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Impact of Spatial Transformation on Women's Livelihoods in Slum Rehabilitation Housing after Development-induced displacement

An analysis of spatial transformation and women's livelihoods in case of Natwar Parekh Compound in Mumbai, India

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Summary

Housing is a human right and forced displacement is a violation of this fundamental right. It leads to a breakdown of livelihoods and disproportionately affects the socio-economically vulnerable groups of society. One such group is women. In a patriarchal society, women are given secondary social status and are stripped of several basic rights purely as a virtue of their gender. Over many decades of negotiating socio-spatial freedom, women have started to shed the socio-cultural implications of patriarchal norms and artfully devised livelihood strategies that serve them. However, displacement disrupts these complex systems and forces women to start from scratch in unfamiliar spatial contexts.

This thesis explores the multifaceted impact of spatial transformation on the livelihoods of women in a resettlement housing after development-induced displacement. It delves deep into the characteristics of transformation conducted and their reasons to do so. Several notable findings have been discovered, elucidating the ongoing change that shapes their well-being. Through a series of in-depth interviews with displaced women, a comprehensive understanding of their experiences in the transformed environment was garnered. The significance of this transformation becomes apparent in its multifarious contributions across social, human, and economic livelihoods assets. Women's ability to effectively rebuild their lives within the new spatial confines speaks to the inherent resilience and adaptive capacities they possess, which leads to a ripple effect and improves the livelihoods of all household members, especially females. Moreover, the study illuminates the transformative potential of spatial changes in enhancing women's sense of agency, fostering social networks, and reinstating a semblance of normalcy in their daily lives required for livelihood restoration.

However, it is noteworthy that spatial transformation is an ongoing process, necessitating continual attention and support. The research underscores the need for sustained institutional backing to fortify and scale up the positive outcomes of spatial change. Through capacity building, knowledge sharing and speedy redressal of grievances, spatial transformation can be effectively designed to respond to evolving challenges and aspirations of the women residents.

The research methodology employed a combination of in-depth interviews and spatial analysis to unravel the intricate dynamics of spatial transformation and the role of women in it. The narratives of displaced women offer profound insights into the nuanced ways in which the need for spatial transformation is recognized and actualized in households and the community. Complementing these narratives, spatial analysis was conducted to map conditions before and after the transformation. This approach enriches the understanding of the physical and socio-economic shifts that have transpired.

In conclusion, the thesis underscores that spatial transformation wields a substantial influence on the livelihoods of women in resettlement colonies following forced displacement. The restoration of livelihood assets through this transformation emerges as a noteworthy positive outcome, yet the process's ongoing nature necessitates continual support. As societies continue to grapple with the challenges of displacement, this thesis contributes essential insights into the role of spatial transformation in fostering resilience and empowering women within their new communities.

Keywords

Spatial transformation, livelihood, women, resettlement, displacement

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Foreword

This research is conducted as part of the degree, M.Sc. Urban Management and Development with a specialization in Urban Housing, Equity and Social Justice, at the Institute for Housing and Urban Development Studies at Erasmus University Rotterdam, Netherlands. The focus of this study is on the impact of spatial transformation on women's livelihoods in a resettlement housing project after development induced displacement. The research investigates different forms of spatial transformation and their reasons to do so. The process of these transformations is examined through the lens of women and their role in it from realising its need, financialization and implementation. These layers are overlaid and ultimately, the study explores the impact of spatial transformation on the human, social and economic aspects of women's livelihoods. The study employs a case study approach in Mumbai, India. This context is significant due to the large-scale development-induced effects (1,20,000 DPs) of MUTP and its noncompliance with resettlement guidelines. Several SRH projects have been built over the last two decades to provide housing to displaced people. This study aims to provide a better understanding of post occupancy living conditions and uncovers the inherent capacity of community-led bottom-up livelihood strategies, which if buttressed with institutional support could potentially provide adequate housing and livelihood restoration in future projects.

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Abbreviations

BMC	Brihanmumbai Municipal Corporation
CDA	Community Design Agency
CEC	Centre for Education and Communication
CSDC	Curry Stone Design Collaborative
DCR	Development Control Regulations
DFID	Department of International Development, UK
DFY	Doctors For You
DP	Displaced Person
FSI	Floor Space Index
HLRN	Housing & Land Rights Network
IHS	Institute for Housing and Urban Development Studies
ILO	International Labour Organisation
KI	Key Informant
KRVIA	Kamla Raheja Vidyanidhi Institute of Architecture
LARR	Land Acquisition, Resettlement and Rehabilitation Policy
MCGM	Municipal Corporation of Greater Mumbai
MHADA	Maharashtra Housing and Area Development Authority
MM	Mahila Milan
MMRDA	Mumbai Metropolitan Region Development Authority
MUTP	Mumbai Urban Transport Project
NBC	National Building Code
NCEUS	National Commission for Enterprises in the Unorganized Sector
NGO	Non-governmental Organization
NPC	Natwar Parekh Compound/Colony
NSSO	National Sample Survey Office
OECD	Organisation for Economic Co-operation and Development
PAP	Project Affected Person
PPP	Public Private Partnership
R&R	Resettlement & Rehabilitation
RA	Research Assistant
SDG	Sustainable Development Goal
SLF	Sustainable Livelihood Framework

SRA	Slum Rehabilitation Authority
SRH	Slum Rehabilitation Housing
SRS	Slum Rehabilitation Scheme
ST	Spatial Transformation
TDR	Transferable Development Rights
UHES	Urban Housing, Equity & Social Justice
UN	United Nations
UNCHS	United Nations Conference on Human Settlements
UNDP	United Nations Development Programme
WEIGO	Women in Informal Employment: Globalizing and Organizing

1: Introduction

1.1 Background

Urban development inevitably poses a threat to informal settlements and is the leading cause of forced displacement (HLRN, 2022; Nikuze et al, 2019). Studies show that involuntary displacement results in the loss of assets, jobs, and breakdown of livelihoods, all the while contributing to psychological trauma and long-term vulnerabilities. In the 90s, increased global resistance against displacement gave rise to the need for “rehabilitation”, which meant providing adequate housing to the displaced persons (DPs) and assisting to restore their livelihoods (Goyal, 1996).

The process of urbanisation is particularly harsh for women who are bound by patriarchal and decrepit social norms. Despite acknowledging the primary role of women in household practices in the Global South, their decision-making capacity and involvement in the Sustainable Development Goals (SDGs) is under-researched, especially in the low-income urban context. Many recent studies highlight survival strategies adopted by women in order to restore several aspects of their livelihood and in turn, the household’s (Sunikka-Blank et al., 2019; Musana, 2021). This includes informal income generation, reciprocity of informal social networks, alternative energy solutions, management of household chores and a variety of other activities conducted all at the same time.

Adequate housing and livelihood restoration require interventions across multiple SDGs as defined by the United Nations (UN). All SDGs encompassing sustainable communities, decent work, climate change, infrastructure, energy consumption, food security, poverty, housing, employment, equality etc., have a compounded effect on women’s livelihoods. The indispensable bridges across these sectors forged by women are often shadowed by informality, limitations of colonised knowledge, their secondary social status in patriarchal societies and poor understanding of gender-specific needs.

The hardships of women working in informality are exacerbated by the traditional gender-based expectations on a household level. Their economic activities are often dismissed as an extension of their domestic chores, undermining their work, rather than being recognized as a significant participant in the market (Chen & Sinha, 2016; Raman, 2023). Their contribution to the economy remains largely invisible and undervalued and they do not enjoy the benefits of adequate economic opportunities, legal rights, social protection, or representative voice – referred to by the International Labour Organization (ILO) as the four pillars of decent work (ILO, 2021).

Provisions of secure working and living environments for women in urban redevelopment plans are missing in plans, practice as well as policy due to poor understanding of gender-based needs and intricacies of informal work (Chen & Sinha, 2016). Traditional top-down slum redevelopment practices neglect how communities shape their spatial functionality to generate income and subsequently, how they use the income to improve other livelihood aspects. In disregarding informality, they overlook patterns and connections that must be preserved for livelihood restoration. Kura et al. (2017) emphasise on understanding coping strategies adopted by DPs to restore livelihoods post displacement. One example of coping mechanisms is spatial transformation (ST), where people create changes in their surroundings based on their changing needs. This research will analyse the impact of ST on women’s livelihoods in a resettlement colony in India.

1.2 Problem statement

Raavalee (2021) notes that the Government of India often uses the terms resettlement and rehabilitation synonymously and therefore, fails to grasp the processes required for adequate rehabilitation. The Rehabilitation and Resettlement (R&R) Bill, 2007 provides benefits and compensation for involuntarily DPs and ensures formulation, execution, and rehabilitation monitoring of their resettlement plan (Ministry of Rural Development, 2007). While the policy mentions protecting livelihoods, and improving living standards, these clauses are not mandatory. Sunikka-Blank et al. (2019) note that rehabilitation is primarily focused on fulfilling the housing deficit in India. The lack of accountability from policymakers, and institutional organisations, and absence of post-occupancy evaluations leaves the resettlement practices in violation of human rights. Additionally, profit-making endeavours from private organisations often take priority over livelihood restoration of DPs (Sunikka-Blank et al., 2019). As a result of these resettlement practices and intense commodification of land, DPs are further pushed into poverty and destitution.

Moreover, it does not specify any rehabilitation standards, gender-inclusive interventions or post-occupancy support. In practice, these responsibilities are transferred to NGOs, Social Welfare Department, and the community itself, while the state only offers shelter in “economically optimal terms” (Sunikka-Blank et al., 2019). Moreover, Raavalee (2021) points to the patriarchal structure of Indian society as the reason for lack of compensation for women-headed households, unmarried daughters, deserted/divorced women, and widows. Inequitable resettlement disrupts livelihood mechanisms, especially for women and threatens them with greater impoverishment (Goyal, 1996). In 2017-2018, WEIGO estimated 23.45 million informal workers as women in urban India. The most commonly identified informal work groups for women are home-based workers, domestic workers, and informal construction, among a few other options (Raveendran & Vanek, 2020). Housing & Land Rights Network (HLRN), India estimated over 70 million DPs due to development projects. In 2021, 27% of all evictions in India were done for development projects (HLRN, 2022). After resettlement, most DPs are declared “ineligible” due to unrealistic institutional requirements. A small minority of DPs considered “eligible” are provided alternative housing in undeveloped areas with a dearth of basic amenities, which further exacerbates the proliferation of slums (HLRN, 2022). In the state of Maharashtra, more than 50% of the city's population resides in slums (Fig 1). Mumbai is the largest urban agglomeration and the economic capital of India. Municipal Corporation of Greater Mumbai (MCGM) alone accounts for about 12.4% of the total slum population reported in the country (Census 2001) (Fig.2).

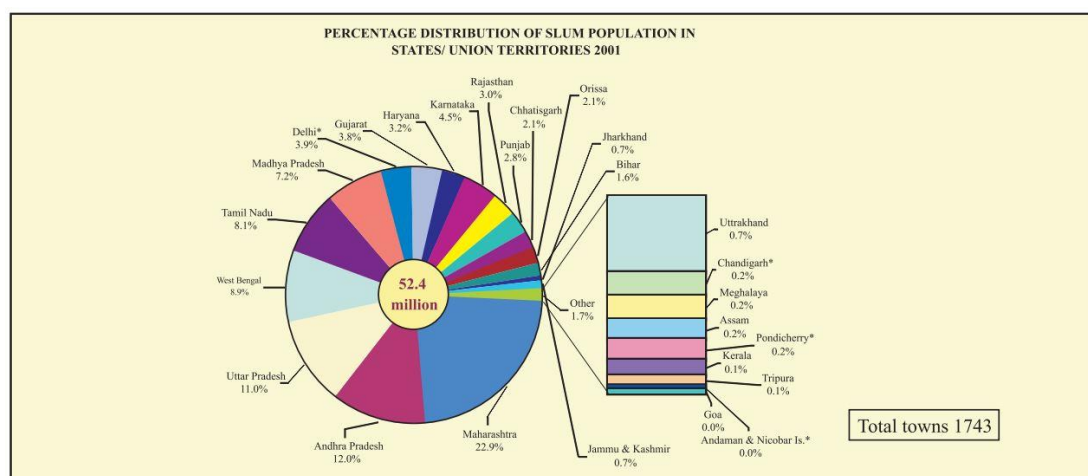


Figure 1: Percentage Distribution of Slum Population in States/Union Territories, India; Source: Office of the Registrar General and Census Commissioner, India, 2001

Name of Major Slum Reporting Million Plus City	Slum Population of City Municipal Corporation Area	% of City Slum Population to All India Slum Population	% of City Slum Population to All Million-plus Cities Slum Population
Chennai	819873	1.57	4.63
Delhi	1851231	3.53	10.46
Greater Mumbai	6475440	12.36	36.59
Kolkata	1485309	2.84	8.39
Hyderabad	626849	1.20	3.54
Nagpur	737219	1.41	4.17
All India Slum Population	52371589		
Slum Population of Metro Cities	17696950	33.79	

Figure 2: Slum Population in Million Plus Cities in India; Source: Office of the Registrar General and Consensus Commissioner, India, 2001

Jaimini and Sharma (2020) argue that that slum improvement policies are usually outdated even before they are initiated and are implemented as reparative measures without taking the cultural, social, or spatial fabric into account. One such colony is the Natwar Parekh Colony (NPC), a resettlement neighbourhood in East Mumbai. NPC was built to provide public housing to slum dwellers from various parts of Mumbai, who were forced to relocate due to the infrastructure projects. Many studies have highlighted the lack of institutional and economic support, poor building design, broken infrastructure, decreased mobility, lack of social and workspaces, poor waste management and decreased access to health and education in NPC, which led to a complete breakdown of the residents' livelihood assets post rehabilitation (Sunikka-Blank et al., 2019; Pardeshi et al., 2020; Debnath et al., 2019; Anand et Baranwal, 2016). Sunikka-Blank et al. (2019) argue that in such cases, "women act as shock absorbers in the households" (p. 58). During resettlement, many women lost work, and many were forced to work due to the increased financial pressure of formal housing. Research shows that women have redefined household practices and space utilisation for livelihood restoration (Sunikka-Blank et al., 2019).

This research studies the impact of ST on the human, economic and social spheres of women's livelihoods in a resettlement colony. It is subsequently divided into 4 sections. The first section offers an academic review of concepts used in the study. The second section delineates the methodology used to conduct the study and the third section provides the findings gathered as described in the methodology. Finally, the last section presents conclusions and recommendations for further study.

1.3 Relevance of the research

Cernea (2021) argues that loss of livelihood is not an "unavoidable" cost of resettlement and rehabilitation. However, we need to learn and unlearn from the past and present. This research will provide insight into ways of reducing the livelihood cost of R&R. It will provide detailed information on the real housing-related needs of women's livelihoods in resettlement colonies and therefore, interventions to tailor these R&R plans to facilitate livelihood restoration, an aspect which is currently missing in policy and practice. The study will also shed light on the process, outcomes and benefits of bottom-up measures adopted by the community to improve their livelihoods. This will provide a deeper understanding of integrating their knowledge and capacity in policies to facilitate enablement and empowerment.

Musana (2021) emphasizes on the limitations of spatial analysis through the lens of a male and its generalisation to all people. In order to successfully tackle these design and planning incompetencies, we need proper understanding of women's household strategies and their needs. Musana (2021) highlights the convenience of integrating work and domestic responsibilities as a critical element of women's economy and suggests that policy and design should promote this duality of using a house as home and workplace. The documentation of ST will help in understanding gender-specific spatial needs that are critical for adequate housing and informal work-related practices. It will be useful to architects and builders involved in designing housing to devise innovative solutions to address the temporal and multi-functional complexity of space usage.

Vanclay (2017) argues that resettlement will always carry some level of hurt, however, given the right conditions, it may be used as an opportunity for development and improved well-being. Through understanding livelihoods post rehabilitation, the study aims to raise awareness regarding the issues associated with R&R, as well as present opportunities for better impact assessment, design innovation and capacity building with a special focus on women and their needs. As the Government of India races to achieve its 'housing for all' target, insights into bottom-up practices and qualitative analysis of completed slum rehabilitation projects would have a substantial impact on future development.

1.4 Research Objectives

The objective of this research is to examine how spatial transformation influences women's livelihoods, in terms of human, social and economic capital, in the Natwar Parekh Compound, Mumbai after development-induced displacement.

1.5 Main research question and research sub-questions

How does spatial transformation contribute to the women's livelihoods, in terms of human, social and economic capital in the R&R case of Natwar Parekh Colony, Mumbai?

1. What are the characteristics of spatial transformation conducted in NPC and why were they done?
2. What was the role of women in the process of spatial transformation?
3. What are the women's livelihood outcomes derived from spatial transformation?

2: Literature review and hypotheses

The purpose of this section is to outline the theory relevant in the conceptualization of this study. The first section discusses the impact of project induced displacement on livelihoods, analysis of sustainable livelihoods and bottom-up coping mechanisms like spatial transformation. The second critical part of this study is the focus on women's economy, breaking down the intricacies of their work, workspace, and their role in the household. The third section highlights international R&R guidelines and the politics of the slum rehabilitation scheme adopted by the State Government of Maharashtra. Based on this literature, a conceptual framework is presented at the end which will guide the study further.

2.1 Impact of Displacement, Sustainable Livelihoods & Spatial Transformation

Many studies have confirmed varied impoverishment risks inherent to forced displacement (World Bank, 2016, Cernea, 2021; Vanclay, 2017). Authors and international organisations have globally emphasized on the need to focus on adequate rehabilitation practices and long-term support to minimize the damage caused to the livelihoods of the resettled people

(Fernandes, 2008; Vanclay, 2017; Cernea, 2021). Additionally, Vanclay (2017) suggests that resettlement provokes significant emotional pain and other inexcusable negative social impacts, irrespective of the living standards offered during rehabilitation (Das & Shukla, 2011 in Vanclay, 2017). Cernea (2021) also puts forth the differential impact of displacement on women and children, claiming that vulnerable groups are more deeply hurt than the rest. Many authors highlight that women suffer from more severe impacts due to gender-based discrimination, especially with respect to the compensation efforts like property entitlement and ownership. It can be said that the negative impacts of resettlement are complex and multi-layered; and are exacerbated by socio-economic vulnerabilities. Several authors have attempted to define the two terms “resettlement” and “rehabilitation” in order to provide a clear perspective of what an adequate process would entail.

Fernandes (2008) defines resettlement “as the act of physical relocation.” He argues that “rehabilitation is a long-time process that involves rebuilding people’s physical and economic livelihood, their assets, their cultural and social links, and psychological acceptance of the changed situation” (Fernandes, 2008, p. 4). However, Vanclay (2017) combines the two terms and describes the process of resettlement as “multi-dimensional, multi-factor, multi-actor, multi-scalar and multi-level” (p. 3). In an attempt to comprehensively define resettlement, the author describes it as,

*“as the comprehensive process of planning for and implementing the relocation of people, households and communities from one place to another for some specific reason, together with all associated activities, including: (a) the provision of compensation for lost assets, resources and inconvenience; and (b) the provision of support for **livelihood restoration** and enhancement, re-establishment of social networks, and for restoring or improving the social functioning of the community, social activities and essential public services” (p. 5)*

In order to understand livelihood restoration, this study employs the Sustainable Livelihood Framework (SLF). In 1997, British Department of International Development (DFID) developed the SLF in an attempt to encompass livelihoods and provide a set of indicators to measure it. SLF is an analytical tool used to assess livelihoods by effectively examining the interlinkages of social and environmental changes (DFID, 1999).

The most widely accepted definition of a livelihood is by Chambers & Conway (1992) which states that,

“a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term” (p. 6).

The cyclical nature of this framework implies the concept of sustainability and resilience. This means that individuals or communities will be able to use their livelihood assets in order to tackle shocks, without exploiting them and devise transforming structures/processes (livelihood strategies) to achieve the desired Livelihood Outcomes, as shown in Fig. 3 (DFID, 1999; UNDP, 2017).

The application of the SLF involves the requires the consideration of the following aspects (UNDP, 2017).

- An understanding of vulnerability in a given context.
- A strategy to protect livelihoods.
- An analysis of several types of livelihood capitals

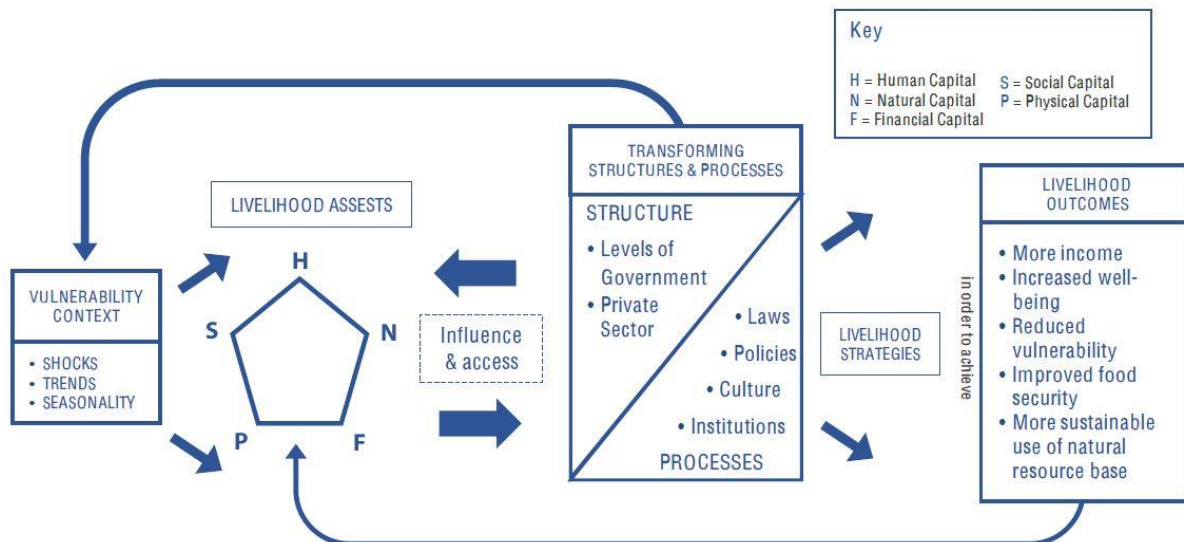


Figure 3: SLF; Source: DFID, 1999

The SLF is based on the principle that individuals or communities require 5 distinct types of assets to achieve positive livelihood outcomes and that no one type of asset is sufficient to achieve the desired result. The following categories are visually represented in a regular pentagon, indicating that each type is equally important as shown in Fig. 4 (UNDP, 2017).

Human Capital: It represents the abilities, experience, work skills and the physical state of good health which, when combined, allow populations to engage with different strategies.

Social Capital: It refers to social relationships, networks, associations, local authorities.

Natural Capital: It refers to the stocks of naturally occurring resources (soil, water, air, genetic resources, etc.) which can be used as inputs to create additional benefits, such as food chains, protection against soil or coastal erosion, and other natural resources.

Physical Capital: This refers to the basic infrastructure available.

Financial Capital: It refers to the financial resources and ease of access to financial assets.

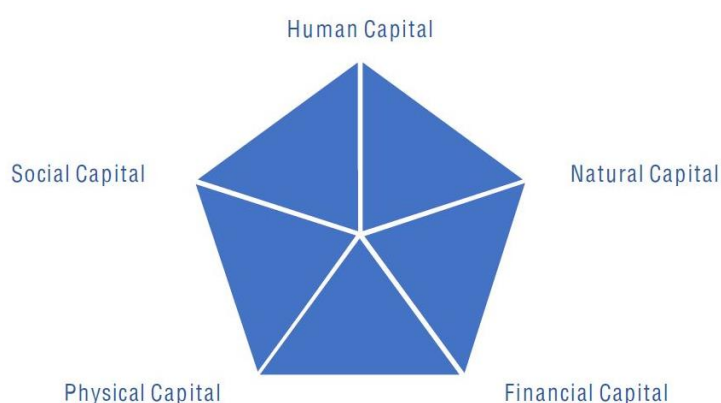


Figure 4: Asset Pentagon; Source: UNDP, 2017

DFID (1999) encapsulates livelihood strategies as “the range and combination of activities and choices that people make/undertake in order to achieve their livelihood goals” (p. 23). Livelihood assets are considered the ‘the building blocks for livelihood strategies’ that expand the choice and value to transform structures and processes into livelihood outcomes suited to their needs (DFID, 1999). DFID (1999) states that “strategies are

intimately connected with people’s objectives – the beneficial *Livelihood Outcomes* that they seek” (p.24). The report defines livelihood outcomes as an output of livelihood strategies and breaks them down into several indicators. In this study, we will be focusing on the following three indicators relevant to human, social and economic capital, as explained by UNDP (2017).

More income: Increased income relates to the idea of the economic sustainability of livelihoods.

Increased well-being: This emphasizes the value of peoples' sense of well-being, self-esteem, sense of control and inclusion, physical security of household members, their health status, access to services, political enfranchisement, maintenance of their cultural heritage, etc.

Reduced vulnerability: This relates to having a cushion against the adverse effects of vulnerabilities. Reducing this vulnerability works in congruence with increasing the overall social sustainability of livelihoods.

Livelihood restoration can be viewed as an improvement in one or more of interconnected these livelihood assets leading to favourable livelihood outcomes. The World Bank (2013) also emphasizes on consultation and participation of the DPs during planning and implementation in order to assist them in livelihood restoration.

While we have established several indicators to measure livelihoods, Tipple (2000) notes the perplexity of measuring or defining adequate housing in the Global South, due to the lack of data and poor understanding of the dynamic nature of peoples' socio-cultural household needs. With the additional pressure of the growing housing shortage, the author points to the user-initiated process of adjusting their house in order to better serve their needs. Many authors argue that inadequate housing leaves two options for the inhabitants, i.e., "to move or improve" (Tipple, 2000; Seek 1983; Debnath et al., 2019; Nijman, 2008). While there are many factors that influence this decision, several studies have affirmed that **secure tenure is a pre-requisite to investment in housing improvement** (Banerjee, 2022; Tipple, 2000).

Tipple (2000) terms this growing mismatch between housing needs and given conditions as "housing stress" and argues that all changes in the household are forms of coping behaviour to relieve this stress. Authors have globally recognised **spatial transformation (ST) as an indicator of inadequate housing and as a coping mechanism for livelihood restoration** (Avogo et al., 2017; Sheuya, 2009; Tipple, 2000).

Tipple (2000) defines housing transformation as "**acts of alteration and extension**" (p. 40) and emphasizes on the inevitability of the process given the changing needs of people. Sheuya (2004) further adds internal layout changes to the concept, where the net floor area may or may not change. Atália et al. (2022) note that transformation is often combined with maintenance activities and may even extend to the neighbourhood level. Two main characters of housing improvement are, 1) they respond to demographic or economic circumstances and 2) their expenditure is constrained by the household's economic status (Seek, 1983 in Tipple, 2000). The words, transformation, adjustment, improvement, alteration, modification are synonymous. Transformation may be complete or partial, physical, or functional, and internal or external, done to improve/alter the appearance, usefulness, or efficiency of space to satisfy the needs of the household (Popkin et al, 2012, Aduwo et al, 2013).

Furthermore, Avogo et al. (2017) ascertain certain key housing needs as the determinant factors for housing transformations to be, 1) expanding household size, 2) home-based enterprises, 3) security, 4) storage, and 5) renting. Their research also reveals that the reasons for transformation vary depending on the context. Debnath et al. (2019) proposed a novel conceptual framework to analyse social, economic, and environmental factors causing distress and discomfort in slum rehabilitation housing in Mumbai, which may be relieved through ST, as shown in Fig. 21.

In this study, ST is considered a type of livelihood strategy which includes any form of adjustment, physical or function, ranging from the household level to the neighbourhood level.

The SLF will be employed to measure the difference in their livelihood outcomes before and after the transformation. The study will uncover reasons for transformation and the role of women in it, which may or may not resemble the academic literature discussed. The hypothesis is that this community driven change would have led to the restoration of women’s livelihoods after resettlement.

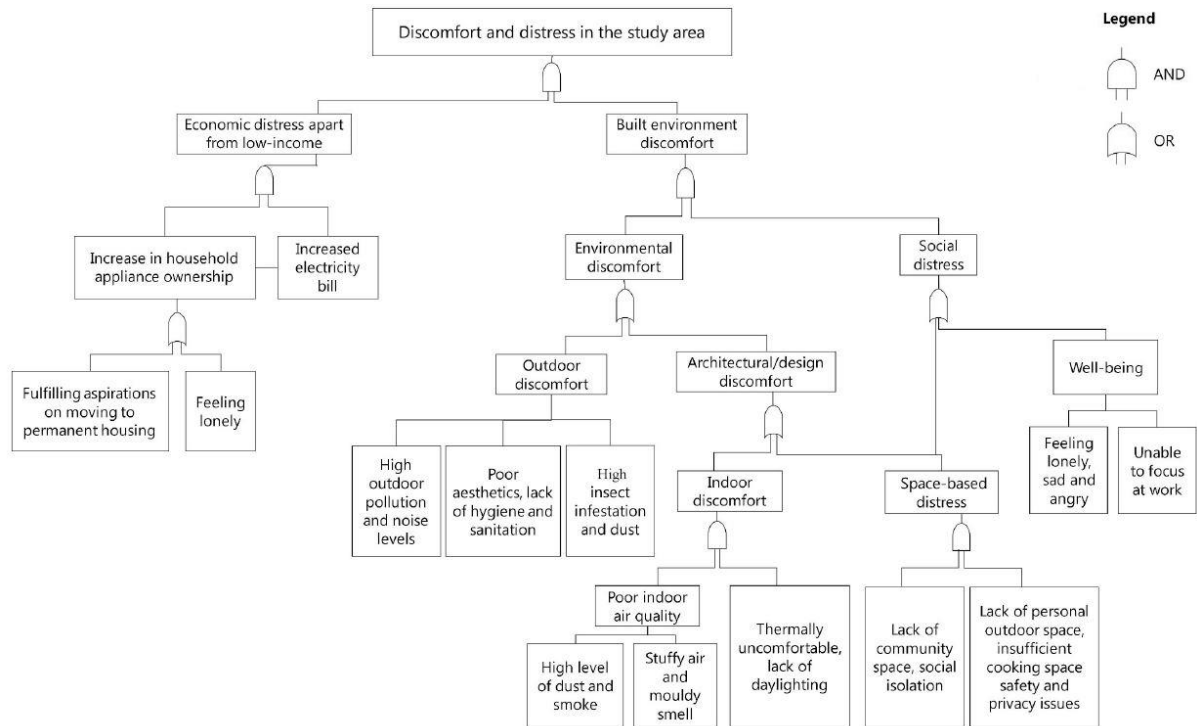


Figure 5: Reasons of discomfort & distress in NPC; Source: Debnath et al. (2019)

2.2 The Role of Women

Many authors argue that until the 1960s, mainstream economic literature focuses only on the male wage earner to dissect household expenditure. This neglects two critical socio-economic domains, one being the informal economy and two, the role of women. With limited literature on women’s domestic activities, work and decision-making capacity in households, several parameters of gender sensitive housing design, planning and provision are ignored and/or misunderstood. (Rakodi, 1991; Musana, 2021). The following sub-sections dissect elements of women’s work practices and its perception in the household and outside.

2.2.1 Types of Work Opportunities & Impact of Resettlement

Chadha (2021) notes that urbanisation and industrialisation has led to the migration of unskilled workers from rural agrarian economies to urban cities. The growing demand of workers in the informal economy and service sector absorbs this population, taking advantage of their economic status. Women are mostly employed in home-based work, domestic work, informal construction and transport jobs, street markets, or waste picking, unless they stumble upon the opportunity to receive training through an NGO or any other organisation.

Domestic workers are workers who perform domestic work for pay and remuneration (ILO 2018). Their services range from cleaning, cooking, laundry, and child/elder care, among others. Economist Jayati Ghosh highlights that there has been an increase in the supply and demand of domestic workers due to two reasons; scarce employment opportunities, and substantial rise in inequality (Ghosh, 2014). Mangilal (2022) notes that female domestic

workers suffer from a variety of problems in their workplace and their household due to the nature of their work and the lack of social security. From sexual abuse, to exploitation, the author points to the inhuman work conditions and violation of human rights of female domestic workers. Considering their poor socio-economic status, Mangilal (2022) argues that they are often subjected to similar kinds of domestic abuse at work and at home. Their workload is also doubled as they are expected to repeat the same chores as household duties, causing additional mental and physical strain. (Mangilal, 2022).

Women in Informal Employment: Globalizing and Organizing (WEIGO) estimates that around 147 million women around the world work in or close to their homes. In India, the estimate of home-based women workers stands at approximately 17.2 million (16.4 per cent of all women in the informal sector) (WEIGO, *n.d.*). A survey of the informal economy from 2011 shows that women entrepreneurs were engaged in micro businesses, both as a rational choice, and a necessity and desire to engage in economic activity (Williams & Gurtoo, 2011). WEIGO identifies two types of home-based workers as follows (WEIGO, *n.d.*).

Self-employed home-based workers – They function with all the risks and benefits of an independent enterprise. They bear all costs of raw materials, equipment, transport, and utility costs and have complete control over selling clientele and prices.

Sub-contracted home-based workers (homeworkers or industrial outworkers) – individual entrepreneurs, factories, or firms contract them, often through an intermediary. Production is outsourced to those who work from home to cut costs and maximize profits. They are given the raw materials; however, they cover the costs of workplace, equipment, electricity, and other supplies. They are paid by pieces and have no control over selling.

Since their home is their workplace, home-based workers are directly affected by housing policies and practices (slum upgrading and/or slum eviction–relocation schemes), basic infrastructure services and zoning regulations. Home-based workers are also affected by the accessibility and cost of public transport, especially if they are forced to relocate at great distances from their customers, markets, or contractors (Chen & Sinha, 2016).

During resettlement, any minor change or disruption of employment can lead to loss of livelihoods considering the precarious work contracts, which are mostly based on verbal agreements. The invisibility of their work takes away any social protection or labour regulations that may be attached to other informal/formal work (Raman, 2023). On top of this, many studies highlight that income-generating women are additionally bound by entrenched social norms and are expected to simultaneously fulfil their household duties and child/elder care. Their contribution to the household income does not free them of the traditional gender roles (Raman, 2023; Chen & Sinha, 2016; WEIGO, *n.d.*). Sunikka-Blank et al. (2019) argue that the overlap and continuous juggling of household work and paid work pushes women into “time poverty”, compromising several livelihood assets. Raman (2023) corroborates by pointing at the perception of responsibility making it impossible to conceive the concepts of leisure, personal time, and self-development. The author substantiates the argument further by highlighting the low pay as the cause, which makes it necessary to work long hours in order to make the income worthwhile, pushing them further into time poverty (Raman, 2023).

Raman (2023) emphasises on the need to study the full range of women’s activities, both income-generating and household related, to understand the diverse income sources, household strategies and their significance in the economy. The author highlights the messy and multi-layered nature of balancing paid work with domestic duties and the negotiation of these blurred boundaries (Raman, 2023).

2.2.2 Women's Economy

Considering the under researched nature of the informal economy, we cannot say that workplaces are inappropriate. There is a lack of understanding of the space and human requirements of the work and what is defined as work (Raman, 2023). This informal workspace is different from the concept of workplace which can be defined as a “site of exchange value production where income is earned” (Rakodi, 1991). Rakodi (1991) states that these workspaces are “criticised as inappropriate for Third World countries in which pre-capitalist forms of economic organisation persist” (p. 39). Instead, the author offers the concept of reproduction as a form of work “carried out within the household with assistance from collectively provided services” and their societal association to women leading them to be devalued and ignored. Raman (2023) emphasizes on the need to redefine what constitutes as work, how it may be conducted in order to comprehensively understand the qualifications for appropriateness of a workplace.

Moreover, authors have globally recognised that the cookie cutter approach to housing is gender blind and ignores the idea that women use house as a resource, i.e., a home and an income generating space (Musana, 2021). It is critical to uphold their participation in household strategies in order to design policies and buildings that introduce equity among genders. Musana (2021) suggests that irrespective of whether women work at home or outside, “the integration of women's interests into the design and provision of housing can make their domestic responsibilities easier by giving them a chance for cooperation and productive, income-generating activity while allowing income and time for other pursuits” (p. 18).

Additionally, the author argues that women are more acutely aware of their surroundings and can typically generate income through the needs of the community itself, allowing them to productively serve their community. Therefore, more egalitarian living environments focussing on the woman's quality of life will not only impact women but also, the household and the community. In contrast, Raman (2023) presents a drawback of this work and household proximity, i.e., their distance from the market. Considering the social and societal restraints, women are physically and psychologically separated from the market which inhibits them from developing a defined work identity, impeding their capacity to recognize the value of their skills, work hours and overall worth.

Additionally, Raman (2023) highlights the detrimental impact of poor ventilation and lighting in low-income housing turned workspaces and the lack of guidelines for the homes to adequately double as workspaces. The lack of boundaries between personal and professional space further introduces the politics of spatial negotiation and brings into question the occupational safety, convenience, and productivity (Raman, 2023).

2.2.3 Perception of Women's “Work” & the Role of Kinship

Rakodi (1991) talks about the critical connection between household strategies and family/kinship. She states that kinship establishes the structure of organisation, obligations, and responsibilities in the business of living in the household. Multiple families/groups may live together based on the household function they add value to, for example, cooking, cleaning, income sharing or decision-making and this composition may change over time, “depending on circumstances, rural ties and the stage of the family life cycle” (Rakodi, 1991, p. 40). Considering these values, it is critical to understand the dynamics of the household and who takes the central position, i.e., the head of the household in this context. While the male earning members of the family usually assume this title, there has been a shift in dynamics considering the growing number of women participating in income-generating activities and the financialization of livelihood strategies. While research until has now neglected intra-household and inter-generational conflicts for the convenience of considering households as

units, Rakodi (1991) argues that the “the interests, behaviour, and contributions of men and women may differ considerably, with respect to their economic roles, fertility decision making and the demand for children, and the use of time.

On the other hand, Raman (2023) links work with family/kinship and its proliferation by word-of-mouth as family members and neighbours often help each other in introducing new work or completing/assisting in work tasks. The author notes that the perception of women’s contribution to the household income may be considered as “extra,” i.e., as something that the family serendipitously gains through family, despite its vitality. She also talks about how this extra income-generating activity is not typically perceived as employment as “employment” in its conventional sense may be not permissible in the family or the society (Raman, 2023). This shows that kinship/family plays a significant role in income-generating and household activities in women’s ability and perception of work and household duties. While some women may be able to draw support from the family members depending on their perception, others may suffer from invisibility on both fronts, work, and household.

2.3 Guidelines & Policies on R&R

2.3.1 World Bank Guidelines

The World Bank offers a set of guidelines and working definitions in its Land Acquisition, Resettlement and Rehabilitation (LARR) Policy proposed in 2001 (and revised in 2013) in order to improve or at least restore the livelihoods of the project affected people (PAPs), applied to mitigate the economic and social impacts resulting from Bank-assisted investment projects. Following are the required measures suggested to achieve adequate resettlement and rehabilitation (World Bank, 2016).

1. Resettlement instrument: DPs should be (i) informed about their options and rights; (ii) consulted on the resettlement alternatives; and (iii) provided compensation at full replacement cost.
2. Land-for-land: Land-based livelihoods should be given land-based resettlement strategies or reasonable alternatives with proper compensation.
3. Livelihoods restoration: DPs should be (i) offered support after displacement for a transition period; (ii) provided with development assistance in addition to compensation measures; and (iii) provided with support such as land preparation, credit, and training or job opportunities.
4. Vulnerable groups: Particular attention given to the needs of vulnerable groups among the displaced, especially those below the poverty line, the landless, the elderly, women, children, Indigenous peoples, and ethnic minorities.
5. Consultation and grievance mechanism: DPs and host communities should be provided with timely and relevant information, consulted on resettlement options, and offered opportunities to participate in planning, implementation, and monitoring of resettlement; and also, an appropriate and accessible grievance mechanisms.

2.3.2 Politics of the Slum Rehabilitation Scheme (SRS), Maharashtra, India

UN Habitat (2003) offers an operational definition of a slum as an area that combines, to varying extents, the following characteristics (restricted to the physical and legal characteristics of the settlement), inadequate access to safe water, inadequate access to sanitation and other infrastructures, poor structural quality of housing, over-crowding, and insecure residential status. Internationally and nationally, the negative perception of slums has reinforced the idea of “clearing slums” instead of considering them potential hotspots for innovative growth and addressing their problems at the grassroot level (Sunikka-Blank et al., 2019). Architect, Activist and a resident of Mumbai, P.K. Das notes that “the tragedy in housing in the city has

all along been the fact that the plans and policies have continuously alienated the people” (Das, 2005, p.1).

In 1995, the Slum Rehabilitation Authority (SRA) was established by the Government of Maharashtra in order to implement the Slum Rehabilitation Scheme. The vision of this organisation is to create a “Slum Free Mumbai” (SRA, *n.d.*) Under the purview of this scheme, Private developers are granted access to highly valued slum lands for a fraction of the land price. The developer must build accommodation for all the residents on the selected site, which is given to the slum dwellers for free (Resettlement colony). The developer is incentivised with a higher Floor Space Index (FSI) or Transferable Development Rights (TDR), for a sale component building. The SRA has carried out around 1500 projects along with private developers (built and proposed) till date.

As part of the SRS, several special concessions are granted in building requirements i.e., relaxations in open space and room sizes. Pardeshi et al. (2020) analyse the differences between the National Building Code regulations, and SRS Development Control Regulations (DCR), and highlight the relaxation of norms related to unit density, marginal open space, and distance between buildings for slum redevelopment buildings. One of the main deviations is the reduced gap between two buildings. The study highlights poor standards of planning and design set for rehabilitation sites which inevitably lead to the production of vertical slums. The additional clauses for further relaxations have been exploited by private developers to fit more housing units on a given site and churn out greater profits.

SRA’s idea of public-private partnerships is focussed on re-clustering horizontal slums into vertical redevelopments. The intention is to maximize occupancy in small pockets of land and “free up” the remaining land for other development (Debnath et al., 2017). Baliga and Weinstein (2021) note the SRS Low-Income Housing has linked several international and national investors, developers, architects, and residents into networks of housing financialization. Their study criticized the policy for converting slum lands into sites of financial investment, disregarding the residents’ interests and views in the process. The policy exacerbates the commodification of land in Mumbai and subverts the government’s responsibility to provide safe, affordable, and liveable housing for all.

2.4 Conceptual framework

The conceptual framework as represented in Fig. 6 below summarizes the basic issues of slums, whose impacts are compounded for women due to their low social status in a patriarchal society. Additionally, when their livelihoods are disrupted by forced displacement and resettlement, their existing systems are easily compromised, leading to loss of livelihoods. In this research, ST (independent variable) is considered a livelihood strategy used to restore human, economic and social livelihood assets (dependent variable) and the study investigates the role of women in it.

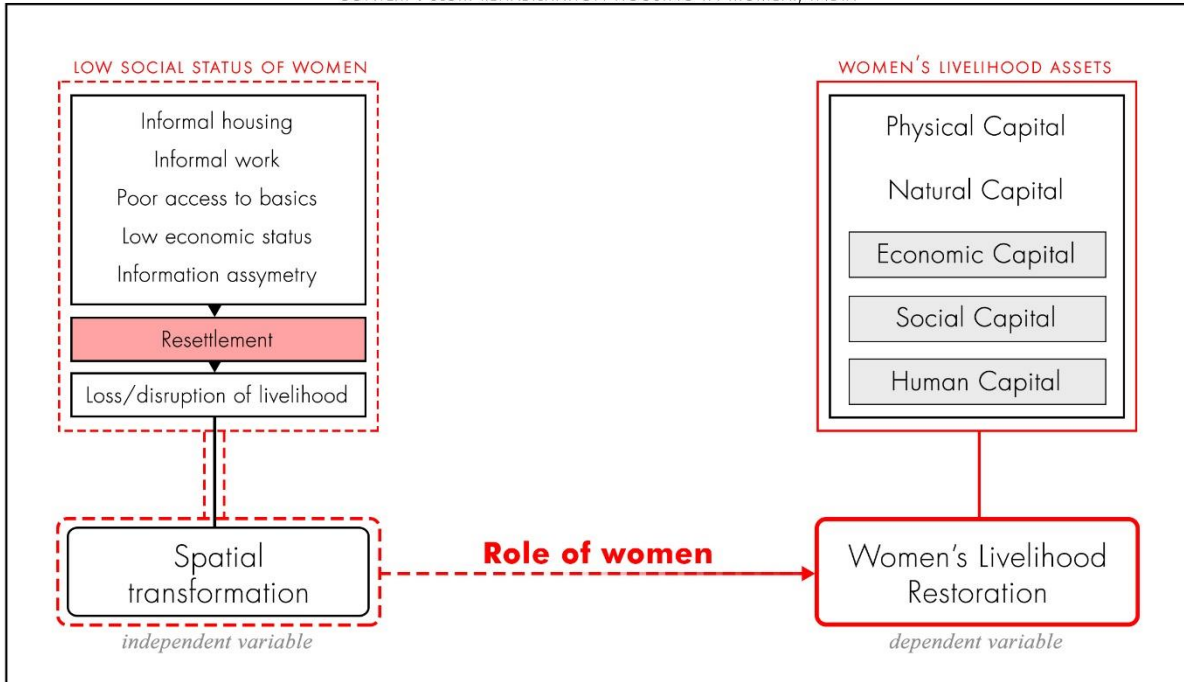


Figure 6: Conceptual Framework; Source: Author

3: Research design

3.1 Research Strategy

Research strategy, methods and techniques are the defining elements of research design (Van Thiel, 2014). The research strategy delineates the overall structure of the research and guides data collection, whereas the technique determines the process of analysis. The choice of this depends on the subject of the research, the body of existing knowledge and the author's personal preferences, time limitations, and practical feasibility (Van Thiel, 2014)

The research objective here is to investigate the impact of ST on women's livelihood outcomes post resettlement, with a focus on women's economy within a household. Considering that the objective focusses on the livelihoods of displaced women, a suitable research strategy is to conduct the study in a slum rehabilitation housing as **a case study** (Van Thiel, 2014). The case study will offer a perspective on the impacts of R&R projects on women's livelihoods and their efforts to restore capital after displacement. Pre-transformation data will be collected through developer's architectural drawings and secondary research, whereas post-transformation data will be collected through documentation, semi-structured in-depth interviews with female residents and key informants. Moreover, an interview will be conducted with an employee of Community Design Agency (CDA), a non-profit design and research organisation, which has been engaged in community development and livelihood restoration in SRH projects. During these interviews, the interviewees will also be asked to recall the reasons and process of transformation. The case study strategy along with detailed input from female residents and key informants, will provide a comprehensive understanding of their livelihood outcomes achieved through ST.

3.2 Case Study

A slum rehabilitation colony called the Natwar Parekh Compound (NPC), located in Mumbai, India is the selected case study for this research. It is one of the many slum rehabilitation

projects built to accommodate the people displaced due to the World Bank funded Mumbai Urban Transport Project (MUTP), aligning with the research objective. It was built as part of the Slum Rehabilitation Scheme (SRS) launched by the Government of Maharashtra, overseen by MMRDA, and built by several private developers. The strong presence of NGOs in NPC makes it ideal for community engagement and easy data collection. Additionally, the existing research questioning SRS, housing adequacy, and gender roles in NPC offer valuable insight into the impacts of R&R. This study attempts to build on this current research in order to map the evolution of livelihood restoration in slum rehabilitation projects with a focus on women's role in it.

3.3 Sample Size and Selection

Another significant aspect of research is the identification of the unit and scale of participants included. NPC currently inhabits 25,000 DPs, and considering the logistical constraints of the study, an appropriate representative selection is required. While the study selects a small part of all the potential participants, research strategy is designed in a way that the results can be effectively used to draw conclusions for the entire group (Van Thiel, 2014).

A pilot survey will be conducted to identify the appropriate samples, which is also known as **purposive sampling or judgement sampling**. It is a deliberate choice of participants is curated that satisfy the qualities required to gather data for relevant research (Etikan et al., 2016). Evidence of ST is necessary in order to study its impacts. The research objective also provides the first filter of focusing on female DPs; and the investigation of economic capital and the financialization of ST requires a focus on women's income generation practices. Additionally, the literature review provides the final criteria which suggests that **secure tenure** is a pre-requisite for any form of housing improvement. Therefore, in order to effectively satisfy the conditions of the research, **10 female residents** will be chosen based on the following **conditions** –

1. Respondent or respondent's family member is a homeowner
2. Respondent is an income-generating, female DP of age 18 – 65 years
3. Respondent has undergone/participated in spatial transformation

Furthermore, 2 key informant interviews will be conducted with the following individuals –

1. Ms. Parveen Sheikh - Resident Community Worker; President of Building Management and NPC Federation
2. Ms. Bhawna Jaimini - Architect and Author leading several socio-spatial transformation and livelihood restoration projects; employed in CDA

3.4 Data Collection Methods

As stated in the previous sections, primary data is collected through a close ended questionnaire (pilot survey), in-depth interviews with income-generating women. This data will be used to analyse their livelihood (before and after transformation) and experiences of ST after R&R. Since the case study was based in India, fieldwork was conducted in collaboration with CDA and two of their research assistants (RA) active in the community. Female RAs were chosen to ensure comfort of the respondents and their family members. At each step, the RAs effectively communicated the details of the study, ensured anonymity, and requested for consent.

3.4.1 Primary Data Sources

1. **Pilot survey** – The structured questionnaire is divided into 3 main parts (Appendix 1). The first part enquires basic household information, like year/reason for displacement, tenure type and household composition (**CONDITION 1 & 2**). The second part covers

information on ST, its reasons and financialization (**CONDITION 3**). The final part covers information about the income-generating practices of female(s) and number of dependents. The survey was designed on Qualtrics such that the survey would not move forward if the above-mentioned conditions were not met. It was conducted in person door-to-door by the RAs. The information was subsequently processed electronically by the author.

2. **In-depth Interview** - The semi-structured interview contains open questions regarding their experience of R&R and ST, the intricacies of their household practices, and the change in their livelihood assets. Once the sample was identified, the RAs assisted in scheduling the 30 – 40 minutes long interviews which were conducted with the author over Zoom video calls. In order to preserve the integrity of the data and allow the respondents to feel safe in expressing their concerns, interviews were conducted in a private room in the community library.
3. **Documentation** - The RAs collected photos and videos of households selected in the sample. The author guided them to observe critical areas.

3.4.2 Secondary Data Sources

1. **Architectural Drawings** - Architectural drawings were drawn by the author based on the layouts presented in the following sources. The measurements were also corroborated by the RAs on site.

Singh, R., Pardeshi, P., Bardhan, R., Kapoor, N., Jadhav, B., David, S., . . . Jana, A. (2018). *Studying the association between structural factors and tuberculosis in the resettlement colonies in M-East ward, Mumbai*. Mumbai: Doctors For You.

➤ Drawings shared by CDA

2. **Neighbourhood level Spatial transformation & its processes**

➤ Photos, articles, research, and handbooks as published by CDA

3. **Post resettlement living conditions** – The following studies have been conducted to analyse the adequacy of slum rehabilitation projects and post-occupancy conditions in Mumbai, using NPC as a case study. Their analysis and conclusions provide invaluable information on post R&R living conditions and can be used to paint a clear picture of their living conditions.

➤ Debnath, R., Bardhan, R., & Sunikka-Blank, M. (2019). Discomfort and distress in slum rehabilitation: Investigating a rebound phenomenon using a backcasting approach. *Habitat International*, 87, 75-90. doi:10.1016/j.habitatint.2019.03.010

➤ Pardeshi, P., Jadhav, B., Singh, R., Kapoor, N., Bardhan, R., Jana, A., . . . Roy, N. (2020). Association between architectural parameters and burden of tuberculosis in three resettlement colonies of M-east ward, Mumbai, India. *Cities & Health*, 4(3), 303-320. doi:10.1080/23748834.2020.1731919

➤ Sunikka-Blank, M., Bardhan, R., & Haque, A. N. (2019). Gender, domestic energy, and design of inclusive low-income habitats: A case of slum rehabilitation housing in Mumbai, India. *Energy Research & Social Science*, 49, 53-67. doi:10.1016/j.erss.2018.10.020

➤ Kimaya, K. (2017). CASE STUDY MAPPING LIVABILITY OF LOWER INCOME HOUSING TYPOLOGIES IN THE CITY OF MUMBAI. Building Inclusive Urban Communities. https://mdl.donau-uni.ac.at/binucom/pluginfile.php/405/mod_page/content/38/KRVIA_3_K.pdf

3.5 Research Techniques

In order to effectively analyse all this data, the structured surveys are thoroughly checked to ensure that all information was entered correctly and compiled into graphs on MS Excel. The information collected through interviews is processed using Atlas.ti, coded based on the indicators identified from the literature. Interview questions were organised to ensure all indicators/codes were answered to address the research questions. The findings are presented as tables and graphs. ST is analysed through before and after conditions, presented as photos and drawings prepared by the author.

3.6 Expected Challenges & Limitations

The scope of the study is to investigate the change in human, social and economic aspects of livelihood restoration. SRS provides a housing unit free of cost to the DPs which is considered as the physical asset and since the DPs were moved within the same city, their natural capital remains constant. The assumption that the DPs restore their human, economic and social livelihood assets, considering their physical and natural capital as a constant is a limitation as studies indicate that all assets are interconnected and collectively contribute to livelihood strategies (DFID, 1999; UNDP, 2017). Additionally, the DPs may have employed one or more livelihood restoration strategies to achieve their present status, however, this study will focus on ST and its impact.

Another limitation is that NPC is only one case study of SRH, however, other projects are designed differently and may produce different outcomes as they are built by different developers. While some conclusions may be effectively applied to other SRH projects in Maharashtra, the study remains context specific. Additionally, the study focuses on female individuals and therefore, strategies of other genders are excluded from the scope. The final limitation is that the author was not physically present for the fieldwork, however, all efforts of proper guidance to the RAs and consistent virtual presence were employed to offset this limitation. Monetary and time constraints have also affected the scope of the study.

3.7 Variables and Operationalization

3.7.1 Operational Definitions of Variables

1. Spatial Transformation

A combination of activities and assets may be employed to achieve livelihood goals, known as livelihood strategies (DFID, 1999). In this study, ST is considered a livelihood strategy which includes any physical or functional, permanent, or temporal alteration implemented at a household or neighbourhood level (Tipple, 2000; Sheuya, 2009; Popkin et al., 2012; Aduwo et al., 2013; Avogo et al., 2017; Atália et al., 2022)

2. Role of Women in Transformation

A wide range of interconnected household and income-generating activities are conducted by women, while simultaneously negotiating freedom, space, time, duties, networks, and personal aspirations. As women manage most households, any spatial transformation is critical to their livelihoods and this parameter investigates the reason for transformation and the role of women in its process (Rakodi, 1991; Chen & Sinha, 2016; Chadha, 2021; Musana, 2021; Mangilal, 2022; Raman, 2023; *WEIGO, n.d.*).

3. Livelihood Assets

The SLF defines livelihood assets, both material and social, as a range of various kinds of capitals required by individuals or communities in order to survive (UNDP, 2017). This study focuses on the following livelihood assets as outlined by DFID (1999) –

- Human Capital – An individual’s abilities, experience, education, and skills
- Economic Capital – An individual’s financial resources and access to resources
- Social Capital – An individual’s formal/informal networks, sense of belonging, safety, and security

4. Livelihood Outcomes

According to DFID (1999), “livelihood outcomes are the achievements or outputs of livelihood strategies”. It is critical to note that outcomes may be contradictory and/or difficult to translate into monitorable indicators. Therefore, it is important to judge outcomes that women consider crucial in their livelihoods, i.e., including non-tangible outcomes such as awareness of rights, security, access to information, etc. (DFID, 1999; UNDP, 2017)

3.7.2 Operationalization

The following table explains the operationalization of the main variables as defined above, in terms of dimensions, indicators, sub-indicators drawn from the literature review, along with their data collection methods and sources.

Variables	Dimension(s)	Indicator(s)	Sub-indicator(s)	Data collection method(s)	Source(s)
Spatial Transformation (Independent variable)	Household/ Gallery Level	Permanent change	Addition/ removal of walls/addition of levels	Questionnaire, In-depth Interviews, Documentation	Selected sample’s households
			Internal layout change		
		Visible alterations			
	Neighbourhood Level	Temporary change	Function change		
			Visible alterations		
		Permanent change	Physical modification of public space		
Temporary change	Function change				
Role of Women	Personal/Household Level	Economic role	Income & other work benefits	In-depth Interviews	Selected sample, KI
			Financial Agency		
			Financial Responsibilities		
			Informal microcredit systems/ loans		
		Household duties	Division of chores/ Responsibilities		
			Head of household		
	Kinship/Community Level	Social obligations	Social ties		
			Community organisation		
Livelihood Assets	Personal	Human Capital	Time dedicated to work/household duties/networks/self	Questionnaire, In-depth Interviews	Selected sample, KI
			Room occupancy ratio		
			Social security		
		Economic Capital	Thermal comfort		
			Regular Income		
			Access to credit		

	Community	Social Capital	Relationships of trust, reciprocity & exchanges Community organisation		
Livelihood Outcomes	Personal	Human Capital	Work life balance Increased wellbeing	In-depth Interviews	Selected sample, KI
		Economic Capital	Financial Stability		
			Decent work and adequate workspace		
	Community	Social Capital	Presence of formal/informal networks		
			Feeling of safety & security		
			Ownership & sense of belonging		

Table 1: Operationalization of variables; Source: Author

4: Research Analysis and Findings

This chapter presents the research analysis and findings based on the primary and secondary data collected as described in Section 3.4. This chapter is divided into 5 sections. The first section gives an overview of NPC, while the second section presents sample characteristics. The subsequent sections answer the three research sub-questions sequentially.

4.1 Natwar Parekh Colony, Mumbai – A Resettlement Colony

Amongst one of the first public housing estates in Mumbai, NPC was built in 2007 with the aim to provide housing to slum and pavement dwellers from Byculla, Cotton Green, Nagpada, Mithi River, Chembur, Sewri, Kurla and other areas of Mumbai, relocated due to MUTP (Fig. 8). It is located in the Govandi suburbs, surrounded by other SRA projects and the Deonar Dumping Ground. A study on liveability in NPC by Kimaya (2017) explains that the site was considered a “greyfield” site prior to resettlement as it was economically obsolescent and an underused real estate asset. The project was completed in 2005. However, it was not occupied until 2008, during which, water connections, and basic building services were either not provided or were worn out (Kimaya, 2017). The first DPs organized themselves to clean, fix, and maintain NPC, which was the beginning of bottom-up ST in NPC.

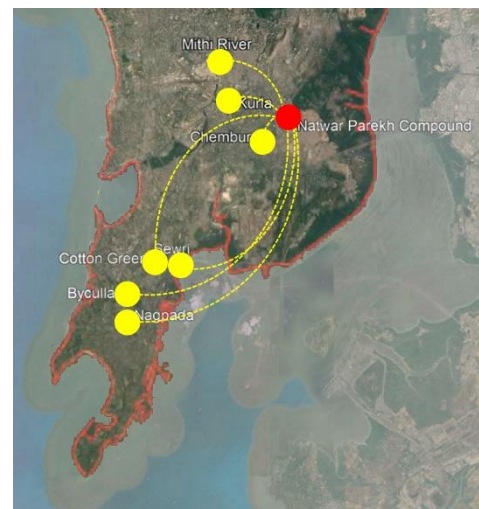


Figure 7: Locations of internal displacement; Source: Author



Figure 8: NPC Neighbourhood, other SRA projects and Deonar Dumping Ground; Source: Author

4.2 General Characteristics of the Sample

This section describes the general characteristics of the sample selected based on the three criteria defined in Section 3.3. The respondents were divided into different age groups with a range of 10 years, as shown in Table 2.

Serial No.	Age Group	Frequency	Percentage (%)
1	18-24	1	10
2	25-34	2	20
3	35-44	4	40
4	45-54	2	20
5	55-64	1	10
	Total	10	100

Table 2: Sample Age; Source: Author

Another critical aspect is the household size, as shown in Table 3.

Serial No.	Household size	Frequency	Percentage (%)
1	≤ 4	2	20
2	5 - 7	4	40
3	8 - 10	2	20
4	10 - 12	1	10
5	12 - 15	1	10
	Total	10	100

Table 3: Sample Household size; Source: Author

Based on the existence of a work contract, Table 4 presents the frequency of formal and informal workers.

Serial No.	Type of work	Frequency	Percentage (%)
1	Informal Work	7	70

2	Formal Work	3	30
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Table 4: Sample Type of work; Source: Author

The different types of income generating activities identified (Table 5). Some participants are also engaged in more than one type of income-generating activities.

Serial No.	Type of work	Frequency	Percentage (%)
1	Paid domestic work	3	30
2	Bangle packaging	1	10
4	Flower stall	1	10
5	NGO Employee	2	20
6	Building Management Employee	2	20
7	Grocery Store owner	1	10
8	Henna tattoo artist	1	10

Table 5: Sample Occupation; Source: Author

Different places of work were identified depending on the type of income-generating activities (Table 6). Some people work in more than one spaces, using their home as a production space or as a discussion space for their community work, while also having other designated workspaces.

Serial No.	Place of work	Frequency	Percentage (%)
1	Home	5	50
3	NPC	3	30
4	Other	5	50

Table 6: Sample Place of work; Source: Author

4.3 Spatial Transformation

This section answers the first research sub-question which requires an analysis of the characteristics of spatial transformation implemented in NPC and their reasons. The first sub-section describes the design of NPC before transformation and the subsequent sections present ST as conducted.

4.3.1 Design of Natwar Parekh Compound

NPC is a dense network of 60 buildings with 96 units per building (Fig. 10), built to accommodate 30,000 individuals. The total residential Built-up area is 1,22,967 sqm which is currently home to approximately 25,000 residents, including illegal squatters. All buildings have 8 levels (Ground + 7 floors) and are equipped with elevators. The height of each building is 24 meters (m), i.e., each floor is 3 m high (Jadhav, 2016; CDA, n.d.).

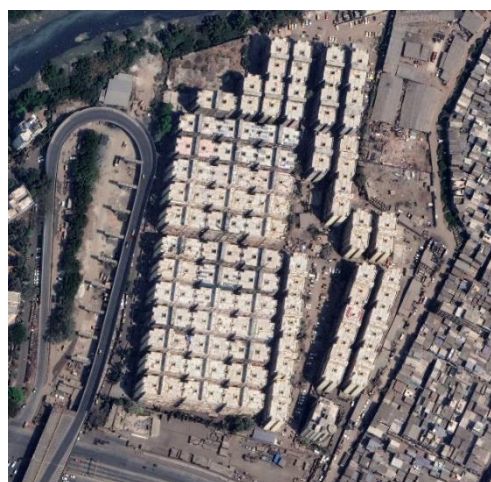


Figure 9: NPC Aerial View; Source: Google Earth

Building Block Types

NPC is built with a modular design, which is a system based on sub-division of the same components to cover maximum usable area. There are 3 building typologies comprising of the same unit (Fig. 11). Type 1 is a the base module with 12 housing units on each floor (Fig. 12). Type 2 is a combination of two Type 1 modules and Type 3 is a combination of three Type 1 modules. The replication allows for cheaper and faster construction.

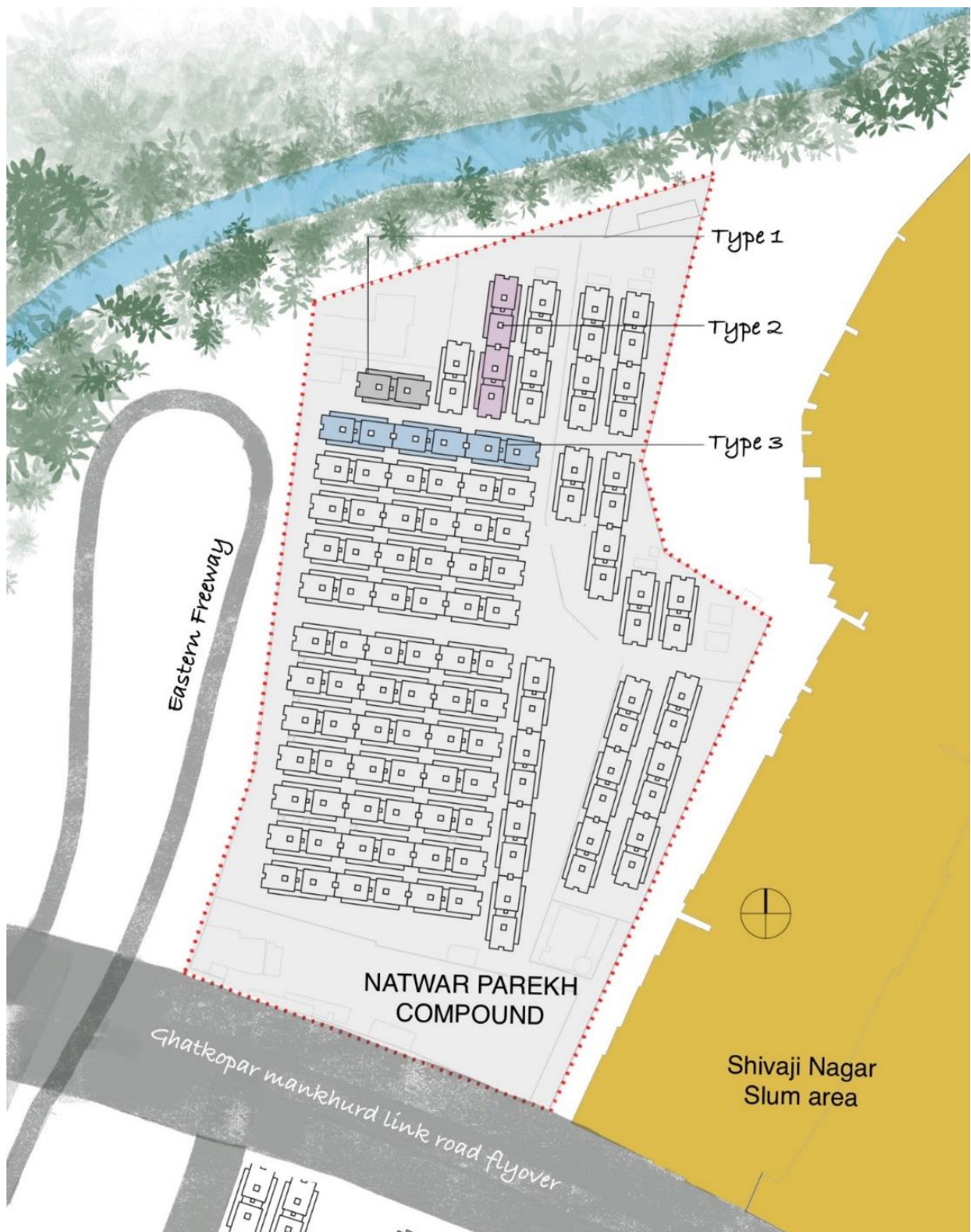
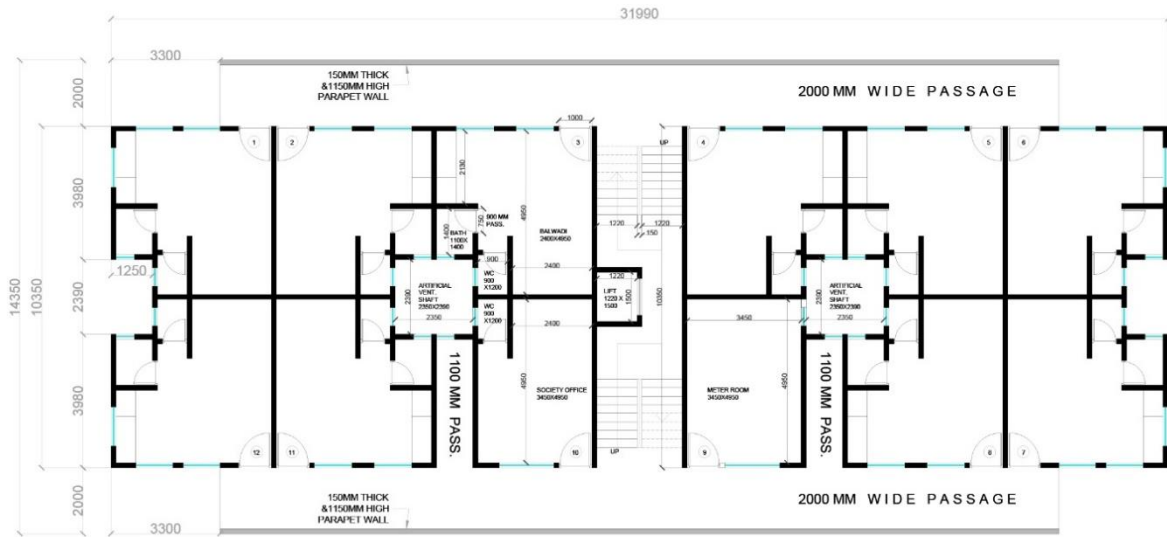
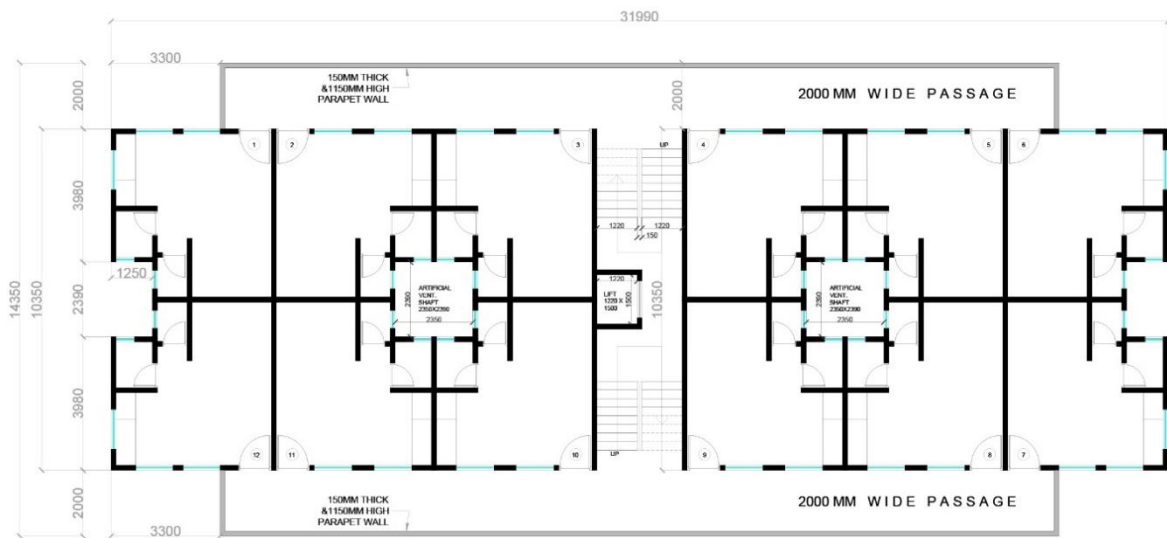


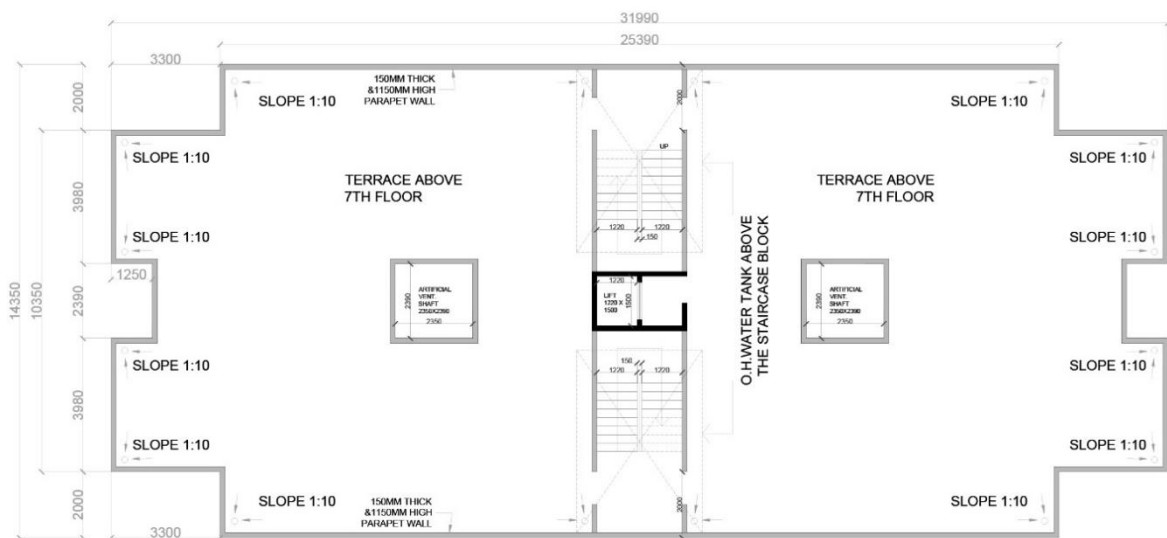
Figure 10: Types of Building Blocks; Source: Author + CDA



GROUND FLOOR PLAN



TYPICAL FLOOR PLAN 1 TO 7 FLOORS



TERRACE FLOOR PLAN



Figure 11: Type 1 Floor Plans; Source: Author + CDA

Housing Unit

The entire complex of NPC is designed with the replication of one housing unit, with the variation of an additional kitchen window in corner units. In NPC, all household units are 225 sq. ft in size and were designed to accommodate 4-5 people.

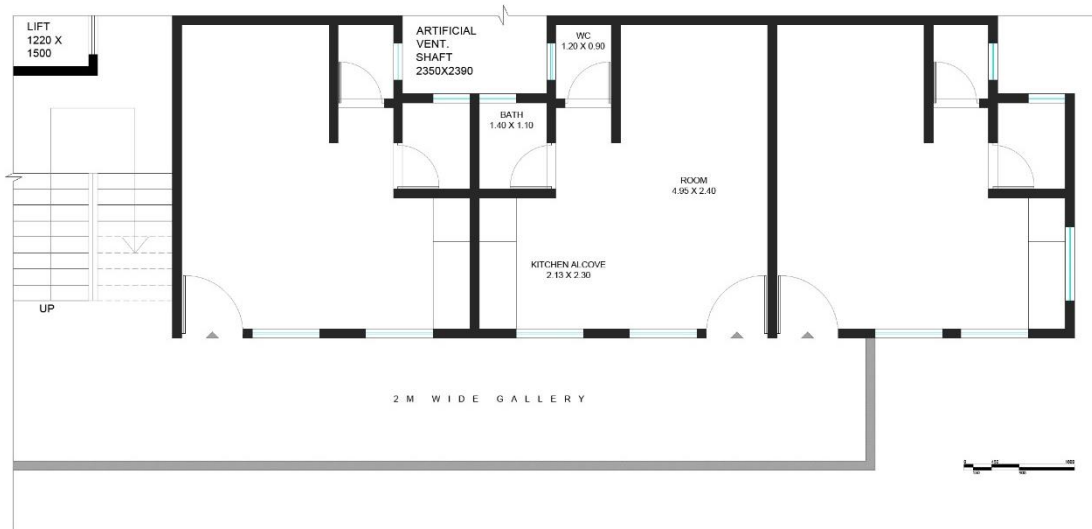


Figure 12: Gallery Level (3 units); Source: Author + CDA

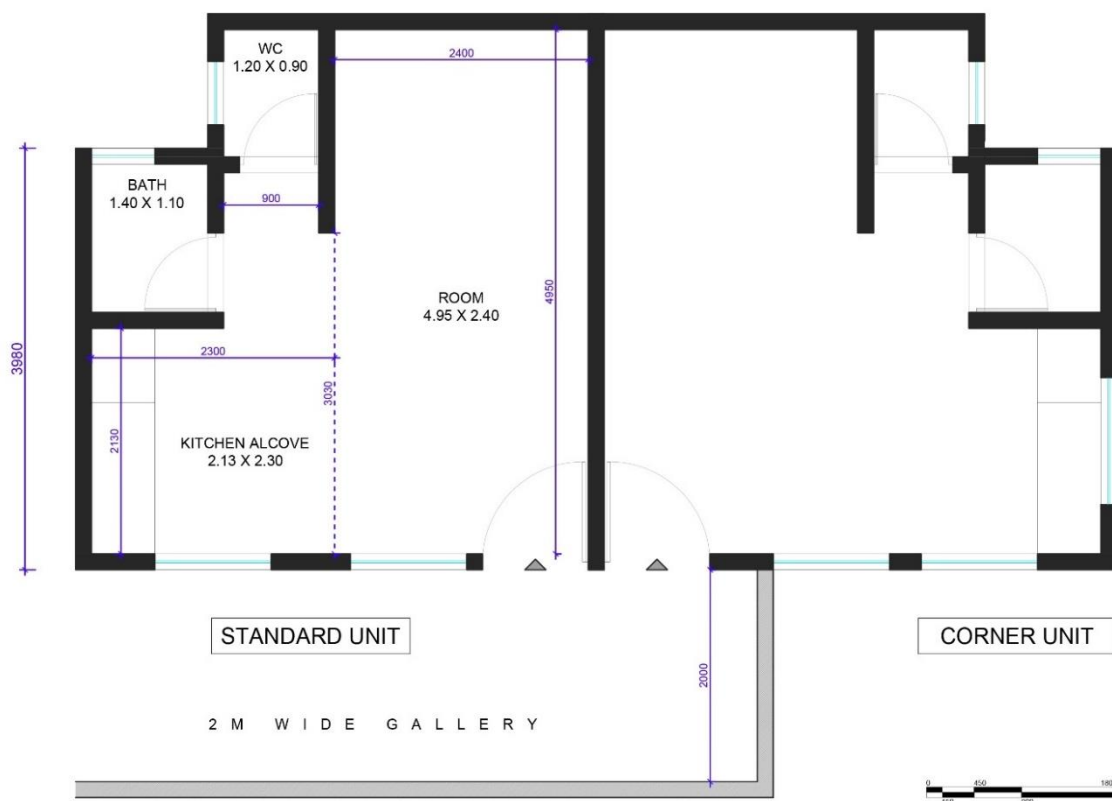


Figure 13: Household Unit Variation; Source: Author + CDA

4.3.2 Household/Gallery Level Transformation

This section analyses the spatial transformation made by residents at a household (Fig. 15), and gallery level, which includes a set of 3 housing units (Fig. 14.) and their reasons to do so. As per the operationalization, spatial transformation is classified into two categories: permanent or temporary.

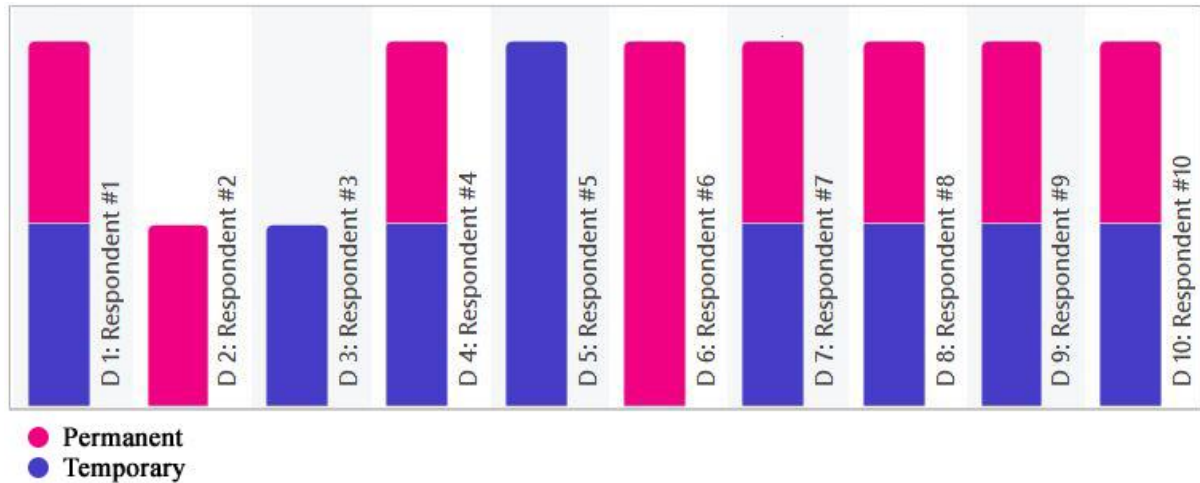


Figure 14: Type of transformation - Permanent or temporary; Source: Author

The data shows that the percentage of permanent & temporary transformation was almost 50-50 (Fig. 14). While permanent changes require financial investment, temporary changes require time and effort in changing the function of the space and preparing it for other functions. Fig. 15 shows the frequency of reasons cited for spatial transformation. This variety of reasons indicates that several livelihood needs were unsatisfied after resettlement.



Figure 15: Frequency of reasons for transformation; Source: Author

Fig. 16 shows the frequency of reasons cited by each household. According to the data, 60% households conducted transformation for ease of maintenance, private/study/play space for children and space to relax/exercise..

Reason for spatial transformation	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Totals
● ◇ Clothes drying space										1	1
● ◇ Ease of maintenance	1	1		2		2		1	1		8
● ◇ Household/kitchen equipment space	2							1			3
● ◇ Income Generation	1	1			1			1			4
● ◇ Increase Kitchen efficiency		1		2		1					4
● ◇ Lighting/ventilation			1				1	2	1		5
● ◇ Living space									1	1	2
● ◇ Private/comfortable sleeping space			1			1	1	2	2		7
● ◇ Safety & security				1					2		3
● ◇ Space for gatherings	1			1	1				1		4
● ◇ Space to dine	1				1						2
● ◇ Space to relax/exercise	1			1	1	1	1		1		6
● ◇ Storage organisation	1			1		1	1	1			5
● ◇ Study/play/private space for children	2			1	1		1		1	1	7
Totals	10	3	2	9	5	6	5	8	10	3	61

Figure 16: Frequency of reasons for transformation per household; Source: Author

In most cases, personal household use has extended to the gallery, which is shared by 3 or 6 households on one side of the staircase, depending on if it has been secured by a gate (Fig. 17). The gallery space is perceived as a hybrid of communal and private space as explained further.

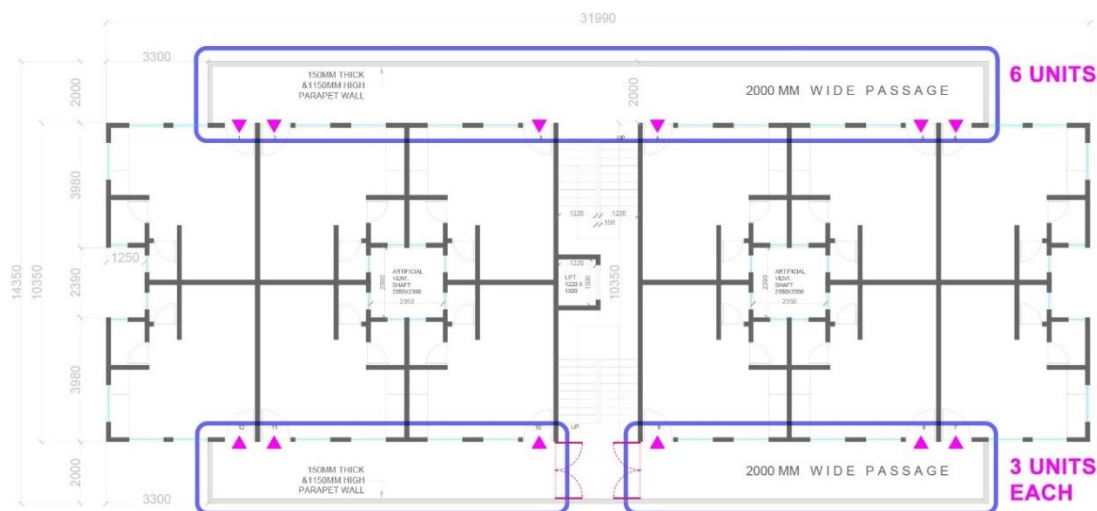


Figure 17: Households sharing the gallery space; Source: Author

4.3.2.1 Permanent Changes

As per the operationalization, this section outlines the permanent ST. Fig 18. shows how one type of transformation can be made to address multiple requirements.

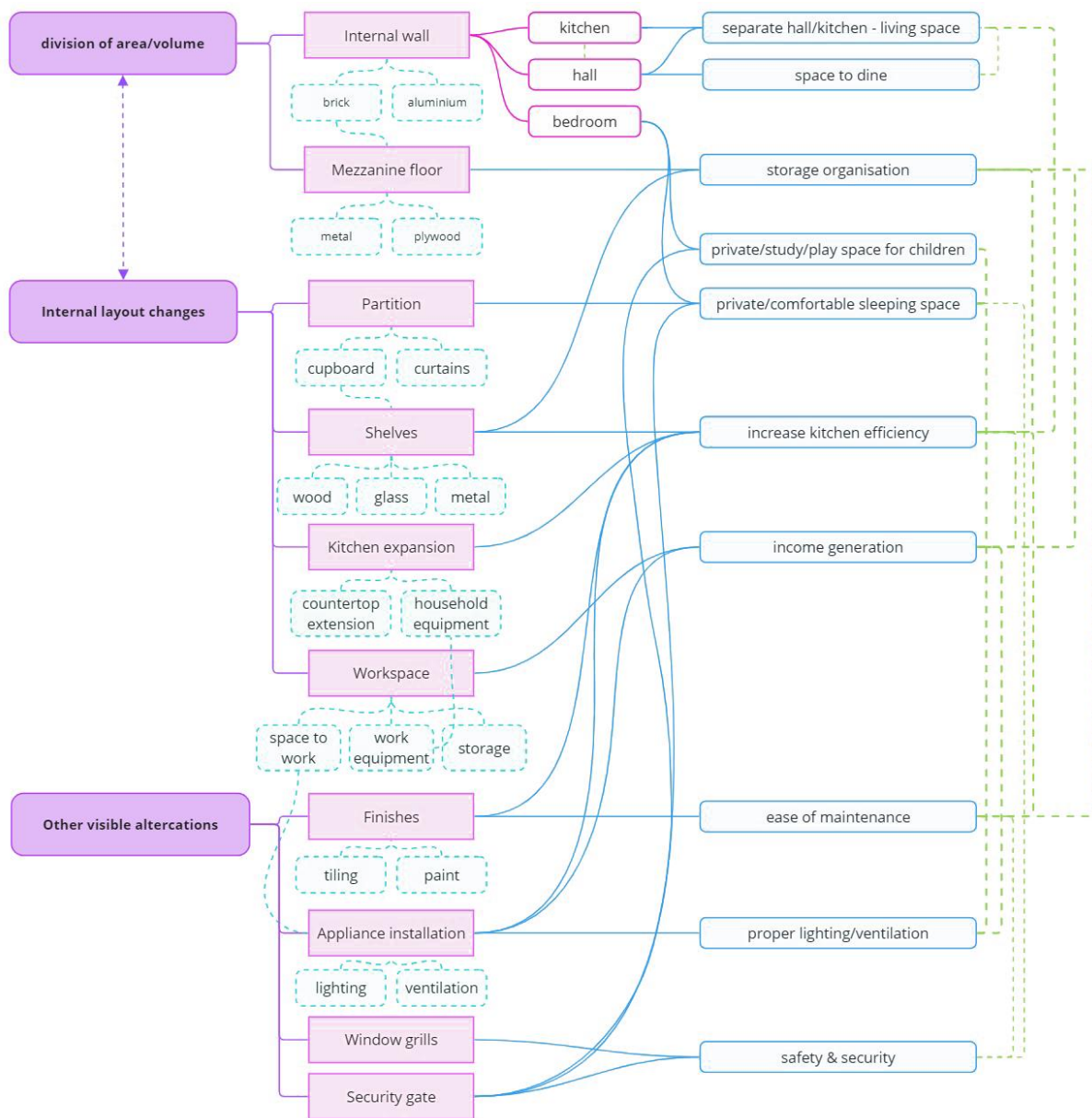


Figure 18: Permanent spatial transformation; Source: Author

Form of transformation	#1	#2	#3	#4	#6	#7	#8	#9	#10	Totals
◆ appliance installation	•		•		•	•	•			5
◆ equipment	•									1
◆ finishes	•	•		•	•		•	•		6
◆ internal layout change	•				•			•		3
◆ Internal wall	•							•	•	3
◆ kitchen expansion		•		•	•					3
◆ mezzanine level					•	•	•			3
◆ partitions						•				1
◆ security gate									•	1
◆ Shelves	•			•		•	•			4
◆ window grill		•					•	•		3
◆ workspace		•						•		2
Totals	6	4	1	3	5	4	5	6	1	35

Figure 19: Frequency of permanent changes per household; Source: Author

Fig. 19 shows the frequency of each form of permanented transformation conducted by each household. As per the data, 60% households changed the finishing materials of walls and flooring, 50% added lighting/ventilation appliances and 40% households installed shelves or mezzanine levels for storage. 30% households did internal layout changes, built internal walls and expanded the kitchen and 20% conducted permanent changes for work.

Addition/removal of walls or levels

Resettled in a vertical settlement, the residents were limited to interior changes as more space could not be added horizontally or vertically. Therefore, there was no scope of removal of any walls either. The household unit given to the residents was an open layout with only structural walls (grey) with possible additions (orange) (Fig. 20).

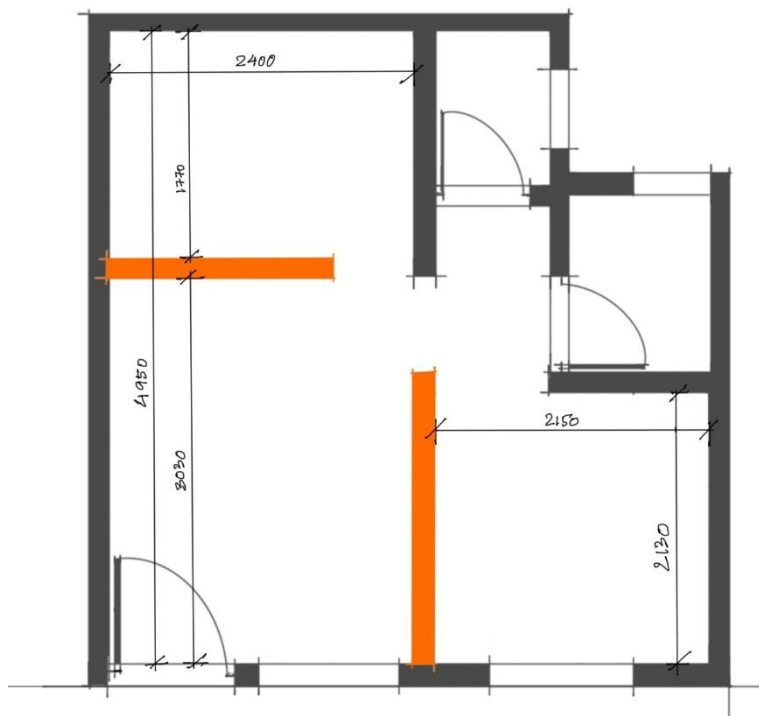


Figure 20: Structural walls (grey) and internal walls (orange); Source: Author

Since expansion was not an option, every household developed their own creative ways of *dividing the given area and volume*. Fig. 21 shows the division of area where an internal wall was constructed to create a room at the end of the hall. This room is 2.4 x 1.77 m in size and has no windows for daylight. It also shows the wall cutouts (red) created above lintel level to ensure ventilation.

Fig. 22 shows a wall constructed to separate kitchen and hall. It divides the two windows in two spaces. The kitchen is 2.13 x 2.15 m in size and the hall is 4.95 x 2.4 m (without bedroom) and 3.03 x 2.4 m (with bedroom).



Figure 21: Wall separating bedroom & hall; Source: Research Assistant (RA)



Figure 22: Wall separating hall and kitchen; Source: RA

The space has also been divided vertically to utilize the volume of the household for storage or sleeping purposes in metal and wood respectively (Fig. 23 and 24).



Figure 23: Metal mezzanine for storage; Source: RA



Figure 24: Wood mezzanine for sleeping; Source: RA

Internal Layout Changes

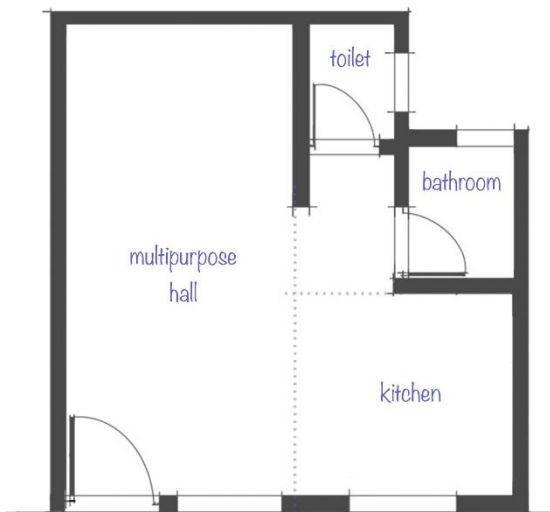


Figure 25: Base Layout; Source: Author



Figure 26: Bedroom allocation; Source: Author

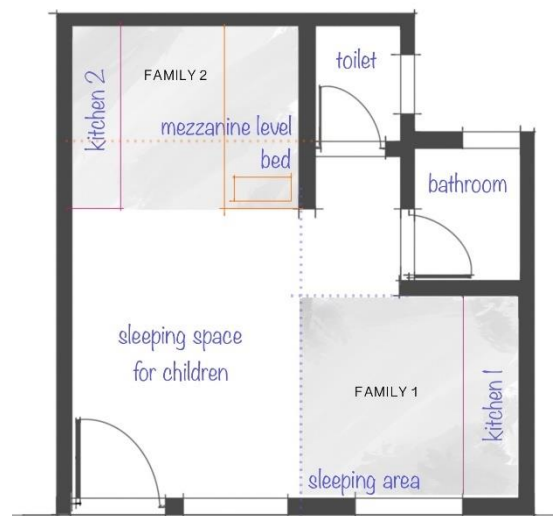
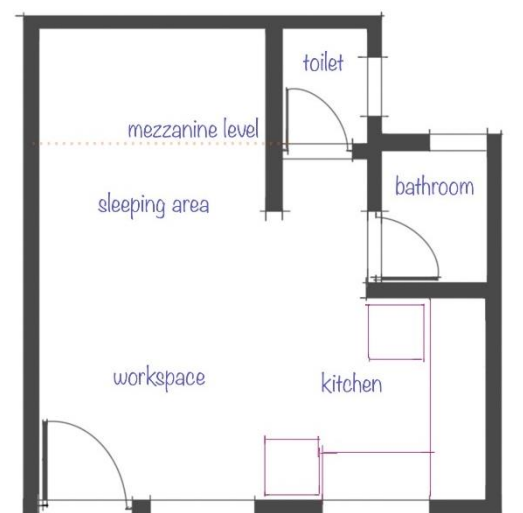


Figure 27: Kitchen L-shape extension(left) and two separate kitchens for separate families(right); Source: Author

In NPC, the household units are designed as open layout floor plans (Fig. 13). This means that most of the space does not have a designated function. Except the toilet area, all spaces are interchangeable and multi-purpose. Fig. 25 shows the standard intended layout provided to the DPs. Even in its basic form, it does not provide any privacy to a family of 4 people. Fig. 26 shows the common layout adopted by most households. The far end of the unit is a designated bedroom/sleeping space, with or without physical separation. Fig. 27 shows the arrangement adopted by a households with two or more families, where independent kitchens were required. It also shows the extension of kitchen into an L-shape countertop and space for household equipment. Additionally, the hall is converted into a workspace for women involved in home-based work. Fig 26 and 27 show different permutations and combinations of ST depending on household needs.

Following are examples of kitchen storage shelves designed by the women in order to increase kitchen efficiency (Fig. 28).



Figure 28: Examples of kitchen organisation; Source: RA



Customer-based home-based enterprises are installed at the intersection of household and gallery (Fig. 29). These setups are part permanent and part temporary. In some cases, residents have built lockable shutters, but in others, residents typically move the saleable items inside the house at closing time.



Figure 29: Grocery store, home-based enterprise; Source: RA



Figure 30: Tiling & paint; Source: RA

Other Visible Altercations

Fig. 30 shows vibrant paint and tiling design on the walls and flooring. Following are relevant instances -

“We changed the flooring. No matter how much we scrubbed the old terrazzo flooring, it was always dirty.” (Respondent #9)

“It was always my dream to have a house with good tiling. When we came here, we finally had proper walls for tiling. We used to have terrazzo flooring which was very difficult to clean.” (Respondent #1)

This shows that women changed finishes for practical reasons to increase the ease of maintenance, but also, to fulfil personal aspirations.



A woman made special provisions for lighting to boost her income (Fig. 31). She works as a henna tattoo artist which requires fine handwork. She stated -

“Because of my work, ceiling lights were more critical. Now we have enough lighting for me to apply henna tattoos on clients from home. [...] Ever since I have fixed my house, my client base has increased considering the people that I can call home for extra work. They always appreciate our home whenever they come.” (Respondent #1)



Figure 31: Ceiling lights in Respondent #1 house (left) and henna work (right); Source: RA

She explained that these upgrades had a direct impact on her client and income.

Fig. 32 shows the types of window grills installed in the gallery for security. These grills were frequently used to hang clothes for drying. The edge of the parapet was used for storage, with or without physical intervention. Security gates were installed in the gallery, which were communally operated by 3 households.



Figure 32: Different types of window grills; Source: RA

Detailed Description of Respondent #9

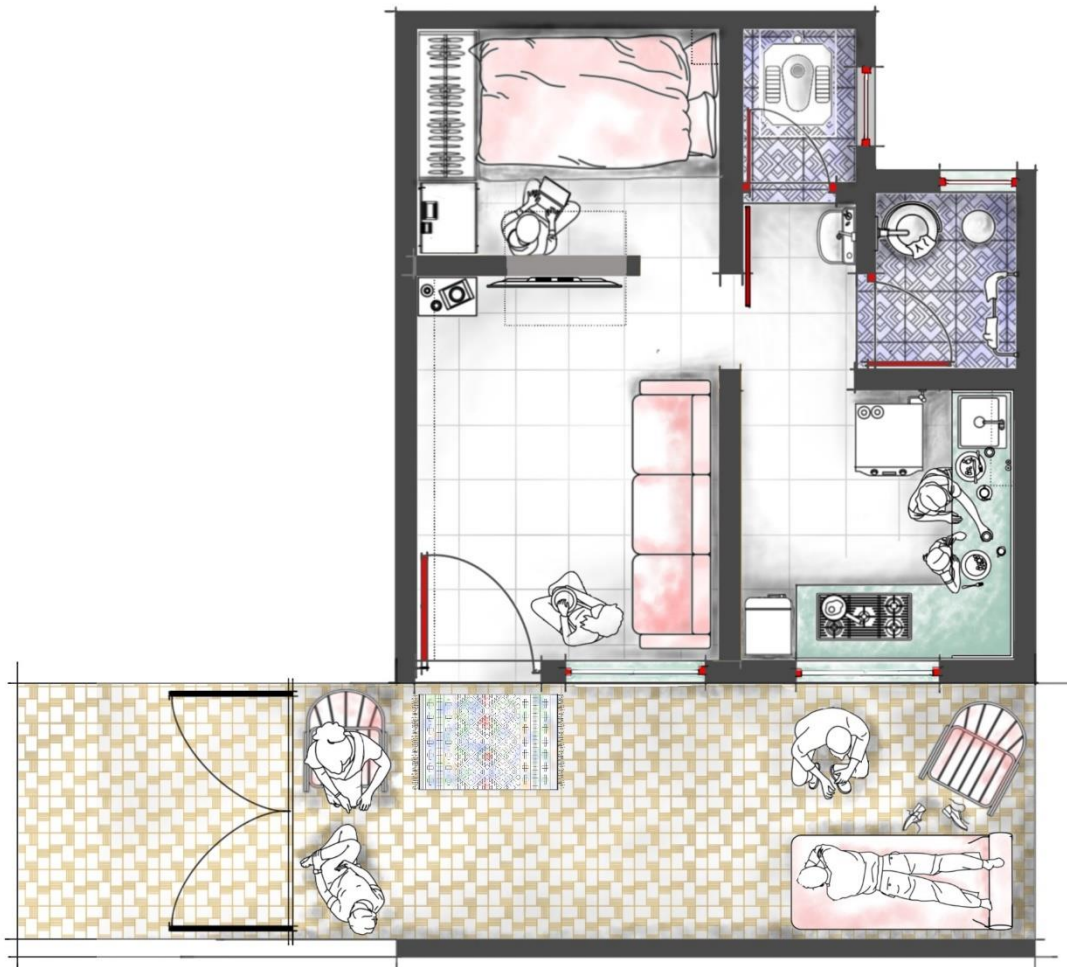


Figure 33: Detailed spatial arrangement of Respondent #9's house; Source: Author

Respondent #9 is a key informant resident. She is a community worker who works as the president of NPC federation and building management. She lives with her husband and 2 adult sons. They started ST with building internal walls and physically separating the internal layout in order to provide privacy to their children (Fig. 33). Eventually, the kitchen was extended into an L-shape and space was made for household/kitchen equipment. As their children grew older, one of them started sleeping in the gallery and private activities began spilling over. As a community worker, she stays available for more than 18 hours a day to address the community's concerns. She stated that people visit her house on a regular basis. These interactions also take place in the gallery. She described her family-like relationship with her neighbours and their common understanding over the use of the gallery, which was also secured by window grills and a security gate.

4.3.2.2 Temporary Changes

As per the operationalization, this section outlines the temporary or temporal (time-related) changes conducted by households (Fig. 34). Temporary or temporal changes mean that spaces are used for specific activities at specific times of the day.

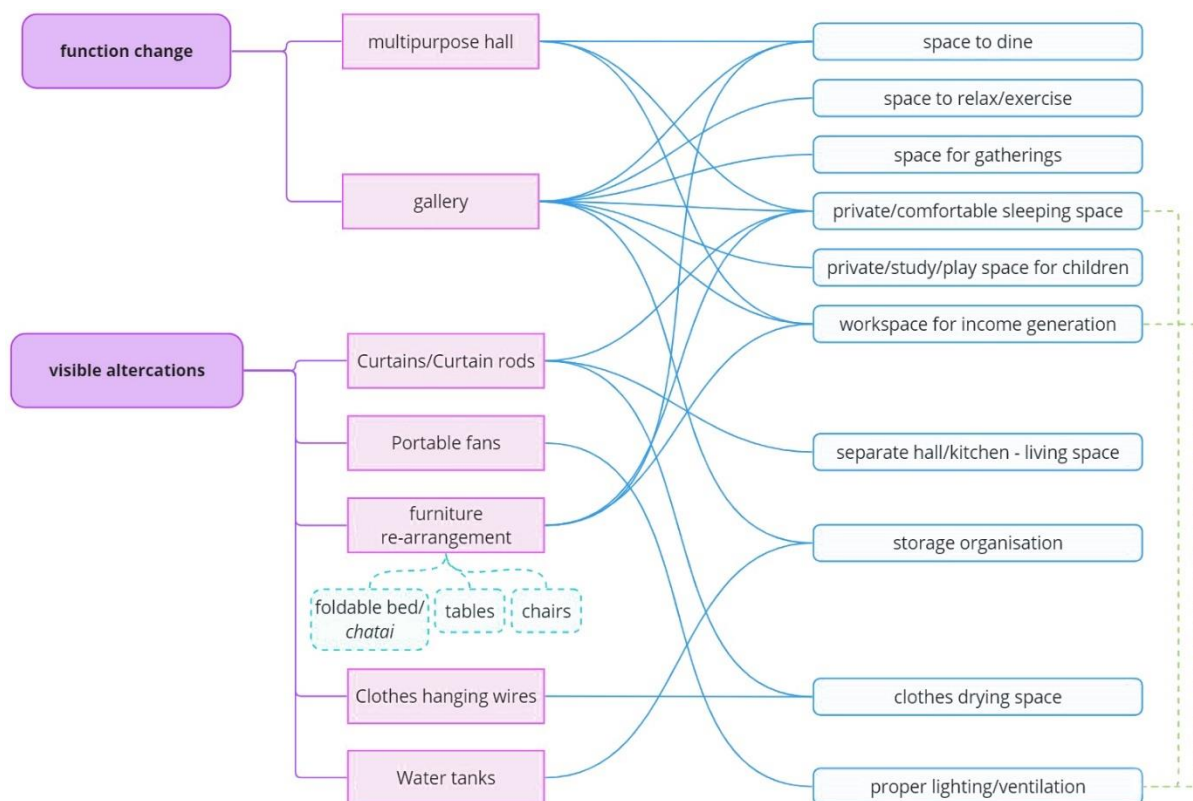


Figure 34: Temporary spatial changes; Source: Author

It can be noted that multipurpose hall and gallery are used for a variety of reasons, ranging from private activities, income generation to communal activities (Fig. 34). The versatility of that space stems from the lack of adequate space to conduct these functions independently.

Form of transformation	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Totals
◆ Clothes hanging wire										•	1
◆ Curtains/curtain rod							•	•			2
◆ Furniture re-arrange...			•		•	•					3
◆ Gallery/hall function...	•	•	•	•	•		•	•	•	•	9
◆ Portable fan			•			•		•	•		4
◆ Water tank							•	•			2
Totals	1	1	3	1	2	2	3	4	2	2	21

Figure 35: Frequency of temporary spatial changes per household; Source: Author

Fig. 35 shows the frequency of each type of transformation per household. As per the data, 90% households engaged in temporary function change in the gallery and hall for many reasons.

Function Change

In NPC, the lack of social spaces, adequate work and living space has resulted in the multi-purpose use of the available space in order to generate economic and social capital. 100% of the households convert the hall into a sleeping area at night, while 40% of the households convert the gallery into a sleeping space as well. 40% of the women convert their halls into workspaces and 30% also, convert their galleries into workspaces. Following instances corroborate these findings -

“Here we have the gallery, so I work there. Sometimes my back hurts because of sitting on the floor working for long hours.” (Respondent #8)

Respondent #5 is a sub-contracted home-based worker whose job is to pack sets of bangles into boxes (Fig. 36). She states –

“I sit on the floor in my hall and work. Both my girls help me. It’s messy for a while but we clean up before sleeping. My back hurts but we have to do it to feed ourselves. I sweep the floor before sleeping. I don’t spread everything. I go box by box and pack one at a time.” (Respondent #5)

In this case, the resident transforms the hall into a workspace. It shows that function change may serve the purpose but it does not necessarily mean that it is the appropriate use of a particular space for some activities.



Figure 36: Bangle packaging work in the hall during the day, sleeping area at night; Source: RA

Another woman, who owns a small grocery store on the 3rd floor, states –

“I put it out during the day and take the whole shop back inside the house and bring it out again in the morning.” (Respondent #2)

This ability to work at the intersection of the house and gallery is critical for customer-oriented home-based enterprises, like small grocery stores. Additionally, household space is also used as storage/production space, as shown in the following instances -

“I use the home kitchen to prepare the henna and I store it in our refrigerator after preparation. It needs to be stored properly to avoid material waste and financial loss.” (Respondent #1)

“On bad days, I have to bring back the stock with me and store it in the fridge so that the flowers do not go bad. [...] I use the home fridge to store flowers and also household groceries. I keep everything organized in different bags so that the house does not feel cluttered.” (Respondent #8)

This shows that household practices are intertwined with income generation, especially the kitchen space. Due to this connection, home-based workers have to make special efforts to ensure organization for both fronts to function smoothly.

Furthermore, 50% of the women have allowed their young children to play in the gallery, considering the ease of access and monitoring. 60% of the women also reported that they use the gallery as a space to dine, relax, and socialize (Fig. 37). This results from the lack of community space or parks. The residents have transformed this 2 m wide passage into a multi-purpose community space with mutual agreement and understanding. The following statement corroborates this finding -

"If we have any family program, we do it in the gallery. Otherwise, it is a good place for the children to play. In the morning, we exercise in that space. If we are bored, people come to socialise there. The passage is especially useful." (Respondent #4)

Visible altercations

Many households make temporary visible altercations which have the flexibility to be reverted back to their original state or moved to another place.

Respondent #7 lives with 14 more household members in one unit. She stated -

"We have some privacy issues for which we have put up curtains to divide the spaces temporarily at night. [...] My parents-in-law, three of my brothers in law and all the kids sleep outside on the balcony. The married couples, that is, me and my husband along with his older brother and his wife sleep inside the house to maintain privacy." (Respondent #7)

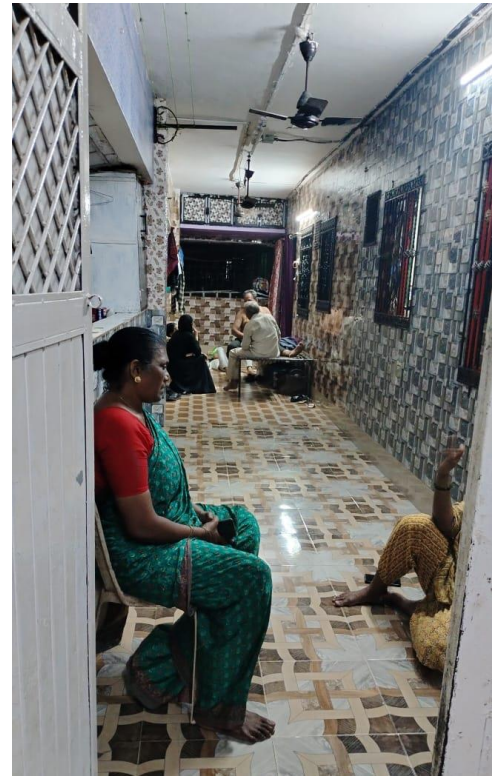


Figure 37: Gallery turned into social space; Source: RA



Figure 38: Clothes hanging wires; Source: RA

It shows their understanding among family members as well as their neighbours.

Considering the extensive use of the gallery, 100% households have installed permanent fans and installed clothes hanging wires (Fig. 38). Additionally, residents frequently encounter issues with the municipality's temporal water connection. Each building receives water for an agreed-upon hour, usually in the morning. About 30% of households store water in personal tanks in the house/gallery during the day.

A common feature of Indian households is 'chatai' which is a thick mat made of grass, jute, or textile. All women mentioned the use of 'chatai' and re-arrangement of furniture to create sleeping and dining spaces in the gallery as well

the house. Another such noticeable element is the clothes drying mechanisms which can be observed in almost every gallery. Neighbours are typically very respectful of other households' hanging wires (Fig. 50).

4.3.3 Neighbourhood Level

In NPC, only 18% of the entire area is open space, which includes water tanks, parking, and makeshift commercial setups (CDA, n.d.). CDA along with NPC's federation and residents has made consistent progress, permanent (physical) and temporary (functional) change to restore social capital, as follows.

Permanent Change

Permanent change at neighbourhood level is dependent on many factors, such as the community's collective consent, level of participation and funding, for example, the street upgradation/public space project. Other projects such as murals and library are explained in Appendix 4.

Street upgradation/Public space

The distance between two buildings ranges from 3 m to 4.5 m, with main lane being 9 m wide. Considering that vertical living was a new concept to these residents, these narrow streets were often littered with waste thrown from the upper levels or flooded with sewage from the broken drainpipes as shown in Fig 39 (Jaimini & Sharma, 2020).



Figure 39: Garbage and sewage in the streets (left and right); Source: CDA

These streets were transformed into green public spaces for people to socialize. After proper maintenance, the ground was paved, and the walls were painted with vibrant colours. Plants and benches were added to the space (Fig. 40 and 41).



Figure 40: Spatial transformation - street upgradation; Source: CDA

Additionally, the building management has made efforts to add benches around the office to create more spaces for women to engage with the neighbourhood. A member of the building management stated -

"We also placed benches near the office downstairs, so we sit there sometimes. It's been a few months. Other women also join us." (Respondent #4)

This shows that spaces are now being designated to create an intersecting point for formal and informal networks of women facilitating communication and information sharing.



Figure 41: Benches in common areas; Source: CDA

Temporary Change

In this case, temporary change may be defined as any function change, reorganisation of space, and/or behavioural change that has an impact on the quality and use of space, such as the waste management drive, elaborated as follows. Another spatial reorganization project is explained in Appendix 4.

Waste Management

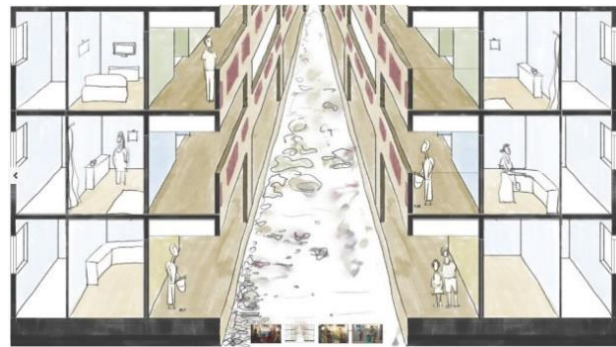


Figure 42: Garbage thrown from upper levels (left) and sketch showing clean galleries and dirty streets (right); Source: CDA

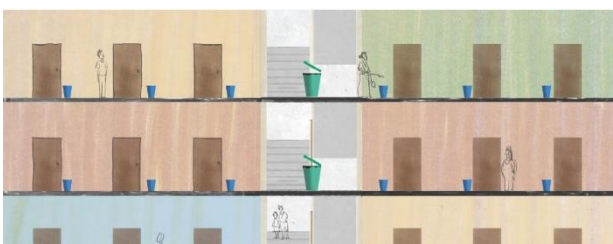


Figure 43: Garbage can installation on every floor; Source: CDA

People hauled garbage in the open spaces, which led to the proliferation of disease and pests (Fig. 42). They were more likely to take care of their gallery since they perceived that space as an extension of their home, but beyond that, there was no accountability. CDA recognized this and collaborated with the community to install

communal waste disposal systems in each gallery (Fig. 43). A total of 15 individual (blue) and a shared (green) wet waste bins were installed in each building. Additionally, an exercise of painting the instructions and images around the bins was done to encourage the people to take responsibility for their space. This had a direct impact on the cleanliness of the streets as people began managing their waste in proper systems (Jaimini & Sharma, 2020).

4.4 Role of Women

This section answers the second research sub-question which pertains to the role of women in the process of transformation. It is divided into 2 sub-categories i.e., household level and community level.

4.4.1 Household Level

Women play an economic role in ST, starting from the realization of the requirement, decision-making, financialization all the way to implementation, as analysed in the following sub-sections.

4.4.1.1 Economic role

As per the operationalization, a woman’s economic role in the household income and spatial transformation may be analysed through factors as described below –

Income & Other work benefits

As mentioned in the literature review, the international standards of minimum wage and unemployment security are not applicable to informal workers. As per the data, respondent #2, #5 and #8 (home-based workers) reported fluctuating daily wages depending on the day/time of the year. Respondent #8 who is a flower business owner reported that she is able to make a greater profit around festivals. She stated her concerns as follows -

“My income changes depending on the time of the year. [...] Sometimes, I make 30 -400 (0.34-4.48 €) rupees a day, and sometimes it is 60-120 rupees (0.67-1.34 €). During Diwali, I make 1000 -1200 (11.2-13.44 €) a day. We can sell flowers for higher prices during that time.” (Respondent #8)

As per the data, women working as domestic workers or in formal employment were paid a regular monthly salary (Fig. 44). In congruence with the ST data, it can be noted that women with greater and stable income have been able to transform their households with permanent changes.

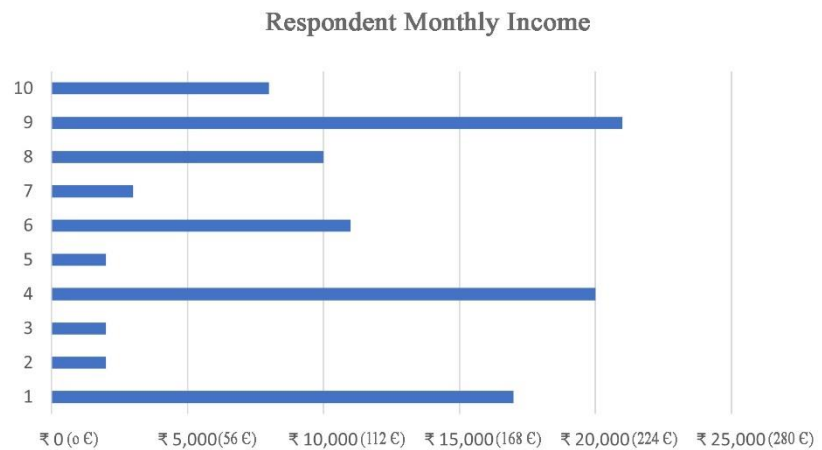


Figure 44: Respondent Monthly Income in rupees and euros; Source: Author

Financial Agency

The financial agency of the respondents may be measured by two characteristics, i) access to/use of banks and ii) spending decision. The use of cash is a major component of women’s informal economy. As per the data, 90% women reported that they had their personal bank accounts, however, only 50% were using it and the remaining relied on cash (Fig. 45).

Respondents who have a bank account

Respondents who use bank account

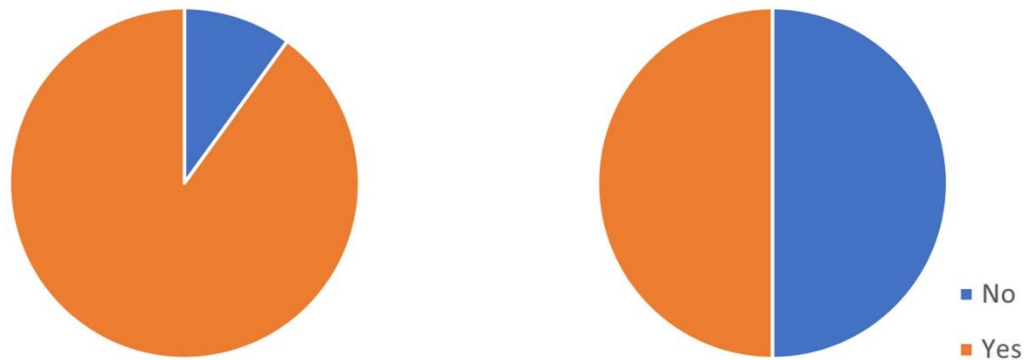


Figure 45: Respondents access and use of bank account; Source: Author

In terms of spending decisions, 80% of the women reported that they are in charge of the spending decisions of their income, whereas the rest had to negotiate the use of their resources or completely transfer agency to other family members.

Financial Responsibilities

Respondents noted a shift in financial roles due to the economy, with both genders sharing responsibilities despite traditional norms. Household needs outweighed cultural and religious restrictions. Female headed households noted that the women were either separated from their partners or widowed. 30% respondents reported that their male partners stopped contributing to the household income after resettlement, due to their alcohol addiction, fuelled by the proximity of liquor stores in NPC. Following are instances from female-headed households -

"I take care of all the finances at home whether it is getting a loan or returning a debt. No one contributes to the house financially." (Respondent #8)

"Before moving my husband never drank alcohol but ever since we have come here, he has started drinking. It is very easy to purchase alcohol here. [...] I knew that I had to start earning. (Respondent #6)

Furthermore, 70% of the women reported that they are responsible for the monthly maintenance bills, groceries, and other household expenditures. The respondents reported a range of 2 – 10 dependents within the household and extended support to their relatives in rural areas. A respondent reported her multiplying responsibilities as follows -

"My brother and sister-in-law passed away show we put all of their children in a hostel. I took care of them and got the elder one married by 18 or 19." (Respondent #6)

In line with the literature, this shows that even extended family is very closely tied to the household and women assume responsibility of their kinship even if they are struggling themselves. The respondent added that she arranged a new bed and re-arranged the sleeping area to accommodate the changing household composition.

30% of the women reported respectful division of financial responsibilities among the male and female counterparts in medium income households. For example -

"I take care of the household expenditure. He takes care of the childrens' school fees and building maintenance. We have divided our financial responsibilities." (Respondent #10)

This sense of equality is observed in households where both men and women have same or similar income range and respect each others' decision-making capacity. These are the households where spatial transformation has accurately served its purpose.

Informal microcredit systems/ Formal loans

40% of the households reported that they took loans to finance spatial transformation through an informal microcredit system established in the community, called 'Bissi'. Bissi is a system in which a pre-decided set of women pay a pre-decided amount of money every month for a specific period of time. Once a round is completed, one person is given the total amount decided by a random chit system, and the round starts again until every person has received the same amount of money they invested. There are no interest rates in the system and the group has the flexibility to decide the people, duration, and amount. Another critical feature of this system is that pre-existing relationships among participants allow recognition of other's urgent needs. If one person is in greater need of the loan, the other participants may transfer their turn to them. Following are instances from data -

"Any formal loan would have required a lot of paperwork and high interest rates. This was convenient because we knew the people and we could negotiate timelines with them without any interest. We can discuss and negotiate our terms. Any of those involved families can claim the amount depending on their needs and everyone understands. This is how we have developed our systems to educate our children, pay for their weddings, jewellery, home upgrades and provide for the family. Bissi is my saving process and also investment." (Respondent #1)

"We have loans in the form of 5000-10,000 rupees (56-112 €) bissi. We did it with the people we knew. No stranger will give us anything." (Respondent #9)

This also shows that there are feelings of mistrust with financial organizations that women have been estranged from in the past. They find comfort in sharing resources with other women or familiar contacts.

4.4.1.2 Household duties

As examined in the literature, income generation may or may not be considered an essential activity for a woman, but household duties are still considered their primary role. As per the operationalization, these duties can be examined by the following characteristics -

Division of Chores & Responsibilities

As the lines of gendered division of labour are becoming blurred with women contributing to economic capital, the same cannot be said for men contributing to household duties. As per the data, 90% women were responsible for managing their work and household both. 90% women reported that they did not have any personal time. Their entire day was designed to serve the household's diverse needs. Additionally, the responsibilities of child/elder care are also part of gendered duties, and 50% women were juggling them with work. Following are instances from interviews -

"It is a major responsibility to take care of household chores and my work. [...] I am always stressed about managing both." (Respondent #1)

"I wake up to store water, I prepare breakfast for everyone, and take care of the children's needs. I leave for work at 10 after managing everything. At 6 pm, on my way back, I get groceries. Then I cook dinner. I work till 10 pm at night. [...] I don't get any time for myself." (Respondent #10)

"Sometimes I take my youngest daughter with me to work. She is too young to be at home unmonitored, so I take her with me to work." (Respondent #7)

Moreover, women are expected to be emotional sponges of the household that accept and absorb abuse and volatility without retaliation, as shown in the following instance -

"We are 16 of us in the house and so we must maintain some unity. My parents-in-law scream at us sometimes if we focus too much on ourselves. We cannot be selfish otherwise who would

look after everyone. If they ask for anything, we must provide. If they (parents and brothers-in-law) say anything unpleasant, we cannot always talk back. We must listen. If they fight with us, we are expected to keep quiet. [...] I work from 5am to 11 pm. I get tired but I cannot drop anything. If I don't work my parents-in-law would taunt me.” (Respondent #7)

This shows that women often fail to question the fear and sense of duty instilled through social conditioning. They embrace the role of provider, and any other task is only an addition to the preset household tasks, which finally leads to time poverty (Sunikka-Blank et al., 2019). Not only does it take away personal time, but the exhaustion also leaves a grave impact on mental and physical health. This severely compromises human capital in terms of their ability to work. ST for relaxation and gathering encourages women to share their problems and learn from each other's experiences.

Head of household

Literature argues that women are more acutely in touch with household needs considering the time spent in household management and as a result, their role in spatial transformation is more critical. However, a key element of this study is examining the power of decision-making in the household.

As per the data, 50% of the women reported that they were the heads of the household and would take decisions in light of everyone's livelihood needs. 20% women reported that household decisions are made by them and their partners together. They ensured that their voices here heard, and their opinions are respected at all times. Two respondents shared conflicts regarding the decision-making process whereas one respondent shared that she was excluded from the process altogether. The following presents a case of transformation where the woman used her financial agency, however, was unable to dictate the terms of transformation.

“We have 2 kitchens because 2 families used to live here. My brother in laws and mine. My brother-in-law insisted on having separate spaces. I wanted to make a proper kitchen when we moved but he resisted. He never even used the kitchen. I have already invested all my hard-earned money. If he had let me make one proper kitchen, I would have been left with more space to make a room also.” (Respondent #6)

This shows that livelihood restoration through ST is more likely to be achieved when women's insights are valued and applied.

4.4.2 Kinship/Community Level

As per the operationalization, women's informal networks play a critical role in ST in organizing, adapting, and delivering positive results, which can be examined through the following characteristics -

Social ties

This section analyses how women employ their social ties to conduct ST, as shown in the following examples -

"We hired a contractor. We knew him personally, so he gave us a discount. He designed the ceiling of our house." (Respondent #1)

"From the 4 families that came with me, one of them was a contractor. He helped me to do everything in 5000 rupees (56 €)." (Respondent #4)

This shows that they were able to use their relationships for saving costs during transformation and were able to access the skillset of their contact. Additionally, women working as domestic workers have been able to develop long-term social ties with their employers, which allows them to unlock other benefits as shown in the following examples –

"I got the tiles from my employer but everything else, the sand cement brick I got on my own. [...] My employer was getting rid of a sofa, and I bought it for just 600 rupees (6.72 €). [...] They offered to help in funding the education of brother in law's daughter. They told me to encourage her to study and that they would take care of the finances." (Respondent #6)

This shows a cycle of material reuse, which is both environmentally and financially sustainable. Additionally, the employer encouraged to build human capital in the domestic worker's household. Respondents are able to draw benefits from their work-based relationships in order to conduct spatial change in their households.

Finally, social ties may offer emotional support and help navigate safe channels of growth. A respondent stated -

"My brother and sister-in-law passed away and I had to take care of their children. Five of them were girls and the environment here is not good. We were scared. My other sister-in-law and Kanta aunty (works in an NGO) helped me to put them in a hostel." (Respondent #6)

This shows that the respondent was able to employ her social ties to navigate through adversity and find the best possible situation without compromising anyone's livelihood opportunities.

Community organisation & Collaboration

NPC is now an organisation with several parts working together towards the common goal of livelihood restoration and improvement. Today, many NGOs, government bodies, agencies and residents collaborate on a regular basis. However, when the DPs moved to NPC in 2008, this organisation was led by the community's women when they dealt with the initial shocks of displacement. In 2015, CDA began building relationships and networks in the community.



Figure 46: Waste management drive; Source: CDA

Jaimini & Sharma (2020) reported that the waste management drive was particularly met with cultural, religious, and habitual concerns (Fig. 47). However, clear dialogue among groups eventually brought success to the joint initiative (Fig. 46). Architect and researcher, Ms. Bhawna Jaimini during her interview stated the following -

"Most of our projects are women centric because they're available. They are there, and also, it's easy to talk to them." (Respondent #11)

Ms. Sheikh refers to Ms. Kanta, who works in the NGO, PAN India and also works as the Secretary of the Building Management in the following statement -

“Kanta and I are the only women in the building management currently. It is not enough. If we are not available, we delegate tasks to other women in the building.”
(Respondent #9)



Figure 47: Waste management issues; Source: Jaimini and Sharma (2020)

After relocation, the displaced persons (DPs) established housing co-operative societies for each building. The NPC federation was created to manage the neighbourhood. They collaborate with CDA in navigating the complexities of dealing with government authorities (Fig. 48). Ms. Sheikh states -



Figure 48: Residents collaborating with CDA; Source: CDA

“We are continually talking to the government about all of these amenities and issues. Depending on the jobs, we either reach out to BMC or MMRDA. The responsibility of NPC is divided between the two organizations, and we have to talk to both of them. Neither of them takes responsibility for their roles. If we can bring both of them together at a table, we can understand what the division of responsibilities is.”
(Respondent #9)

While Ms. Sheikh also stated many problems have been addressed by the authorities, she emphasized the time-consuming and cumbersome nature of this process.

4.5 Women’s Livelihood Outcome derived from Spatial Transformation

As per the conceptual framework, women derive livelihood outcomes from ST, which is considered a livelihood strategy in this study. This can be analysed through the livelihood assets generated through ST to achieve livelihood outcomes, in terms of the following livelihood assets

4.5.1 Livelihood outcome in human assets

As per the operationalization, human assets refer to individual’s abilities, experience, education and skills. While all these factors are interconnected through several complex relationships, this section analyses human assets as follows.

Work life balance

Time management

As the data suggests, most women are responsible for household duties in addition to their work. This means that the time cost of cleaning, cooking and laundry for the entire household is paid by the woman’s life primarily. Households have undergone ST for these reasons as follows –

"I have screwed nails to hang ladles etc above the stove. I have put up small racks to keep the spices. It has helped a lot and kitchen work gets done faster." (Respondent #4)

"We got a washing machine because washing clothes with hands was causing bruises and the wounds would hinder my henna tattoo work. Henna has many oils that stay on the skin after application. Sometimes my skin’s top layer comes off as the henna fades, so I cannot wash clothes frequently." (Respondent #1)

This shows that increasing kitchen efficiency allowed women to finish household chores more efficiently. Additionally, 100% of the women who changed their flooring finishes from terrazo to another, agreed that they spent less time in maintenance. However, work life balance is still a far reaching goal for most women.

Increased wellbeing

Room occupancy ratio

The Organisation for Economic Co-operation and Development (OECD) emphasizes on the importance of space in the housing quality, highlight the negative impact of overcrowding on health and privacy. The report takes into account the household composition that dictates personal space needs, as tabulated in Table 7 (OECD, 2022). Key informant, Bhawna Jaimini comments on the resettlement process adopted in NPC as follows -

"Here (in case of NPC), if you were all living in one shanty, everybody was put into one unit." (Respondent #11)

This grouping was blind to all ages, genders, and relationships, which eventually led to overcrowding and improper allotment of space. As per the data, the family compositions and number of rooms identified in each household were as follows.

Composition /Respondent ID	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
No. of adult couples	1	3	1	0	0	1	2	1	1	1
No. of single adults (18 yrs. +)	0	2	3	2	2	1	4	3	2	3
No. of females (12 – 17 yrs.)	1	0	0	0	2	2	0	1	0	1
No. of males (12 – 17 yrs.)	1	0	0	0	1	1	0	0	0	0
No. of children (-12 yrs.)	1	4	3	0	0	0	3	0	0	2
Total number of people	5	12	8	2	5	6	15	6	4	8
No. of rooms required	4	7	6	2	4	4	8	5	3	6
No. of rooms before Spatial Transformation	1	1	1	1	1	1	1	1	1	1
No. of rooms after Spatial transformation	2	1	1	1	1	1	1	1	2	1

Current Deficit	2	6	5	1	3	3	7	4	1	5
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Table 7: Room occupancy before & after transformation; Source: Author

Since this open living space is doubled as sleeping space in each household, the default number of rooms is considered 1. As per OECD guidelines, 100% of the respondents were experiencing overcrowding before transformation and still experiencing at after transformation. However, these standards do not take into account the temporal transformations made by the residents in the hall and extending over to gallery. Residents have found creative ways to separate space which has added value to their wellbeing.

Thermal Comfort

Thermal comfort was observed as another key criterion for the selection of sleeping zones. Research conducted by Pardeshi et al. (2020) shows that NPC suffers from poor ventilation as a result of the building design. The closely packed buildings and inadequate windows prevent proper airflow in the unit, which has been the reason for different forms of transformation such as installation of fans, portable fans, and permanent/temporary change of sleeping zones, as shown in the following instances –

"This past month, it has been so hot that all of us have been sleeping in the gallery outside. We empty the house, and everyone sleeps outside because it is unbearably hot inside" (Respondent #8)

"My children and I sleep outside in the gallery. I have put up a fan, and we sleep outside." (Respondent #3)

Reduced vulnerability

Safety & Security

On a personal household level, residents have installed grills and mosquito screens to prevent insects and birds from coming into the gallery space. 30% of the women reported that painting the walls reduced the number of bugs inside the house.

On a gallery level, people have installed security gates for the security of three household units, so as to protect them from theft or any other crimes. This has reduced their vulnerability to theft and trespassing, which were prevalent in the early stages of resettlement.

4.5.2 Livelihood outcome in economic assets

As mentioned in the literature, the international standards of decent work are not always applicable to informal workers. Women in NPC are now engaged in variety of formal and informal work as a result of the social and human capital developed through ST. Some women have honed their skills through many years of hard work, and some have been trained through NGOs, creating a blend of human and economic capital. As per the operationalization, this section analyses economic assets that impacted the women's livelihood outcomes after ST.

Financial Stability

Regular Income

One of the most overwhelming causes of livelihood breakdown is insufficient household income, which impacts all ages, genders, and relationships. A freelancing henna tattoo artist describes her experience as follows –

"When we were moving houses, it was very difficult to maintain my schedule. I could not pack everything at the same time and call the moving truck once. I had to do it in instalments. I would constantly run back and forth between work and home just to make sure everything was running smoothly. The government does not give us a timeline considering our needs and

schedules or even the weather. My clients make appointments well in advance and then we have to make last-minute cancellations. My work integrity suffered during that process.” (Respondent #1)

60% of the women reported that resettlement had a grave impact on their work and household income. They were forced to either travel long distances for their old jobs or find new jobs in a new neighbourhood. 50% of the women reported an increase in travel expenditure and inconvenience. A respondent, who runs a small grocery store at the intersection of the household unit and gallery reported –

“In Sewri, we could manage traveling in 10-15 rupees (0.11-0.17 €). No matter where we go from NPC, we need at least 200 rupees (2.24 €) in hand. Electricity used to cost 150 rupees (1.68 €) there and it costs 1500 rupees (16.81 €) here, plus maintenance. Everything adds up. [...] I set up this grocery shop 3 years ago. Before that I used to be a domestic worker. When the knee pain set in, I took my last salary and invested five thousand rupees (56 €) to buy stock for this shop. Setting up shop at home is convenient and it is good for my health but my income has reduced a lot.” (Respondent #2)

This shows that there have been complex trade-offs involving economic and human capital. Home-based work was considered more feasible to cut down travel costs and physical exertion, even though this meant that they would have lesser and irregular income. They were still able to preserve human capital and reduce pressure on economic capital.

Moving to NPC also allowed women to explore new opportunities through the presence of NGOs. A respondent stated –

“I have gained knowledge since I have come here that I did not have earlier. When Myna Milan came to NPC, they trained me to make sanitary napkins. They encouraged me to collaborate with more women.” (Respondent #10)

This shows that community engagement helps in building human as well as economic capital. Furthermore, trained women in formal jobs reported that they were satisfied with their work, and they were actively working on building more social, human, and economic capital in their household as well as in the community.

Access to credit

Access to credit has been greatly enhanced by the informal microcredit system, ‘bissi’ used for the financialization of ST. Not only does it build economic capital, but it also builds social capital through relationships of trust and exchange. Women participating in Bissi reported that it is used as a form of saving as well as investment, without the risk of losing any assets. A respondent stated –

“We used the ‘bissi’ system to pay for the home upgradation work. My sister, who also lives in NPC helped me get into this. [...] I am now in the process of returning my ‘bissi’ but it helped me build my home and for that I am grateful.” (Respondent #1)

Decent work & adequate workspace

Adequate work conditions

As per the data, 70% of the women work in informal employment, who are robbed of the basic labour rights, and social security enjoyed in formal employment; and the remaining 30% are engaged in formal employment. Tumultuous work conditions of informal or formal work may include inadequate workspace, low wages, inconvenient travel, long work hours, exploitation and/or harassment. While these problems are more prevalent in informal jobs, formal employment is not entirely secure either. The lack of income standards for all forms of work

stems from many reasons but primarily, the disproportionate demand and supply chain as described in the literature.

30% women engaged in paid domestic work reported that it was a necessity. 50% women were working from their respective homes or used their homes as a production space. 20% women reported that they had to resort to home-based work due to other inconveniences. A respondent who runs a small grocery store from home, reported that she finds her household work and income-generating work easy on account of them occurring in the same space. She stated –

“The shop is at home, so I can spend my day there while still being at home. It is not stressful.”
(Respondent #2)

This shows that the nature and place of her work allowed her to generate economic capital on her own terms. Only 20% of the women invested capital in permanent transformation of space to create a workspace which had a direct impact on their income. The rest were practicing temporal transformation for work. While some had combined with these activities with regular household activities, some were spending more time on creating and re-transforming that space on a regular basis. 20% of the women reported back pain from sitting on the floor for work. In addition to the health cost, their efforts are doubled for constantly switch between workspace and living space. These efforts are rarely compensated in the wages. This shows that neither the neighbourhood nor the household units are well equipped to provide access to decent work or mould into a workplace.

4.5.3 Livelihood outcome in social assets

As per the operationalization, this section analyses social assets that impacted the women’s livelihood outcomes after spatial transformation.

Presence of formal/informal networks

Community organisation

The data shows a complex network of formal and informal networks in NPC connecting many NGOs, residents and government authorities with each other and also other urban networks in the city. CDA, Doctors For You, Mahila Milan and other NGOs working in NPC have taken years of constant engagement with women to create active participation and have encouraged women to take lead in community projects. Women have now developed informal networks of support which impact the functioning of NPC. Creation of public space facilitated communication and the collaborative processes of creation facilitated new relationships. Adding benches near zones of formal networks like the building management, acts as an invitation for informal engagement, expressing grievances and their speedy redressal. As per the data, a strong presence of these networks was observed, which has allowed women to build a significant amount of social capital.

Relationships of trust, reciprocity & exchanges

As per the data, 100% of the respondents are on good terms with their neighbours. They also have close personal relationships with other residents in NPC. They have been able to preserve their relationships from before and have developed new relationships with unfamiliar DPs who moved in units around them. ST projects have fostered relationships of trust, reciprocity, and exchanges, especially the temporary spatial changes made in the galleries. These changes have established invisible boundaries that are respected by everyone and also, removed when needed. This allows them to have a sense of comfort and clear understanding of the use of common areas. The following instances corroborate these findings –

“We have been with each other through thick and thin. We live like a family. If we cook something special, we share it with them, and they do the same with us. If anyone gets sick, we are there for each other. Our neighbors are like our family.” (Respondent #9)

“My neighbors are very nice and friendly. They come over to socialize when they see me around in the gallery. Sometimes they invite me to their home, and I consider it my duty to maintain a healthy relationship with my neighbours. A few weeks back my youngest child got hurt while playing outside. Parveen and my neighbors took care of him. [...] This is the level of support and safety that we have because of the connections that we have built over time.” (Respondent #1)

Sense of safety & security

As per data, most women suffer or have suffered from different forms of abuse in NPC in public as well as private space. From street sexual harassment to domestic abuse, the physical and mental violations compromise one's sense of safety and security. These problems are further aggravated by rampant alcoholism, drug abuse and crime.

By redeveloping their public spaces, women have gained ownership of these spaces. As more people actively use these spaces, they have become more cognizant of the negative elements of society. More eyes automatically deter these elements and allow women to confidently use their space. A woman commended CDA's Managing Director, Ms. Sandhya Janardhan's work as follows -

“I work outside all day. I have to leave my kids behind but now the colony is safe, which was not the case earlier. Street harassment was a huge problem. But now, everyone plays downstairs. Sandhya's work towards social infrastructure and cleanliness has really made a difference. [...] The negative elements have come under control because they understand that crime and poor behavior will no longer be tolerated in the community.” (Respondent #1)

Ownership & sense of belonging

Continuous on-ground engagement with the community and a people-oriented approach has inculcated a sense of belonging in the residents. In the last 4 years the community has shown great commitment and enthusiasm to improve their living conditions. Ms. Sheikh, during the interview expressed her gratitude towards the Ms. Naidu as follows -

“CDA has taught us a lot. My concepts of ownership and sense of belonging come from them. These are things that no one has ever told us before. [...] They include everyone, and they do not impose anything. They try to understand our community's likes and dislikes and then devise solutions. I have seen a lot of organizations but very few work in this manner. All women and children participate. [...] She (Sandhya) introduced the idea of taking ownership of all our outside spaces. She reminded us that these spaces belong to us and emphasized that even her presence is irrelevant. No one ever told us about ownership and the concept of doing things on our own to bring a sense of belonging. It is a small idea, but it makes a lot of difference.” (Respondent #9)

5: Conclusions

Vanclay (2017) argues that resettlement will always carry emotional pain, however, it can be used as an opportunity for improving livelihoods. In order to achieve this, post-occupancy analysis of completed slum rehabilitation projects is invaluable in understanding the bottom-up approaches adopted by DPs to restore livelihoods. Even if it is marginal change, the learnings can be scaled up when buttressed by institutional support. This research aims to examine how spatial transformation influences women's livelihoods, in terms of human, social

and economic capital in a resettlement colony. It does so by answering the following three sub-questions summarized below.

1. What are the characteristics of spatial transformation conducted in NPC and why were they done?

Tipple (2000) states that there is an ever-growing mismatch between housing needs and given conditions which leads to spatial transformation. Authors have globally recognised spatial transformation as an indicator of inadequate housing and as a coping mechanism for livelihood restoration (Avogo et al., 2017; Sheuya, 2009; Tipple, 2000).

This research shows that SRH provided through Public Private Partnership (PPP) is unable to deliver several aspects of livelihood restoration and the onus of it is mostly on the residents and social welfare organisations. The DPs, NGOs and other organisations have collaborated and organised themselves to employ spatial transformation for this task. These transformations are done on a household/gallery level and neighbourhood level. Household/gallery level transformations include the strategic division of space and volume, layout changes, and multi-purpose use of space. Space is considered a resource and is used to build other resources. Residents who were unable to find work after resettlement opted for home-based enterprises and made transformations for income-generating activities. Others conducted transformations to create social spaces for adults and children, in order to generate social capital in the new community, which was a mix of strangers and past relationships. Another critical aspect of these transformations were the changes made to facilitate the women's ability to work. By reducing the amount of time spent in household chores through intervention, they were able to devote that time in building economic and social capital.

Neighbourhood level transformations were done to build social, human, and economic capital in the community. Spatial reorganization project with street vendors secured their economic capital by protecting their work rights. It also established a formal network in the community, building social capital. This was also done by the public space projects, which led to the creation of safe social spaces. Finally, the establishment of the library not only provided a learning space for children, but also a safe space for women. By reducing crime and drug abuse in the community, these transformations contributed to building a significant amount of social capital.

The reasons for these transformations were clearly stated by the community members, indicating the learning curve required for moving from informal to formal housing.

2. What was the role of women in the process of spatial transformation?

As per the literature, women adopt survival strategies in order to restore several aspects of their livelihood and in turn, the household's (Sunikka-Blank et al., 2019; Musana, 2021). This includes informal income generation, reciprocity of informal social networks, management of household chores and a variety of other activities conducted all at the same time. In an attempt to supplement the limited literature on the role of women in household practices, this research provides a complete view of their domestic activities, work, decision-making capacity in households, and other several parameters that act as contributing factors in livelihood restoration.

The research finds that women perform a variety of household duties in addition to their economic role. This responsibility allows them to devise creative ways to facilitate transformation in order to build social, human, and economic capital for themselves as well as their household members. In addition to participating in several informal income-generating activities, women assume the responsibility of dependants within the household as well as extended family members. In this case, they used their social networks to develop an informal

microcredit system for the financialization of spatial transformation and other household needs. The research also shows that they draw assistance from other household members, and include them in their work, generating more income and building human capital.

Furthermore, they struggled to shed the perception of household duties being the primary responsibility of women. Female headed households were found to be more stable and satisfied with their transformation practices, whereas the households with internal conflicts ended up wasting economic capital in transformations that were redundant in the long run. It was found that women were more acutely aware of the household's needs and transformative actions that would deliver optimal livelihood outputs. They were also able to employ their social ties to improve their own households and help their household members.

On the neighbourhood level, women were able to organise, communicate and collaborate to improve the overall functioning of the community. With the support of NGOs and other organizations, women were actively engaged in building social and human capital in the community. In spite of being in a new community after resettlement, women were able to build and maintain old and new relationships through engagement and spatial changes.

3. What are the women's livelihood outcomes derived from spatial transformation?

Livelihood restoration can be viewed as an improvement in one or more of interconnected these livelihood assets leading to favourable livelihood outcomes. DFID (1999) defines livelihood outcomes as an output of livelihood strategies. The SLF is based on the principle that individuals or communities require 5 distinct types of assets to achieve positive livelihood outcomes, namely, physical, natural, social, economic, and human. This research employs the SLF to examine the human, economic and social assets of women's livelihood outcomes derived from spatial transformation which is considered as a livelihood strategy.

The research shows that after transformation, women were able to improve their human capital, to varying extents. While many transformations were done to reduce their time poverty, women still reported the lack of personal time. It was noted that the concept of personal time was invalidated by the socio-cultural limitations of their outlook, and it was not considered as a need. While space is a major limitation in vertical housing which is not equipped for incremental growth, women have been able to divide their space and volume to create alcoves of privacy for the growing and changing household composition. Additionally, they have been able to make arrangements for thermal comfort and security for the household. Units that have been able to install security gates communally function well due to the ties developed by women with their neighbours, building human as well as social capital. Finally, the establishment of the community library allows them to learn in a safe environment and also have a safe space for their children, which further adds.

In terms of economic assets, women participate in various informal and formal jobs, and sometimes, both, in order to fulfil the household's needs. Most women have been able to have a regular stream of income. They have built informal access to credit forms and generated economic capital along with social capital while doing so.

Almost all transformations have led to the strengthening of social capital. These activities have led to the establishment of formal and informal networks, safety and security, sense of belonging and ownership and creation of public spaces in the community. With the help of NGOs and other organisations, women have been able to fight several forms of abuse against women and foster a healthy living environment with relationships of trust and reciprocity.

Final conclusions

The research shows that spatial transformation is an ongoing process which began the day the DPs moved into their new homes. This analysis concludes that spatial transformation improved

several aspects of women's social, economic, and human livelihoods. However, several aspects are yet to be worked on. The implications of socio-cultural and religious norms have far reaching impacts on adequate housing, equity and social justice and a holistic approach towards livelihood restoration is needed which involves all stakeholders – the authorities, NGOs, relevant organisations and most importantly, women.

Recommendations

The research shows the disparity between general building standards and R&R housing standards set by the government, which are further exacerbated by profit-making endeavours by private developers. In order to provide adequate housing to DPs, they need to be viewed as equals and their housing rights must be upheld at all costs, without dilution of standards. Key informants note the lack of post-occupancy institutional support and recognize that this process of livelihood restoration would have been far more efficient if the authorities had taken steps to stay involved post resettlement. They also note that dense cities like Mumbai need policies for the decommodification of land which is the root problem of the SRA PPP format and current building patterns.

The research shows that many aspects women's livelihoods are misunderstood and/or under-researched. The process of data collection recorded other societal issues of child marriage and domestic abuse in high numbers, which were not included in the study due to the scope and time constraint. The data showed that females with legal ownership were far more secure in their socio-economic position, which means that altering ownership patterns could have an impact on women's livelihoods. It can be said that women's vulnerabilities are aggravated by ignorant housing policies that dissolve their needs as the household's collective needs and a shift in policymaking is required to cater to gender specific needs.

The study concludes that the first step towards adequate rehabilitation of female DPs would most importantly require a great investment in research and understanding women's livelihood needs in low-income housing in urban areas in the Global South.

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7: Appendix

7.1 Appendix 1.0 – Survey Form

Start of Block: Consent form



Q1 1. CONSENT FOR PARTICIPATION

PRINCIPAL INVESTIGATOR: RADHIKA SARAN

RESEARCH SUBJECT: COPING WITH INADEQUATE REHABILITATION

INSTITUTION: Institute for Housing and Urban Development Studies, Erasmus University Rotterdam, Netherlands

SPECIAL ASSISTANCE: Community Design Agency, Mumbai, India

The following information is provided to inform you about the research project and your participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and the information given below, you will be given an opportunity to ask questions and your questions will be answered. During the survey, you will be asked personal questions which you are free to skip if you do not wish to answer. You are also free to withdraw from this study at any time. In the event that new information becomes available that may affect the risks or benefits associated with the study or your willingness to participate in it, you will be notified so that you can make an informed decision whether or not to continue your participation. Please feel free to ask any other questions you may have.

Purpose of the study: Thesis Research for master's degree M.Sc. Urban Management and Development (Specialisation in Urban Housing, Equity and Social Justice)

Description of procedures to be followed and approximate duration: This is a pilot survey with single/multiple choice questions and one-line text questions only. It will take a maximum of 15 minutes.

Expected costs: N/A

Description of the discomforts, inconveniences, and/or risks that can be reasonably expected as a result of participation in this study: There are no foreseeable risks, discomforts, or inconveniences associated with participation in this study. None of the measures present any risk to the participants. None of the data would reasonably place participants at risk of criminal or civil liability or be damaging to participants' financial standing, employability, insurability, reputation or be stigmatizing.

Contact Information: If you should have any questions regarding this research, please feel free to contact Ms. Radhika Saran at [670602rs@eur.nl]

Confidentiality: All efforts, within reason, will be made to keep the personal information in the research records private and will be anonymised for analysis purposes.

STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY: I have read this informed consent document and the material contained in it has been explained to me

verbally. I understand each part of the document, all my questions have been answered, and I freely and voluntarily choose to participate in this study.

No, I do not consent. (1)

Yes, I consent. (2)

End of Block: Consent form

Start of Block: Household Information

Q2 Since when have you been living in Natwar Parekh Compound?

Year (1)

▼ 2007 (1) ... 2023 (17)

Q3 Reason for displacement

Project induced displacement (1)

Disaster induced displacement (earthquake, fire, flood etc) (4)

Forced eviction (zabardasti nikaala/ghar tod diya) (2)

Homeless (3)

Personal choice (6)

Other. Please specify. (5) _____

Q4 Do you like living in NPC?

Extremely satisfied (18)

Somewhat satisfied (19)

Neither satisfied nor dissatisfied (20)

Somewhat dissatisfied (21)

Extremely dissatisfied. Why? (22)

Q5 Head of the household

Myself (Female) (1)

Partner (Male) (2)

Other Male (3)

Other Female (4)

Q6 Tenure Status of the household

Homeowner (4)

Tenant (5)

Other (6)

Skip To: End of Survey If Q6 != 4

Page Break

Q7 Number of people living in the household



Q8 Number of children under the age of 18 in the household



Q9 Number of residents above the age of 60 in the household



Q10 Number of differently abled residents in the household

Q11 Number of FEMALE residents in the household (above 18)

0 (4)

1 (5)

2 (7)

More (8)

Skip To: End of Survey If Q11 = 4



Q12 Number of income-generating MALE residents in the household

Q13 Number of income-generating FEMALE residents in the household

0 (4)

1 (5)

2 (6)

More (7)

Skip To: End of Survey If Q13 = 4

Page Break

Display This Question:

If Q13 != 4

Q14 Current employment status of female (1)

Working full-time (1)

Working part-time (2)

Student (5)

Retired (6)

Other. Please specify. (7) _____

Display This Question:

If Q13 != 5

Q15 Current employment status of female (2)

Working full-time (1)

Working part-time (2)

Student (5)

Retired (6)

Other. Please specify. (7) _____

Display This Question:

If Q13 = 7

Q46 Current employment status of female (3)

Working full-time (1)

Working part-time (2)

Student (5)

Retired (6)

Other. Please specify. (7) _____

Page Break

Q16 Have you made any spatial changes in your household?

Yes (26)

No. Do you wish to make any changes? If yes, please describe them. Also state the reason for not having them done till now. (27)

Skip To: End of Survey If Q16 = 27

End of Block: Household Information

Start of Block: Spatial Transformation

Q17 What kind of spatial changes have been made in your household? Select multiple options if necessary.

Maintenance. Please specify. (4)

Upgradation / Personalization. Please specify. (Material change, tiling, flooring, painting etc) (3) _____

Interior changes (furniture arrangement/addition or removal of walls) (2)

Exterior changes (outside mail walls/gate/balcony/window/chajja etc) (1)

Temporary change of function (example, tuition classes in living room for a few hours in a day) (5)

Permanent change of function (example, convert living room into classroom) (7)

Q18 Reason for spatial transformation at the household level. Select multiple options if necessary.

Aspirational (1)

Health-related (2)

Sanitation (3)

Family growth (4)

Space for income-generating activities (5)

Space for work-related equipment (6)

Space for work-related storage (7)

Other. Please specify. (8) _____

Q19 Source of credit for the changes. Select multiple options if necessary.

Personal savings (1)

Bank loan (2)

Loan from family, friends, or neighbours (3)

Government aided (4)

NGO aided (5)

Other. Please specify. (6) _____

Q20 Are you satisfied with the spatial transformation?

Extremely satisfied (18)

Somewhat satisfied (19)

Neither satisfied nor dissatisfied (20)

Somewhat dissatisfied (21)

Extremely dissatisfied (22)



Q21 Images of the transformed spaces



Q22 Images of the transformed spaces



Q23 Images of the transformed spaces



Q24 Images of the transformed spaces



Q25 Images of the transformed spaces

End of Block: Spatial Transformation

Start of Block: Female (1)

Display This Question:

If Q13 != 4

Q26 Female (1) : Age

Under 18 (1)

18-24 years old (2)

25-34 years old (3)

35-44 years old (4)

45-54 years old (5)

55-64 years old (6)

65+ years old (7)

Display This Question:

If Q13 != 4

Q27 Female (1) : Current marital status

Married (1)

Widowed (3)

Divorced/Separated (4)

Never been married (6)

Display This Question:

If Q13 != 4

Q28 Female (1) : Highest level of education

No formal education (12)

10th Board Certificate (13)

12th Board Certificate (14)

Undergraduate degree (ongoing or completed) (15)

Graduate degree or higher (ongoing or completed) (19)

Display This Question:

If Q13 != 4

Q29 Female (1) : Have you received any other formal or informal training?

No (1)

Yes. Please specify. (2) _____

Display This Question:

If Q13 != 4

Q30 Female (1) : Employer. Select multiple options if necessary.

Self-employed. Please specify. (1)

Domestic worker (2)

Private organisation (3)

Government organisation (4)

NGO (5)

Other. Please specify. (6) _____

Display This Question:

If Q13 != 4

Q31 Female (1) : Place of work. Select multiple options if necessary.

Own home (1)

Natwar Parekh Compound (2)

Other (3)

Display This Question:

If Q13 != 4



Q32 Female (1) : Number of dependents

Display This Question:

If Q13 != 4

Q33 Female (1) : Were you engaged in income-generating activities before coming to Natwar Parekh Compound?

Yes (1)

No. Please specify reason (under 18 / no workspace / no opportunity / no skills / no time / unable to work due to medical reasons / other etc) (2)

Display This Question:

If Q13 != 4

Q34 Female (1) : Did the spatial transformation affect your income?

Yes (1)

No (2)

End of Block: Female (1)

Start of Block: Female (2)

(SAME AS FEMALE (1) DETAILS IF NUMBER OF WORKING FEMALES > 1)

Display This Question:

If Q13 = 6

Or Q13 = 7

7.2 Appendix 2.0 – Interview Questions

7.2.1 Interview – Selected sample

- 1 Consent to record and use this information for research purposes
- 2 Please tell me about your experience of R&R in NPC. Please describe the conditions of the NPC building and household unit when you moved.
- 3 What are the spatial changes you have made since then? Please describe what, when, where and why the changes were made.
- 4 How do you use the gallery (corridor) space outside your unit and have you made any changes to it? If yes, what, when and why?
- 5 Who funded these changes and what was the implementation process? Does the change serve its purpose?
- 6 Has the resettlement process and/or building design impacted your health and if yes, how? Have you made any efforts to change that?
- 7 Do you have enough private space?
- 8 Please describe your household responsibilities and if you have family/community support to conduct these tasks effectively.
- 9 Please describe your income generating activities and what, where and when you conduct them. Please add if you have family/community support to conduct these tasks effectively.
- 10 How has resettlement impacted your income-generating and household activities?
- 11 If you use your home for any part of the income-generating process, how does it intersect with your household practices?
- 12 Please describe your (and others') financial responsibilities with respect to the household and the dependants.
- 13 Please describe a regular working day in your life.
- 14 How do you spend your personal time? Do you conduct any activities for your mental and physical health, self-development, creativity, learning or relaxation and if yes, what, when, how and where?
- 15 How is your relationship with your neighbors? Please describe the social aspects of your life.
- 16 How are household decisions made and who makes them?
- 17 Do you use any social spaces in NPC and if yes, how? Do you have any concerns regarding social spaces in NPC? Do you and your family feel safe in the community?
- 18 Are you a part of any formal or informal networks that work towards social welfare in the community? Please describe your experience with the existing networks.
- 19 Do you consider that your and your household's livelihood has improved after the rehabilitation or not? Please answer why.
- 20 What are your future aspirations in terms of your work, family, and household?
- 21 Is there any other pertinent information that you would like to add regarding your human, social and/or financial wellbeing?

7.2.2 Interview – Ms. Sheikh, President of NPC Federation & Building Management

- 1 Consent to record and use this information for research purposes
- 2 Describe your role and responsibilities in the building management and since when have you been doing this?
- 3 Describe your work and the role of the community's women in it.
- 4 Who are the organisations that work with you and support you in the improvement of NPC and what is their role? In what capacity?

- 5 Describe the social spaces in NPC when you moved here and your journey to collaborate with CDA to work on those spaces
- 6 Who implemented these projects and what was the role of women in it?
- 7 What was the impact of those projects on the functioning of these spaces and the peoples' attitude towards them.
- 8 How did the projects encourage relationships and networks within the community and are they still in place?
- 9 Do you feel like the community is safe space for women?
- 10 Do you have regular meetings with the women of the community?
- 11 What are the common resources in the community and how are they managed?

7.2.3 Interview – Ms. Jaimini, Architect & Researcher at CDA

- 1 Consent to record and use this information for research purposes
- 2 CDA is an architecture and design agency set up as an initiative from CSDC. Can you please state your role in the organisation and since when have you been working in this organisation. Please give some information on your educational and professional background.
- 3 CDA's team has done multiple spatial transformation projects in NPC to create new social spaces., through artwork, waste management, cleanliness drives in order to develop social infrastructure. Could you please talk about that a little and why was that a focus for your work (When, what, where, phases, processes)
- 4 Was there any institutional support to conduct these projects?
- 5 Who were the key actors in these projects and what was the community's response to them?
- 6 How were these projects financed?
- 7 What is your view on the role of women in these projects?
- 8 Do you want to talk about any conflicts in the community and their perception of women and their work?
- 9 As an experienced architect, can you comment on the design of the settlement, buildings, and housing units in NPC?
- 10 Do you think NPC is sensitive and/or responsive to the needs of women's livelihood practices?
- 11 Do you consider the spatial transformation projects to be successful? What were the short-term and long-term impacts of it and did it affect the perception of safety and security for women?
- 12 Coming from horizontal settlements, how do you think the women have adapted to vertical living?
- 13 Do you think these transformations have induced a positive change in their habits, sharing of resources and social structures?
- 14 Would you like to comment on the physical and mental health related aspects of R&R,
- 15 What do you think about women's access to information, (in)formal organisation support, and credit forms?
- 16 If you had to summarize the positives and negatives of NPC and similar rehabilitation projects, what would you say?
- 17 Is there anything else you would like to add from your experiences?

7.3 Appendix 3.0 – Apartment Floor Allotment, Social freedoms & Vertical Accessibility

During data collection, many women talked about the unfamiliarity of living in a vertical settlement. It was a concept for them, and they had to re-think and re-negotiate accessibility

navigating through physical hurdles and socio-cultural issues. All residents were allotted homes through a lottery system and groups of families coming from the same original location were allotted neighbouring units. Seven buildings were allocated to DPs from Sewri, four for DPs from Ray Road, three for DPs from Nagpada and Byculla, and rest were allocated miscellaneously.

Due to the lack of attention given to household specific needs, factors such as age and disability were disregarded in the process, further aggravating vulnerability. All respondents reported that the elevators work at specific hours, and it is not a 24x7 available service. Moreover, when they moved in, the elevator was not functional at all, and it took many months of door-knocking and pleading with MMRDA to get it fixed. 8 out of 10 respondents complained regarding the same. Two respondents living on the 7th and 6th floor mentioned that they do not climb down more than once a day and it has affected their movement and health negatively.

One respondent described her experience as follows.

“When the lottery system happened and we got to the 6th floor, my mother revolted. She had breathing issues. She wanted to be on the ground floor, but they didn’t let us switch. Even when we came to see the house for the first time, my mother was just sitting downstairs, and she could not see the house. We went and checked it out. My mother refused to go up the 6 floors. I went up and cleaned. My mother didn’t come down for months, maybe a year. She begged and pleaded to switch but they didn’t let us do that.”

Another critical element of vertical accessibility was highlighted by Ms. Bhawna Jaimini during the interview. In case of women, vertical accessibility is not just a product of physical access, but also the social freedoms they have negotiated with their households. Ms. Jaimini stated –

“This is a Muslim colony. Women are far more policed. When they’re on the ground floor, it’s much easier for them to perhaps get out or negotiate those boundaries. But if you’re stuck on the 6th floor, how do you do that? Some of the women just don’t leave their houses for days.” (Respondent #11)

Their religion, socio-cultural norms, and low economic status combined work against women. Their lack of accessibility further impacts social and financial capital as they are spatially restricted to their households. This shows that women have struggled with vertical living in complex ways, which need to be accounted for when planning SRH projects.

7.4 Appendix 4.0 – Other neighbourhood level spatial transformations & Social capital

Kitaab Mahal (Library)

The welfare space in a building which was previously an empty unit was converted into a library space as shown in Fig. 49 (CDA, n.d.). This not only increased youth engagement but also provided the women a safe space for engaging and learn with people outside of their duties and grow their human capital.



Figure 49: Community Library; Source: CDA

Additionally, Ms. Sheikh comments suggest that the library has not only helped in providing a safe space for women and children, it has given them a space for learning and growth. It has reduced the negative elements on the streets and also offered working women a safe space for childcare, creating knowledge and safety at the same time.

“All the work that CDA has done has made an impact. So many kids come to the library now who were just wandering the streets earlier. They appreciate this space. They have books here. They learn through art. We have storytelling sessions here. If we leave them on the streets, they are bound to fall into the wrong company. If we try to stop someone's drug addiction all of a sudden, it does not work. It is more important to show them another path and engage them in different ways. So now the kids are coming here. Their mothers leave them here and go to work. They feel secure knowing that their children are in the library. They are not scared. They can play games here, play music. They realize that no one is forcing them here to do anything. We focus on interactive learning, and it is going well.” (Respondent #9)

Murals

Battling social problems, another intervention to revive dead spaces was to create wall murals. They were designed and implemented by the community which further strengthened their social capital. Fig. 50 shows the before and after of the side wall of a public toilet which was described as a spot for questionable illegal drug transactions. This was transformed into an artwork and a playful hangout spot for the community. It also encouraged the community to maintain the public toilet better to encourage people to socialize around it. The key informant, who is a resident and president of the building management made the following statement about the mural work –

“We made a mural on a lifeless wall in 2021. That is when we found out that art can give life to a lifeless object. [...] Earlier people would urinate on the wall, and it was a hotspot for drugs. Just by filling in color and giving life to it, everyone had the sense of belonging and the personal attachment of taking part in it.” (Respondent #9)



Figure 50: Mural work on toilet wall; Source: CDA



Figure 51: Mural work; Source: CDA

The other wall that was transformed was the boundary wall corner as shown in Fig. 58 (CDA, n.d.). This corner of the compound was also a dead unused space which would remain empty at most times of the day. This was revived into a bright public space for the residents.



Figure 52: Mural work on NPC Boundary Wall; Source: CDA

Spatial Reorganisation Workshop with Street Vendors

More than 100 street vendors sell all kinds of daily items and foods in NPC. In October 2018, an altercation over parking space led to the death of a street vendor. This led the authorities (MMRDA) to ban all street vending in the compound, which had a massive impact on the livelihoods of countless households. After several complaints, the ban revoked with the condition that no hand carts would be used. They were allowed to set up shop directly on the street. In response to this growing uncertainty, Ekta Hawkers Federation was formed with the congregation of 120 street vendors.



Figure 53: Spatial reorganisation processes; Source: CDA

CDA conducted several workshops to facilitate their understanding their physical space and its proper utilisation (Fig. 53, 54, and 55). They were also equipped with tools and information about their rights and responsibilities (CDA, n.d).

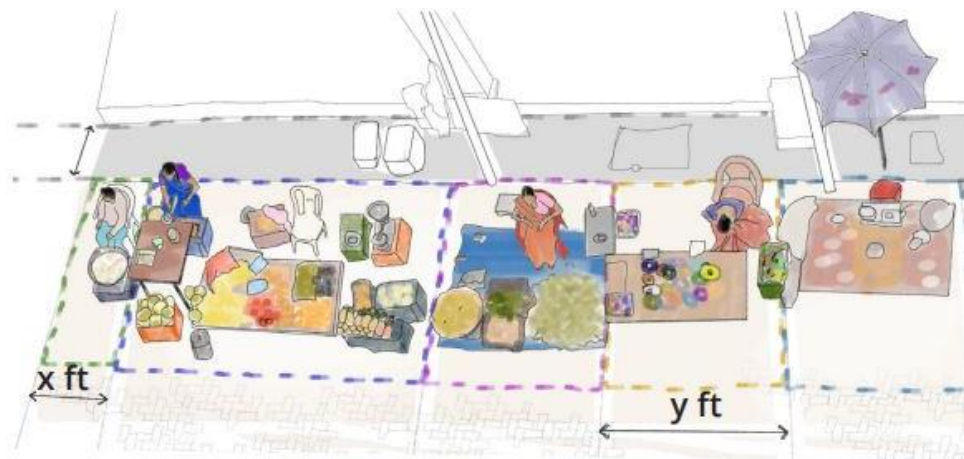


Figure 54: Sketch of spatial reorganisation of street vendors; Source: Ekta Hawker's Association. (n.d.)



Figure 55: Main vending street after reorganisation; Source: Ekta Hawker's Association. (n.d.)

Legal rights, Representative voice & Social protection

As discussed in the literature, legal rights, representative voice, and social protection are a few tenets of decent work that informal workers do not receive. In the case of NPC, this was changed through collective efforts, collaboration, and spatial reorganization of the street vendors. The Ekta Hawkers Association was created in 2020 and registered as a society under the Societies Registration Act, 1860. It is a union of street vendors particularly catering to the rights of street vendors in SRA colonies whose rights are unclear in the Street Vendors Act, 2014. It ensures the street vendors' right to conduct trade in public spaces, protecting their interests while following an approved code of conduct. It protects them from harassment, and regulates street vending within the colony, providing legalisation and security to their economic livelihood assets. In addition, the process of collaboration and congregation has also enriched their social capital by the establishment of a formal network that ensures social protection. While this association is not limited to women, it has added capital to the livelihoods of several female street vendors.

7.5 Appendix 5.0: Perception of Women's Work & Assistance from other household members

As mentioned in the literature, the perception of women's work is tainted by many socio-cultural and religious norms that are conservative and patriarchal in nature. In many cases, it was observed that women had to ask for permission to work from their husband and/or their parents-in law. Following are instances of women expressing gratitude for their partners who allowed them to earn.

"My husband is my biggest support. If he had not allowed me and trusted me to work outside, we would not have been able to provide this lifestyle to our kids. Today we have everything, good food, good clothes, and a good home and none of this would have been possible if he had not supported me the way he has." (Respondent #1)

"I really wanted to work. [...] I told my husband right in the beginning. [...] I asked him to support me and let me live freely. I asked him to let me do whatever I wanted and assured him that I did not want to do anything wrong. [...] If I had built a facade of the perfect submissive and traditional Indian woman, it would compromise my mental health. My husband supported me completely But of course, society had issues with that because they do not want women to go out. A lot of people degraded my husband for letting me live the way I wanted to and work. They had problems with me communicating with other men for work and they started

commenting on our values. My husband did not care. He trusted me. He told them that if I am accepting my wife then it is none of anyone else's business. I never looked back after that." (Respondent #9)

The case of respondent #9 shows that women have to battle not only their family's perception of work but also the society's. The extent of their freedom is dependent on how much pushback their family can manage without compromising trust. There are other instances of women reporting that families are understanding of their work because of its financial benefits. A respondent during the interview stated -

"Everyone supports me to go to work. There are no problems in the household. Everyone understands now. Everything is so expensive these days. It does not work without money." (Respondent #10)

In a patriarchal society, income generation is considered the male's role, which is attributes several other social benefits to males. When women start participating in income generation, they also experience an upgrade in their social status. This is a phenomenon that patriarchal societies tend to limit and control. Now this upgrade has been attached to 'respect' and the 'usefulness' of an individual in a household. Many women stated that they feel respected at home due to their ability to contribute to the household income, while simultaneously managing household chores. However, this respect is still fragile and conditional. Following is an instance to corroborate this finding –

"I go to work because I want to work. They do not ask me to do this. My husband's income is not enough so I have to help. But I know that I must take care of the household chores as well. If I do not, my parents-in-law will scream at me. [...] When we work, we are respected in the household. If we do not, we will not be respected." (Respondent #7)

"My husband is very supportive. Even though he is an alcoholic, he recognises that I manage everything alone, so he supports me. He wastes so much of my money in alcohol. I tried to explain this to him, but he does not understand. It is an addiction now. He fights with me after drinking. I have to handle it. He is not physically violent, but he is verbally abusive. I take care of the entire household and also listen to his taunts. It is not fair, and I am sick of it." (Respondent #6)

These statements show the complexity of abuse that women are suffering from in their homes. On one hand they feel supported and respected for their work and on the other hand, they are expected to tolerate violence. The duplicity of this behavior demonstrates that households still lack empathy and tend to treat women as sub-ordinate whose purpose must be to serve the household.

As per the data, it is common that other household members assist each other in income generating activities, especially in case of home-based work. Following examples demonstrate this finding –

"I have two daughters. [...], and if ever I want to rest or take a nap, they manage the shop." (Respondent #2)

"I sit on the floor and pack bangles. Both my daughters help me." (Respondent #5)

Additionally, family members may even aid in setting up new streams of income, as shown in the following case -

"My daughter lives next door. She and her husband helped me out. I did not spend any money on setting up the shop." (Respondent #2)

In other cases, household members may provide other forms of support, as demonstrated by the following example -

"He (my husband) helps me commute for work. Sometimes I work late hours and he is always there to pick me up, waits for me and drops me wherever I need to go." (Respondent #1)

During the interview, Respondent #8 who has a flower business, explained that she needs to store certain flowers in a refrigerator for them to stay fresh and avoid monetary losses.

"My kids bought the fridge for me, 8 years ago. I have been doing this business for 15 - 16 years now." (Respondent #8)

From transportation to labour and equipment support, household members have devised ways to contribute to the household income indirectly and support working women in performing their tasks efficiently. Conversely, many women also lack this support and do not receive it even upon request. Following are instances of women sharing the lack of assistance -

"I have been paying the maintenance bills for the last 15 years. I have told my son to pay for the maintenance now. He does not add anything to the household income." (Respondent #3)

"I get my stock from Dadar or Parel. It is far. My kids do not help me with stocking up. I have asked them several times to check out my vendors and their selling rates so that they are familiar with the business, but they blatantly refuse to participate." (Respondent #8)

As per the data, it is common that other female household members assist each other in household chores and childcare responsibilities, which affects women's ability to work and generate livelihood assets for themselves and the household. Livelihood restoration is considered a collective effort and women have found common ground despite adversity. Following examples demonstrate this finding –

"Because my daughter takes care of a lot of household chores, I am able to find time to work and pay for her education." (Respondent #1)

"When I go to work my mother-in-law takes care of my children." (Respondent #7)

This also shows that the division of labour is extended to female children before an adult male is expected to contribute. The general perception is to train females for future responsibilities, however, 100% of the women emphasized on educating their daughters in order to improve their livelihoods. In this case, recognition of the value of human capital acts as the first step in building it.

7.6 Appendix 6.0: IHS copyright form

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