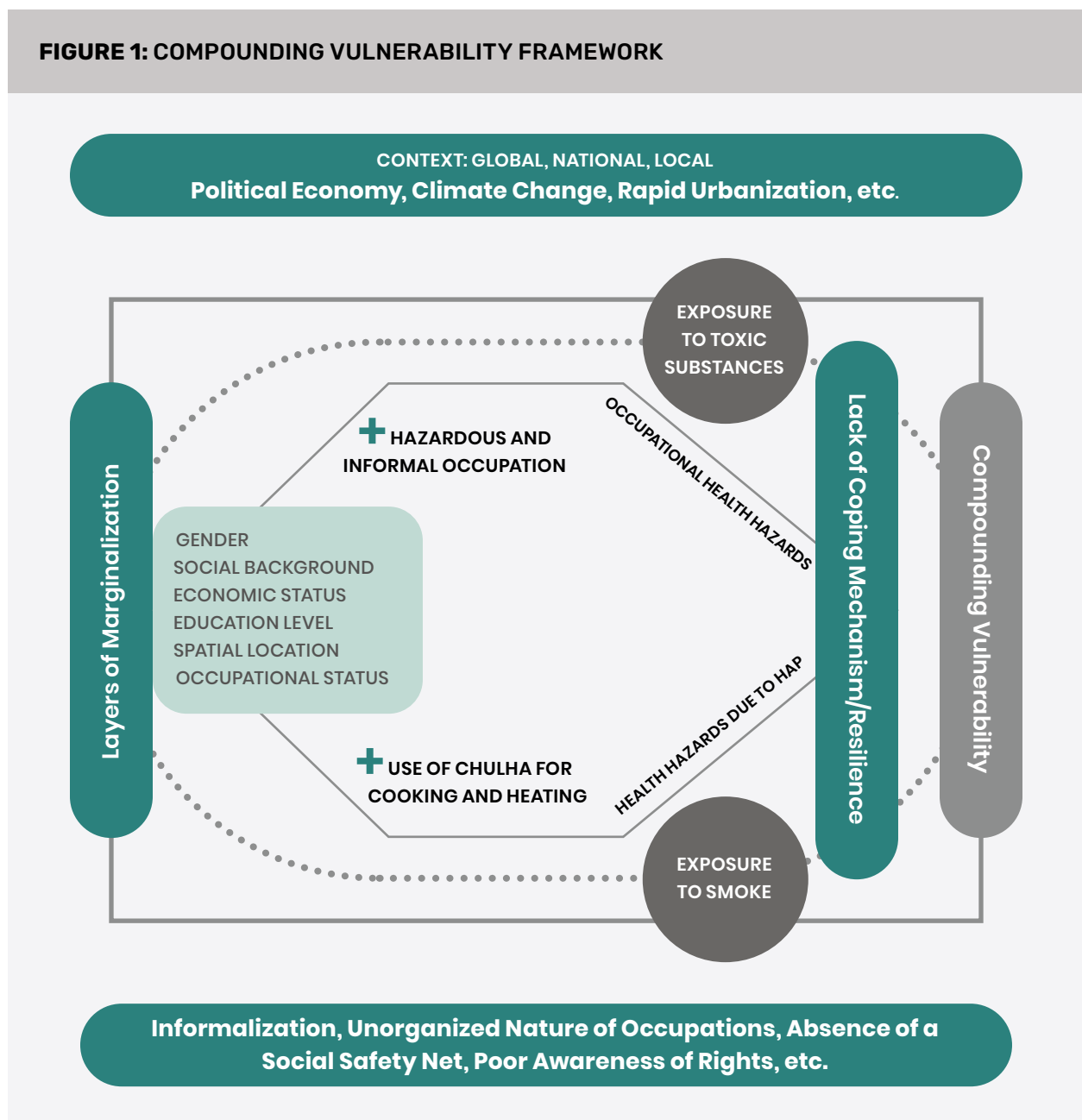


Compounding Vulnerability is the intensified risk and adverse impact experienced by marginalized groups, such as women due to intersecting factors like gender norms, socio-economic status, hazardous occupations and limited access to clean cooking fuels, which collectively exacerbates their health and well-being.

In the case of Chikhli's marginalized communities, vulnerability is compounded by layers of inequality and marginalization, where individuals from poor economic backgrounds and socially disadvantaged groups face heightened susceptibility to hazards. Given their context of hazardous occupations, lack of personal safety, and social security, individuals living in these slum colonies face different layers of marginalization, compounded by intersectionality with space, education, and other factors. This pushes them towards using *chulhas*, which

further impacts their health and well-being, creating a compounding effect. Women from such households face dual disadvantages: first, due to gender roles, and second, due to their socio-economic and occupational status both in private spaces (homes and neighborhoods) and public spaces (dumping grounds, construction sites, etc.). Thus, examining the barriers to accessing cleaner cooking fuels for women in localities like Chikhli necessitates understanding the amplifying role of various layers of marginalization. Variables such as socio-economic background, education, spatial location, and occupational background, along with their intersections, have to be thoroughly explored to comprehend the context in which women use *chulhas* and its compounding impact on their health and well-being.

FIGURE 1: COMPOUNDING VULNERABILITY FRAMEWORK



Methodology



The analysis employed a mixed methods approach, combining qualitative and quantitative methods with a particular focus on the localities of Pangul Vasti, Mata Mandir Nagar, and Rahul Gandhi Nagar. A survey was conducted among 252 respondents with majority female respondents considering the prevailing gender norms around cooking. Semi-structured interviews were conducted with various stakeholders, including residents, community leaders, and health workers, to gather qualitative insights and complement the survey data. Similarly, five focus group discussions (FGDs) were also conducted to delve deeper into the challenges faced by women residents. Verbal and informed written consent of respondents was taken for the purpose of the analysis. Local NGO CFSD supported in speaking to the respondents at the time of data collection as the NGO has been engaging with the community on the issue of clean cooking.

Findings

Three kinds of findings emerged from the Situational Analysis:

- 1** Vulnerability profile of residents in Chikhli which includes: socio-demographic profile of households, educational background, migration status, employment and occupational status, household income, housing and spatial setting, access to documents and services.
- 2** Double burden of health risks for women who use *chulhas* and are also involved in hazardous occupations.
- 3** Coping mechanism of residents which includes awareness about and access to social security schemes and benefits, membership of labor unions and self-help groups, access to healthcare facilities, political awareness, etc.

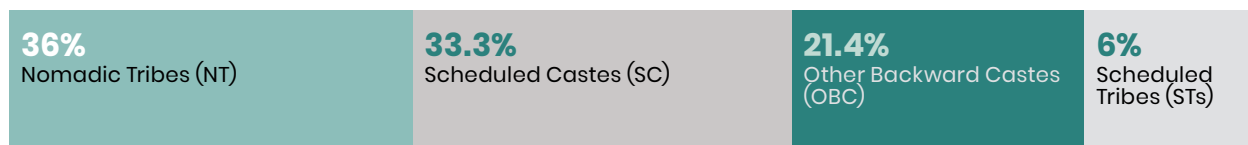


1. Vulnerability Profile of Respondents

Demographic Distribution



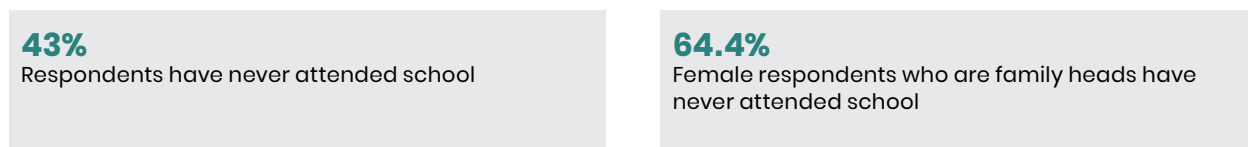
Religious profile: Hindus constitute the majority at 81.3%, followed by Buddhists/Neo Buddhists at 13.1%, and Muslims at 5.2%.



Caste distribution: 36% belong to Nomadic Tribes (NT), 33.3% to Scheduled Castes (SC), 21.4% to Other Backward Classes (OBC) and 6% to Scheduled Tribes (STs).



Geographical origin: 72.6% are from Maharashtra, 14.3% from Chhattisgarh, and 11.1% from Madhya Pradesh. 60% respondents from Maharashtra were born in Nagpur district.



Educational attainment: 43% have never attended school; majority female respondents who are family heads (64.4%) have not gone to school.

Social and Economic Conditions

- **Caste certificates:** Despite belonging to socially backward caste groups, 82.5% respondents reported that they do not have caste certificates.
- Residents across the three slum pockets are engaged in informal and insecure occupations with irregular income. More than half the respondents (53%) are engaged in employment that gives them only a casual wage of which 41.3% respondents reported to be engaged in daily casual wage and 11.5% in regular casual wage.

- **Household income:** Average monthly income at the household level was recorded as Rs. 12,930; 76.2% respondents find it challenging to save money, often resorting to borrowing.
- **Housing:** 56.3% live in *kaccha* houses; only 3% possess property ownership documents.
- **Water and sanitation:** There is limited access to clean drinking water (36.5%) and there are inadequate sanitation facilities with 61.1% using common or public toilets.
- **Transportation:** Majority population relies heavily on private transport as their homes are at a considerable distance from the city center and public transport is not very accessible.

Access to Social Services and Documents

- A vast majority possess Aadhar cards (97.6%), ration cards (84%), and voter cards (71.8%).
- Limited respondents have access to other social security documents like Ayushman card (2.8%) and E-shram card (21.4%).

2. Low LPG usage and double burden of health risks

Reported Status of Using LPG

- **Access to LPG connections:** Majority (79%) respondents have access to LPG connections.
- **Prevalence of *chulhas*:** Despite high LPG penetration, only 15.9% respondents use LPG exclusively while 62.7% using a combination of *chulha* and LPG for cooking food and heating water.
- For heating water, 80.6% respondents solely rely on *chulha*.
- **Low frequency of LPG refills:** 55.8% respondents refill every two months, indicating financial constraints or irregular delivery.
- **Affordability barriers:** 75.8% cited financial constraints for continuing *chulha* usage.
- **PMUY penetration:** Only 3.2% LPG users obtained connections through PMUY. Reasons include existing connections, lack of awareness, rejections and documentation issues.

Reported Health Symptoms

- **Chulha using women reported a range of health symptoms** including—runny nose (61.8%), watery eyes (74.5%), throat irritation (47.2%), cough (37.7%), headache (66.5%), nausea (33.5%), and skin irritation (34.4%).
- **Majority women (72.6%) who use chulha for cooking continued to do so even while they were pregnant.** Women said that they experienced difficulty in cooking especially during those months as the *chulha* fumes added to the existing nausea (59%) and caused pain in the stomach (34.4%).
- **Several respondents reported having severe health issues** that can be potentially linked to long-term *chulha* usage such as: difficulty in breathing (30.2%), asthma (13.7%), *chulha* burns (11.3%), COPD (5.2%), heart-related ailments (6.1%), chronic asthma (7.5%), lung cancer/failure (2.4%), loss of eyesight (9%).

CASE STUDY

Manda Jadhav, a 31-year-old resident of Pangul Vasti suffers from COPD, a condition that has severely damaged her lungs. She has been using *chulha* since she was 11 years old. Manda comes from the low socio-economic strata and grew up in rural Nagpur. Back home, firewood was easily available in nature and hence her family used biomass to cook food and heat water. She moved to Chikhli after getting married but continued using the *chulha*. Manda's family consisting of her husband, daughter and in-laws only makes about Rs. 10,000 from the waste picking work every month. The rising prices of LPG cylinders have made it nearly impossible for Manda's family to afford a refill each month, compelling Manda and her daughter Anu to continue using the *chulha*. Manda was diagnosed with COPD two years ago when she had difficulty in breathing and experienced frequent bouts of cough. While doctors suggested a surgery which might potentially improve her condition, the family lacks the financial means to pursue it. Adding to the challenges, Manda's husband grapples with alcohol addiction and is mostly unemployed. As Manda's health continues to deteriorate, her daughter Anu has taken on the primary responsibility of cooking. Nevertheless, the persistent *chulha* smoke within their home and its surroundings remains a daily struggle for Manda and Anu. Manda said, "I am already so sick, and the *chulha* fumes make it worse. But now, with my illness, I have to spend much more on medicines, and my earnings have gone down substantially. This makes it nearly impossible for me to switch to LPG." [Personal Interview, May 1, 2023.](#)

Health Risks from Informal Occupations

- **Prevalence of informal, insecure, and hazardous occupations:** 402 out of 498 working members from the households surveyed are engaged in such occupations.

- **Some of the main occupations reported are as follows:** waste picking (47.5%), construction labor (19.7%), loading/porter work (16.2%), working as a househelp (7.5%), hawking (2.7%), driving auto/taxi (1.5%).
- **Several respondents reported that they experience health issues** that may be linked to the nature of their work. This includes skin irritation (35.3%), frequent cough and cold (56.3%), fever (62.6%) and difficulty in breathing (23.9%).
- **Workplace injuries:** 61.3% stated that they had sustained injuries at their workplace with 15.8% reporting severe injuries. Similarly, 44.5% respondents have had fractures at some point. 88.7% of respondents work without any safety gear.
- **Lack of amenities:** 45.8% indicate shortage of basic facilities such as drinking water and toilets in their workplace.
- **Harassment and exploitation** were commonly reported by respondents (41.9%) due to the informal and insecure nature of their work. This harassment was from local goons, police, employers, etc.

CASE STUDY

Sarita Londhe, a 38-year-old resident of Pangul Vasti, begins her day at 4 a.m., embarking on a daily routine with her husband in their three-wheeler pickup tempo to collect waste. They go to the neighboring villages in Nagpur, where they gather waste from streets, dumping grounds and open spaces. Around 150–200 men and women, along with 20–25 children from Pangul Vasti, go to pick up waste, covering a 40-kilometer radius around Nagpur. Sarita and her husband pick waste from early in the morning till 2 p.m. and then come back to the Vasti with the collected waste. They then segregate this waste in an open ground until evening. Waste pickers separate materials such as plastic, copper, iron scraps, glass bottles, and other recyclable items like cardboard from the collected waste, which are subsequently sold to scrap dealers. There are about five scrap dealers in Pangul Vasti and almost all waste pickers sell their material to these dealers. Sarita reflected on the daily challenges waste pickers like her face in obtaining enough “useful waste” to sell. Household waste in the city and neighboring villages of Nagpur is typically collected by garbage trucks (*ghanta gaadis*) deployed by the civic or local body. The drivers and helpers of these trucks are contracted by private agencies which are appointed by the civic body. They collect plastic and recyclable waste separately at the source and often sell that to scrap dealers to earn an additional income. The remaining unsorted waste is then dumped at dumpsites/landfills, where waste-pickers living nearby sift through it in search of useful items to earn a living. Waste pickers like Sarita encounter difficulties in collecting waste from these dumpsites as communities residing near them often claim exclusive rights to collect this waste, leaving little scope for others. It is important to note that waste-pickers also lack access to sites such as the Multi-Modal International Cargo Hub and Airport at Nagpur (MIHAN) and sites under the jurisdiction of the NIT where they can get some lucrative waste. Collection from these sites is outsourced to private companies, limiting the opportunities for waste pickers. This compels waste pickers from Pangul Vasti to venture into distant villages for waste collection. It also results in meager profits for them despite working tirelessly for long hours. Carrying gunny bags weighing 25–30 kgs throughout the day, waste pickers like Sarita undergo physical strain, resulting in severe fatigue and exhaustion. [Personal Interview, May 2, 2023 at Pangul Vasti.](#)

3. Lack of Coping Mechanism

- Residents of the three slum colonies constantly grapple with uncertainty both in living arrangements and workplaces, exacerbating their vulnerability.
- Data revealed that very few respondents have membership of labour unions (2.1%), women's self-help groups (16.7%) and social organizations (3.6%).
- **Access to media and information:** Despite high ownership of television (69.8%) and mobile phones (67% with internet), there is limited access to vital information, as 98.8% do not read newspapers and the usage of television is mainly limited for entertainment purposes.
- Awareness about government schemes is very low among these communities with 89.7% lacking knowledge about social security initiatives, indicating a critical gap in welfare information dissemination.
- Similarly, political awareness was also found to be dismal as 53.2% respondents were unaware of local political representatives and 34.9% felt that their vote didn't matter.
- There is great discontent and anger towards politicians as they experience neglect from them regarding some crucial concerns raised by the communities.
- **Challenges in accessing healthcare facilities:** Residents struggle to access public health facilities and express dissatisfaction with healthcare quality. Health camps are organized, but follow-ups and support are lacking, leaving residents vulnerable to untreated health issues.
- Some of the top challenges that respondents mentioned which may be crucial entry points in understanding their vulnerability are as follows: housing insecurity, occupational hazards, irregular income, health concerns related to work and rising inflation.

Discussion

The analysis points towards the intricate web of challenges faced by marginalized communities in urban slums of Nagpur fueled by a combination of factors, including marginalization on various fronts, limited access to clean cooking fuels and inadequate coping mechanisms to deal with resultant shocks. To comprehend this cycle, it's essential to elucidate the connections between LPG access and sustained usage against the individual's marginalization on various fronts.

Urban slums, such as Chikhli are characterized by poverty, overcrowding, and a dearth of basic services. Access to clean cooking fuels, such as LPG, is paramount for household well-being and public health in such localities. Despite schemes like PMUY, challenges persist in the sustained usage of LPG. The continued usage of *chulhas* in households exacerbates existing vulnerabilities, particularly among women from economically disadvantaged households, who face health risks, coupled with occupational hazards and a lack of coping mechanisms in addition to being embedded in social and gender norms.

Various factors contribute to the perpetuation of this vulnerability cycle. Residents' socio-economic, spatial, educational, occupational, and gender locations create barriers to accessing LPG, leading many to continue using biomass. Limited incomes and high expenses make prioritizing LPG challenging, while spatial factors hinder free door-to-door LPG delivery. Additionally, poor awareness of the benefits of LPG and a lack of media engagement further contribute to the reliance on *chulhas* for many households in these localities.

Amid the daily struggles of people living in spaces like Chikhli, access to clean cooking fuel thus falls lower on their priority list compared to other pressing concerns. Any push towards maximizing clean cooking in such spaces necessitates a holistic approach embedded within a comprehensive socio-economic framework. Therefore, to break this cycle of vulnerability, policy recommendations must encompass multifaceted interventions addressing socio-economic disparities, spatial constraints, gender inequality and awareness-building initiatives. These policies should aim to enhance LPG accessibility, promote its benefits and empower marginalized communities with the resources and skills needed to adopt cleaner cooking fuel effectively in the long run.

Recommendations to the Nagpur Municipal Corporation

The Situational Analysis revealed that despite the informal and insecure nature of their occupation, communities living in Chikhli play a significant role in mitigating the impact of climate change in Nagpur through their occupations. While the suggested recommendations for ensuring a just transition to cleaner fuels require coordinated efforts at the local, state and national levels, the Nagpur Municipal Corporation can play a crucial role in implementing or facilitating the same.



TARGETED INTERVENTIONS TO INCREASE DEMAND FOR CLEAN COOKING

- Identify and map vulnerable households which consistently lack access to clean cooking fuels in urban Nagpur.
- Conduct awareness campaigns about PMUY, especially among vulnerable households and collaborate with local NGOs, ASHA workers and SHGs to increase the reach of the PMUY scheme.
- Develop Information, Education, and Communication (IEC) material on the health impacts of household air pollution and disseminate it through mass media, health centers and educational institutions.
- Develop and execute behavior change campaigns aimed at fostering a transition to cleaner fuels and address oppressive gender norms within households.



INITIATIVES TO ADDRESS COMPOUNDING VULNERABILITIES AND ENABLE THE TRANSITION TO CLEAN COOKING

- Provide slum dwellers (especially those who have been rehabilitated by the Government) with the necessary documentation and land tenure rights based on eligibility.
- Provide basic services, including Water, Sanitation, and Hygiene (WASH) facilities and conduct health camps in urban informal settlements of Nagpur.
- Develop a policy for waste pickers and sanitation workers in urban areas, including the issuance of identity cards to recognize and support their work.
- Encourage the establishment of federations and SHGs of waste pickers and provide training in sustainable livelihoods related to waste, such as recycling in order to enhance economic opportunities.
- Organize camps in various slums to enroll residents for various government schemes related to health, education and social security.



COPING MECHANISMS TO SUPPORT VULNERABLE POPULATIONS IN ACCESSING CLEAN COOKING FUEL

- Facilitate the establishment of micro-level distribution networks for LPG and ensure easy availability of 5 kg cylinders for economically marginalized households.
- Mandate free door-to-door delivery from gas distributors for all LPG users irrespective of their spatial location.
- Create budgetary provision in Nagpur's Clean Air Action Plan, to top up the subsidy currently provided by the PMUY scheme for vulnerable households.
- Institute a system for continuous tracking of fuel usage among existing LPG users through incentivizing ASHA workers.
- Encourage SHGs to assist in financing the cost of refill on rotation basis to households in need.

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