

**WOMEN AND THE URBAN
SANITATION CHALLENGE:
TRACING AN INTERSECTIONAL RELATIONSHIP**



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**WOMEN AND THE URBAN SANITATION CHALLENGE:
TRACING AN INTERSECTIONAL RELATIONSHIP**

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Anshika Suri,

11th March, 2018

LIST OF ABBREVIATIONS

AWBS	ATHI WATER BOARD SERVICES
BORDA	BREMEN OVERSEAS RESEARCH AND DEVELOPMENT AGENCY
BWB	BASIN WATER BOARDS
CBO	COMMUNITY BASED ORGANISATION
CDF	COUNTY DEVELOPMENT FUND
CEO	CHIEF EXECUTIVE OFFICER
CHA	COMMUNITY HEALTH ASSISTANT
CHEW	COMMUNITY HEATH EXTENSION WORKER
CHV/CHW	COMMUNITY HEALTH VOLUNTEER/WORKER
CIUP	COMMUNITY INFRASTRUCTURE UPGRADING PROGRAMME
CSO	CIVIL SOCIETY ORGANISATIONS
DAWASCO	DAR ES SALAAM WATER AND SEWERAGE COMPANY
DAWASA	DAR ES SALAAM WATER AND SEWERAGE AUTHORITY
DEWAT	DECENTRALISED WASTE WATER TREATMENT
DESWAM	DECENTRALISED SOLID WASTE MANAGEMENT
DFID	DEPARTMENT FOR INTERNATIONAL DEVELOPMENT
EMCA	ENVIRONMENTAL MANAGEMENT AND COORDINATION ACT
FBO	FAITH BASED ORGANISATION
FGM	FEMALE GENTIAL MUTILATION
FIDA	FEDERATION OF WOMEN'S LAYERS, KENYA
GBV	GENDER BASED VIOLENCE
GIZ	DEUTSCHE GESELLSCHAFT FÜR INTERNATIONALE ZUSAMMENARBEIT
GFP	GENDER FOCAL PERSON
GTI	GENDER TRAINING INSTITUTE
ICT	INFORMATION AND COMMUNICATION TECHNOLOGY
JICA	JAPAN INTERNATIONAL COOPERATION AGENCY
KISUP	KENYA INFORMAL SETTLEMENTS UPGRADING PROGRAMME
KSH	KENYAN SHILLINGS
KSUP	KENYA SLUM UPGRADING PROGRAMME

KWSP	KENYA WATER AND SANITATION PROGRAMME
LGA	LOCAL GOVERNMENT AUTHORITIES
MHO	MUNICIPAL HEALTH OFFICE
MKURABITA	MPANGO WA KURASIMISHA RASILIMALI NA BIASHARA ZA WANYONGE TANZANIA (PROPERTY AND BUSINESS FORMALIZATION PROGRAM)
MODGC	MINISTRY OF COMMUNITY DEVELOPMENT, GENDER AND CHILDREN
MOH	MINISTRY OF HEALTH
MPESA	MOBILE PESA
MSF	MÈDECINS SANS FRONTIÈRES
NACTE	NATIONAL ACCREDITATION COUNCIL FOR TECHNICAL EDUCATION
NBS	NATIONAL STATISTICS BUREAU
NCWSC	NAIROBI CITY WATER AND SEWERAGE COMPANY
NEMA	NATURAL ENVIRONMENT MANAGEMENT AUTHORITY
NGO	NON-GOVERNMENTAL ORGANISATION
NSC	NATIONAL SANITATION CAMPAIGN
OD	OPEN DEFECATION
PPP	PUBLIC PRIVATE PARTNERSHIP
SBM	SANITATION BUSINESS MODEL
SGBV	SEXUAL GENDER BASED VIOLENCE
SFF	STONE FAMILY FOUNDATION
SIDA	SWEDISH INTERNATIONAL DEVELOPMENT AGENCY
SWAP	SECTOR WIDE APPROACH TO PLANNING
TGNP	TANZANIA GENDER TRAINING PROGRAMME
TZS	TANZANIAN SHILLINGS
UNICEF	UNITED NATIONS CHILDREN'S FUND
USAID	UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
UTI	URINARY TRACT INFECTION
VAW	VIOLENCE AGAINST WOMEN
VIP	VENTILATED IMPROVED PIT
WASH	WATER SANITATION AND HYGIENE
WASREB	WATER SERVICES REGULATORY BOARD

WASSIP	WATER SANITATION SERVICES IMPROVEMENT PLAN
WSBSP	WATER SERVICES BOARD SUPPORT PROGRAMME
WSDP	WATER SECTOR DEVELOPMENT PLAN
WSP	WATER SERVICE PROVIDERS
WSTF	WATER SERVICES TRUST FUND
WSUP	WATER AND SANITATION FOR URBAN POOR

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Abstract

The global sanitation crisis is one of the most important developmental challenges in the 21st century with 2.4 billion people still lacking access to improved sanitation facilities. Women are particularly affected and the lack of access to safe toilets is accompanied by several risks, shame, health issues, indignity, harassment and attack. Though sanitation is usually perceived as a private act, the lack of a private space forces the action to become a matter of public intervention, i.e. open defecation, leading to the female body not only becoming a site of oppression, but also of contestation, negotiations and a socio-political tool within urban infrastructure regimes. Thus, sanitation infrastructure is often determined by engineering, environmental and public health concerns that are often far removed from women's needs, their socio-cultural practices and existing gender constructs. In addition, the failure to involve women in the design of infrastructure facilities results in inappropriate standards and technological artefacts.

Furthermore, research about gender and sanitation in African cities focuses mostly on hygiene and health issues but fails to capture the magnitude and scope of gender-based disparities, how women's human rights fit into different development strategies and an inherent lack of gender equality in accessibility of sanitary infrastructure. Therefore, my research claims that there is a need to examine injustice against women through infrastructural inadequacy. In this research, I aim to investigate the inclusion of public infrastructure under the taxonomy of systems of oppression of women through the perspective of urban and infrastructural development issues. I use a techno-feminist perspective to inspect how gender inequality in urban spaces, manifested in the different relations women and men establish with sanitation facilities in informal settlements, could also be seen from the lenses of women's ambiguous relation with technology (as users but removed from design).

The research presents data obtained through in-depth, semi-structured interviews, participant observations and focus group discussions conducted in March-April 2015 and February-April 2016 with state actors, development agencies, non-governmental organizations and, male and female residents of informal settlements in Dar es Salaam, Tanzania and Nairobi, Kenya. The findings revealed firstly, sanitation infrastructure provision

exhibited a technical focus, with a major emphasis on public health concerns in Dar es Salaam whereas the findings from Nairobi presented a more emphasised focus on engineering and technical aspects along with concerns for public health and hygiene. Secondly, fear and insecurity were being imbibed within the women residents of informal settlements who used various coping mechanisms in their everyday encounters with shared/multi-family toilets. Thirdly, the lived experiences of women users contrasted with the imaginaries designed by service providers. In both the cities, all actors involved in service provision showed an imagining of the users and usage of the infrastructure by the designers.

The conclusion of the study highlighted that firstly, despite the presence of acts of violence against women intersecting with shared/multi-family toilets, the layer of violence is yet to be addressed within sanitation infrastructure provision. Additionally, themes of reductionism were observed within service provision processes that could be exacerbating the induction of fear and insecurity within the women residents. Furthermore, the women residents' restricted interaction with the infrastructure highlighted key information that could help bridge some of the gaps in knowledge on socio-spatially relevant sanitation infrastructure. Moreover, evidence from the lived experiences of the women residents highlighted the recurring acts of violence which created a more oppressive environment for them to live in every day, specifically the intersection of violence with inadequate service provision was identified to instigate an oppressive environment around shared sanitation facilities. Therefore, a more detailed analysis into urban infrastructure planning needs to be carried out to determine with certainty if infrastructures are themselves turning into systems of oppression or whether the reported violence is an unintended consequence.

Abstrakt

Die Sanitärversorgung stellt weltweit eine der größten entwicklungspolitischen Herausforderungen des 21. Jahrhunderts dar, denn etwa 2,4 Milliarden Menschen haben noch immer keinen Zugang zu angemessenen sanitären Einrichtungen. Frauen sind besonders betroffen, und der fehlende Zugang zu sicheren Toiletten ist für sie gleich mit mehreren Risiken, mit Scham, Gesundheitsproblemen, Erniedrigung, sexueller Belästigung und Übergriffen verbunden. Obwohl die sanitäre Grundversorgung als private Angelegenheit verstanden wird, macht das Fehlen eines privaten Raumes diese zur öffentlichen Aktion, d.h. der offenen Defäkation mit der Folge, dass der weibliche Körper nicht nur Gegenstand der Unterdrückung, sondern auch Gegenstand der Anfechtung, der Aushandlung und gesellschaftspolitisches Mittel innerhalb der städtischen Infrastrukturregime wird. So wird die Infrastruktur in der Sanitärversorgung oft von technischen, ökologischen und gesundheitlichen Belangen bestimmt, die weit entfernt sind von den Bedürfnissen der Frauen selbst, ihren soziokulturellen Praktiken und den bestehenden Geschlechterbeziehungen. Darüber hinaus führt die fehlende Einbeziehung von Frauen in die Planung und Gestaltung von Infrastruktureinrichtungen zu unangemessenen Standards und technologischen Artefakten.

Die Forschung zu Gender und Hygiene in afrikanischen Städten konzentriert sich hauptsächlich auf die Themenfelder Hygiene und Gesundheit, sie erfasst dabei aber nicht das Ausmaß und den Umfang der geschlechtsspezifischen Disparitäten, wie sich die Menschenrechte von Frauen in verschiedene Entwicklungsstrategien einfügen, noch den inhärenten Mangel an Gleichberechtigung in der sanitären Versorgung. Deshalb geht meine Forschungsarbeit von der Feststellung aus, dass es notwendig ist, Ungerechtigkeiten gegen Frauen durch infrastrukturelle Missstände zu untersuchen. In dieser Studie möchte ich die Einbeziehung der öffentlichen Infrastruktur in die Taxonomie der Systeme der Unterdrückung von Frauen aus der Perspektive der Stadt- und Infrastrukturentwicklung untersuchen. Ich habe eine technofeministische Perspektive ausgewählt, um zu untersuchen, wie sich die Ungleichheit der Geschlechter in städtischen Räumen, die sich in den unterschiedlichen Beziehungen von Frauen und Männern zu sanitären Einrichtungen in informellen Siedlungen manifestiert, aus Sicht der Frauen darstellt, die einen mehrdeutigen Bezug zur Technologie haben (als Nutzer, aber vom Design entfernt).

Die Studie präsentiert Daten, die durch ausführliche, semi-strukturierte Interviews, teilnehmende Beobachtungen und Diskussionen in Fokusgruppen im März-April 2015 und Februar-

April 2016 mit staatlichen Akteuren, Entwicklungsorganisationen, Nichtregierungsorganisationen sowie männlichen und weiblichen Bewohnern informeller Siedlungen in Dar es Salaam, Tansania und Nairobi, Kenia, gewonnen wurden. Die Ergebnisse zeigten zum einen, dass die Versorgung mit sanitärer Infrastruktur einen technischen Schwerpunkt hat, wobei der Fokus in Dar es Salaam auf den Belangen der öffentlichen Gesundheit lag, während die Ergebnisse aus Nairobi einen stärkeren Nachdruck auf technischen Aspekten und auf Fragen der öffentlichen Gesundheit und Hygiene belegten. Zum zweiten wurde die Angst und Unsicherheit der Bewohnerinnen von informeller Siedlungen deutlich, die in ihrem Alltag unterschiedliche Bewältigungsmechanismen für die Nutzung der gemeinsamen bzw. der von mehreren Familien genutzten Toiletten entwickelt haben. Als drittes Ergebnis zeigte sich, dass die gelebten Erfahrungen der Nutzerinnen in Kontrast zu den Vorstellungen und Planungen von den Betreibern stehen. In beiden Städten war für alle an der Versorgung beteiligten Akteure allein die Vorstellung der Planer von den Nutzern und der Nutzung der Infrastruktur ausschlaggebend.

In der Schlussfolgerung der Arbeit wird dargelegt, dass trotz der gewalttätigen Übergriffe auf Frauen, die sich Toiletten mit mehreren Familien teilen, diese Ebene der Gewalt innerhalb der sanitären Infrastrukturversorgung noch nicht angegangen werden kann. Darüber hinaus wurden Themen des Reduktionismus innerhalb von Dienstleistungsprozessen beobachtet, die die Angst und Unsicherheit bei den Bewohnerinnen noch verschärfen könnten. Die eingeschränkte Interaktion der Bewohnerinnen mit der Infrastruktur zeigte zudem wichtige Informationen auf, die dazu beitragen könnten, einen Teil der Wissenslücke über die sozialräumlich relevante Sanitärinfrastruktur zu schließen. Darüber hinaus wurden Themen des Reduktionismus in der Bereitstellung der Leistungen beobachtet, die die Angst und Unsicherheit bei den Bewohnerinnen noch verstärken könnten. Zusätzlich hat die eingeschränkte Interaktion der Bewohnerinnen mit der Infrastruktur wichtige Informationen aufgezeigt, die helfen könnten, einige Wissenslücken über die sozialräumlich relevante Sanitärinfrastruktur zu schließen. Des Weiteren belegten die Erfahrungen der Bewohnerinnen die immer wiederkehrenden Gewalttaten, die ein bedrückenderes Umfeld für ihr tägliches Leben bildeten. Insbesondere die Schnittmenge von Gewalt und mangelhafter Versorgung wurde als Ursache identifiziert für ein repressives Umfeld um gemeinschaftliche sanitäre Einrichtungen. Daher sollte eine detaillierte Analyse der Planung städtischer Infrastrukturen erfolgen, um mit Sicherheit festzustellen, ob die Infrastruktureinrichtung selbst zu einem System der Unterdrückung wird oder ob die auftretende Gewalt eine unbeabsichtigte Folge ist.

CHAPTER 01.

INTRODUCTION

Sanitation in urban cities in the Global South

This chapter aims to introduce the reader to what I believe is the imminent global sanitation crisis, with more than two billion people across the world still lacking access to sanitation facilities. While a plethora of research has been on-going in the provision of sanitation infrastructure worldwide, the perspective of the research is still health, hygiene and engineering oriented, despite evidence of growing cases of acts of violence around shared sanitation facilities. Hence, I aim to investigate whether inadequate infrastructure provision is intersecting with violence against women and if yes, what are its implications on the residents living within informal settlements in the rapidly metamorphosing cities within East Africa.

1.1 Research Problem

The global sanitation crisis is one of the most important developmental challenges in the 21st century with 2.4 billion people still lacking access to improved sanitation facilities (Domestos Unilever et al., 2013). The lack of sanitation has been identified among the main causes of health problems among urban dwellers in African cities (Hendriksen et al., 2011) and the promotion of basic sanitation is largely focused on hygiene awareness, health and environmental benefits. While the access to sanitation is currently measured globally by the WHO /UNICEF Joint Monitoring Programme through the targets set by the Millennium Development Goals and uses internationally agreed definitions for “improved sanitation”, this monitoring currently does not provide a breakdown of access for men

and women separately. However, poor sanitation most significantly impacts on the safety, well-being and educational prospects of women. Previous studies reveal that one in three women still lack access to safe toilets worldwide and risk shame, health issues, indignity, harassment and even attack because of inadequate sanitary infrastructure (Domestos Unilever et al., 2013; Abrahams et al., 2006; Joshi et al., 2011, Reddy & Snehalatha, 2011: 400).

Earlier research emphasizes the vulnerability of women to physical and sexual violence if they are forced to wait until early morning or late evenings to look for a secluded place to defecate (Reddy & Snehalatha, 2011:390; Domestos Unilever et al., 2013; Abrahams et al., 2006). Research has also identified that violence became more pronounced towards women of lower socio-economic strata living in informal settlements while accessing sanitation infrastructure (Anand & Tiwari, 2006). This literature exposes the oppressive relationship of women with sanitation. This also finds a resonance with feminist analysis which is grounded in analysing systems of oppression of women like patriarchy, race, class etc. as well (Crenshaw, 1991).

Literature additionally suggests that lack of sanitation considerably contributes to poverty (Hendriksen et al., 2011; Desai et al., 2014) with the casting out of many sites, groups and practices of the urban poor as unsanitary (Desai et al., 2014; Allen et al., 2006; Joshi et al., 2011). Furthermore, problems of poverty faced by female-headed households in rural areas of Africa were shown to be caused, in part, by unequal access to essential resources (Porter & Sweetman, 2005). This helps draw attention towards women who stand on an intersection of multiple categories like inadequate access to sanitation infrastructure, poverty and gender violence.

While there is extensive research on gender and sanitation focused on hygiene and health, the literature presents a limited vision regarding sanitation. The vision is narrow as existing research shows a failure to capture the magnitude and scope of gender-based disparities, how women's human rights (collective and individual) fit into different development strategies and approaches adopted and an inherent lack of gender equality in accessibility of sanitary infrastructure within the urban cities of the Global South (Chant, 2013; Rakodi, 1991; Scampini, 2013). The studies show a dearth of empirical evidence regarding the intersectional relationship of poor women with sanitation infrastructure.

Hence, there emerges a need to examine the injustice against women through infrastructural inadequacy. The next section will present gaps identified within the existing research on sanitation infrastructure provision and its intersection with gender debates, poverty, inadequate access and empowerment of women.

1.2 Point of Departure: Research Gap

The conceptual framework of this research aims to present the state of research on sanitation as an axis of development through four themes: gender debates in development, women and urban poverty in Africa, inadequate infrastructure access and design in African cities and from exclusion to empowerment of women.

Gender Debates in Development

Development as a concept and process is constructed, contested, and dynamic. Regardless of the various ways in which development has been envisioned and implemented, women and their rights are portrayed as being perpetually subject to marginalization, side-lining or instrumentalization (Scampini, 2013). As the development processes in the 1970s turned towards women being seen as passive recipients of development, rather than participants in the development process, it led to the feminist discourses asking for equal inclusion of men and women (Anand, 2002; Valentine, 2007:11; Scampini, 2013). While the notion of gender equality began to enter the development agenda, it did not lead to equality but rather to strategies on how to incorporate women into incumbent models (Scampini, 2013; Valentine, 2007; Reeves, 2002; Porter & Sweetman, 2005), to engender the analyses, goals and strategies of the environment, human rights, and labour movements around the world (Scampini, 2013:8; Reeves, 2002). However, ethnographic studies and feminist analysis in the early 1990s questioned the value of including women as an isolated 'category' and called for a shift away from an analytical lens from a 'women only' focus and incorporate gender (Reeves, 2002:198). In addition, researchers revealed that it was not possible to separate out multiple categories of gender, race and class and to explain inequalities through a single framework. Hence, *intersectionality* has emerged as a concept to theorize on and empirically analyse *the relationship between different social categories: gender, race, class, sexuality, ethnicity and so forth*. This was introduced

and extensively researched by black feminists who argued that black women are positioned within structures of power in fundamentally different ways than white women (Crenshaw, 1993; Valentine, 2007:10; Scampini & Raaber, 2013).

Intersectional analysis describes acts of discriminations, concealed power relations and brings forth how they construct identities through sustained interferences of multiple categories (Crenshaw, 1989; Valentine, 2007; Winker & Degele, 2011; McCall, 2005). Also, gender geographers' stress on how feminist analyses could be useful to analyse core geographical issues related to women including the city, access to facilities, and development. However, the discourse on intersectionality in social sciences has paid less attention to the significance of space in the process of subject formation (Valentine, 2007:14; Fernandes, 2003:309; Scampini & Raaber, 2013). Little research has also been conducted in rethinking intersections of systems of oppression and structures of power that frame social positions of individuals and gender inequality that lead to contested 'rights to the city' for women (West & Fenstermaker, 1995; Valentine, 2007). Finally, the way these systems of oppression are mediated by socio-technical arrangements and women's unequal access to critical infrastructures has been largely neglected in the debates on intersectionality.

Instead of merely summarizing the effects of one, two or three oppressive categories, adherents to the concept of intersectionality stress the interwoven nature of these categories and how they can mutually strengthen or weaken each other (Winker & Degele, 2011). Hence, the following sections focus on the interrelation of three central categories women in African cities are confronted with, namely poverty, inadequate access to infrastructure and lack of articulation of rights to the city for women as dimensions of inequality and injustice.

Women and urban poverty in Africa

Urban research shows that cities in Sub-Saharan Africa struggle from severe poverty, inequality, rapid urbanization, and spatial fragmentation (Kombe & Kreibich, 2000; Rakodi, 2001; Sliuzas, et al., 2004; Watson, 2009; as cited in Abebe, 2011). Studies have also shown that limited options for the poorer Africans to access urban land has contributed to the proliferation of urban slum (United Nations Human Settlements Programme,

2014). Gender inequalities and injustices persisting in urban environments are highlighted all the more when considered in conjunction with poverty. Since 1970, policy makers and academics have been working towards strategies to link development programmes to poor women (Anand, 2002). Throughout the Global South, particularly in the past 15 years, there has been a proliferation of policies, programmes, and projects designed to assist low-income women (Moser 1993 as cited in Anand, 2002). Issues of poverty among women are quite distinct and complicated as studies have reported that female members of a poor household are often worse off than its male members because of gender discrimination in the access to housing, in the distribution of food and in entitlements within households (Anand, 2002; Rakodi, 1991).

Poor women in particular lack access to employment opportunities, land and education. However, they have also been observed to become key actors in the informal sector in cities like Nairobi, where for instance in the informal settlement of Kibera; about 85 percent of women are engaged in water collection (UN HABITAT, 2014:175). Even though subsidies are channelled to ensure minimum standards to those who would be otherwise excluded, policies however struggle to reach the 'invisible' urban poor (Parnell, 2007; Jaglin, 2008). Due the absence of basic services such as water, sanitation and electricity supply in slums and informal settlements, women also often bear the responsibility of employing informal modes of services acquisition, sewage disposal and collecting water (UN HABITAT, 2014:175). Compared to both men and white or Asian women in African cities, black female-headed households are particularly affected by a higher risk of poverty and by a deficient access to service provision exacerbating existing inequalities in gender and race (Porter & Sweetman, 2005; Brennan & Burton, 2007). Women's poverty status is further accentuated through discrimination in housing provision and degree of engagement in income-generating activities (Buyana, Lwasa, & Schiebinger, 2014). Women's poverty is thus not only multi-dimensional but is also multi-sectoral and experienced in different ways, at different times and in different spaces (Chant, 2013).

Inadequate infrastructure access and design in African cities

Various studies have linked urban poverty in Africa to the lack of access to public infrastructure like sanitation. Studies show an absence of adequate sanitation provision for the poor and reflect on the low governmental priority attached to sanitation services (Hendriksen et al., 2011; Reddy & Snehathatha, 2011; McFarlane, 2012; Desai et al., 2014).

Cuts in government expenditure on social services, and also the conditionalities of the World Bank and the International Monetary Fund have further widened equal access to public services and have restrained the access among the urban poor (Allen et al., 2004; Budds & Mcgranahan, 2003).

Women have been observed to give higher priority to sanitation than men because of health benefits and privacy. One of the challenges women face with sanitation infrastructure is their need to look for a secluded place to defecate in poor areas (Reddy & Snehalatha, 2011a). The social facilities to which women need access are often inappropriately located (Rakodi, 1991). Moreover, an inapt design of sanitation arrangements can deter their use or exacerbate maintenance problems (Schlyter, 1988). In many cases, the failure to involve women in the design of infrastructure facilities may result in unsuitable standards and technological artefacts and it can restrain their commitment to maintenance (Moser, 1987a as cited in Rakodi, 1991). In addition to the higher health risks faced by women, an inadequate access to these services and existing infrastructure designs can also expose women to acts of violence and reports indicate increased violence around sanitation infrastructures (Abrahams et al., 2006; Domestos Unilever et al., 2013). Such gender-based violence has been observed to instil a mobilizing fear and insecurity in the public space (ibid.).

Hence, among the multiple aspects that set apart the urban poor, the two most critical aspects related to sanitation are often identified as spatial, where one lives, and gender, or the complexities of gendered identities and related sanitation needs and responsibilities in these diverse settings (Joshi et al., 2011:1). What is provided as sanitation is often determined by engineering, environmental and public health concerns that are far removed from women's needs, their socio-cultural practices and existing gender constructs. Thus, while sanitation needs are indeed universal, more context-based research is needed on the gender-related constructs and implications in the design and promotion of basic sanitation infrastructure within the diverse group of the urban poor (ibid.).

From exclusion to empowerment of women

Nobel laureate Amartya Sen has poignantly stated that “nothing, is as important today in development than an adequate recognition of political, economic, social participation and

leadership of women” (1999 as cited in Anand, 2002:5). These factors find a resonance with the *'rights to the city'* concept where the key foci in recent debates have been the exclusion of women and poor people from infrastructure services. Studies have shown a preferential treatment of wealthier sections of society over the needs of the poor in Kenya, Tanzania and Uganda (UN HABITAT, 2014:11) highlighting how the urban poor are not solely excluded from the material necessities of life (Marcuse, 2009:190) but are often also deprived from articulating the access to critical services (Purcell, 2003; Marcuse, 2009; Harvey, 2012; Purcell, 2002). Due to their everyday struggles to provide for basic needs, studies have shown that women, black or other people of colour, working-class people and poor people tend to participate less in decision making processes (Fenster, 2005) despite these groups being affected more than other social groups (Young 1998 as cited by Fenster, 2005). Studies in Central African cities have shown black women particularly remain weak due to lack of access to financial, municipal and government support schemes and poor participation in the public sphere (UN HABITAT, 2014:210).

These unequal rights are seen to be partially perpetuated through existing systems of planning (Winker & Degele, 2011; Rakodi, 1991; Sandercock & Forsyth, 1992) with informal settlements developing largely outside the scope of formal urban and infrastructure plans (UN HABITAT, 2014: 117). Women in East Africa are seen as key agents of social change (ibid.:176), research however shows a gap in formalizing the rights of women and in their access to financial services, especially those who live in poverty. However, East African women are portrayed as taking the key responsibility of ensuring the socio-economic needs for their communities and as a vital key in finding solutions of inclusion and participation (ibid.). Studies have shown that cities of East Africa are likely to spear head gender transformations by harnessing and protecting the potential for empowerment (UN HABITAT, 2014:176). Women's groups are seen as a form of empowerment through bottom-up initiatives reaching from diverse forms of self-organisation in the supply of critical infrastructure and housing services, to the provision of funds for micro-enterprise creation; to the political mobilisation and lobbying for women's rights to the city (Anand, 2002; Kondal, 2014; Bali Swain & Wallentin, 2007).

Particularly, studies from South Asian cities show that women's participation in self-help groups has created a tremendous impact upon their lifestyle and has empowered them

at various levels not only as individuals but also as members of their family, community and the society as a whole (Kondal, 2014; Bali Swain & Wallentin, 2007). However, studies on women's participation in access provision in poor neighbourhoods in African cities are still rare and their potential in empowering women and in compensating for deficiencies in urban planning and public service delivery has not yet attracted much scholarly attention.

Summarizing the Gaps

The state of research presents current views on and gaps in the existing research: First, current literatures in development studies either neglect existing gender-related inequalities or provide simplistic, one-dimensional views overlooking how gender-related inequalities intersect with urban poverty, poor sanitation infrastructure and unequal rights to the city. Secondly, research on urban poverty in African cities has not yet systematically fathomed the gender-related inequalities regarding, income, access to housing and infrastructure services and the specific demands and everyday practices of black women residents of informal settlements. Thirdly, research has treated sanitation infrastructure as gender-neutral and has neglected both, the unequal access to basic sanitation within the diverse groups of urban poor and the impact of existing technological designs in propelling gender violence. Finally, current debates on the (unequal) rights to the city have rarely addressed the situation of poor women in African cities and their everyday lived experiences of infrastructure service provision.

1.3 Research Objectives and Hypotheses

This study investigates gender inequality and inadequate access to infrastructure in informal settlements chosen within the cities of Dar es Salaam and Nairobi. Using the analytical framework of intersectionality, I assume that the lack of inclusion of women and violence against women is exacerbated through the intersection of a) infrastructure access and design, with women suffering more from an unequal access to sanitation infrastructure, b) inappropriate technological determinism with imagined users and c) lived experiences of women residents of informal settlements with state interventions. By analysing the existing sanitation infrastructure through the lens of intersectionality, the ob-

jective of the study is to explore and understand the gender inequality mediated by existing arrangements in the provision of sanitation services, the access to them, the use of services and by the technological design of sanitation infrastructure.

Hence, based on the above-mentioned criterion, I have formulated four research objectives for my dissertation, along with what I aim to seek through the objectives and indicating the assumptions that led me to determine these objectives for this research. They are as follows:

Objective 1: To investigate the existing sanitation conditions in informal settlements between Dar es Salaam (Mlalakuwa Sub-Ward) and Nairobi (Mathare Informal Settlement) in East Africa. Here, *I seek* to investigate the type and design of sanitation infrastructure and the availability of services. *I assume* that what is provided as sanitation is often determined by obscure engineering and public health concerns that are far removed from local needs of women and their socio-cultural practices.

Objective 2: To evaluate women's access to sanitation infrastructure and how it affects their everyday life in informal settlements, their access routes during the day and night and how it contributes to gender violence. Here *I seek* to evaluate whether the gender-related differences in the accessibility and requirements in the design of infrastructure deepen existing inequalities in informal settlements in Nairobi and Dar es Salaam and whether they expose women to violence. *I assume* that the practices of sanitation may differ contextually due to different cultural and social constructs and infrastructural inadequacy is slowly transforming sanitation infrastructure into a system of oppression.

Objective 3: To highlight the existing knowledge gap between actors involved in sanitation planning processes and women users' perspectives. Here, *I seek* to determine the contestations and negotiations (if any) within stakeholders involved in sanitation infrastructure planning and implementation in the two cities. *I assume* that urban and infrastructural planning processes lack the inclusion of a gendered perspective.

Objective 4: To contribute to existing conceptual debates in feminist planning discourse on intersectionality through the perspective of urban and infrastructural development issues in the Global South; by examining the inclusion of public infrastructure under the taxonomy of systems of oppression of women. Here *I seek* to

analyse whether an intersectional lens can help reveal the perspectives of women oppressed through discrimination and violence being propelled by the sanitation infrastructure in Nairobi and Dar es Salaam. Since the concept of intersectionality has not yet been applied to the urban and infrastructural geographies of the Global South, I expect valuable theoretical and empirical insights for the debate on gender planning and on gender and technology.

1.4 Organisation of Dissertation

Outline of the Dissertation

Rationale for selection of case studies

The study will focus on identified groups of men and women in informal settlements of Mathare Informal Settlement (4A Village), Nairobi; Kenya and Mlalakuwa Informal Settlement, Dar es Salaam; Tanzania. These two cases were selected because of various similarities like high population density, severe lack of infrastructure and environmental problems and both being previous sites of infrastructure upgrading programmes funded by the World Bank (Council, 2010; Hagen, 2010). Additionally, my research also builds on existing secondary literature on the two settlements. Both chosen settlements are also located in cities that are similarly sized, with populations of 3 to 3.5 million, and that are the power centres for decision-making in their respective countries. They also possess a strong British colonial legacy and a similar post-colonial trajectory of undergoing the World Bank's Structural Adjustment Programmes (cf. Myers 2003; Kironde 2007; Harrison 2001). Both cities are marked with growing informal and irregular settlements outside the control of the local administrations (UN Habitat 2008; Scholz 2008). These cities are also shaped by collaborative and co-productive arrangements of informal and/or self-organised provision of services that coexist with municipal service provision (cf. Kyessi 2005). Both cities are located in countries that rank on a similar level on the existing gender disparity indices like the Global Gender Gap Report published by the World Economic Forum and the UN Gender Inequality Index (Hausmann et al., 2012) highlighting the need for studying the role of infrastructural injustice in contributing to existing gender inequality in these two cities.

Case Study Design

The project follows a case study approach as this helps to avoid overgeneralisations from one single case and at the same time for an in-depth examination of the relevant place-specific variables in each case. The selection of two cases allows for a deeper understanding of the place-based dynamics and processes and for refining hypothesis and conceptual frameworks that can be developed for the analysis of other cities. To test the assumptions made, the study will be structured on three levels namely a) socio-economic condition of the women b) infrastructure access, technological design and violence and c) Governance shaping the city through state and international actors. Finally, studies of intersectionality as a methodology state case studies as the most effective way of empirically analysing the complexity experienced by women in their everyday lives. Hence, this research aims to use intersectionality as an analytical tool to assess the empirical data gathered from two chosen case studies of women's unequal access to infrastructure services and their exposure to infrastructural violence. This will enable the study to show how the interwoven nature of inequality on different levels can be used in empirical research as a tool to analyse social inequalities (Winker & Degele, 2011).

Research techniques and Chapter overviews

Based on a literature review of the debates on (African) urban and planning studies, studies in feminist geography and on urban infrastructure; the theoretical framework, the research hypotheses and methods will be refined. The research techniques for the empirical case studies will encompass a secondary qualitative analysis of existing research on urban planning and infrastructure development in both case studies. Further, an analysis of available quantitative geographical data on socioeconomic and demographic developments, infrastructural facilities, resources, etc. is conducted in Dar es Salaam and Nairobi. Interviews and observations are used to gather primary field information that will supplement and explain the information collected from other sources (e.g. literature reviews and official documents). The primarily qualitative data is evaluated and interpreted through the theoretical framework of intersectionality as an analytical tool to analyse the multiple problems faced by women.

Based on a detailed literature review in Chapter 2, I elaborate my theoretical framework. The framework examines and establish for this research the core debates in feminist in-

tersectionality, gender inequality and violence, and gender in/and technology. This review will help in refining the intersectional analysis of women in informal settlements under the influence of poverty, inadequate access to and the design of sanitation infrastructure and urban routines intersecting with urban gender violence as an analytical tool for the research.

Moving further, the research design is elaborated in detail in Chapter 3, with a focus on describing methods used to conduct this research. Additionally, the research is conducted in two phases and includes fieldwork of three months per chosen case study in Chapter 4 and 5. The field work consists of explorative semi-structured interviews with male and female residents of informal settlements as users of sanitation infrastructure, a selection of experts from governmental and non-governmental institutions, and developmental agencies involved in infrastructure led upgrading projects. The information collected from interviews is supported through secondary literature and official documents. Both case studies follow the same methodology and the respective findings are presented.

Lastly, through an analytical framework of intersecting the insights gained in the field from state/development agencies and contrasting them with the narratives of the lived experiences of the residents, the implications of an intersectional analysis on the disparities in accessibility of sanitation infrastructure in the form of infrastructural injustice is highlighted in Chapter 6. Thus, the final compilation of analysis, discussion, conclusion and presentation of dissertation is done in Chapter 7.

Concluding Remarks

The next chapter will now present the theoretical challenges presented through the framework of existing literature and discourses and will aim to build a theoretical framework to highlight the intersection of gender disparities, violence and the role of intersectionality as an analytical tool to strengthen this research's foundation.

CHAPTER 02.

LITERATURE REVIEW: BUILDING THE THEORETICAL FRAMEWORK

Introduction

This review aims to shed light on existing debates that frame/formulate the intersection of gender, technology and violence, and to consider in-depth how gender inequality in urban planning manifests through inadequate sanitation infrastructure provision and access. In order to understand more about the need for an intersectional analytical lens, the review explores published literature in relation to three questions: (a) how have women been placed (with) in the discourse on development? (b) how does gender interact, inform and transform technology? and (c) how violence intersects and impacts gender debates within urban public space. The review includes research drawn from feminist geography, feminist science and technology studies, intersectional scholarship, urban space discourses, though it is possible that not all of the problems and solutions within those broad discourses are transferable for this research. Finally, conclusions will be drawn about the extent to which the reviewed texts shed light on the review questions.

2.1 Positioning 'women' in debates in/on Development

Development as a concept and process is constructed, contested, and dynamic. Women and their rights are portrayed as being perpetually subject to marginalization, side-lining or instrumentalization despite the various ways in which development has been envisioned and implemented (Scampini, 2013). Regardless of admittance of the notion of gender equality in the development agenda, most strategies have been heavily focused on how to incorporate women into incumbent models to engender the analyses, goals and strategies (Porter & Sweetman, 2005; Reeves, 2002; Scampini, 2013; Valentine, 2007). Additionally, feminist ethnographers in the early 1990s called for a shift away

from an analytical lens from a “women only” focus and further questioned the value of including women as an isolated ‘category’ (Reeves, 2002:198). Thus, the next sub-section will discuss how women have been portrayed as a homogenous group lacking diversity, dimension and deconstruction within western feminist writing.

2.1.1. Representation of ‘Women’ as a simplistic formulation and category of analysis

Women are often represented as “incapable of thinking for themselves, requiring mediation and representation” (Spivak, 1988 as cited by Caretta & Riano, 2016:259). Chandra Mohanty provides a detailed explanatory construct of ‘women’ from a discursive perspective by elaborating the problematic use of ‘women’ as an always-already constituted group and as a stable category of analysis (1984:344). She describes firstly, how women as a group “are labelled ‘powerless,’ ‘exploited,’ ‘sexually harassed,’ etc., by feminist scholars themselves in scientific, economic, legal and sociological discourses”. She argues how the focus is not on finding material and ideological specificities that may lead a particular group of women to be constituted as ‘powerless’ in a particular context. It is rather on “finding a variety of cases of powerless groups of women to prove the general point that women as a group are powerless” (Mohanty, 1984:338). She elaborates further by stating that “because women are constituted as a coherent group, sexual difference becomes co-terminous with female subordination, and power is automatically defined in binary terms: people who have it (read: men), and people who do not (read: women)” (Mohanty, 1984:344).

Mohanty further raises a broader argument about ‘cultural others’ and how western discourses more often than not “analytically formulate them into homogeneous groupings with little regard for historical specificities”. Based on this argument, she then takes the positioning of “women as a powerless and oppressed group” one step further by describing how western feminist writings delineate “women of the Third World from western feminisms’ self-presentation”. Describing how western feminist writing implicitly assumes “an ahistorical, universal unity between women based on a generalized notion of their subordination” (1984:344), Mohanty argues that based on assuming these concepts to be universally applicable, “the resultant homogenization of class, race, religious, cultural and historical specificities of the lives of women in the third world can create a false sense of the commonality of oppressions, interests and struggles between and amongst women globally” (1984:348). She explains this as problematic through an explanatory

construct of 'colonialist move' on part of western feminist writings, by highlighting how "the application of the notion of women as a homogeneous category to women in the third world colonizes and appropriates the pluralities of the simultaneous location of different groups of women in social class and ethnic frameworks" (Mohanty, 1984:351). Hence, the focus within earlier literature highlights the emphasis on discovering and describing cases of groups of women as 'powerless' rather than unveiling the materialities and specificities that render particular groups of women powerless under particular context.

These problematic narratives further gain dominance and complexity in the research focusing on women of Africa. Western feminist writings on women in the 'third world' describe 'women of Africa' through homogeneous, culturally reductive, sociological grouping often characterized through common dependencies or powerlessness (Mohanty 1984:340; Carter, 2013; Moser, 1998). In addition, Mohanty (1984:340) claims that being seen as a generally dependant and oppressed group leads to a binary analytical lens of "the victims and the oppressors" that lacks specific historical differences. Mohanty (1984:344) asserts further that such simplistic formulations can be reductive and ineffectual in designing strategies to combat oppressions and it is imperative to understand the contradictions inherent in women's location within various structures. Thus, these perspectives highlight the diversity of women through the deconstruction of women as a single category. This is illuminating to understand the diverse nature of women's experiences in relation to their interaction with infrastructures.

Additionally, the existing literature highlights poignant gaps. Firstly, the contradictions inherent in women's location within various structures of power need to be highlighted to strengthen investigation into understanding gender as being socially shaped and potentially reshape-able (Faulkner 2001:80). Secondly, instead of merely summarizing the effects of one, two or three oppressive categories, adherents to the concept of intersectionality stress the interwoven nature of these categories and how they can mutually strengthen or weaken each other (Winker and Degele 2011 ; Clarke & McCall, 2013).

Therefore, the following sub-section will now digress and focus on the interrelation of these categories and the concept of Intersectionality.

2.1.2 Intersectional Framework: Origin, Relevance, Analytical Lens

Origin

Building up from the previous section, it was during the 1980s that the deconstruction of 'woman' as category was started and there were calls to renew "thinking on the theoretical basis for a common identity or shared experience of subordination among women" (Riley, 1988; Spelman, 1988 cited by Davis, 2008). "Race/class/gender became the new mantra within women's studies" (Kathy Davis, 2008) and studies highlighted that it was not possible to separate out multiple categories of gender, race and class and to explain inequalities through a single framework. Hence, intersectionality emerged as a concept to theorize on and empirically analyse the relationship between different social categories (Crenshaw, 1993; Valentine, 2007:10; Scampini & Raaber, 2013).

Intersectionality was introduced to focus examination of the contested dynamics and dimensions of sameness and difference; and played a major role in facilitating consideration of gender, race, and other axes of power in a wide range of political discussions and academic disciplines, including new developments in fields such as geography (Cho, Crenshaw, & McCall, 2013:787). An intersectional lens looked beyond the narrowly defined demands for inclusion within the logics of sameness and difference and addressed the broader "ideological structures in which subjects, problems, and solutions were framed" (Cho et al., 2013:791).

Intersectionality's deployment as a deconstructive move also posed challenges to the sameness/difference paradigms by highlighting that the uniformity for women was based on experiencing oppression but not necessarily the 'same' oppression (Cho, Crenshaw, & McCall, 2013:800). This led to calls for an urgent need of an intersectional perspective on oppression by highlighting how western feminist discourses bind women through the "normative sociological notion of the sameness of oppression while ignoring the pluralities of different groups of women in diverse social classes and ethnic frameworks" (Mohanty, 1984:337).

However, as discourses and debates on feminism progressed, feminist of colour raised objections over the 'narrow and mutually exclusive approaches to intersecting patterns of subordination, on the one hand, and the single-axis frameworks within progressive, antiracist, and feminist discourses that were being contested by feminists of colour elsewhere, on the other hand' (Cho et al., 2013:790). Within these debates, Black feminists

specifically highlighted that “any attempt to essentialize ‘Blackness’ or ‘womanhood’ or ‘working classness’ as specific forms of concrete oppression inevitably conflates (...) as well as constructs narratives of identity within specific projects’ (Yuval-Davis, 2006:195). Henceforth, such narratives tend to reflect hegemonic discourses of identity formation that often reduce experiences of women to the margins and make them appear homogenised and invisible (Yuval-Davis, 2006:195).

Additionally, when “feminism entered the academy, it was with the knowledge that different and contending points of view legitimately existed, but primarily the theoretical positions of women’s oppression were highly contested” (Stanley & Wise, 2000:275). Hence, the narrative that emerged generalized women all over the world and failed to see diversity present in women’s lives and disguised the lack of gender neutrality in critical debates on power.

Relevance

The origin of intersectionality demonstrates its assertive role in demanding diversity in the voices of the women as subjects and to further their inclusion within other disciplines as well. The theory often provides unanticipated ways of analyses, by also identifying what could be the incompatibilities within different contexts especially when it comes to evidence highlighting the presence of race, class, and gender. In addition, the theory doesn’t shy away from investigating “social and material consequences of the categories of gender/race/class that are visible, but does so by employing methodologies that deconstruct categories, unmask universalism, and exploring the dynamic and contradictory workings of power relations” (Brah & Phoenix, 2004: 82). Furthermore, it also offers a rather theoretically sophisticated methodology that can help shed a light on material realities of women’s lives. In short, intersectionality provides the basis for a mutually beneficial collaboration between theoretical projects (previously lacking footing) with interdisciplinary methods and techniques that enrich and provide “a joint nodal point” for different theoretical approaches within feminist and other scholarship (Lykke, 2005; Davis, 2008: 74).

Moving further, the inclusion of interdisciplinarity has also allowed intersectionality to travel into spaces and discourses that are constituted by contested power relations. Attention has been drawn not only to “the institutional politics of knowledge production that shape the context in which projects are formed but also to the way such projects are

received, historicized, and engaged” (Cho et al., 2013:789). Intersectional analyses further narrate how acts of discriminations, and concealed power relations constructed identities through sustained interferences of multiple categories (Crenshaw, 1989; Valentine, 2007; Winker & Degele, 2011; McCall, 2005). Hence, intersectionality was propelled within feminist studies to allow attention to critically analyse the multiplicity of divisions and inequalities. It lead to an open space for critique and intervention, which enabled scholarship to be reflexive about the range and limitations of theory (Davis, 2008:78).

Additionally, intersectionality rejects the “single-axis framework” often embraced by feminist scholars, instead analysing “the various ways in which race and gender interact to shape the multiple dimensions of Black women’s (...) experiences” (Crenshaw, 1991: 1244 as cited in Nash, 2008:2). Because intersectionality is attuned to subjects who “exist (...) within the overlapping margins of race and gender discourse and in the empty spaces between”, it is also a tool particularly adept at capturing and theorizing the simultaneity of race and gender as social processes (Crenshaw, 1992: 403 as cited in Nash, 2008:2)

However, earlier research on intersectional approaches in social sciences also highlighted a lack of attention to the significance of space in the process of subject formation (Valentine, 2007:14; Fernandes, 2003:309; Scampini & Raaber, 2013). The emphasis on giving ‘voice’ to those who are in positions of oppression encouraged in practice what Hancock (2007) calls a ‘content specialization’ interpretation of intersectionality (Choo & Ferree, 2010:132). This helped me in placing the lack of urban development debates within feminist discourses, because the content of urban city dynamics has yet to find a voice within/through this theory.

Little research has also been conducted in rethinking intersections of systems of oppression and structures of power that frame social positions of individuals and gender inequality (West & Fenstermaker, 1995; Valentine, 2007). “What Hancock calls ‘multiple intersections’ and McCall defines as an ‘intra-categorical’ approach; focuses especially on differences of experience for subgroups within a category, and often generates lists of groups to be included as well as debates over the priority to be given to one or another intersectional location” (Choo & Ferree, 2010:133).

Lastly, the way these systems of oppression are mediated by socio-technical arrangements and women's unequal access to critical infrastructures has been largely neglected in the debates on intersectionality.

Scope

Intersectionality has been identified in earlier research as ambiguous and open-ended, lacking clear-cut definition or even specific parameters that enables it to be drawn in nearly any context of inquiry and has proved insightful for recent feminist scholarship (Davis, 2008:77). With each new intersection, new connections emerge and previously hidden exclusions come to light. It has been stated that “the feminist scholar merely needs to ‘ask (an)other question’ and the research will take on a new and often surprising turn (...) Intersectionality offers endless opportunities for interrogating one’s own blind spots and transforming them into analytic resources for further critical analysis. In short, intersectionality, by virtue of its vagueness and inherent open-endedness, initiates a process of discovery which not only is potentially interminable, but promises to yield new and more comprehensive and reflexively critical insights” (Davis, 2008:77).

Moreover, the widening scope of intersectional scholarship and praxis has not only clarified intersectionality’s capacities; it has also amplified its generative focus as an analytical tool to capture and engage contextual dynamics of power. Thus, “theoretical and methodological questions will continue to mark the unfolding of intersectionality, particularly as opportunities to engage in cross-disciplinary, cross-sectoral, and international exchanges grow” (Cho et al., 2013:788). Therefore, intersectionality has grown from its foundation within Black feminism from critical legal and race studies; to other disciplines and inter-disciplines; and across countries and continents. It has helped shape how race, gender, and other social dynamics are conceptualized and intertwined or, alternatively, how the central subjects and categories of intersectionality are identified (Cho et al., 2013:792). Lastly, an intersectional analytical lens also exposes multi-layered structures of power and domination by adopting a grounded praxis approach by engaging with the conditions that shape and influence the interpretive lenses through which knowledge is produced and disseminated (Cho et al., 2013:805). Thus, the next section explores the potential of this analytical framework as not just a lens but its development into a tool of analyses and discussion.

Analytical Lens

When multiple inequalities are studied and the relevance of each determined by its statistical significance in models that are not fully interactive, the risk is that researchers will make note of, but ultimately bypass, the dynamics of individual systems of inequality that appear secondary in the results (Clarke & McCall, 2013). Within Praxis, the “efforts of dominant groups seeking to enforce their own definitions of citizenship and its boundaries lead to efforts by subordinated groups to contest these definitions and boundaries” (Clarke & McCall, 2013).

Feminist scholars view the body in at least four ways: the embodied knower, the body as object of inquiry, the body as a category of analysis and the body in relationship to the material (Fonow & Cook, 2014). When the lack of a private space forces the action/act to become a matter of public intervention, studies show that there is ‘shame’ attached with it due to socio-cultural constructs of the female body (Desai, McFarlane, and Graham 2014:14). In this context, the female body becomes a site of oppression, but also contestation, negotiations and a socio-political tool within urban infrastructure regimes.

Therefore, this has led to calls within research to focus on women’s ‘lived experience’ as a way to recover what had been omitted or distorted in academic knowledge about women and gender, and to give women a voice in the construction of new knowledge. Additionally, it has also led to a number of methodological innovations, but also criticisms about how those voices were to be represented, who had the authority to do so, and what form these representations should take (Spivak 1990; Roof and Wiegman 1995; Olesen 2000) and “to critiques of the way experience itself had become foundational in feminist research” (Gorelick 1996; Scott 1996; Fonow & Cook, 2014).

Thus, conversations about intersectionality have transcended the disciplines of women’s/gender/feminist studies, critical race studies, and women-of-colour feminism in a manner that is proactively aiming at bridging this theory with other disciplines in determining how relevant it is in shaping individual experiences (Clarke & McCall, 2013). The existing literature on intersectionality, therefore, highlights how this theory can be a useful analytical tool within this research. The generalisation of women fails to capture the diversity in women’s lives but intersectionality can pave a way to address the diversities by examining the lived experiences of women with service provision in informal

settlements. Hence, the following sections focus on the interrelation of two categories namely gendered technological artefacts and gender in technology.

2.2 Gender in Technology

Cynthia Cockburn once argued that “technology itself cannot be fully understood without reference to gender” (1992: 32 as cited in Faulkner, 2001). Earlier discourses in gender and technology studies highlight that users (of technology or technical systems like sanitation infrastructure), by their different ways of interpreting, using and talking about technologies further contribute to their social shaping. In this sense, a look towards feminist studies of science and technology brings an insightful perspective to analyse gender inequality in sanitation.

Therefore, the next sub sections describe how women as users inform, interact and transform infrastructure and technology.

2.2.1 Everyday Encounters

Women’s everyday encounters with technological artefacts are rarely recognized (Faulkner, 2001) despite technology being a significant site of gender negotiations where both masculine and feminine identities are constructed and deconstructed (Lohan, 2013:149). It has been argued that technologies gain gender identities when they enter into our everyday structural relations and cultural meaning systems and can become actors or agents in the material and symbolic practices of everyday lives (Lohan, 2013:158). However, much of the available scholarship on women and technology fails to capture or explain women’s ambivalence about technologies they encounter. Indeed, feminist researchers of technology have emphasized the need to focus on women’s “lived experience” as a way to give women a voice in the construction of new knowledge (Fonow & Cook, 2014). Recognition of the interweaving of technology in everyday life enables relations to be better understood as also constituting means through which we develop knowledge about the world and use technologies (Stepulevage 1999:415; Green, 2013:7).

The everyday encounters with technology can also help to bridge the theoretical gap between ‘technology as neutral’ but misappropriated and often adopted as a ‘social shaping’ approach to technology (Mackenzie and Wajcman 1985 as cited in Green, 2013:138). It also raises political and ethical concerns about technology as a product of social, political and cultural negotiations between designers, policy-makers and other groups.

The question of access in everyday encounters cannot be addressed on an individualized basis. Rather, it must be transformed into a question about the social relations of technology. As Scott, et. al mention, “technologies do not necessarily bring with them specific social relations antagonistic or co-operative. It is the use to which technologies are put that develops their social relations” (2013:13). Even within these restricted social groups, however, there are major demographic issues – bearing particularly on the way women organize their lives – which have been inadequately investigated. One of the key demographic issue in this context is the “locked into locality narrative” (Scott, Semmens, & Willoughby, 2013: 15), which adheres to the problematic construction of public and private in women’s lives. Secondly, earlier research has demonstrated that technologies like some ICTs have depicted a wider “demographic spread of users, in relation to gender, social class and ethnicity. These often cheaper and less glamorous technologies are being creatively used by women (within informal activities) to reshape local social structures, reorganize social geographies and recreate social institutions” (Scott et al., 2013:16). While the intersection of these women’s usage with informal activities has been little studied, this research intends to explore women’s abilities to affect social and political geographies of access.

Moving further, the interpretation of technology usage in everyday lives is often described through an implicit gendered lens and observed social relations. Additionally, notable feminist researchers of technology (for example, Wajcman 1991; Sørensen 1992; Cockburn and Ormrod 1993; Berg and Lie 1995; Lie 1995; Faulkner 2000) assert that a lack of gender neutrality in technological determinism has led to “some defining characteristics of masculine” culture being welded to technology” in everyday life (Lohan, 2013:149). They argue that it is primarily men who take the key decisions that shape technologies because men are normatively viewed as possessing a higher technical competence than women—“including that in the construction, maintenance, marketing, and design of technologies” (Faulkner, 2001).

The next section looks at the interpretation of this implicit masculine identity and its intersection with gendered usage of technical artefacts.

2.2.2 Users in technology

Traditionally, users have been regarded as important actors in the diffusion and acceptance of new technologies (Von Hippel 1976, 1988 as cited by Rommes, van Oost & Oudshoorn in Green & Adam, 2013). Although most attention has been focused on the role of innovators in the construction of technological objects, studies of technology also include analyses of the role of users in technological development (Green et al. 1993 as cited in Green & Adam, 2013). More recently within the sociology of science and technology, attention has shifted away from the 'analysis of users in the sociological sense i.e., as identifiable individuals involved in the diffusion of technologies towards users as imagined by the designers of a technology' (Rommes, van Oost, & Oudshoorn, 2013:191)

Designers often themselves make gendered assumptions about the user, assumptions that can be 'designed in' to the artefact (Faulkner, 2001). Hence, the "mutual shaping of gender and technology is evident: features designed in to artefacts tailored specifically for women or men users tend to reflect and reinforce gender stereotypes, which in turn, play in to design choices" (Faulkner, 2001). Hence, strategies have to developed that intervene in the process of designing new technologies as well as in the context of usage (Faulkner, 2001). Based on this, recent scholarship has conceptualised users as 'co-designers of their relationship to technological products' (Lie & Sørensen, 1996: 3 as cited in Oudshoorn et al., 2002).

Users, by their different ways of interpreting, using and talking about technologies further contribute to their social shaping. "Users define whether things are useful, what things are good for and for whom and whether they experience them as gendered. By interpreting and using technologies, users are active participants in shaping the gendering of artefacts" (Oudshoorn et al., 2002). However, the interpretation of users can also take an unintended direction. During their diffusion through the market, technologies are actively translated which can lead to unintended consequences (Lohan, 2000). Scholars have repeatedly shown how the inability to control the user's construction of technological inventions can lead to unintended consequences. Nonetheless, these unintended consequences are often preceded by the incorporation of 'gendered scripts' within technical artefacts. The next section highlights how these so-called scripts of predetermined usage patterns can go tangential from the user's interactions.

2.2.3 Gender Scripts

Previous literature highlights that innovators often construct many different representations of users and objectify these representations in technological choices. This results in technologies containing 'scripts', which assign specific competences, actions and responsibilities to its envisioned users (Rommes, van Oost, & Oudshoorn, 2013:191). Users of technology often tend to experience them as gendered and find them useful to articulate and perform their (gender) identities. Hence, when the scripts reveal a gendered pattern, they are called "gendered scripts" (Oudshoorn 1996 as cited by Rommes, van Oost, & Oudshoorn, 2013:191). However, social constructivist theories of technology reject the positivistic notion that technological objects have intrinsic properties. In this view, "technology is seen not an autonomous from society but as the product of social, political and cultural negotiations among innovators, policy-makers, and social groups" (Pinch and Bijker 1987; Bijker 1995 as cited in Rommes, van Oost, & Oudshoorn, 2013:191) .

A script analysis enables an understanding of how technologies can contribute to the exclusion of specific users if, for example, the designers' image of users represents only a selective set of attitudes and values. The concepts of 'user representation' and 'gender script' thus can be understood as a mismatch between the designers' image of users and the actual users (Rommes et al., 2013:200). Furthermore, objects can become gendered because innovators anticipate the preferences, motives, tastes, and skills of the potential users, and the cultural norms in society. These views can then become materialized into the technical design of the new product. Due to the norms and values that are inscribed into a technical artefact, objects can attribute and delegate specific roles, actions, and responsibilities to their users (Akrich, 1992:208 as cited in Oudshoorn et al., 2002). Hence, artefacts can also incorporate a gender script that can shape and define the agency of women and men.

Therefore, in this research, I also intend to highlight how scripts can contribute to the exclusion of specific users if the designers' image of the envisioned users only represents a selective set. Donna Haraway (1997:37 as cited by Scott, Semmens, & Willoughby, 2013:7) states that "if women do not 'fit' well within the new technological standards being developed, they find themselves being marginalized within developing social prac-

tices and forms". This accentuates the mismatch between the designer's image of the users and the actual users of the infrastructure and technology. This mismatch also highlights how there can be unintended outcomes of choices in the design process (Oudshoorn, Saetnan, and Lie 2002:481). Furthermore, studies suggest that they can also become serious obstacles for specific groups of people (Oudshoorn, Saetnan, and Lie 2002:481). Thus, in my research, I additionally seek to investigate whether there is presence of any type of unintended consequences due to inadequate access to sanitation infrastructure provision. However, some studies have also shown that technology can aid female empowerment by appropriating individual technologies in practice, by including wider gender contexts within which they are designed and used (Faulkner, 2001). Critical feminist technology assessment seeks to extend existing technology assessment procedures by giving voice to the full range of interested groups in technological design and starting a critical debate about what and whose needs are to be met (Faulkner, 2001).

Hence, an intersectional approach could significantly augment and alter the injustice against women through infrastructural inadequacy by analysing the complexities, intricacies and diversity of embodied and lived experiences of women.

2.2.4 Techno-feminism

Feminist technology studies may be distinguished from other feminist scholarship and falls largely under two headings: 'women in technology' and 'women and technology'. Largely, the literature on women in technology problematizes women rather than technology (Henwood 1996). This reflects the fact that the vast majority of women encounter technology as users rather than designers. "Technology per se is not theorized beyond this" (Faulkner 2001 as cited in Lohan & Faulkner, 2004: 320). In addition, much of the available scholarship emphasizes the ambivalence that characterizes women's encounters with technology (Lohan & Faulkner, 2004:321). It is also useful to distinguish between 'gender in technology' and 'gender of technology'. In the former case, gender relations are both embodied in and constructed or reinforced by artefacts to yield a very material form of the mutual shaping of gender and technology (Faulkner, 2001).

Hence, gender needs to be viewed as an integral part of the social shaping of technology. There thus, emerges a need to "challenge any presumed neutrality of technology by focusing on how gender might enter or be expressed in the very design of the technologies

women encounter. Even more profoundly, the notion of the ‘sociotechnical’ in technology studies captures the sense that technology and society are mutually constituting, leading to the coproduction of gender and technology” (Faulkner, 2001).

The co-production of gender and technology highlights the intersection of gender with technical infrastructure. The next section looks at how inadequacy can reveal the gaps within a co-productive framework.

2.2.5 Sanitation as a Gendered Technological Artefact

Sanitation is universally perceived as an action/act conducted in a private space. When the lack of a private space forces the action/act to become a matter of public intervention, i.e. open defecation, studies show that there is ‘shame’ attached with it due to socio-cultural constructs of the female body (Desai, McFarlane, and Graham 2014:14). In this context, the female body becomes a site of oppression, but also contestation, negotiations and a socio-political tool within urban infrastructure regimes. Indeed, women have been observed to give higher priority to sanitation than men because of health benefits and privacy. Studies also highlight the stratification in provision and access to sanitation infrastructure often becomes a negotiated space for the poor (Porter & Sweetman, 2005; Brennan & Burton, 2007).

The social facilities to which women need access are often also inappropriately located (Rakodi, 1991). Moreover, an inappropriate design of sanitation arrangements can deter their use or exacerbate maintenance problems (Schlyter, 1988). In many cases, the failure to involve women in the design of infrastructure facilities may result in inappropriate standards and technological artefacts and it can restrain their commitment to maintenance (Moser, 1987a as cited in Rakodi, 1991). In addition to the higher health risks of women, an inadequate access to these services and existing infrastructure designs can also expose women to acts of violence around sanitation infrastructures (Abrahams et al., 2006; Domestos Unilever et al., 2013).

Earlier research has often identified the two most critical aspects related to sanitation as namely space, where one lives, and gender, or the complexities of gendered identities and related sanitation needs and responsibilities in these diverse settings (Joshi et al., 2011:1). Thus, while sanitation needs are indeed universal, more research is needed on

the gender-related constructs and implications in the design and promotion of basic sanitation infrastructure within diverse groups (ibid.).

Therefore, this section has highlighted how women as users inform, interact and transform infrastructure and technology. Each action of women as users highlights the various contestations and negotiations they have to face within technological determinism, namely—imagined users, ambivalent relationships, unintended consequences, lack of privacy leading to public interventions and lack of inherent equality in inclusion within design and planning process.

The next section highlights how violence intersects with these interactions and lived experiences of women.

2.3 Intersection of Violence with Urban Space: Urban Public Space and Urban Routines

2.3.1 Urban Public Space: Feminist Geography, Fear and Insecurity, the public and the private

Gender and violence are clearly associated with power. The literature on gender is enormous and tells us that gender refers not only to questions of identity but also to the relations between women and men, and amongst men and women and it stresses that this is a power relation. Though a discussion of the history of gender theory in the social sciences and urban planning is beyond the scope of this work, for the purpose of my discussion, I would like to stress that rather than seeing men and women biologically as the origin of gender, gender is now widely seen as a social structure and a set of relationships. Far from being a stable basis for the organization of social life, as anthropologist Gayle Rubin argued “every society has a sex/gender system –a set of arrangements by which the biological raw material of human sex and procreation is shaped by human, social intervention and satisfied” (Rubin, 1975:165). In these lines, other authors call this system a “gender order” that is a product of history and is in constant evolution, sometimes more consolidated other contested, trespassed or even denied (Moore 2007; Connell 2009, Scott 1989). Nelson states also how “gender refers to the associations, stereotypes, and a social pattern that a culture constructs on the basis of actual or perceived differences between men and women” (1995:132, cited in Fainstein & Servon; 2005:3). A discussion on

gender violence requires that we understand how power crosses both concepts. Gender is always the definition of a relationship between what it means to be men and women in a particular society and time-frame and taking into account that our world is intrinsically socially and economically unequal, gender relations are also immersed in a field of power relations.

On the other hand, violence is also closely related to power since acts of violence are extreme and dramatic exercises of power. It's imperative in the view of this study to define violence at large. Urban violence has been defined in numerous ways but two of them are relevant for this study. The first is defined by Hernando De Soto as being "a response to frustration that is mainly caused by the difference between what people have and what they think they are entitled to" (De Soto 1989). The second definition is given by the World Health Organisation and also used by Caroline O. Moser, a leading authority on Urban Violence in Latin America. It's defined as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation" (The World Health Organisation 2002 in Moser, 2004:4)

One of the most prominent forms of violence is gender-based violence, manifesting in violence against women predominantly. Gender Violence and Violence Against Women (VAW) has been defined by the United Nations (1993) and the 1992 Vienna Declaration as "any act of gender-based violence that results in, or is likely to result in physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life" (in Sweet & Escalante, 2010: 2130). Gender Violence has multiple manifestations like domestic violence, intimate violence, sexual harassment, eve-teasing, molestation, child defilement, amongst others (Wanasundera 2000 as cited in Harrison, 2012:11). Along these lines, De La Cruz (2007) emphasizes the division of public and private sphere as being detrimental to women and that it's "a core issue of daily complexity by generating urban segregation, the reduction of interaction and mobilization spaces and resulting in the deterioration of women's quality of life and citizenship" (quoted in Vargas, 2007:22).

As mentioned in the introduction; an important factor to take into account when examining violence is the changing role of women in the society that has led them to access public spaces more and this leads to clashes with existing cultural practices and unequal gender relations. Domosh and Seager (2001) state that despite women facing violence in private homes, “it is the spaces clearly defined as ‘public’ that they fear most” and that “research demonstrates that this fear of public spaces is true for women of all socio- economic classes, ages and stages in the life cycle” (quoted in Yamini Narayanan, 2012:8). Access to public space also brings in the debate on socio-economic independence for women and provides them more visibility and participation in public spaces (Dixit 2014) but this visibility also makes them vulnerable to acts of rape that is often viewed as a weapon to reclaim power by men.

Another aspect that the literature on gender violence stresses is the importance to pay attention to existing mechanisms of inclusion and exclusion in the city. The debates are centred on the meanings that the urban environment has had for women. Though the analysis of this literature is beyond the realm of this research, I found the debate insightful when we analyse the issue of violence against women. While cities are viewed as providing liberation, emancipation and an escape from stereotypes for women, some authors also emphasize the negative impact of this perceived emancipatory action. Sweets and Escalante for example, analyse the dramatic Case of Femicide in Ciudad Juárez, Mexico where working women were targeted and brutally raped and murdered near their workplaces. The case presented the retrogressive view of the public officials and the local police who accused the victims of being prostitutes, of leading double lives and of having provoked their murderers (Sweet & Escalante, 2010:2138). A different scenario is the one that Sweet and Escalante (2010) examine in the case of Vilafranca in Catalunya, where the Catalan Law to Eradicate Sexist Violence has enabled and strengthened the links between different administrative authorities as well as local and regional business associations in order to create job opportunities for women with the goal to help to break with the cycle of gender violence and poverty.

Public and Private Space

Earlier research on the definitions for ‘public’ and ‘private’ within feminist perspectives, has been observed to adhere to the construct of western ideals. There is an inherent lack

of understanding that women in cities, both of Western and non-Western cultures, often are unable/hesitant to use public spaces such as streets and parks (Massey, 1994) and in some cultures, could not wander around at all (Fenster, 1999a). They belong to the 'private' (Fenster, 2005:220) space and this is often the context for the everyday life of women inhabitants of cities within the global south.

We have already seen how spaces are becoming unsafe because of lack of gendered participation in the design of urban spaces. Thus, the prevalent narrative on the construct of 'public' often doesn't include women, black or other disadvantaged groups although these groups are equally concerned and affected by the design of urban spaces, which doesn't meet their needs and aspirations (Fenster, 2005:227). Though public space is a central concept for scholars studying urban settings, it still depends on the cultural and political context as well as the disciplinary lenses that scholars use. When we take into consideration gender, the writings of Doreen Massey are clearly insightful as she defines space as "a result of interrelations (...) formed through interaction, from the immense of the global to the infinitesimal of privacy (...) because space is the result of relations." Along these lines, Daphne Spain in her book 'Gendered Spaces' proposes that 'space and social relations are so intricately linked that the two concepts should be considered complementary instead of mutually exclusive' (Spain, 1992:6).

An important aspect that needs to be taken into account in the discussion on engendered public space is the question of *legitimacy and ownership* of public space. In this sense, Action Aid report by Taylor stated that 'the right to the city' is the right of all city inhabitants, to have equitable access to all that a city has to offer and also to have the right to change their city in the ways that they see fit. The report further states that "analysis frequently fail to take into account the diversity, inequalities, and power structures that determine which urban inhabitants enjoy the most access and influence in shaping their cities" (2011:5). Taylor also discusses the right of women to the city stressing on freedom "from violence and the fear of violence, and free from rights violations that arise in the spaces where she lives and works" (2011: 5). The debate on legitimacy is also discussed by Narayanan who cites UN Habitat (2007) to stress on the concept that "if women consider the space safe, then it is safe for everyone, since women have the highest fear of violence in urban areas" (2012:9). Narayanan also talks about ownership issues and quotes in her analysis that "citizens of a sustainable, thriving metropolis need to have a

sense of 'ownership' of the city in order to make for a liveable city" (2012: 17). The issue of legitimacy is also a persistent one for women in public spaces. Paul (2011) points out that women can access public space legitimately only when they can manufacture a sense of purpose and are seldom found wandering in public spaces without any purpose. Phadke (2007) also states how women face 'possible "risks" (...) should they overstep the boundaries of social legitimacy' (quoted in Paul, 2011:420) One of these risks is the 'loss of opportunity to engage city space and the loss of the experience of public spaces' (Phadke, 2007:1511 cited in Paul, 2011:420)

Fear and Insecurity

Another important aspect in the discussion on public space is the notion of safety and fear. Most literature on fear of crime is a nest of normative binary notions: offenders and victims, men and women, safe and unsafe, public and private, and central city and suburbs (Whitzman, 2007:2721).

Paul (2011:420) states that safety through respectability is what women strive to attain through their negotiation of public space. This constant perception of unsafety in a public space is leading to what planners call 'gendered spaces'. Narayanan (2012:19) points out how 'gendered violence' occurs in the city's public spaces and 'the women's unequal status to men in society is reflected in the lack of gender-sensitive planning of the city's spaces'. Baxi (2003) and Domosh and Seager (2001:44) as cited by (Narayanan, 2012a) also emphasize on the gendered spaces discourse by pointing out the fact that "feminist analyses of gender-based crime view public spaces as 'sexualised zones that are seen as permissible spaces' or as gendered spaces". Paul (2011) also interestingly points that most literature pertaining to women's access to public spaces is imbued with evidences of fear of crime as a key constraining factor. Fear has been conjectured to be emanating from feelings of uncertainty, helplessness, and vulnerability, and could vary depending upon the level of social well-being and racial and class affiliations (Paul, 2011; Whitzman, 2007:2721). Fear is also experienced differently by men and women. In patriarchal societies, women fear public places as they relate it to 'fear of shame and dishonour associated with being out-of-place'. They tend to avoid places that are lonely, deserted, or marked by disorderly and disreputable behaviour, since visibility in these places is

fraught with the dangerous consequence of being socially stigmatized (Reddy & Snehalatha, 2011a).

2.3.2 Urban Routines, Temporalities and Contestations

Feminist analyses are tethered to spatialities and temporalities. Urban routines constitute an infinite range of occurrences: from the everyday life, to events, such as disruptions of access to public space. Most literature pertaining to women's access to public spaces is imbued with evidences of fear of crime as a key constraining factor (Paul, 2011). This fear is often observed to be intertwined with gender violence.

An important factor to take into account when examining violence is the changing role of women in the society that has led them to access public spaces more and access to public space also brings in the debate on socio-economic independence for women and provides them more visibility and participation in public spaces which is pointed as 'traditionally a male prerogative' (Dixit, 2014). Thus, 'spatial design as a device of social control and exclusion (between spaces/ places of the city and between private and public spaces) has negative effects on gender relations as it disempowers women and with perverse effects on city public spaces' (Levy, 1992). Therefore, what seems clear is that there is a need to go beyond awareness of gender as an important variable in development, and to impart skills which can translate this awareness into concrete practice.

Concluding Remarks

The aim of this conceptual framework was to answer questions based on the theories that inform this research. The framework has been organised to highlight how women have firstly, been represented as a simplistic formulation and category of analysis. This reduction led to the understanding of how an intersectional framework can help provide a new analytical lens when it comes to researching gender in/and technology. Secondly, the framework elaborated how an intersectional lens can help tie together everyday encounters of women with them being treated as users of technology. Thirdly, it also shed a light on how gendered scripts within technology are further propelling the simplistic analysis of women as users, leading to the design of sanitary infrastructures as a gendered technological artefact. Lastly, the framework additionally established the intersection of violence with urban space, detailing how fear and insecurity are one of key indicators for

determining access to common shared infrastructures like shared/community sanitary blocks provided in informal settlements.

However, this literature review has highlighted numerous gaps within existing discourses and research as well. Firstly, a 'women's only' focus within development discourses led to a one dimensional and universal assumption of women and their everyday lived experiences as being ahistorical and generalised, despite contextual variations. Secondly, the contradictions inherent in women's position within various structures of power need to be highlighted to strengthen investigation into understanding gender as being socially shaped and potentially reshape-able. Thirdly, instead of merely summarizing the effects of one, two or three oppressive categories, adherents to the concept of intersectionality stress the interwoven nature of these categories and how they can mutually strengthen or weaken each other. Fourthly, little research has also been conducted in rethinking intersections of systems of oppression and structures of power that frame social positions of individuals and gender inequality. Fifthly, the way these systems of oppression are mediated by socio-technical arrangements and women's unequal access to critical infrastructures has been largely neglected in the debates on intersectionality. Sixthly, the widening scope of intersectional scholarship and praxis has not only clarified intersectionality's capacities; it has also amplified its generative focus as an analytical tool to capture and engage contextual dynamics of power.

Hence, these revelations lead me to determine that an intersectional approach could significantly augment and alter the injustice against women through infrastructural inadequacy by analysing the complexities and diversity of embodied and lived experiences of women.

However, the framework shows the voices and lived experiences of women have also been intersecting with violence for a while, raising issues of privacy and public interventions, engendering of public spaces that have heightened exclusionary practices aimed at women, raising questions of ownership and legitimacy for women residents, and inducing fear and insecurity while accessing urban routines. Therefore, what emerged was the

need to go beyond the awareness of gender as an important variable in development, and to impart skills which can translate this awareness into concrete practice. Additionally, the incorporation on intersectionality as an analytical tool can help gather insights from the field that describe how the governance is shaping the city, and its intersection with lived experiences of the residents.

CHAPTER 03.

METHODOLOGICAL FRAMEWORK: RESEARCH DESIGN

Introduction

This chapter describes the methodology and research techniques that were employed to conduct this research. The aim of the chapter is to substantiate the methodological aim that focuses on the primary goal of this research, which is to understand gender inequality in inadequate access to infrastructure. The primary methodological approach chosen for this research is qualitative in nature. An account of the specific data collection methods and instruments used, including in-depth, semi-structured interviews, participant observations and focus groups; will then be provided to illustrate how the evidence from the field and theory was gathered. A reflexive consideration of the limitations incurred within the fieldwork process and instruments is also provided. Lastly, the chapter will reflect on the result of the implementation of this research design as a means of answering the research objectives.

3.1 Methodological Framework

The aim of this research is to understand how gender inequality is manifested through inadequate access to sanitation infrastructure in informal settlements in cities of East Africa. As the aim of my research is to explore the intersection of women's everyday lives with inadequate service provision and gendered violence, the methodological framework of this research is primarily qualitative in nature¹ and inspired by perspectives. This

¹ Qualitative research aims to describe social problems or situations 'from the inside out', that is, from the point of view of the people. Thus, though in qualitative research we begin with certain assumptions and use theoretical frameworks that inform the study we place special attention to understand or explore the meaning individuals or groups assign to the "problem" or situation under study. In a qualitative research, there is no single method, but a spectrum of methods belonging to different approaches that may be selected according to the research questions (for example, different types of interviews, focus groups, participant observation). Another characteristic of qualitative research is that the collection of data occurs in a natural setting, sensitive to the people and places under study and the role of the researcher is key through the entire process. Thus, a qualitative research relies on the investigator's subjective perception as one component of the evidence. Finally, in qualitative research, the final written report or thesis should include the voices of participants, the reflexivity of the researcher and a complex description and interpretation of the problem (Creswell, 2013; Flick, von Kardoff, & Steinke, 2004).

methodology has been chosen because it allows the demonstration of the need to tackle the growing gender-based violence around communal/shared sanitation facilities in informal settlements and to specifically furnish the study with a depth that brings forth the voices and everyday experiences of women. Moreover, feminist perspectives within science and technology studies (STS), led me to discover the process of gendered identities being designed and assumed within infrastructure design. This methodology has also driven my research design towards a more deeper understanding of violence and its intersection with infrastructural inadequacy and the emergence of its subsequent consequences (intended/unintended) on the users. 'Concepts such as "user-centred design" and "design for all" are frequently used by designers and policy makers interested in questions of equal access to new technologies and technical infrastructures' (Oudshoorn, Rommes, & Stienstra, 2004) and a qualitative research methodology can contribute in developing a better understanding of the experiences of women as users of critical infrastructures as part of this research design.

Social researchers highlight how qualitative methods by "discovering and understanding the experiences, perspectives, and thoughts of participants" (Hiatt, 1986 as cited in Harwell, 2011:148; Bernard, 2006; Lichtman, 2014; Diccico-bloom & Crabtree, 2006) enable the unveiling of socio-spatio interactions with technological artefacts and urban public spaces . This method of research also allows room for the presence of 'multiple truths' that may often be socially constructed (Lincoln & Guba, 1985 as cited in Harwell, 2011:148). Additionally, qualitative research also allows for a detailed exploration of a topic of interest in which information is collected by a researcher through case studies and interviews. These methods thus, help in highlighting "the interactions among participants and researchers in naturalistic settings with few boundaries, resulting in a flexible and open research process" (Harwell, 2011:148).

As an architect and urban development planner, an understanding of the social and cultural contexts are clearly implicit and important aspects of this research, however the aim of this research is not the description, analysis, or interpretation of a culture or cultural group (Creswell 1998). Within qualitative methodologies, ethnographic approaches are used to understand the cultural and social context in which the women that inform

my analysis are located, but also to understand the meanings women (and men) give to their uses and interactions with sanitary infrastructure. Moreover, ethnographic analysis enabled me to understand the multi-scalar links between local, regional and national processes and how this can enrich my understanding of the chosen study area and the local community.

As mentioned earlier, this research is also heavily influenced by and incorporates feminist perspectives, both in methodological and theoretical terms. Feminist scholars often state the need of the researcher to be aware of the nature of their relationship with those whom they interview (Caretta & Riano, 2016; Clarke & McCall, 2013; Verloo, 2013; Davis, 2008). Several researchers stress the need to carefully understand their particular personal and research standpoints and what role they play in the interview process in terms of power and authority within the interview situation (Hesse-Biber, 2007:113). Furthermore, as Creswell mentioned 'in feminist research approaches, the goals are to establish collaborative and non-exploitative relationships, to place the researcher within the study so as to avoid objectification, and to conduct research that is transformative' (Creswell, 1998: 83).

Another aspect my research addresses is the question of 'woman' as a single category. Women's lives are embodied by diverse experiences shaped by multiple factors, however within western feminist discourses this diversity amongst women has been excluded and replaced by the notion of a 'generic woman' (Clarke & McCall, 2013; K. Davis, 2008; Mohanty, 1984; Nash, 2008). Hence, the reason to take two cities as research context also highlights that no single narrative captures the everyday lives of all women. Previous literature also often tends to portray the distinctive voices of women as either stereotyped or add-ons in development studies despite being vitally relevant in these aspects. However, women's views and experiences should be central in informing urban development planning and implementation. This allows for gender to be understood as a participative and inclusive, rather than a reactive element. It also allows for gender to be included as a major category of analysis while conceptualising as well as implementing policy (Narayanan, 2012:11). Though feminist research tends to focus largely on the experiences of women, this research focuses on the experience of both women and men who, as residents of informal settlements, possess marginalized positions within society. The reason

for incorporating both experiences into the research process allows for a better understanding of how gender inequality is understood both by men and women.

3.2 Primary Methods and Data Used

This research design employed the use of primary methods, namely: in-depth semi-structured interviews, focus groups and participant observation. The interviews functioned as the primary method for the following three reasons. Firstly, since the aim of the research is to understand and convey the everyday experiences of women residents of informal settlements, I considered that it was imperative to reproduce the voices directly within the study. Secondly, in-depth semi structured interviews enabled different interviewees to express their experiences in detail and allowed me to capture a wide diversity of experiences and perceptions. Lastly, the interview process also sheds light on every individual's agency and highlights the importance of acknowledging the agency of the interviewees, especially the women residents as not just mere informants but rather knowledge producers.

The second method used in the research was participant observation. This qualitative approach is defined as the process enabling researchers to learn about the activities of the people under study in their natural setting through observing and participating in those activities. It provides the context for development of sampling guidelines and interview guides (DeWalt & DeWalt, 2002 as cited in Kawulich, 2005:2; Russell, 2006; Platt, 1983). Observation methods can also be useful to researchers in a variety of ways. In addition, observation provide researchers with ways to check for non-verbal expressions, determine interactions within the group, grasp how participants communicate with each other, and check for time spent on various activities (Schmuck, 1997 as cited in Kawulich, 2005:4). Additionally, Participant observation allows researchers to check definitions of terms that participants use in interviews, observe events that informants may be unable or unwilling to share and observe situations informants have described in interviews, thereby making themselves aware of distortions or inaccuracies in description provided by informants (Marshall & Rossman, 1995 as cited in Kawulich, 2005:4).

This method was an integral part of my methodology since I was researching a setting I was not part of contextually. Therefore, participant observation became an important instrument of data collection for me. The method helped me to track and record interactions of the interviewees, identify different terminologies used by interviewees (e.g. for

shared/communal toilet, gender violence) and observe hesitations or unwillingness to share certain details and to also observe their interactions with my research assistants. The process of participant observation hence, helped in providing me with a broader perspective of the community members on the issues of informal work, gender, and spatial interactions.

The final method which was used in this study is gathering secondary literature of contemporary sources, including newspaper articles, research documents written by government institutions and developmental agencies, and other academic work pertinent to the research project. These documents allowed an understanding of popular and official representations of gender norms and spatial processes within the research context. They also proved to be a source for understanding governance frameworks including economic and social development policy (e.g. gender budgeting) and the relationship of sanitation infrastructure with gendered sexual violence in the Tanzanian and Kenyan societies.

3.3 Case Study Approach

For my research, I decided to conduct research within two informal settlements, each in one city in Tanzania and Kenya respectively. I chose Mathare Informal Settlement in Nairobi; Kenya and Mlalakuwa Informal Settlement in Dar es Salaam; Tanzania. For this research, I decided to follow a case study approach as this helps to avoid overgeneralisations. My aim is not to compare the two cases, but to highlight the contextual specificities that emerge from the narratives from the cities. Keeping in line with this, I will present the two case studies through the style of parallelism. This allows me to maintain consistency in my position and role when describing the case studies. It would further let the diversity of the responses within both the cases to be seen more clearly and highlight any similarities/dissimilarities between the voices of the various actors. The selection of two cases also allows for a deeper understanding of the place-based dynamics and processes and for refining hypothesis and conceptual frameworks that can be developed for the analysis of other cities.

Case studies are in-depth studies and analysis of a single group or culture or site and have long been associated with qualitative methods within social sciences. They allow the exploration and understanding of complex issues and earlier research points at it being considered a robust research method. Case studies and qualitative research more generally

have always been “distinguished by their ability to delve into the complexities of social life—to reveal diversity, variation, and heterogeneity where quantitative researchers see singularity, sameness, and homogeneity” (Ragin 2000 as cited in McCall, 2005:1782).

Additionally, this approach of inquiry could be considered “when: (a) the focus of the study is to answer ‘how’ and ‘why’ questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context” (Yin, 2003 as cited in Baxter & Jack, 2008:545). The suggestion of creating boundaries implies what will and will not be studied in the scope of the research project.

This design of inquiry can also aid in a more in-depth evaluation and analysis of a case, often involving more than one stakeholder. The process additionally, is time-bound and collection of detailed information can be conducted over a sustained period of time (Stake, 1995; Yin, 2009, 2012 as cited in Creswell, 2013). A case study approach with multiple cases further enables the researcher to explore differences within and between cases. The goal within the analysis then is to highlight findings across the cases (Yin, 2003 as cited in Baxter & Jack, 2008:548). Yin (2003: 47 quoted in Baxter & Jack, 2008:550) describes how multiple case studies can be used to either, “(a) predicts similar results (a literal replication) or (b) predicts contrasting results but for predictable reasons (a theoretical replication)”.

Furthermore, this approach also allows for a closer collaboration between the researcher and the participants, by enabling narratives and stories to come forth (Crabtree & Miller, 1999 as cited in Baxter & Jack, 2008:545). Within my field visit, through the narratives of the participants I was able to gain a perspective on their realities, temporalities, socio-spatial interactions and better understand their actions to cope with the everyday experiences.

3.3.1 Context Description: Informal Settlements

The selection of two research contexts—Dar es Salaam in Tanzania and Nairobi in Kenya was based on the fact that between 50 to 80% (one of the highest rates) of informal settlements are based in Sub-Saharan African cities. Over 70% of Dar es Salaam’s residents

reside in unplanned settlements. Similarly, Nairobi is also amongst the most rapidly developing cities within East Africa, where over 65% of the capital's almost 3.2 million people live in informal settlements occupying 10% of the land area (Cities Alliance/SDI, 2010; Obeng-Odoom, 2010).

In addition, both these cities are currently shaped by diverse collaborative and co-productive arrangements of informal and/or self-organized provision of services that coexist (with some contestation) with municipal service provision. Both cities had a similar colonial and post-colonial trajectory and have been previous sites of infrastructure upgrading programmes led by the World Bank.

Dar es Salaam is one of the fastest growing (urbanizing) cities in Sub Saharan Africa. The City's urbanization is characterized by "high rural – urban migration, low capacity of provision of planned and serviced land, sky rocketing of land prices (for planned and serviced land), low enforcement of planning laws and regulations, mushrooming of informal settlements and urban sprawl" (Dar es Salaam City Council, Physical Planning Presentation, 2015). Urbanization taking place within Tanzania is mostly in informal and unplanned settlements, with the majority of its residents living in informal settlements.

Similarly, the majority of Nairobi's population is crowded in a very limited part of the city and is living in extremely deprived living conditions, which shows the huge inequalities embedded in the land distribution of Nairobi (Agostini et. al, 2007:41). As a consequence, the number of informal settlements dwellers in Nairobi grew from an estimated 500 in 1952 to 22,000 in 1972 and multiplied to 111,000 in 1979 (Otiso 2002).

However, despite the apparent similarities in the context namely the language, population size and urban development trajectory, the cities also have a contrasting view of tackling the growing informal settlements and provision of formal services to its residents. Lastly, while the two cities may present multiple similarities; I want to highlight the different experiences of women users when faced with gender-based violence and not bind them together under the singular, often one-dimensional, normative sociological notion of 'Oppressed Black/African Women'.

Based on these rationales, I chose to work in informal settlements due to their ambiguity within the city planning discourses that have led to the emergence of the above mentioned co-productive and collaborative arrangements of services that are either informal

and/or self-organised and co-existing with municipal service provision. I chose one settlement in each city—Mlalakuwa informal settlement in Dar es Salaam and 4A ward of Mathare informal settlement in Nairobi as case studies. I will now present in the next subsections a detailed view on the rationales mentioned above, through a small literature review.

3.3.2 Informal settlements: Attitudes, Perspective and Understanding

Informal Settlements: terminology

UN Habitat has defined an informal settlement as an area with “inadequate access to safe water, sanitation and other infrastructure, poor structural quality of housing, overcrowding, and insecure residential status” (as cited in Corburn & Karanja, 2016:1). Informal settlements differ in definition and characteristics from a slum. A slum is defined by the UN-Habitat “as being in an urban area and lacking one or more of the following: durable housing of a permanent nature that protects against extreme climate conditions; sufficient living space – no more than three people sharing a room; easy and affordable access to sufficient amounts of safe water; access to adequate sanitation in the form of a private or public toilet shared by a reasonable number of people; and, security of tenure that prevents forced evictions” (UN Habitat, 2006-2007:1 as cited in Corburn & Karanja, 2016:12). However, the two words are often used interchangeably within the development discourse due to the lack of clarity within various actors involved in regulation of service provision and planning.

Informality is also defined as “a state of deregulation, where the ownership, use, and purpose of land cannot be fixed and mapped according to any prescribed set of regulations or the law” (Roy, 2009:80). Although informality is often presented as an ‘alternative’, it does not function independently of formal systems. The intersection of the two is characterized through the numerous interactions, transactions, negotiations and contestations that actors involved on both sides partake in. (UN HABITAT, 2014:174). Hence, though informality may exist alongside formality, it often succeeds the social function of the formal sector. Informality is embedded far more deeply in Eastern African society than are formal systems (UN HABITAT, 2014:175).

Research on informality also highlights how its synonymous with poverty. Informality is often also described as a “revolution from below, the entrepreneurial strategy or tactical

operations of the poor marginalized by bureaucracy and state” (De Soto, 1989,2000 as cited in Roy, 2009:82).Hence, informal settlements are similar to squatter settlements and shanty town when it comes to a legal status. However, informal settlements habitually express a power differential, despite existing outside institutional regulations and “can thus command infrastructure, services, and legitimacy in a way that marks them as substantially different from the landscape of slums”(Roy, 2009:83).

In addition, previous research also highlights how unregulated activities dominate informal discourses and often lead to informality being understood as unplanned, adding further ambiguity to the concept. Aside from being termed unplanned, the informal sector is also often called interchangeably as “extra-legal (de Soto, 1989) or para-legal (Chatterjee, 2004) or as a ‘shadow city’ (Neuwirth, 2004)” (as cited in Roy, 2009:83). Thus, Ananya Roy describes informality and debates surrounding it as a “practice of the subaltern or rather a democracy from below” (2009:83). She argues for it to be understood as ‘structure of power’ rather than just a phenomenon emerging from the grassroots. By conceptualizing the idea as a mode of power, informality becomes an integral part of the territorial practices of state power. She demonstrates this conception by highlighting the ambiguities of land tenure systems that can be understood as “fragility of authority’, the ‘Achilles’ heel’ of resettlement schemes and state-led development” (Li, 2007 as cited in Roy, 2009:83) which point to a system of deregulation in informal settlements but is distinct from the failure of planning or the absence of the state.

Therefore, informality is “inscribed in the ever-shifting relationship between what is legal and illegal, legitimate and illegitimate, authorized and unauthorized. This relationship is both arbitrary and fickle and yet is the site of considerable state power and violence” (Corburn & Karanja, 2016:1). The next section sheds a light on how infrastructure inadequacy and informality interact with each other.

Informal Settlements: inadequate service provision

Infrastructure deficit has been observed to play a key role in generating informality and activities that would simply not exist in the presence of a well-developed infrastructure (UN HABITAT, 2014:210). Additionally, there is also an observed apparent lack of insti-

tutional capacity to implement, maintain and upgrade urban water and sanitation services within cities of the global south. Various studies have linked urban poverty in Africa to the lack of access to public infrastructure like sanitation. Studies show an absence of adequate sanitation provision for the poor and reflect on the low governmental priority attached to sanitation services (Hendriksen et al., 2011;Reddy & Snehalatha, 2011;McFarlane, 2012;Desai et al., 2014). Cuts in government expenditure on social services, and also the conditionalities of the World Bank and the International Monetary Fund have further widened equal access to public services and have restrained the access among the urban poor (Allen et al., 2004;Budds & Mcgranahan, 2003). As UN HABITAT (2014:119) argues, “the lack of adequate water and sanitation infrastructure capacity leaves urban dwellers dependent on private and informal providers who supply the majority of the poor residents. The challenge of ensuring drinking water and sanitation in the cities is an urban and regional challenge, requiring large-scale effort and coordination”.

Within cities of East Africa, rapid population growth and urbanization is clearly an important indicator, with increases in demands for water and sanitation, and pressure on managing solid waste management to protect natural resources from environmental degradation (Ministry of Water, 2015:19). It has been revealed that a majority of urban areas “lack functional drainage and wastewater treatment systems, improved sanitation facilities and appropriate systems for disposal and management of faecal sludge and solid wastes” (Ministry of Water, 2015:19). These perceived inadequacies are further exacerbated within peri-urban and informal settlement leading to various threats like—an increased risk of flooding (caused by even heavy rainfall), destroying poorly built latrines and leading to contamination of surface water from sewerage, contributing to outbreaks of cholera and other water-borne communicable diseases. This is likely to have major impacts on urban areas, in terms of infrastructure, assets and people (Ministry of Water, 2015:19).

However, studies have indicated that “high cost of centralized water and sanitation systems is set to increase and maintaining large centralized infrastructures will become more expensive. A broad range of solutions is necessary although they will depend on the particular contexts for implementation” (UN HABITAT, 2014:121). Hence, it is important to evaluate “how centralized, semi-decentralized and decentralized water and sanitation

technologies can play a role in building resilience and security at different scales, from the regional to the national, city, municipal and household levels” (UN HABITAT, 2014:121). Within cities of the global south, women have played a key role in the informal sector, especially showing an intricate intersecting relationship with water and sanitation services. The next paragraphs shed a light on gender in informality.

Gender issues in informality

Research in informality has often identified women to be key actors within the discourse (J. S. Anand, 2002; Geneva, 2007; Lund & Skinner, 1999; McIlwaine, 2013; Moser, 1989) . Within informal settlements, women are often depicted as possessing a greater role in ensuring access and provision of safe drinking water within the community. “In urban slums, where women are particularly vulnerable, programmes which harness and boost the potential of female-led production activities are required. In those communities where men are elevated in social status above women, community members need to be engaged more directly in gender transformation cultures, so that constructive and positive values and beliefs around femininity and masculinity can evolve at the same time” (UN HABITAT, 2014:210).

Within Easter African cities, a change has been seen within gender roles and identities, especially with the rise of female headed households. Women-headed households are also common in informal settlements, where they bear the dual burden of performing these activities and generating household income (McIlwaine, 2013; United Nations Human Settlements Programme, 2014). Furthermore, studies in other African cities have also shown that women particularly remain weak due to lack of access to financial, municipal and government support schemes and poor participation in the public sphere (UN HABITAT, 2014:210). Nonetheless, numerous examples of ‘ROSCA’² or peer to peer banking/lending groups have been observed across Africa, particularly in Kenya, Congo, Nigeria and Ghana (Gugerty, 2004) with most of the groups operating in extremely poor areas lacking institutional and economic resources.

² ROSCA stands for ‘rotating savings and credit organizations’ (Gugerty, 2004). ROSCA are locally organized groups that meet at regular intervals; at each meeting members contribute funds that are given in turn to one or more of the members.

However, empirical studies on women's everyday experiences with violence and interactions with various infrastructures in poor neighbourhoods in African cities are still rare and their potential in empowering women in claiming their rights to the city and in compensating for deficiencies in urban planning and public service delivery has not yet attracted much scholarly attention. Hence, if we were to trace a development trajectory for cities of East Africa, it seems likely that gender interactions and intersections may play a dominant role in leading urban infrastructure transitions and transformations. The next paragraph will now highlight informality within cities of East Africa.

Informal Settlements: attitudes and perspectives

Informal discourses on Eastern African cities characterise the cities as ones with—“high urban sprawl, high levels of slums and informality, with limited institutional capacity to regulate, administer and manage housing and land functions and lastly, ineffective and dual (formal and informal) land management systems with many local-level challenges, especially in terms of infrastructure provision and access to services” (UN HABITAT, 2014:163). These characteristics provide a complex analytical lens on Eastern African cities which appear to be struggling with—“planning difficulties, and more locally specific frameworks of understanding required to direct and inform planning and adaptation, especially at city, municipal and neighbourhood levels” (UN HABITAT, 2014:163).

Earlier research has indicated that urban planners in cities of East Africa are heavily influenced by the normative orientations of urban planning in the Global North. This normative planning is observed in three key spots “creating a master plan (such as a spatial development framework); planning and building standards and regulations; and, a system to control development” (UN HABITAT, 2014:163). Despite the region exhibiting high levels of poverty and inequality and fast growth of slums and informal settlements, “the direct transplanting of the master planning approach into Eastern African planning contexts ignores the fact that the majority of growth in Eastern African cities occurs in slums and informal settlements. In such circumstances master planning may directly contribute to further social- and spatial marginalization or exclusion from the urban fabric” (UN HABITAT, 2014:11). In addition, city planning strategies have resorted to turning away their focus from urgently needed socio-political norms that contest and negotiate the combination of formal and informal systems. Through this, a need to deal with critical elements driving what can be termed as the “dualistic nature of urban development” (UN

HABITAT, 2014:164) emerges. This dualistic nature has been persistently exhibited within cities like Nairobi where informal housing and development control procedures dominate, leaving informal settlements within master plans as blank spots.

However, another contestation emerges within the debate of urbanisation levels of Kenya and Tanzania in East Africa. Within both the contexts, complexities due to perceived definitions may have led to “overestimations of their urbanization levels. If either country included ‘occupational criteria’, to distinguish between small rural and urban settlements, they would ‘become’ much less urbanized. Thus, the extent to which their people have shifted away from primarily agricultural occupations could be more realistically assessed” (UN HABITAT, 2014:23).

In Kenya, historically, the authorities have always had a repressive attitude towards informal settlements. Both the colonial and post-colonial trajectories have heavily favoured demolition and eviction of informal settlements (Otiso 2002 as cited in Agostini et. al, 2007:38). Nairobi, housing one of the world’s largest slums Kibera and numerous informal settlements; where living conditions are desperately challenging for the urban poor because of extremely high settlement densities, highlights a massive challenge for urban planners. These attitudes and existing conditions highlight a lack of concentrated collaborative actions towards increasing access to infrastructure provision. Amongst this, sanitation infrastructure provision is one of the key challenges in Eastern African cities, with low levels of service across most countries and cities (UN HABITAT, 2014:167). In addition, within Nairobi’s large and densely populated informal settlement; in the absence of basic services such as water, sanitation and electricity supply, women often bear the responsibility of employing informal modes of services acquisition, sewage disposal and collecting firewood and water.

This has led to approval and implementation of large centralized infrastructure projects, which have proved to be more politically satisfying and appealing to donors, but otherwise inefficient (UN HABITAT, 2014:170). Hence, the need of the hour is to add a new analytical lens on informal discourses. Formalizing informal processes and working on collaborative and co-productive service provision could be one step towards ensuring inclusiveness and participation as key priorities. International donors and large financial institutions need to insist on these when partnering Eastern African states on adaptation

projects. However, achieving this may require “a radical decentralization of powers at municipal levels, to enable community-level self-organization and appropriate self-regulation of these processes” (UN HABITAT, 2014:172).

Therefore, it has become imperative to reconsider how governance is shaping city infrastructure in the short and long term, with a view to assimilate informal and formal actors into larger systems of governance in the future or as the UN-Habitat states, “adopting a bottom-up approach may also give governments enough experiential knowledge of bottom-up interactions and information so that they can establish the appropriate levels at which to aggregate governance and regulatory functions “(2014:172). Lastly, this approach is also vital in embracing knowledge from users of infrastructure and how their incorporation in governance and infrastructure provision can help in redefining power and rights to the city for residents of informal settlements.

Hence, the next section will present the process of data gathering.

3.4 The Interview Process: In-depth Semi-Structured Interviews

3.4.1 Sampling Process

I chose to research informal settlements within the two cities of Dar es Salaam and Nairobi, respectively. The criterion for choosing informal settlements was based on how Eastern African region’s cities exhibit high levels of poverty, inequality and fast growth of informal settlements (UN HABITAT, 2014:11). UN Habitat has defined an informal settlement as an area with “inadequate access to safe water, inadequate access to sanitation and other infrastructure, poor structural quality of housing, overcrowding, and insecure residential status” (Corburn & Karanja, 2016:1).

Additionally, ineffective and dual (formal and informal) land management systems present Eastern African governments with many local-level challenges, especially in terms of infrastructure provision and access to services (UN HABITAT, 2014:163). There is also an apparent lack of institutional capacity to implement, maintain and upgrade urban water and sanitation services. Hence, the infrastructure deficit plays a key role in generating informality and activities that would simply not exist in the presence of a well-developed infrastructure (UN HABITAT, 2014:210).

Furthermore, the reason I chose two places is also to problematize the question of the universal woman as research objects. Feminist scholarship has not only shaped how I interpret the complex issue of women's access to sanitation but it is also present in how I approach women as subjects of my research. While authors such as Chandra Mohanty were pioneers to signal how western feminist discourses bind women from developing countries under the mould of "women as universal, ahistorical, one category" (1984), in my research I also want to show the difference within women of two different cities of East Africa and break the stereotypes of 'Black, African, oppressed women' and present diverse narratives. Therefore, I decided to choose two contexts to highlight not the sameness of oppression faced by the women residents but rather the sameness of 'experiencing' oppression and the diversity within their experiences to move away the discussion from the academic mould of the 'oppressed third world woman'.

This research also sought to capture the difference of experience and perception of sanitation infrastructure between men and women. Thus, the interviewees were both men and women residents. The decision to interview both men and women was intentional, in order to address the ways in which gender functions as a process and as a relational category. Interviewing exclusively women could have addressed the need to develop an understanding of the particularity of women's everyday experiences. However, the decision to interview men and women was made based on the intent to explore not just women's experiences, but also relational gender processes that could help understand how reactions and perceptions differ within the binary notion of gender.

Both chosen informal settlements also have diversity in the actors (formal and informal) involved in the provision of sanitation infrastructure services. Despite their interactions and intersections within the settlements, these actors often had a contentious relationship with each other. The contestations and negotiations occurred due to the existing delineations in service provision with various stakeholders who were firstly, multi-scalar and secondly, lacking linearity between the policy, implementation and maintenance setup. The findings presented in the next chapters will articulate further these interactions, contestations and negotiations in detail.

3.4.2 Interview Procedure: Pre-testing questionnaires

I conducted qualitative semi-structured interviews. Interviews are commonly used as a method of data collection under the naturalistic (qualitative) paradigm (Halcomb & Davidson, 2006 as cited in Tessier, 2012:447). When conducting an interview, choices on how to 'record' the data have to be made namely on whether to use field notes, a recording device, or both. If the interview is digitally recorded, one can decide to transcribe the interview. To a certain extent, this choice has evolved in parallel with technological developments (Davidson, 2009). New tools, such as transcription software, allow researchers to create new forms of transcripts and to organize data in new ways (Crichton & Kinash, 2008 as cited in Tessier, 2012:447).

Based on this information, I devised interview guides for the identified set of stakeholders from secondary literature analysis as pre-test for the final questionnaires. The interview guides divided questions under five themes: history and evolution of the stakeholder, decision-making process, user involvement, unplanned/informal settlements and gender-based violence. Each question set comprised of 4-6 questions each. These interview guides were used in the first field study in March-April 2015. The data gathered from the first fieldwork was then analysed and the interview guides were then modified to reflect the richness of the narratives that emerged from the questions. The data analysis from the first fieldwork also led to the identification and incorporation of separate interviews from male residents of each settlement to highlight the differences within the everyday interactions with sanitation infrastructure.

Therefore, the help of contextual ethnographic understanding gathered from the first fieldwork proved useful in the early stages of development of my area of inquiry within informal settlements. It allowed me to get acquainted with the setting, the people and their culture and everyday experiences particularly in relation to sanitation infrastructure which is the issue of interest in this research. The study helped in the identification of primary sources of data collection and their availability and finally, in establishing first contact with various stakeholders, whose functions helped define the list of interviewees. Based on these methods, I was able to identify Mlalakuwa informal settlement in Dar es Salaam and 4A Village of Mathare Valley informal settlement in Nairobi as case studies for my research.

I also conducted interviews with the help of a local female research assistant (one each in both cities) who also acted as a translator since I did not speak Swahili which is the local language in Dar es Salaam and Nairobi. I felt that due to the existing sensitivity surrounding sanitation due to socio-cultural constructs, I needed a translator for the women to feel safe to talk about issues of sexual harassment and health related problems (e.g. Urinary Tract Infection). It's imperative for my research that the women talk freely and feel comfortable while expressing their concerns and opinions. Therefore, I spent time firstly, explaining my research objectives and secondly, explaining my personal position as a researcher to both the chosen female research assistants. I then made them explain back to me my research objectives based on what they understood and also discussed with them in-depth the need for them to maintain neutrality and to not force the interviewees, but to rather guide the discussions as a moderator. Hence, my female research assistants were able to make the discussions easier for the discussants in Swahili and also made observations within the use of specific phrases in language to convey accurately the responses.

From the initial contacts, twenty-seven in-depth, semi-structured interviews were conducted, ranging in length from 30 minutes to two hours with formal actors in both cities during both the field visits. In Dar es Salaam, I conducted eleven interviews with governmental actors, two with developmental agencies and one with an NGO. In Nairobi, I conducted seven interviews with governmental actors, five with developmental agencies and two with NGOs. In addition, a total of thirty-two female residents and seventeen male residents were interviewed in Mlalakua informal settlement in Dar es Salaam. In 4A village in Mathare Valley informal settlement, twenty-two female residents and seventeen male residents were interviewed. While the number of interviews is both greater and less than that found in the work of other researchers using similar methodologies, interviews were conducted only with the residents willing to participate and there were time and budget constraints in fieldwork process.

Interviews took place either in the home of the respondents, or a public space convenient to the interviewee, such as on the street where the women residents often sat and sold Mandazis (a homemade sweet) or at a local eatery by the street for male residents or at the football ground for the local young men. Following feminist research methodology, the interviews were conducted in a space in which the respondent was comfortable in

order to minimize the potential power difference between myself, my research assistant and the respondent. The respondent was able to choose the location of the interview at all times. Because the majority of the interviews took place in the homes of the interviewees, family members, tenants and/or neighbours were often present during the interview, either occupied with a different activity in the same or another room, actively sitting and listening to the interview, or participating when they felt it was appropriate. While this inevitably affected the responses of the study participants in some way, however I feel that any inhibition caused by the presence of others led to more detailed or richer responses from the interviewees.

In addition, during my first field visit, I was accompanied to the interviews by a local leader, who was also a member of the Ward executive office in Dar es Salaam. The local leader, a male; helped introduce me and my female research assistant to the household residents and would then explain and inform about my research being academic in nature. He also duly informed the residents that they had no obligation and participation was based on their willingness only. While this was extremely helpful in gaining trust of the residents, the precise effect of his presence on the interview cannot be fully known. Despite being a part of the community, an elected local elderly leader and trusted by the residents, to a certain extent he was also an 'outsider' due to his socio-economic status being slightly above the residents. Hence, while his presence may have inhibited the responses to a certain degree, I feel that to an equal extent, having a known person in the room helped the respondents to feel comfortable with my presence. This was also observed when I went for my second field visit and was recognised by the residents and did not require formal introduction again.

The interviews with the residents were conducted using a self-designed semi-structured questionnaire, which was translated in Swahili by my research assistant. It's important to add here that I observed a difference within the Swahili language in the two cities as my research assistant in Nairobi subsequently made small changes in the translated questionnaire. This small gesture I believe also helped retain the essence of the language and its dialects which differ within the two cities. The interviews were conducted one-to one by my research assistants, who took notes in Swahili and simultaneously also translated the answers for me to transcribe on paper.

3.4.3 Focus Group Discussions

In Nairobi, using the same questionnaire, in my first field visit, I used focus group interviews with female residents. This method was employed firstly due to time constraint on my part and secondly, upon the request of the women residents to sit together and answer the list of questions prepared in a group setting. This group meeting had been facilitated with the help of a local NGO MCFPanairobi, where these women were participating in their Teenage Mother's Empowerment Programme and had agreed willingly to participate in the focus group discussion. I also identified them to be key knowledge producers within my research due to their perceived vulnerability within the settlement. The facilitator for this focus group was the research assistant who also translated the answers simultaneously for me to transcribe on paper.

A group interaction can help bring forth thoughts and ideas among participants that may not emerge during individual interviews (Lichtman, 2014:294). I observed this during the discussion when the women deviated from the question and discussed amongst themselves what they considered to be the difference between rape and molestation. This discussion prompted me to add the question of asking them to rate the severity between molestation, harassment, rape and sexual abuse initially. A second focus group conducted during my second field visit to Nairobi, led me to add child defilement to list as many young men and women stated hearing about this gendered sexual violence being prevalent in the settlement.

The interview questionnaire has been included in the Appendix. While the paragraphs above provide an outline of the themes that were discussed in the interviews, the interviews were conducted in a semi-structured manner and used the questions to guide the conversations. However, when it was possible, I allowed the interests of the interviewee to guide and direct the interview, while at the same time making sure my research assistants cover all important interview themes. I took this approach also to encourage the conversation to feel like a discussion for the respondents to express their feelings and attitudes rather than just simply chronicling facts and responses.

3.5 Reflexivity during Research

An important aspect of feminist research is the incorporation of reflexivity about the role

of the researcher in the research process. Reflexivity is the process through which a researcher recognizes, examines, and understands how his or her own social background and assumptions can intervene in the research process. (Hesse-Biber, 2007:129). Feminist researchers often practice reflexivity throughout the research process. This practice helps in keeping the researcher mindful of their personal positionality and that of the respondent and raises issues of power that are often hidden in most research involving human beings. Feminist researchers have written about the need for critical reflexivity throughout the research process as one means of ensuring methodological rigor, and in my case, it has enabled to see how my position in the field was shaped by a multiplicity of aspects.

My background as an Indian woman doing doctoral studies in a German university has made me sensitive to reflect on how power relations are manifested in my fieldwork experience in Tanzania and Kenya. Indeed, the issue of power, in the context of 'outsiders' who are conducting research on, and ultimately speaking about 'others' is one that has been addressed in detail in feminist and development methodologies (Desai & Potter, 2006:19; McCall, 2005; Wendoh & Wallace as cited Porter & Sweetman, 2005:77).

A key issue for 'foreign' researchers or anyone who is not from the area or community under investigation, are often described in a position of power. However, "the reality is that researchers rarely hold all of the power in the research process" (Scheyvens & Leslie 2000: 126 as cited in Desai & Potter, 2006:64, Chp 7). As subjects of research, the researched can also be in a powerful position, as Desai and Potter mention, "they can withhold information, supply partial information and possibly dictate the way any research is conducted. The power relationship between the researcher and researched can be seen as a variety and not as an either/or situation" (Desai & Potter, 2006:64). While I was aware of the power differential within my field visit, a preliminary analysis of data from my first field visit revealed that most women had given answers with regards to specific questions based on what they perceived I wanted to hear. This was especially noticeable in the question with regards to preferred toilet design. In my second field visit, I decided to let my research assistant ask the question again and instructed her to inquire in an informal manner from them, what they would prefer to use if they had to share the space with other people. The second time, I had a different set of answers, with women giving more detailed and specific answers irrespective of my assumed position.

Additionally, as mentioned above, the power differential was observed within this research constantly and I made attempts to address them at various stage during the research design. During the field visits, it thus became helpful to maintain a separate journal to note personal observations and my own reactions to certain interactions I observed. Feminist fieldwork methods advocate using two notebooks for keeping field notes, one for questionnaires/interview guides prepared for the research and another for more personal observations of the entire day and process of carrying out the research. Although field notes generally may include interview notes, maps, diagrams and observations, the process of journal writing can help note 'musings, questions, comments, quirky notes, and diary type entries' (DeMunk & Sobo, 1998: 45 as cited in Kawulich, 2005:21).

Thus, in choosing a feminist perspective in methodology, I worked constantly to reduce the power differentials and to give all voices equal weight within my research process and design. While this section has highlighted key issues of power, the next section will provide the rationale of using case study approach within the research design.

3.6 Ethics

Ethics were also an integral part of research as my objectives intended to analyse social inequalities. Since this research was focused in unveiling and understanding how gender inequalities impacted access to sanitation infrastructures and fostered sexual violence, the sensitivity of the topic was evident from the beginning. This was also reinforced from both the primary and secondary data sources. Hence, I took on research assistants who were women to help facilitate the interviews as sensitively as possible and ensured the assistants explained the research intent clearly to secure their willingness to participate before conducting the interviews.

I also ensured that all required permissions were gained before making contact with the community, including applying for doctoral study research permits from COSTECH (Tanzania commission for Science and Technology) and NACOSTI (National Commission for Science, Technology and Innovation). Earlier research highlights that 'to assist in gaining permission from the community to conduct the study, the researcher must bring letters of introduction or other information that will ease entry, such as information about one's affiliation, funding sources, and planned length of time in the field' (Kawulich, 2005:12).

Once I was in the field, I was also mindful of ensuring the process of conducting my interviews was as transparent to the residents as possible. Studies on ethical research methods advise the researcher to take field notes publicly if possible, to reinforce the actions of data collection for research purposes. In addition, upon meeting the community members for the first time, the researcher should inform them of the purpose for being there, sharing sufficient information with them about the research topic and answer any queries that may be brought up during the course of the field visits. (DeWalt, DeWalt & Wayland, 1998:31 as cited in Kawulich, 2005:11). “With primary data collection, there is a danger of privileging the words and stories of the researched, especially if respondents have become friends during fieldwork. They are giving information voluntarily; they are expressing their opinions” (Madge, 1997 as cited in Desai & Potter, 2006:65). This leads to understanding the ethical considerations that come up with preserving confidentiality and anonymity.

Confidentiality is also a part of the trust established with the community member of the informal settlement that were being studied. Previous discourse suggests assuring them that their identity wouldn't be shared or exposed to other, in case they wished to share personal information (Kawulich, 2005:14). With regards to this, I ensured that my research assistants explained in the beginning of the interviews that the participants were under no obligation to share their personal details, if they didn't wish to. This process of maintaining confidentiality and preserving anonymity was also ensured in the write-up and field notes as another ethical responsibility. Earlier analyses reveal that “individual identities must be described in ways that community members will not be able to identify the participants” (Kawulich, 2005:11).

Another issue highlighted in development research points out how “researchers tend not to stay in research communities for long enough to be able to get to grips with local nuances of power (Desai & Potter, 2006:28). I remained cautious of the shifting balances of power during field visits and strived to remain transparent in my dealings with local NGOs and their beneficiaries (Desai & Potter, 2006:100).

Lastly, earlier research also states an ethical concern regarding “the relationships established by the researcher when conducting participant observation; the researcher needs to develop close relationships, yet those relationships are difficult to maintain, when the

researcher returns to his/her home at a distant location. It is typical for researchers who spend an extended period of time in a community to establish friendships or other relationships, some of which may extend over a lifetime; others are transient and extend only for the duration of the research study. (...) It is further suggested that the research findings be shared with the community to ensure accuracy of findings” (DeWalt, DeWalt & Wayland, 1998 as cited in Kawulich, 2005:12). I, thus documented the case study also through photo documentation.

3.7 Photo-Documentation

As part of the case study approach, I used photo-documentation to analyse and understand the spatial realities and contestations within the informal settlements. The process was also conducted to evaluate the infrastructure access and provision as described within the interviews by the governmental stakeholders to enrich my analysis. Furthermore, they also helped in providing an understanding in the variations in features of architectural styles and the urban morphology of informal settlements in Dar es Salaam and Nairobi.

Within qualitative research design, the involvement of visual methods and materials is considered to aid observations (Demant & Ravn, 2013 as cited in Lichtman, 2014:301). Photographs can also be considered visual documentation of the social landscapes as they are central to our culture and communication. They can ‘represent a kind of reality captured by the researcher, used to reflect a particular stance or point of view’ (Lichtman, 2014:302). Along with the interviews, the photos can help in exploring the subjective meanings of the various aspects of the resident’s lives. ‘When undertaking fieldwork, many researchers take photographs of people and places as part of their primary data collection method. Their photographs and images are used to show others what their research area is like and to support the written account of research findings’ (Desai & Potter, 2006:65). However, images can also evoke multiple meanings and interpretations. According to Cook and Crang (1995:69 as cited in Desai & Potter, 2006:232) : “photographs can often provide more insights into the social milieu of actors than into the reality they supposedly capture, and as a means for studying the culture of groups they can also provide not only a useful research avenue but may already be part of the very culture you seek to study”.

Lastly, as a precautionary measure, photographs have to be taken, with consent, ethically, sensitively and unobtrusively; to ensure no hostile reaction from the local residents. (Desai & Potter, 2006:134).

3.8 Limitations

The research methodology also took into account limitations that occurred during the course of the process. The first one I dealt with was the lack of my knowledge of the language Swahili, which is spoken in Tanzania and Kenya. However, I was able to overcome this through the help of my two female research assistants, who helped translate the interviews with the residents. Moreover, I was able to conduct almost all my interviews with the governmental actors and development agencies in English, due to both countries being previous British colonies and still retained English within administrative and educational mediums.

A second set of problems arose in relation to language. In Swahili, it is usual to address elderly or governmental officials using their title (Professor, Dr) or a more honorific term (Madam, Sir) and to greet them with a specific formal greeting. However, due to a language barrier, I often found myself being confused during my first field visit of whom to address as what since the salutations also varied from Dar es Salaam to Nairobi.

Additionally, I also encountered socio-cultural barriers within women residents of Dar es Salaam. The particular limitation was with regards to elderly women being interviewed who would try to prevent their daughters from talking about any violence or challenges faced. However, I realised that the men within Dar were more forthcoming about the violence being faced by the women in their house- wives, daughters, mothers and sisters.

Furthermore, I also found limited documentation was available on gender mainstreaming in governmental agencies and the attitude towards gender-sensitive policies varied considerable between governmental actors. Despite the presence of Gender Desks in Dar es Salaam, I wasn't allowed permission to interview them to gain knowledge on how they worked and what was their methodology in dealing with gender based violence. Previous studies have identified limitations and a range of barriers to the implementation of gendered policies. 'The role of planning in addressing inequalities cannot not be fully understood or evaluated without recognition of the broader organisational and political environment within which it operates.' (Higgins and Davies, 1996; Little, 1994a as cited in

Reeves, 2002:206)

Another limitation was observed during focus group discussions where there were some dominant voices that were observed to be more 'powerful voices' than others. Despite the group dynamics being amiable and lively, I felt some questions brought up strong opinions from certain members and other faced a kind of 'peer pressure to agree with the dominant voices. Hence, the reliability of the data gathered is understood to be with some 'bias' of the respondents.

Concluding Remarks

Since the methodological framework is largely qualitative, the research design focuses on hypothesis testing through understanding the role of the data gathered. The data technique involves comparing data obtained from interviews of both contexts and contrasting the various stakeholders involved and identified in Dar es Salaam and Nairobi. Each research objective will be presented and insights from the field will be contrasted with the assumptions made to provide conjectures.

Initially, purposeful sampling was used to identify the informal settlements to study the phenomenon of gender violence surrounding sanitation infrastructure provision and access in the first field visit. To maximize the variation in the perspective, an effort was made to interview not just the female residents but also governmental actors responsible for service provision. As interviews from the first fieldwork were analysed, it became necessary to collect new data and return to the previously collected data for comparison to illuminate emerging intermediate conjectures based on theoretical framework. These conjectures then took the form of formulating the identification process of new participants (e.g. male residents of informal settlements) on the basis of information and knowledge they could contribute. The conjectures also compared the data collected to refine the second set of interview questions posed during the second field visit.

The analysis of the data gathered after the second field visit focused firstly, on the planner/user divide by highlighting the phenomenon of the lived experiences of the female users and their interactions with infrastructures. Secondly, it focused on the reductionisms observed in the data gathered. Thirdly, it looked at violence against women emanating from inadequate infrastructure provision and its intersection with theoretical de-

bates calling for its inclusion as unintended consequence of gender scripts and its evolution into a system of oppression.

Additionally, studies of intersectionality as a methodology state case studies as the most effective way of empirically analysing the complexity experienced by women in their everyday lives. Hence, this research aims to use intersectionality as an analytical tool to assess the empirical data gathered from two chosen case studies of women's unequal access to infrastructure services and their exposure to infrastructural violence. This will enable the study to show how the interwoven nature of inequality on different levels can be used in empirical research as a tool to analyse social inequalities (Winker & Degele, 2011). The next chapters will present the case studies on Dar es Salaam and Nairobi respectively.

CHAPTER 04.

DAR ES SALAAM CASE STUDY

Introduction

It is largely recognized that inadequate provision of water and sanitation affects women and girls the most (Domestos et al., 2013:5) in cities of the Global South because they are primarily responsible for collecting water (Chant, 2013:19) in their households for cooking, drinking, washing, doing laundry and cleaning. This often leads them to have to queue up for fetching the water, spend time transporting the water back home and sometimes even go late at night to fetch water. When it comes to lack of sanitation provision, women and girls are more vulnerable to inadequate conditions and facilities, due to menstruation, lack of space for discarding used sanitary napkins, accompanying children to the toilets and being exposed to health risks. Thus, this chapter presents the research findings from Dar es Salaam, focusing on the varied stakeholders interviewed based on their respective functions and roles in sanitation service provision.

4.1 Dar es Salaam, Tanzania: Location and Demographic Overview

Dar es Salaam is the capital city of Tanzania and is considered one of Africa's most populous cities. It is considered one of the fastest-growing cities in the East African region. Tanzania's urban growth rate is expected to be 4.5% between 2015 and 2020 however, it is projected to be higher in Dar es Salaam (UN 2010 as cited in Ricci, 2012:43). The

urban population is estimated to be around 4.36 million with predicted growth rates “ranging from 4.39% (NBS CENSUS 2012), 6.63% (UN-HABITAT 2014) to 8% (World Bank 2011)” (Bright-Davies, et al, 2016:8). With these estimated growth rates, the population is expected to likely exceed 10 million by 2030 leading to it acquiring the “megacity status” (Bright-Davies, et al, 2016:8).

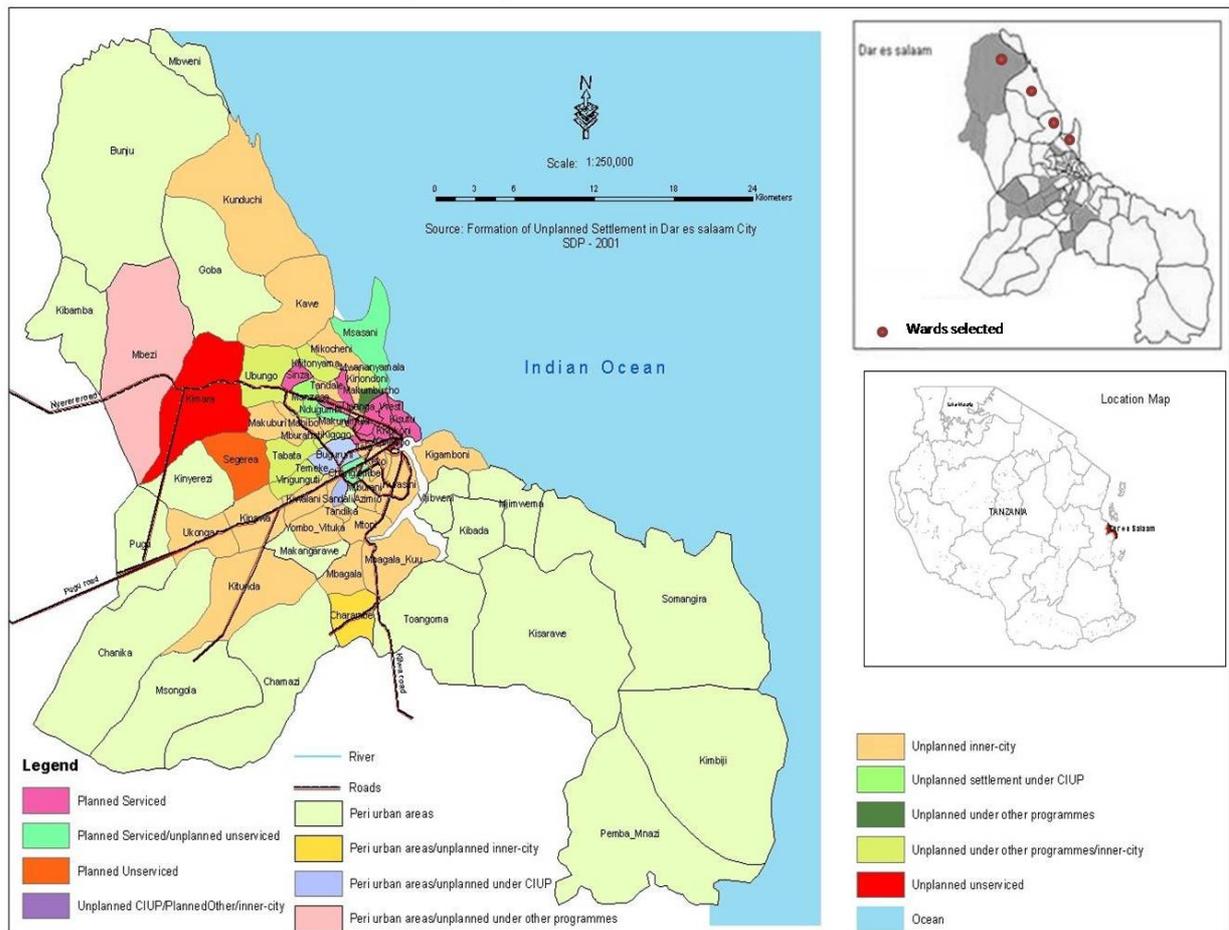


Fig. 4.1 Dar es Salaam City Map (Source: Socio-Economic Survey city of Dar es Salaam, 2007 as featured in Ricci, 2012:46)

Dar es Salaam, located on the east coast of Tanzania, borders the Indian Ocean to the east. The City of Dar es Salaam is managed by a mayor and an executive director/city director who also serves as head of the Dar es Salaam City Council. The city administration is divided further into three municipalities/districts: Kinondoni, Ilala, and Temeke.

These three units are headed by municipal directors appointed by and accountable to the Minister of Regional Administration and Local Government. There are also other lower administrative levels; ward and sub-ward (Mtaa) leaders, all appointed by and accountable to the Municipal Director (JICA, 2014; Appendix 2-6). Fig. 4.2 shows the municipal boundaries for the city with the northern portion belonging to the municipality of Kinondoni, the south-eastern portion to Temeke, and the south-western part to Ilala.

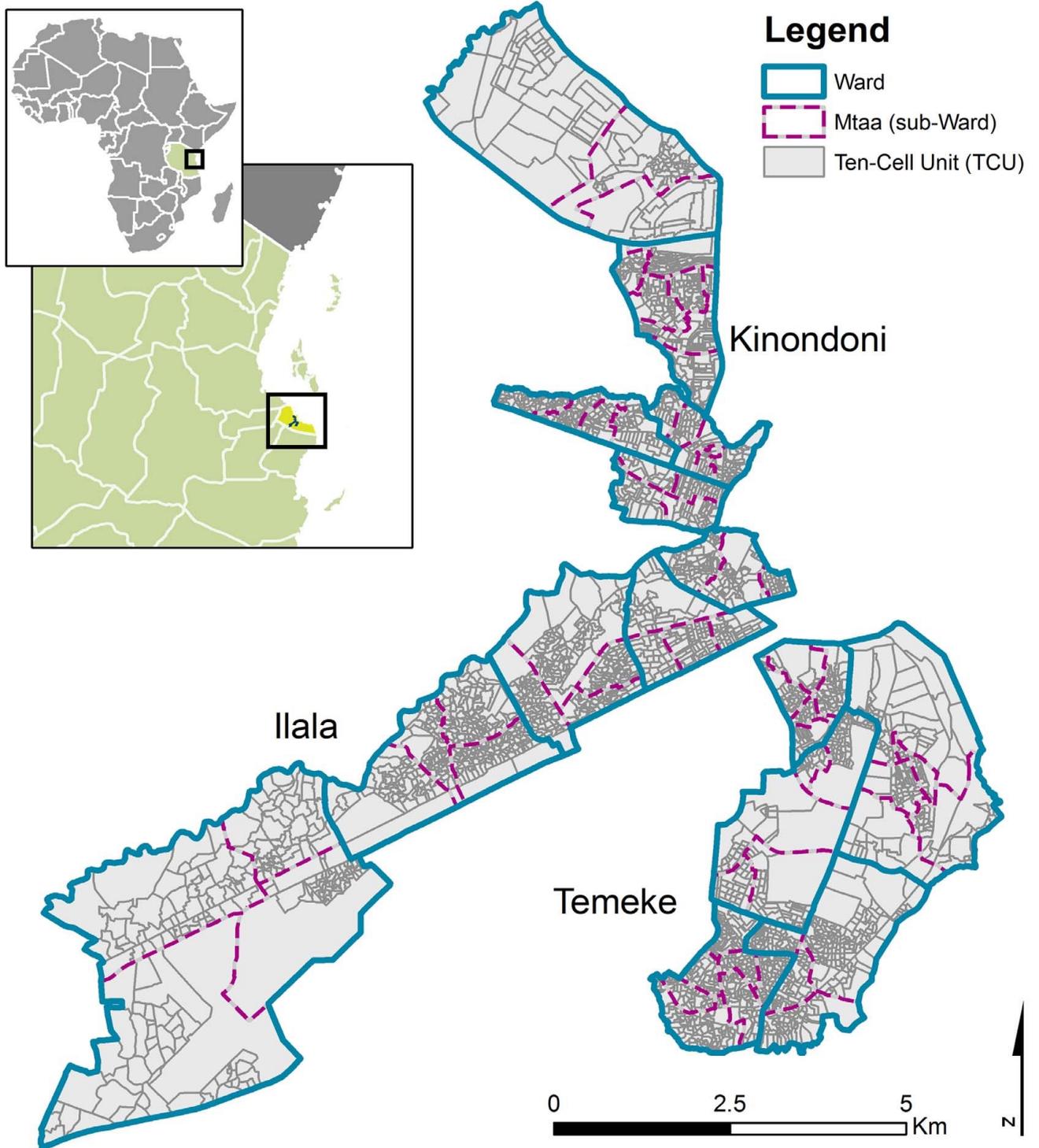


Fig. 4.2 Dar es Salaam Municipal Administrative Boundaries (Source: Maheu-Giroux & Castro, 2013:3)

With a rapidly growing urban population, there is a growing demand on the city’s capacity to provide “sanitation services to all citizens, particularly those in unplanned settlements with little or no access to basic services. It is estimated that over 70% of the population in Dar es Salaam currently lives in such unplanned areas. In these densely populated and sprawling settlements, providing infrastructure has proven to be difficult, due to limited road access, limited available land and hazardous terrain”(Bright-Davies et al., 2015:9). Fig. 4.3 depicts projections of population growth, water demand and solid waste generation for the city of Dar es Salaam till the year 2032.

	2012	2017*	2022*	2027*	2032*
Population (millions) Assuming 4.39% growth rate (NBS CENSUS 2012)	4.36	5.41	6.71	8.31	10.31
Total water demand (m³/day) Assuming average 114L/per person/day	497,000	617,000	765,000	947,000	1,175,000
Total sewage generation (m³/day) Assuming 85% of water demand	422,500	525,000	650,000	805,000	999,000
Total solid waste generation (tonnes/day) Assuming 0.8kg/per person/day (Breeze 2012)	3,488	4,328	5,368	6,648	8,248

* These projections were calculated using fixed rates, assuming that the current economic situation doesn't change. However, development trends suggest that as income levels inevitably rise, as does increasing water consumption and waste generation. Thus, the projections above are likely to be much higher in reality.

Fig. 4.3 Projected population, water demand and solid waste generation in Dar es Salaam
(Source: City Sanitation Planning Report by BORDA, Bright-Davies et al., 2015:9)

Within Dar es Salaam, water and sanitation infrastructure provision includes the participation and involvement of diverse stakeholders. The next section will now describe the stakeholders involved in sanitation infrastructure provision in the city.

4.2 Stakeholders involved in Sanitation Infrastructure Provision in Dar es Salaam, Tanzania

Coordination:

Dar es Salaam presents a multi-scalar, multi-actor framework of delineation of responsibilities regarding sanitation infrastructure provision for informal settlements. The provision of sanitation infrastructure at the household level in Dar es Salaam is chiefly divided between two municipal actors: DAWASA (Dar es Salaam Water and Sewerage Authority) and DAWASCO (Dar es Salaam Water and Sewerage Corporation). Between these two,

the provision of piped infrastructure for water is done by DAWASA and the maintenance and repair of the piped service is done by DAWASCO. The construction of toilet facilities inside the house is the sole responsibility of the house owner. In addition, DAWASCO has been working predominantly with the NGO, BORDA (Bremen Overseas Research and Development Agency) to develop faecal sludge management systems for all the settlements within the city.

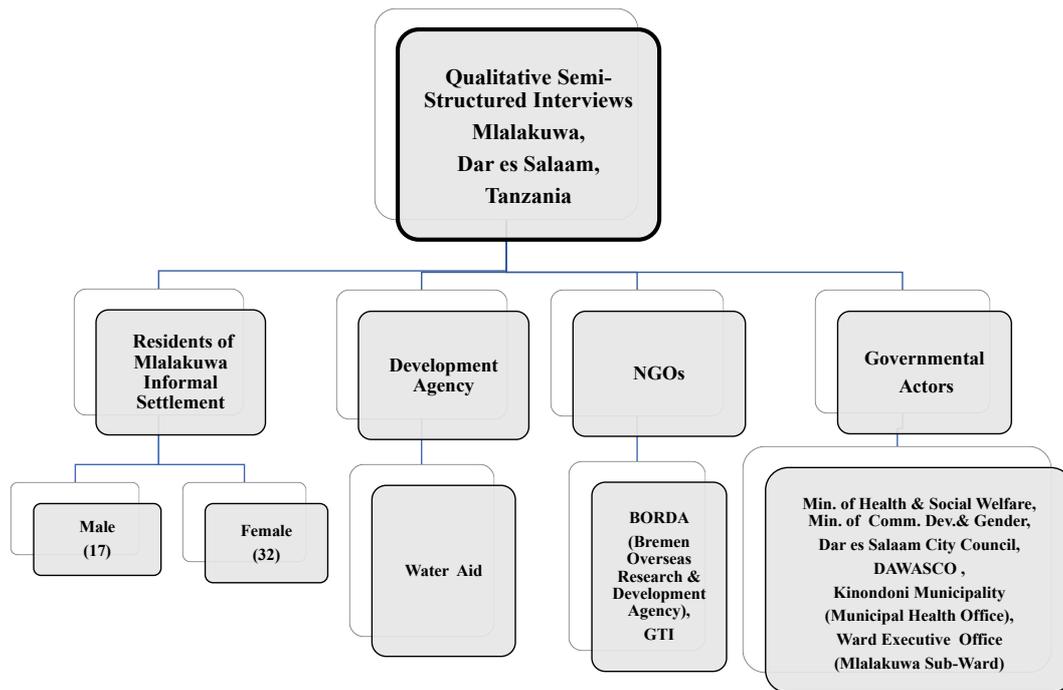


Fig.4.4 Overview of interviewed stakeholders in Dar es Salaam. (Source: Author)

Additionally, after the provision of piped infrastructure, the process of solid waste management (SWM) is the sole responsibility of the Dar es Salaam City Council. The City Council's work on solid waste management is funded by GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH). The NGO; Water Aid provides support in the form of capacity building and training private small business entrepreneurs in SWM, who are registered with the city authorities, demonstrating co-existence and co-production of services.

Furthermore, advocacy and monitoring of open defecation in the city is conducted under the National Sanitation Campaign, which is organised by the Ministry of Health, Community Development, Gender, Elderly and Children. Advocacy and hygiene campaigns are

monitored and implemented by the Municipal Health Officer in each municipality. In addition, gender-based issues within the country and cities are tackled by the Ministry of Community Development, Gender and Children (formerly two separate Ministries—Ministry of Health and Ministry of Community Development, Gender and Children; during my fieldwork in 2015 and 2016). Lastly, apart from formal actors, informal water vendors and private pit latrine emptying businesses also provide services in informal settlements, where formal services are lacking. Fig. 4.5 shows the coverage of existing water supply and sewerage network in Dar es Salaam.

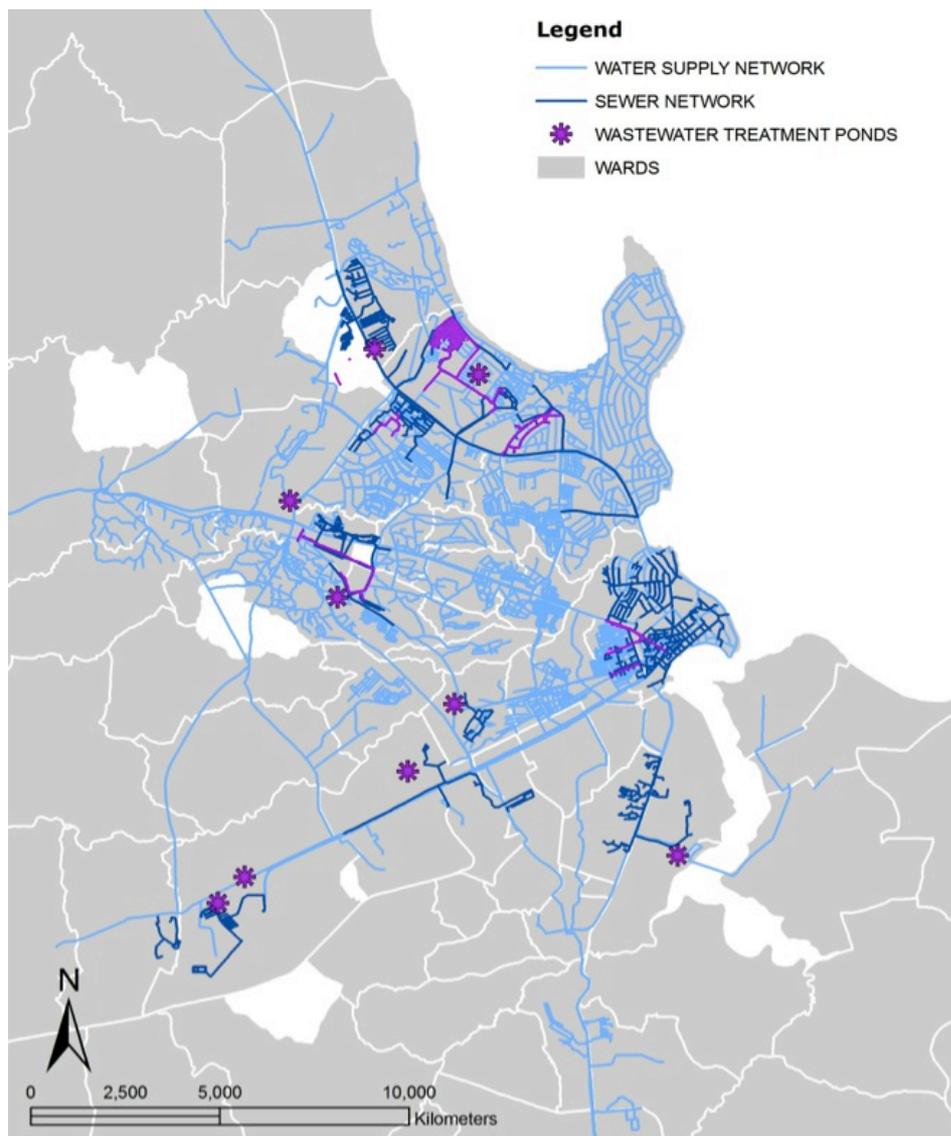


Fig. 4.5 Image showing existing water supply and sewerage network in Dar es Salaam. (Source: DAWASA in collaboration with citysanitationplanning.org;2015)

4.3 Mlalakuwa Informal Settlement

Although Mlalakuwa is a sub-ward in the Makongo Ward in Dar es Salaam, its development trajectory has led it to become an informal settlement.

The 1968 Dar es Salaam Master Plan had designed Mlalakuwa as a light industrial area. However, the construction of residential units was increasing slowly, which led to the creation of subdivisions in the settlement. In the 1970's, the indigenous land owners hurriedly started to dispose of their land for appropriation by the government. Contrary to the 1968's Master Plan, the land use had predominantly changed from industrial to residential. Subsequently, the 1979 Dar es Salaam Master Plan re-designed the settlement as a residential area. In 1982, a residential layout scheme was prepared by the Ministry of Lands and Human Settlements Development in collaboration with the City Council but it proved difficult to implement because it disregarded existing land rights as well as access roads. Presently, Mlalakuwa is one of the sub-wards of Makongo Ward and has the total area of 90Ha and a total population 19,462 where 9959 are males and 9503 are females. It also has the total number of 1176 households and average household size of 4 people per household³.

Location-wise, the informal settlement of Mlalakuwa is based in the northernmost Kinondoni municipality in Dar es Salaam. Classified as a medium density informal area, Mlalakuwa settlement consists of 10 villages. The settlement is at the juncture of one of the busiest roads in the city, namely Bagomoyo Road and is opposite to Makonde Woodcarvers Market, one of the most vibrant community markets in the city, based in the Mwenge neighbourhood (as shown in Fig.4.6). The road, however, physically divides the neighbourhoods and the informal dwellers understand that the road has powerful informal market possibilities. Additionally, the settlement is next to Ardhi University, one of the two biggest universities in Dar es Salaam and the settlement attracts a lot of students looking for cheap and informal housing. Lastly, the settlement is bordered by Lugalo Barracks and Mikucheni light industrial area to the north.

³ Information from the interview conducted with the Ward Executive officer of Mlalakuwa on 01st March, 2016.



Fig. 4.6 Image showing Mlalakuwa sub-ward in Dar es Salaam. (Source: openstreetmap.org accessed 13 October, 2017)

Public spaces in Mlalakuwa include complex concepts of semi-public and semi-private space, framed sometimes as private space (Rasmussen 2013:9). The informal settlement also shares a name with a prominent river in the city, the Mlalakuwa River which is a major water source in the city (International Water Stewardship Programme, 2015). However, inadequate sanitation infrastructure has led to openly discharged raw sewage and further liquid and solid waste being dumped directly into the river by local residents, farmers, businesses and institutions. Communities along its banks have been confronted with related health risks (International Water Stewardship Programme, 2015). Untreated sewage is often released into water bodies in Dar es Salaam especially when sewerage systems fail (UN HABITAT, 2014:169). The informal settlement has seen intervention done for firstly, cleaning up the river and has since then been also a part of innovative sanitation management solutions, done in collaboration with DAWASCO (Dar es Salaam Water and Sewerage Company) and BORDA (Bremen Overseas Research and development Agency).

Moving forward, the next section will now focus on presenting the research findings.

4.4 Framework organising research findings

The research findings from various interviewed stakeholders have been organised (as depicted in Fig. 4.7) under two themes, namely governance shaping the city infrastructure and the lived experiences of the residents of the informal settlements. The theme on Governance is presented through the lens of state (national government and city municipalities) and development (development agencies and NGOs) interventions. Lastly, findings from each stakeholder under these themes are represented under three sub-headings—stakeholder perspective, user involvement, and contestations/negotiations.

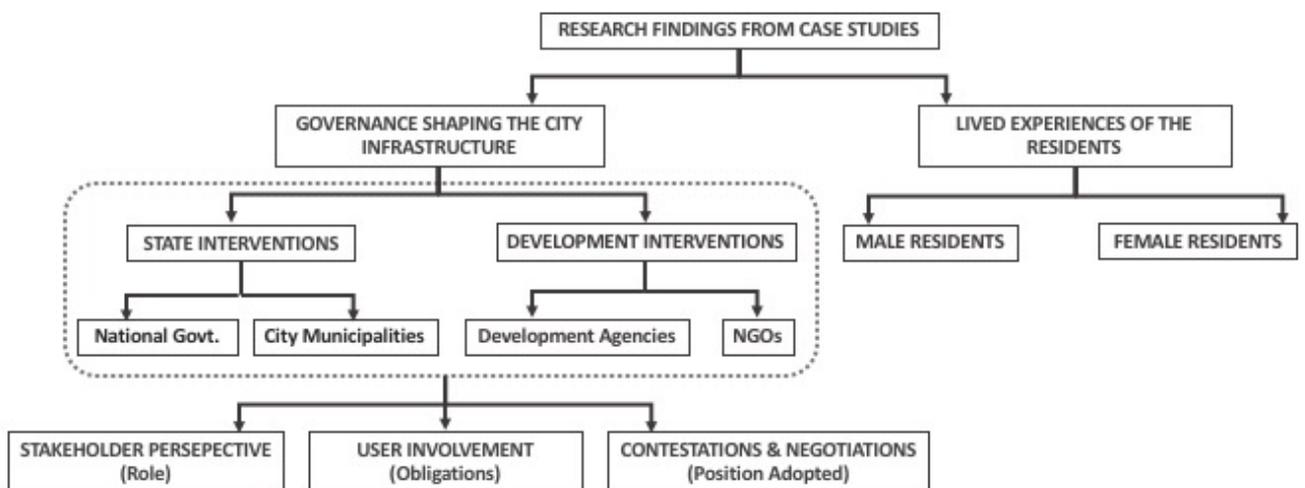


Fig. 4.7 Image of framework organising the research findings (Source: Author)

4.5 Governance Shaping the City Infrastructure

4.5.1 State Interventions: National Government Ministries

1. Ministry of Health and Social Welfare: Coordinator, National Sanitation Campaign (currently called—Ministry of Health, Community Development, Gender, Elderly and Children)

a) Stakeholder Perspective

The Government of Tanzania, through the Ministry of Health and Social Welfare is running the National Sanitation Campaign in the country. The Campaign, started in 2007 under the Ministry of Water, is focused on implementing the Water Sector Development Programme (WSDP), for the period 2006–2025. The Programme has four components, namely: (i) Water Resource Management; (ii) Rural Water Supply and Sanitation; (iii) Urban Water Supply and Sewerage; and (iv) Institutional Development and Capacity Building. The WSDP follows a Sector Wide Approach to Planning (SWAP), with an intention to eliminate overlaps and duplication of efforts and the new Programme is simultaneously implemented throughout the country by Local Government Authorities (LGAs), Basin Water Boards (BWBs), and Water Supply and Sanitation Authorities. (Ministry of Water, 2015:1)

The campaign restructured its first phase in 2011 and the first phase commenced in 2014. The restructured plan elevated the sanitation sub-component into the National Sanitation Campaign (NSC) under the coordination of the Ministry of Health and Social Welfare (Ministry of Water, 2015:1).

The key lessons learnt from National Sanitation Campaign Phase 1 (as stated within the WSDP Phase II policy document) were firstly, “*sanitation and hygiene services are community based therefore need a robust monitoring system to capture the progress*”. Secondly, “*district-wide approach to planning that takes into account water, sanitation and hygiene is critical in providing long term sustainable service levels*”. Thirdly, “*there is limited capacity (in terms of*

knowledge, skills, number of staff and experiences) to manage sanitation and hygiene interventions” (Ministry of Water, 2015:21).

The co-ordinator of the campaign was interviewed to gain an insight on the implementations and interventions being done by the Ministry of Health and Social Welfare. According to the coordinator, the responsibility of hygiene and sanitation started from central level to the community level. As part of this responsibility, the role and mission of Ministry was to *“facilitate the provision of basic health services that are good quality, equitable, accessible, affordable, sustainable and gender sensitive”*⁴. The Ministry had established the National Sanitation Campaign implementation guidelines under Environmental Health and Sanitation Section; which is *“responsible for improving latrines, providing public sanitation service, reducing outbreak of cholera and diarrhoea, and increasing the number of toilets in schools”*.

The focus of the campaign presently was on building toilets in schools as well as in villages by providing the sample of the toilets that are easy to use and cheap to construct. Through budget allocation for these services, the campaign hoped to provide the services on the coastal region and based on its success, hoped to continue the provision further within the whole country.

The coordinator stressed that *“informal settlement within Dar es salaam are unplanned and informal”* and one of the reasons for their emergence could be the *“increase of population force with people looking for an open place to start their life”*. Although the campaign is trying to provide social services to all the people living in these settlements, according to the coordinator *“sometimes it is very difficult to access all (the) people living in the informal areas, that is why many people especially in the unplanned areas complain about being left behind (...) it’s not a function of poverty, it’s a matter of choice for people to not build toilets”*.

⁴ Interview conducted with Coordinator of the National Sanitation Campaign on 18th February, 2016. For more details, see Appendix 1.

The coordinator further elaborated by explaining that they are *“working in collaboration with the city planners”* and are *“trying to move people to places where everyone can get services like public toilets, hospitals etc. from public sector”*. The coordinator also emphasized the focus on health and hygiene of the residents and answering question surrounding challenges that women residents might face, stated the awareness within the Ministry officials *“about the disease called UTI which is very chronic and affects women in the communities”*.

The Ministry was aware of gender-based violence that women in the communities were facing but stated that *“(…) they have other departments that deal with issues of laws and policies which will help the victim who have been raped to firstly protect them against diseases and help them access other services like medical care and legal aid”*. Upon inquiring about the assessment of the campaign, the coordinator responded that they mainly conduct *“assessment after the implementation of the project”*. They start by looking at the key indicators identified in the project and measure its success through the indicators. The coordinator admitted that Violence against Women (VAW) was one of the challenges that the women were facing and they were trying to find solutions for it.

I observed during the interview that the focus on how to tackle and understand GBV was from the perspective of health but no intervention had yet been accommodated in the national sanitation campaign to tackle it, despite an increased focus on sanitation in the revised campaign structure.

b) User Involvement

The coordinator stated that both the local government and the community as a whole are given the opportunity to formulate the by-laws for the sanitation infrastructure service provision, which the Ministry then uses to make laws and regulations that will improve sanitation in the country.

In terms of user involvement, the coordinator explained that after providing services to a certain place, *“they give the power to the community leaders or local government of that place, to make sure that these services are maintained and used in correct manner by them”*.

The community is given the work to construct community/shared toilets, based on guidelines issued by the Ministry of Health and Social Welfare. The community is often involved in decisions of site allocation for the services and also provide other ideas in the process. The coordinator stated that information is normally gathered from the community people, both men and women.

c) Contestations and Negotiations

The first phase of WSDP started in July 2007 and had to be completed by June 2012. However, according to the policy document on WSDP Phase II (written and implemented by the Ministry of Water in Tanzania), the Mid Term Review conducted by the Ministry of Water in April 2010 noted that a number of important consultancies and schemes under construction needed more time for completion. The first phase highlighted a number of challenges the National Sanitation Campaign was facing namely—insufficient systemic planning, monitoring and reporting; lack of standardized instructions for implementation of the construction of toilets; delays in flow of funds and delayed completion of designs. This led to several challenges in ensuring effective management and reporting and also for the extension and restructuring of the National Sanitation Campaign (Ministry of Water, 2015). These challenges led to the incorporation of — WSDP II Institutional and Operational Enhancements, where Sanitation and Hygiene were officially incorporated as the new component, therefore, instead of the four components under WSDP I. “WSDP phase II now has five components (Water Resources Management; Rural Water Supply and Sanitation; Urban Water Supply and Sanitation; Sanitation and Hygiene; and Programme Delivery Support)” (Ministry of Water, 2015:29). The incorporation of sanitation under the WSDP II has led the National Sanitation Campaign to also focus attention in urban settings (as compared to the initial rural focus of the campaign) towards maintenance and upgrading of existing drainage, waste water treatment, alongside the expansion of the network to cover newly settled areas (particularly in informal and peri-urban areas). However, the campaign policy and interview both highlighted the focus of the campaign on technical, health and hygiene related aspects.

2. Ministry of Community Development, Gender, and Children: Senior Community Development Officer, Gender Department

The Ministry since the fieldwork completion (in March 2016) is now a part of the Ministry of Health and Social Welfare. However, during the course of the fieldwork, it was identified based on its function as a key stakeholder when it came to regulating gender related issues within Dar es Salaam.

a) Stakeholder Perspective

According to the Officer, the Ministry was started in 1992. Their main responsibility is to promote community development, gender equality, equity, women and children's rights through formulation of policies, strategies and guidelines in collaboration with stakeholder's active in the country. The department has been actively involved in planning and taking measure against what they admitted was growing violence within the city. Some of the key measures taken include—preparing programmes; implementing, coordinating and evaluating the implementation of Women and Gender Development Policy. The officer explained that the role adopted for the city of Dar es Salaam with regards to GBV was *“to eliminate all form of discrimination against women”*. They have been *“preparing a national plan of action for the prevention of violence against women with the help of police”*⁵. To accomplish this plan, the Gender Department has been working with various other actors in a *“Gender Micro-Working Group consisting of—development partners, CSO (civil society organization) research and academic institution; a gender focal person (GFP) assigned in all ministries, the community and the local municipality”*. The Ministry normally worked with different organization e.g. UNICEF, SIDA, Irish Embassy, USAID, Ministry of Education, national bureaucratic statistics for developing strategies. Upon discussing the growing rise in violence against women, the officer stated that the Ministry was *“aware of the violence, that is why in every police station there is a gender desk which provides services to the victims”*.

⁵ Interview conducted with the Senior Community Development Officer in the Gender Department, former Ministry of Community Development, Gender and Children on 19th February, 2016. For more details, see Appendix 2.

The officer explained how gender desks were incorporated across the city of Dar es Salaam to help the police help the community by providing information regarding violence and harassment against women. The aim of the gender desks was to give education to *“help the victims by giving them confidence and reassuring the victims who have been raped or beaten; that they can go to the police and fight for their rights”*. The officer believed that the cases of violence against women are decreasing because *“they are now educated and strong actions are being taken against the people who violate the policy in the city but in villages it is very hard to help the victims”*.

The officer believed that within villages, women were not willing to send their own husbands to jail and thus, rural areas proved challenging in tackling GBV. Additionally, the Ministry was recruiting victims of GBV as facilitators to encourage other women to not fear fighting for their rights. Lastly, the officer described that they conducted surveys and if required, changed policies after every five years.

b) User Involvement

With regards to the users being involved in the strategies and policies the Ministry developed and implemented, the officer highlighted that they conduct various seminars for the women and children. In these seminars, they normally give them a chance to speak about their life story regarding facing violations (if any) in the past and how has their life changed now. Furthermore, while developing strategies regarding gender and children, they normally give priority to the community by giving them a chance to provide their views, to say what they think needs to be added or removed in the policies. This is done by including the community leaders in their meetings. However, upon inquiring how women residents were specifically included, there was no comprehensive strategy for that.

c) Contestations and Negotiations

The officer discussed how the Ministry also faced numerous challenges. Firstly, they encountered barriers due to cultural beliefs such as *“women believing that if their husband beats them, it’s a way of showing love”*. This further led them to

facing complexities in conveying education on violence to women, in a way that they didn't perceive being against their culture. Secondly, the officer felt that existing patriarchal systems also hindered in women accessing their rights. It bred a lack of confidence in them as the head of the household was generally a man responsible for all decision making.

4.5.2 State Interventions: City Municipality

Moving on from the actors involved in city governance at the national level, actors involved at the city municipal level were interviewed to gain an insight into infrastructure planning and service provision access.

1. Senior Town Planner & City Planner, Dar es Salaam City Council, Tanzania

The city of Dar es Salaam developed its first Master Plan to guide its development in 1934 and went under review in 1949, 1968 and 1979. The last (1979 Master Plan) expired in 1999. Despite the existence of the Master Plan i.e. from 1979-1999, the city grew haphazardly leading to mushrooming of informal settlements and other environmental challenges (as shown in Figure 4.8). According to the senior town planner, "*around 30% of residents have access to basic services*"⁶. A new Master Plan was proposed for the year 2012 but it was not finalized as of 2017. The city planning department in Dar es Salaam City Council has been responsible for the development of the city (Fig. 4.8 shows the growth of the city in comparison to the Master Plans) and with regards to sanitation infrastructure, it is responsible for solid waste management only.

⁶ Joint Interview conducted with the Senior Town Planner and City Planner at the Dar es Salaam City Council on 15th February, 2016. For more details, see Appendix 3

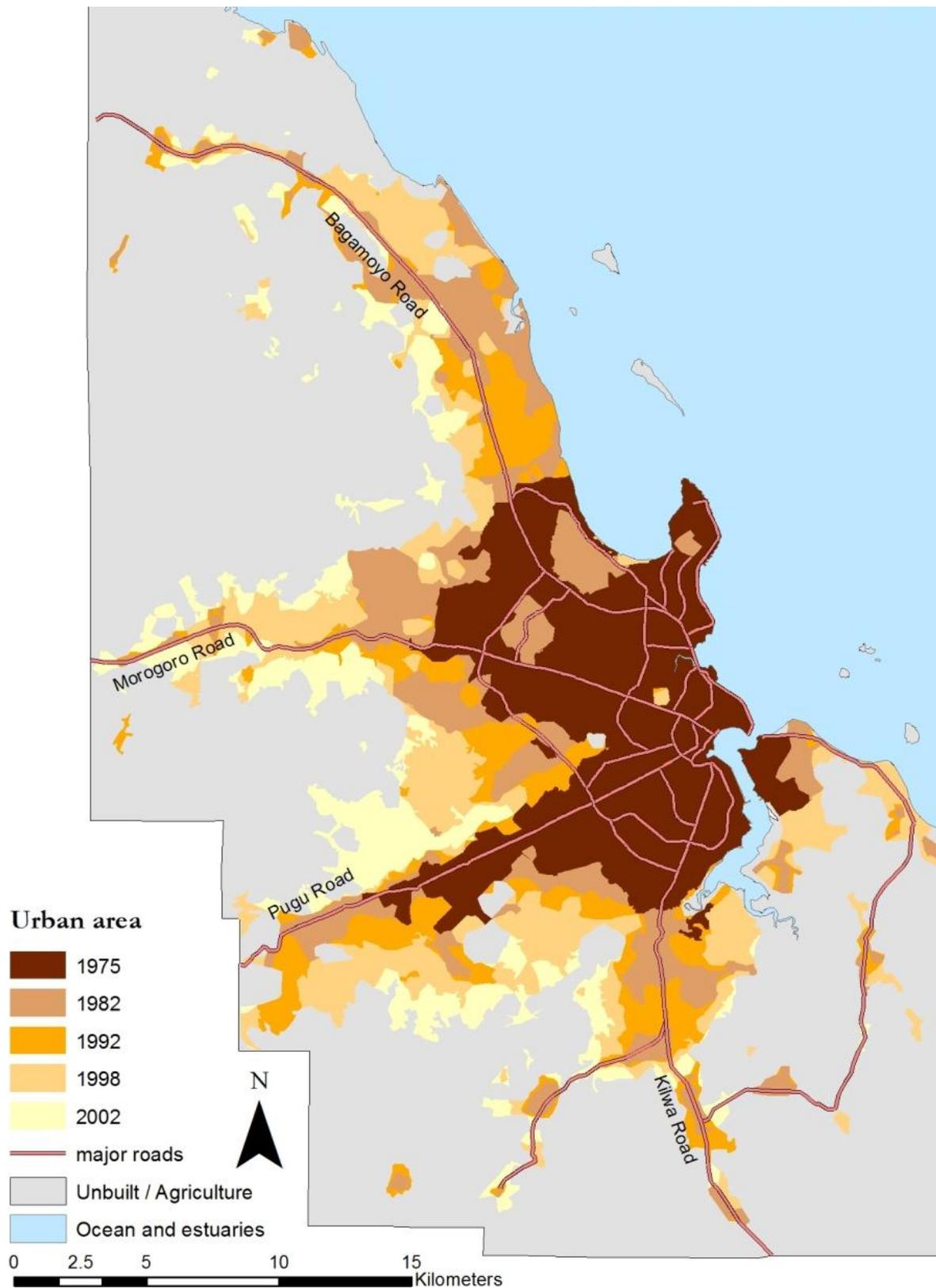


Fig. 4.8: Spatial growth of informal settlements in Dar es Salaam from 1975-2002 (Source: Abebe, 2011; 17)

a) Stakeholder Perspective

The City Council is responsible for Master Plan creation as *“it is not the responsibility of the municipality”*. The structure of the City Council changed in the year 2000. Three municipalities were created (namely— Kinondoni, Temeke and Ilala) and a collective City Council was created for monitoring them. The organisational structure of the Council was designed to oversee the municipalities. The city council is responsible for coordinating and monitoring the three municipalities.

The planners are further responsible for creation of Master plans, Land Use Plans and the Transport Master Plan (called UDART, which is currently under design). They are also responsible for environmental issues like storm water management, climate change management and coordination. Presently, they also manage the Ubungo Bus terminal and run up-country buses. However, the municipality has been responsible for making detailed maps based on the urban development strategies included in the Master Plan and Land Use plan developed by the Council. Additionally, the city planners are responsible for planning to regulate the land use, consulting with the community and other stakeholders, making future plans like Draft Strategic Urban Development Plan and the Land Use plan 1998-2018. They aim at developing plans and programs which will help in organizing the city, region and country as whole. The actors involved within the development process include all councillors, departments, city management team and ward executive office. They mainly focus on infrastructure, public areas and urban open spaces for future use.

Upon inquiring about how the City Council engages with infrastructure service provision, the senior town planner stated that the city council had firstly, worked on— *CIUP (Community Infrastructure Upgrading Programme)* from 2000-2012. It was targeted towards informal settlements and was carried out in collaboration with the municipalities. Currently, they were *“working on the Dar Metropolitan Development Project. It’s a new plan which is based on specific issues of the city. It is essentially a replica of CIUP programme but aimed for the coming years”*. Amongst other responsibilities, when it came to sanitation infrastructure, they were also responsible for solid waste management. They managed the city-wide collection

and transportation of the waste to the dump sites. Crude dumping was also included as their responsibility. They stated that a total of eight waste water points were present in the city, namely- Mikucheni, Buguruni, Sukita, Tageta, Manzese, Mabibo, Airport, Makongo and Bongaro. However, they had also applied to DAWASCO for a better connection to sewer trunks to reduce health hazards and water borne diseases.

Currently they were in the process of allocating a new site and one had been scouted in coastal region. The parcel of land had been secured and they were in the process of securing PPP (public-private-partnership) partners. During the interview, the GIZ consultant for SWM (based at the Dar City Council) also joined in the discussion. The consultant stated that in GIZ's opinion, *"the biggest challenge for Dar es Salaam was SWM and acquisition of land for incinerators"*. However, the Senior Town Planner, very quietly but firmly disagreed and counteracted by stating that *"you are not better than us, just only richer"*.

Lastly, both the City Planner and the Senior Town Planner felt that *"planning of sanitation infrastructure is a challenge now because many people build their houses in unplanned areas therefore, it is very difficult to give them service"*.

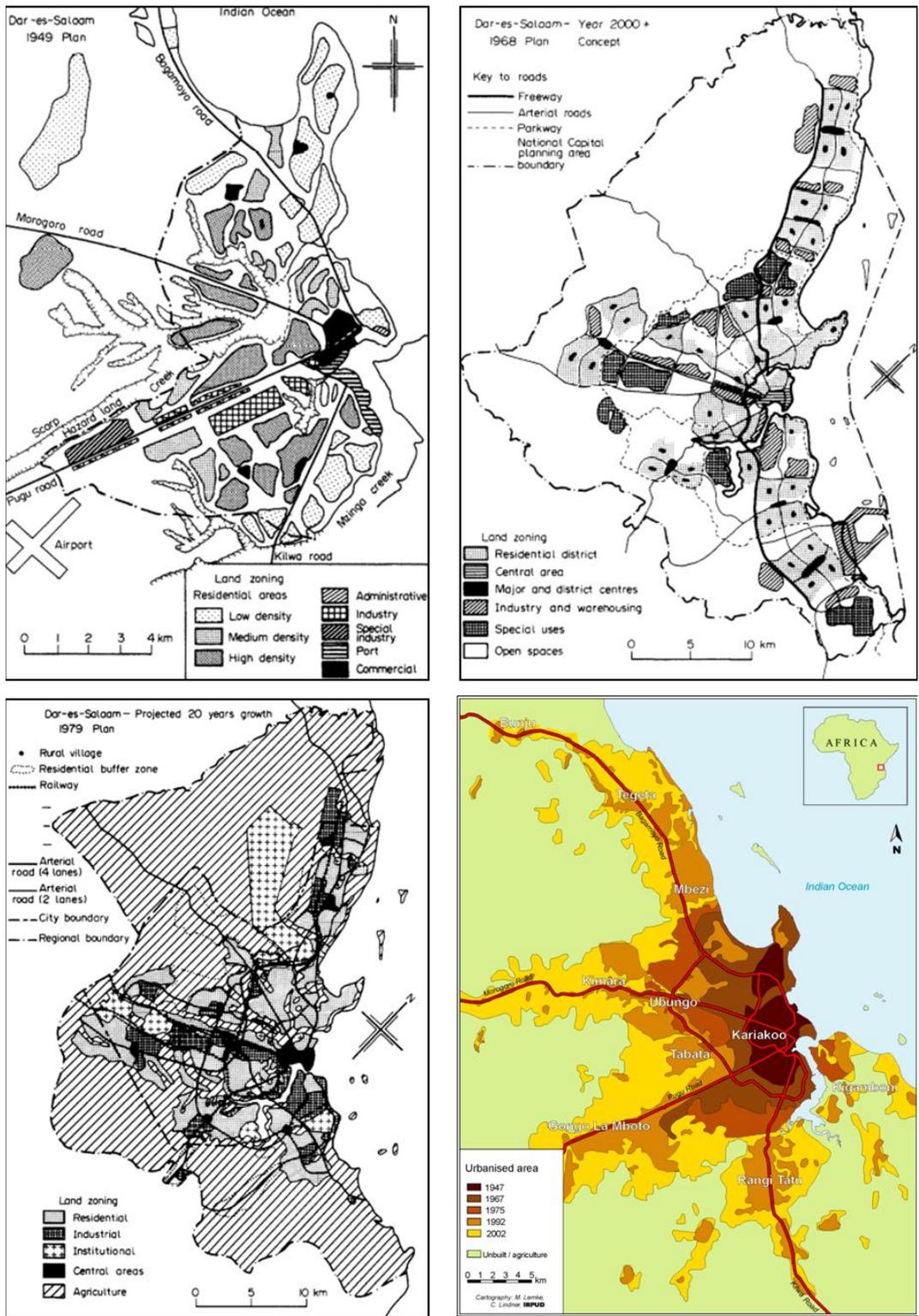


Fig. 4.9 Image showing proposed Master Plans versus Growth in Dar es Salaam. (Source: Abebe, 2011; 31)

b) User Involvement

The users were only involved in one process—they could write a feedback letter to the council regarding any complaints/suggestions/queries regarding solid waste management. However, this process was a dead-end process as there was no strategy on firstly, whom to address the complaint to and secondly, how to incorporate the user knowledge/suggestions.

c) Contestations and Negotiations

The senior town planner and city planner interviewed stated that *“the council’s priority is solid waste management and not sanitation provision”*. Both the respondents explained the complexity involved in the decision-making processes by highlighting the lack of linearity in the delineation of responsibilities. Since, the council is responsible predominantly for SWM only, the challenges faced by them were to come up with strategies to tackle the sewerage of the growing population of the city, of which 70 percent is unplanned with no household access to services. According to the planners, the challenges that residents faced were— *“the difficulty to get the public service that they want”* e.g. drainage system and water provision. The Council has been trying to relocate people in open places so that they can continue providing them access to infrastructure.

Both the planners complained that *“people who were building their houses without any plans usually, left their pit latrines open during rainy season so that they could overflow and empty out on its own”*.

In addition, the City Council worked in a collaborative framework with private Vacuum Tank Owners in the city, who didn’t pay any registration fee but paid at the discharge points (which were collection points for the waste to be transported to the Septic Tanks installed for SWM) in the city. These Tank owners mostly overcharged the households and for collection of waste. However, the Vacuum Tank Owners had to register with DAWASCO instead of the Council that they worked with, which made it challenging for the city council to keep a check on who they collaborate with. Presently, 121 owners were registered (with DAWASCO) for the whole city making it difficult for the Council to monitor the number and the criteria for their registration. Lastly, they stated that sanitation infrastructure was

planned in a way so that all the waste was directed to the Indian Ocean but due to the construction of unplanned residences, the system was blocked and therefore, many people couldn't access the normal drainage system.

2. Municipal Health Officer (MHO), Kinondoni Municipality, Dar es Salaam, Tanzania

The next actors involved in sanitation infrastructure planning at the city level were the three municipalities in Dar es Salaam, who are responsible to make the city clean. Within each municipality, the Municipal Health Officer (MHO) was responsible for sanitation services, specifically hygiene management, monitoring and prevention of outbreak of communicable diseases in planned and informal settlements. Therefore, the MHO of Kinondoni Municipality was interviewed as Mlalakuwa informal settlement was under its administration.

a) Stakeholder Perspective

The role of each municipality was to ensure that firstly, the people in wards that are administratively under them have access to all the public services equally and secondly, that they get the right treatment from the service providers e.g. the hospitals, DAWASA and DAWASCO. When inquired about the how they plan their strategies, the officer stated that *"they consider all groups of people including women, children's and disabled people"*⁷. The officer further stressed that *'almost half of the municipal employees were women'*.

On the other hand, according to the officer, the challenges faced by the residents were multiple but the conditions of the roads posed important challenges. *"It's very difficult to have access to innermost houses as the roads leading directly to the houses are very narrow. This leads to increase in crimes like sexual harassment and also eruption of diseases like cholera and diarrhoea"*. As part of their strategy to tackle these challenges, the officer mentioned that *"they were working together with the police and the community so as to be able to catch all the people who violate human rights and make sure they are being punished by law"*. However, no details

⁷ Interview conducted with the Municipal Health Officer of Kinondoni Municipality in Dar es Salaam on 01 March, 2016. For more details, see Appendix 4

of how this was being achieved were provided rather, the officer went into details of how they advocate hygiene awareness to prevent outbreak of diseases especially amongst women and children. Lastly, the officer stated that *“they were aware of GBV and they had come across some cases regarding sexual harassment and fear faced by women during night hours”*.

b) User Involvement

The officer interviewed explained that they involved both the community members as well as their leaders when discussing awareness strategies and campaigns. Often, they held meetings with all the local leaders so that they could know what problems were being faced. They focused on environmental cleanliness, providing public toilets and ensuring good services to the community. They involved the community as a part of service provision, especially the youth who lived in those areas and viewed it as a gainful employment measure.

c) Contestations and Negotiations

Moving further, the officer stated that people who lived in planned areas had access to public sanitation service like drainage and sewer trunks but for the ones who build or live in informal settlements, it was very difficult to access public services since *“informal settlements are unplanned”*. It was further elaborated that *“according to their culture, most of their toilets are supposed to be built at a distance from the house therefore, they normally tell the family to be careful when accessing during night or that they escort each other”*.

Lastly, for infrastructure provision, they advocated a programme called MKURABITA (Mpangowa Kurasimisha Rasilimalina Biashara Tanzania, Swahili acronym for Property and Business Formalization Programme). This they believed could help ensure that infrastructure (roads, water and sanitation) was available nearby, so *“it can help women residents in informal settlements by not spending a lot of time looking for water”* and would also help in conservation of environment.

3. Engineer in-charge- Customer Relations, DAWASCO, Dar es Salaam, Tanzania

After speaking with the Municipal Health Officer, the next stakeholder identified based on their function was DAWASCO, the company in-charge of sanitation service operations. DAWASA was responsible for infrastructure and DAWASCO was responsible for operations in Dar es Salaam. DAWASCO was also responsible for maintenance and repair of sanitation services for all the serviced residents in the city and employed around 900 people. DAWASCO was established in 2005 (through a government notice no.139, based in 1992). DAWASA had installed water sources in the city namely—Bagomoyo road plant, Lower Louve (182000 cubic meter per day), Toni treatment plant (based on Kizinga River) and 14 boreholes that are scattered in various districts. DAWASCO operated these 14 boreholes in the city. Apart from them, 17 more boreholes were installed in various hospitals and municipal schools, which were run and maintained by the schools and the hospitals themselves. DAWASCO produced a total of 324,000 cubic meter of waste water and its network covered about 14% of the city as being connected. Therefore, the first interview was conducted with the Environmental Engineer in charge of Customers to get an outlook on how the service is provided, the challenges faced and how problems are tackled by the personnel. The Engineer was responsible for daily customer relations, for connection provision to customers and for writing reports detailing maintenance, repair and blockage.

a) Stakeholder Perspective

DAWASCO was responsible for maintenance and repair services for water and sanitation infrastructure provision in the city of Dar es Salaam. However, as stated by the Engineer “*their responsibility is from the main piped network till outside the household wall. The connection’s extension inside a household is conducted by a private Fundi (repairman in Swahili language)*”⁸.

Most of their customers were ones who lived near a road as they had an easier access to the piped and sewerage network. This was also observed in Mlalakua,

⁸ Interview conducted with Engineer-in-Charge of Customer Relations at DAWASCO on 20th March, 2015. For more details, see Appendix 5.

where all the residents close to the roads had water connections (as shown in Fig. 4.10). The company provided water kiosks that charged 1130 TZS for 1000 litres of water. On a daily average, they sold 50 buckets of 20 litres of water, used for drinking, cooking and toilets. Water was sold through water tanks and DAWASA managed water kiosks. The quality of water was maintained by testing water quality at the production source, which was generally one of the authorised boreholes within the city. Additionally, DAWASCO had installed waste stabilization points and septic tanks in Kurasini. Most effluents from the city were discharged in Simbezi River. The City Centre and Kariakoo waste water sewer trunks emptied out directly into the ocean. However, since the City Council was responsible for SWM, DAWASCO only looked after the maintenance and repair of sewer trunks and piped networks.

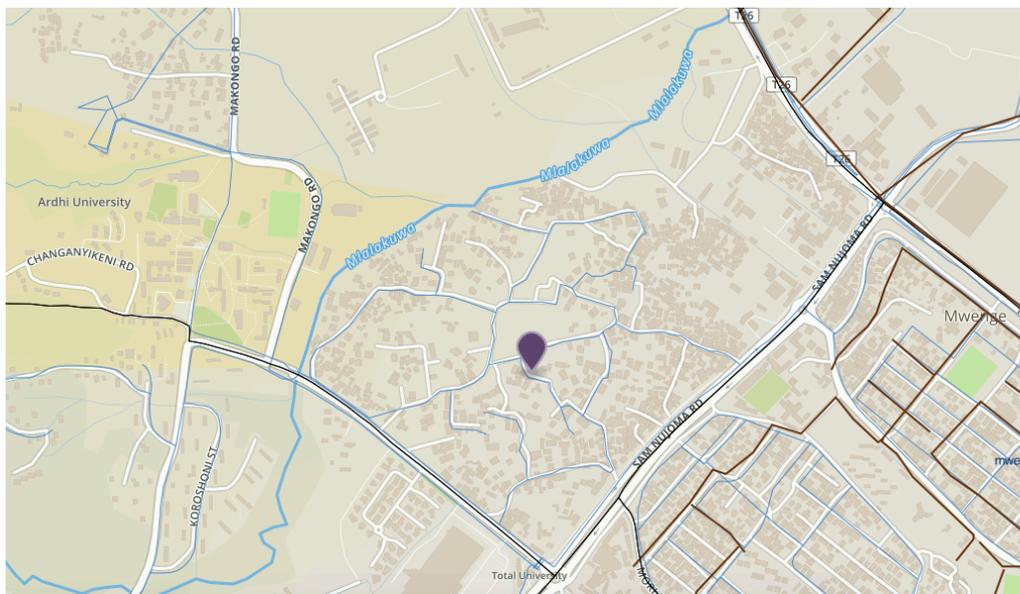


Fig. 4.10 Image showing Water Supply and Sewer Network within Mlalakuwa Informal Settlement, all based near access roads only. (Source: DAWASA in collaboration with citysanitationplanning.org; accessed on 19 September, 2017)

DAWASCO services were only present in some parts in the city—Mwenge (which is opposite to Mlalakuwa Informal Settlement), Mikucheni, parts of Sinza, city centre and parts of Buguruni. They had an existing plan of service extension for the whole city, which was designed in 2008. A private consultant was helping in the procurement process, but this plan and process were still being finalized (at the

time this interview was conducted). With regards to sanitation in informal settlements, the Engineer shed a light on a project that was being planned by Mlalakuwa residents for sanitation infrastructure construction in collaboration with BORDA (Bremen Overseas Research and Development Agency). They had requested collaboration with DAWASCO and it had been approved. The project intended to work on making waste management and waste-water management information available in the form of a guide for the residents.

b) User Involvement

The engineer explained that user involvement was very limited and that they used the customers' residential information to measure the distribution pipes from the nearest network and for the cost estimation for installation services. The estimated cost was then used to give connections to paying customers. The installation of a DAWASCO piped connection took two weeks and the paying users had to pay in advance. For a new connection, they charged 50,000 TZS but there was no charge for maintenance and repair for customers once the initial installation payment had been done. From the house to the main line, 1 pipe of 11-inch diameter cost 299,000 TZS. DAWASCO estimated the minimum bill payment per family per month to be around 12,500 TZS. Initially, 80% of water supply was charged and the rest was considered waste water. However, after monitoring customer consumptions, a minimum charge of 12,500 TZS for every household was set after the estimate of 80% failed. Hence, essentially; the focus for DAWASCO was only towards users who could pay to access their services.

Additionally, to make the payment process more accessible to users, DAWASA incorporated mobile banking services and other various methods—through the bank, cash at home, MPESA or Tibo PESA (both Mobile Banking Services using ICT technologies). However, wherever shared toilets were provided, DAWASCO still charged per household level for usage. While they had both male and female customers, upon being inquired if any incentive was provided to single female heads of households, the engineer stated having *“no incentives for women heads of households”*.

Lastly, when talking about user participation, the engineer stated that *“the users were involved only as paying customers, who could file a feedback form reporting any misuse. The household/plot owners were responsible for constructing private sanitation facilities. There was no other way of participation for the users in the planning, design or implementation process”*.

c) Contestations and Negotiations

According to the engineer, the main challenges faced by DAWASCO were *“rationing of water, inadequate loans repayment, the use of gravity flow in reservoirs, misuse e.g. people disposing their solid waste in other people’s systems, rampant man-hole cover theft and discharge from storm water drain being mixed with waste water”*.

Furthermore, the engineer highlighted that they only catered to customers who could pay 12500 TZS per month for a connection. While only a part of the city was serviced and an extension plan was still not finalised, a majority of the residents in the city were left without any service provision. Additionally, DAWASCO also had suspicions that a private operator, Azam Bakhresa Group was stealing water from the Company’s borehole to sell water under another brand called ‘UHAI’. While the Ministry of Water was responsible for creating boreholes, no check had ever been carried out since the private actor was a powerful city player, despite DAWASCO feeling a revenue loss.

Lastly, the engineer stressed the technical focus of DAWASCO due to it being in-charge of operations and explained in detail about usage of—class B and class C pipes which are essentially small pipes of 2-inch diameter and are used to pump water through low pressure situations. The engineer then brought in the Maintenance Engineer to elaborate further on how they tackle the maintenance and repair.

4. Maintenance Engineer, DAWASCO, Dar es Salaam, Tanzania

The maintenance engineer interviewed for this research was in-charge of operations and on-site implementation. The responsibility of the maintenance engineer was to work with a team of trained technicians or fundi's (Swahili for technician) and monitor repairs in the existing sewerage network.

a) Stakeholder Perspective

The Engineer elaborated on how DAWASCO surveyed the cost of construction for stabilizing prices. The monthly payments for the connection were checked via pre-paid meters and then the residents were billed, which could be paid via instalments or credit⁹. The Company was also aware of a number of illegal permits and connections. To stop illegal connections, the extension of the network was done by DAWASCO, especially for people who could not afford to pay for the provision. However, the extension network was still being planned in 2017. Even though the government was trying to make sure the provision was sufficient for the people, DAWASCO was trying to increase its production of water from 182,000 cubic meters to 200,000 cubic meters from 2 different plants via extension. As part of operations, the company had formulated a Rapid Assessment Repair Unit (RARU) for checking pipe bursts, big leaks and water rationing. DAWASCO approached maintenance work as replacing and repairing but not removing.

b) User Involvement

The user involvement was only restricted to paying customers having the ability to call DAWASCO for any hindrance in supply.

⁹ Interview conducted with Managing Engineer from Maintenance, Repair and Waste Water at DAWASCO on 18th March, 2015. For more details, see Appendix 6.

c) Contestations and Negotiations

The engineer interviewed described how they were only responsible for metering and material costs of the infrastructure provision. When it came to household repairs, they advised residents to hire a fundi or repair technicians who were trained by DAWASCO. While the engineer admitted that the majority of the city is still not connected and is serviced by informal vendors, it was also claimed that DAWASCO was at a disadvantage due to informal vendors allegedly cutting piped connections to restrict/hinder service provision.

Another major challenge was a complete electric power blackout or electricity shutdown in the city, that caused major hindrance to the maintenance system. To minimize the hindrance, they employed 254 people for maintenance and their response time was within 24 hours but it often took them up to 14 days to complete the job. Hence, both the interviews with the responsible personnel at DAWASCO highlighted their primary focus being—technical and financial in nature with no strategies in place for provision for users of informal settlements.

5. Ward Executive Officer (WEO), Mlalakuwa Sub-Ward, Dar es Salaam, Tanzania

The Local Governance Authority is the Ward Executive Office which is in charge of 10 villages. There is a Ward Executive Committee which is a 10-member elected body, who is responsible for monitoring and implementing national and city-wide strategies, campaigns and services within the village settlement.

Thus, the Ward Executive Officer (WEO) was the next stakeholder interviewed. The interview focused on finding out how and if the strategies from—the National Sanitation Campaign, the City Council's SWM strategy and DAWASCO's extension plan for their network—were being implemented in Mlalakuwa and to gather more knowledge about on-site sanitation infrastructure provision and access.

a) Stakeholder Perspective

The WEO stated that *“there is in fact a high demand for renting houses in Mlalakuwa, within every five houses, one or two comprise of a few rooms for renting. In individual household, the price for one single room range from 60,000 TZS – 100,000 TZS”*¹⁰.

Upon inquiring about what kind of interventions does the executive member office undertake, with regards to sanitation infrastructure provision, the WEO replied that *“they normally provide seminars to people who provide service to the pit latrine. They disinfect the toilets every month so they try to encourage people to contribute for the service”*.

Lastly, when asked whether the ward executive committee was aware of any cases of GBV being reported, the WEO responded that *“they have received few complaints but people are normally afraid to report to their office and even to the police stations. However, in the sub-ward office, they have a committee that deals with all the cases regarding mistreatment of any kind”*.

b) User Involvement

The WEO described how Mlalakuwa was attracting *“a lot of migrant community”*, leading to individual house owners shifting to peri-urban areas and renting out their houses. This was causing an increase in the population in Mlalakuwa and further causing a load on infrastructure services, making them inadequate. Hence, the WEO believed this to be a leading cause for a number of households to use shared toilets.

c) Contestations and Negotiations

Being an informal settlement, Mlalakuwa faces many problems which include inadequate roads (see Fig. 4.11), leading to inaccessible areas within the settlement

¹⁰ Information from the interview conducted with the Ward Executive officer of Mlalakuwa on 01st March, 2016. For more information, see Appendix 6.

and poor management of the Mlalakuwa local drain, leading to the pollution of Mlalakuwa river.

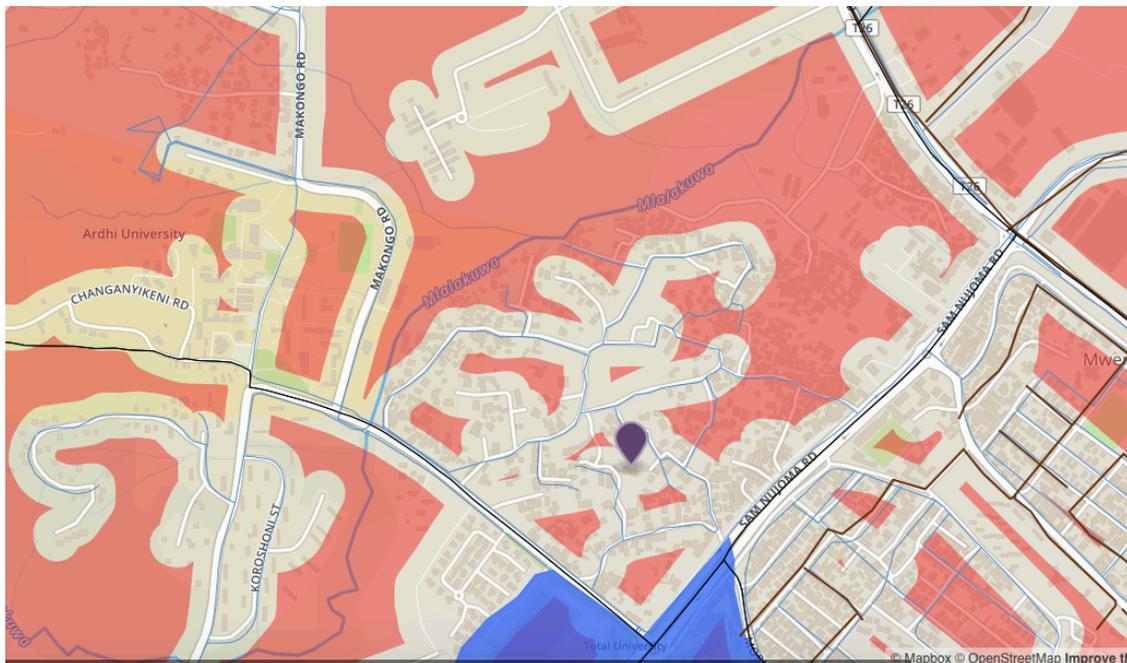


Fig. 4.11 Image showing limited road access (areas in red have no access) within Mlalakuwa Informal Settlement. (Source: DAWASA in collaboration with citysanitationplanning.org; accessed on 19 September, 2017)

This further contributes to poorly managed wastewater, especially sewerage from toilets; causing an unhygienic and unhealthy environment for the residents. Hence, despite the WEO expressing their involvement in infrastructure service provision, most of the settlement shows inadequate to non-existent services.

6. Female Community Leader- Sub-Ward Committee of Mlalakuwa, Dar es Salaam, Tanzania

The Ward Executive Office also includes two female elected members, who are also community leaders in Mlalakuwa. One of them was interviewed for this research.

a) Stakeholder Perspective

The leader explained that the sub-ward committee in Mlalakuwa comprised of elected government officials that partake in the day to day running of the settlement. The leader had been a resident of the settlement since the 1980s and was a

housewife. She was responsible for ten households within the sub-ward. Her chief task was to resolve disputes at the community level through mediation and negotiation but she stated not being hesitant in involving the police where she felt necessary.

The community leader owned a plot with four houses, each having an in-built toilet and one separate toilet outside (but within the plot boundary) for visitors. She possessed a DAWASA water connection in her house and had a squatting toilet, which she stated as her preferred type of toilet.

She then shed some light on the households of which she was in-charge. She stated that in earlier years, there were initiatives that gave people responsibilities and sometimes *“drastic measures of demolishing dirty or faulty toilets were also carried out”*¹¹. She further explained that due to the lack of any new government initiatives, *“she felt powerless to bring about much change”*.

b) Contestations and Negotiation

She echoed the same sentiment as most of the women residents and complained about prevalent urinary tract infections due to unhygienic toilets. She further highlighted that *“women were not just harassed by strangers but also sometimes by their own husbands”*.

Moreover, *“the toilets in some households were not in a good condition and that the people were not in a position to afford better ones”*. Out of the ten households she was responsible for, one didn't possess a door and others were always dirty.

4.5.3 Development Interventions: NGOs and Development Agencies

1. GTI (Gender Training Institute)-Programme Officer and Trainer (Non-Governmental Organisation NGO)

After speaking with the state actors, I then interviewed NGOs and development agencies, that provide support to the state actors. The first NGO chosen was the Gender Training

¹¹ Interview conducted with Female elected member of the Ward Executive Committee in Mlalakuwa, on 03rd April, 2015. For more details, see Appendix 27.

Institute (GTI), Centre for Feminist Leadership. GTI was a gender training institute registered under the National Accreditation Council for Technical Education (NACTE). The institute had been in existence since 1993 as a Training and Capacity Building Programme of Tanzania Gender Networking Programme (TGNP). While TGNP was focused on advocacy, GTI focused on training and capacity building and worked with different ministries and bureaucrats.

a) Stakeholder perspective

GTI organised long-term and short-term courses for CBOs (community-based organisations), NGOs, religious leaders, police officers and decision-makers. Their officers were mainly involved in training, which included *“imparting information on the constitution, legislations and voting rights for women by distributing literature through their workshops”*¹².

The training programme for police officers focused on making them aware of the— Universal Declaration of the Human Rights, the convention on the Rights of Child 1990 and the Kampala Declaration on Sexual and Gender Violence. According to the officer interviewed, these trainings had led to the establishment of a gender desk¹³ in police stations in Dar es Salaam. Furthermore, GTI also conducted a Gender-Based Violence training course for government officials and the community. The training for government officials focused on including police officers, social welfare officers, doctors and members of the Judiciary. The training content concentrated more on sexual gender-based violence (SGBV), female genital mutilation (FGM), discouraging child marriage and teenage pregnancy.

In addition, GTI was also responsible for analysing the budgets prepared by various ministries and departments in the local government from a gender budgeting perspective. Gender budgeting initiatives contributed to ‘gender mainstreaming’ by focusing on the gender dimensions within the government budget. Such initiatives have been introduced in a number of EU countries at national and regional

¹² Interview conducted with Programme Officer and Trainor at GTI on 02nd April, 2015. For more details, see Appendix 7.

¹³ Also mentioned in the interview conducted with the Senior Community Development Officer in the Gender Department, former Ministry of Community Development, Gender and Children.

levels (Elson, 2003). This concept was extensively used by GTI officers who had developed a Gender Budgeting Training Manual—"*Gender Budgeting: Training for Government Officials (local and central levels)*" in collaboration with UN Women in 2013. The GTI officer claimed that the manual was contextualized for Tanzania and did not merely replicate the concept from the European Union framework. The manual focused on — who were affected the most, how were they affected and how the budget could help. The manual worked through a five-year development plan that aimed to prioritise women in the expenditure budget by providing an action plan for intervention in gender budgeting work in different sectors/ministries.

b) User Involvement

The officer highlighted that the framework of GTI required them to be approached to tackle an issue rather than them identifying an issue themselves. Hence, user involvement was non-existent unless someone approached GTI with a problem and most of their work was advocacy and training based.

c) Contestations and Negotiations

Within their work, GTI focused very little on sanitation with the only exception being a proposal circulated in January 2015 that focused on a training course on health and hygiene. The proposal was being developed in collaboration with some (unspecified) donor agencies. However, the officer being interviewed stated the lack of addressal being present due to them not being approached by any NGOs or CBOs. The officer admitted the growing problem of sexual harassment cases around sanitation infrastructures in informal settlements and schools but insisted that they had not been approached yet.

Lastly, the officer emphasised on how their trainings had led to the establishment of a Gender desk in police stations in Dar es Salaam. However, the official interviewed at the Ministry of Community Development, Gender and Children also stated their involvement in the creation of these Gender desks in the Police stations. While this implementation has been prominently mentioned by various actors, its actual impact has not been assessed as of yet.

2. Water Aid- Senior Programme Coordinator for integrated water, sanitation and hygiene (WASH)

Water Aid is amongst the most prominent NGOs that are based in Dar es Salaam, Tanzania. Started in the 1980s as a charitable trust in the UK, Water Aid's presence especially in the field of water and sanitation development challenge has been integral to a majority of developing countries with Tanzania and Kenya being no exception. Water Aid is focused on working with local partners to come up with solutions to access and provision of water and sanitation services. In addition, they also work towards influencing decision makers through sharing their experience and research. Funded primarily through DFID (UK Department for International Development) and other donors, Water Aid is currently focused on sanitation service provision in Dar es Salaam.

a) Stakeholder Perspective

In Tanzania, the presence of DFID is still ranked quite high amongst all other actors in the development sector. Along with the Stone Family Foundation (SFF), DFID had commissioned Water Aid to develop a model for WASH for unplanned settlements in Dar es Salaam.

The Sanitation Business Model (SBM) focused on training local entrepreneurs on managing finances and linking them with institutions that could provide loans/funds to own a sanitation business. The concept was to view sanitation as service with a business opportunity for the locals. Water Aid aimed to link the trained entrepreneurs with the government to regulate their businesses and the services they were providing. The entrepreneurs were tasked with technologies like the Gulper pump (a suction-based system developed to empty pit latrines with a suction pipe attached to a container, see Fig. 4.12) which worked on emptying the pit latrine through a suction technique. The entrepreneurs were also encouraged during the training given by Water Aid; to include different tariffs for different institutions and people, by asking them to differentiate based on their ability to pay.



Fig. 4.12 Image showing GULPER operators in Dar es Salaam (Source: Water Aid, <http://www.wateraid.org/news/news/the-urban-sanitation-business>; accessed on 12 September, 2017)

To further help the entrepreneurs, a manual was being developed by Water Aid on sanitation in urban settings in Dar es Salaam. It took precedents from the National Sanitation Campaign (Phase 1) that was held in Dodoma, Tanzania. The campaign focused on what type of toilets to construct for the people and used microfinance techniques to incorporate more people, but in rural areas.

b) User Involvement

The user involvement had been restricted to small and medium business owners (who were often also residents of informal settlements), who participated in the SBM model trainings.

c) Contestations and Negotiations

The sanitation business model (SBM) had presented Water Aid with numerous challenges. Firstly, various technological challenges had plagued the entrepreneurs. Accessibility had remained a challenge in unplanned and informal settlements, and entrepreneurs trying to access households to empty the pit latrines were left to look for innovative solutions. Despite the introduction of the Gulper, its transportation had proved difficult. *“Entrepreneurs from Kigamboni, Tungi, Keko Machungwa, Bagara and Twanga wards resorted to carrying the pump on tri-*

*cycles*¹⁴. This led to an overload on the technology and also over-filled the gulper tanks.

Secondly, transporting the solid waste to septic tanks placed by DAWASCO cost the entrepreneurs a lot of money, which led to financial losses. Thirdly, there were inherent challenges of transparency in the business being run by the local entrepreneurs. Fourthly, the raise in supply of Gulper service did not lead to a raise in the number of toilets as people still couldn't afford to have water connections or the means to construct a toilet. Lastly, every informal and unplanned settlement had individual problems and did not necessarily place high priority on sanitation.

However, they also saw small successes with the model. Out of the four entrepreneurs that set up a business with Water Aid's help, two were successful. They also promoted modifications and innovations done by the entrepreneurs to deal with challenges. One of the successful entrepreneurs figured the collection cans made out of metal were too heavy to carry on the tricycles and shifted to plastic cans which were lighter in weight, thereby reduced the load on the tanks. They also noted how a group of women led the management and construction of community toilets in Keko Machungwa Ward and were still successfully managing it.

All these challenges and successes led Water Aid to conclude and learn some important lessons. They firmly believed that the *"sanitation business must not be run by an NGO"*. They realised that local entrepreneurs worked with a notion that if they failed, Water Aid would be liable to pay their loans which was not the case. Furthermore, they admitted there was a need to provide a variety of options in technologies and hence, also decided to focus on innovations being carried out by other actors. They also highlighted that *"sanitation was not only about engineering and that the issue was no longer only advocacy but the provision of access to services"*.

¹⁴ Interview conducted with Senior Programme Coordinator for WASH at Water Aid on 09th April, 2015. For more details, see Appendix 8.

3. Social Facilitator- NGO BORDA (Bremen Overseas Research and Development Agency), Dar es Salaam, Tanzania

BORDA is one of the NGOs working predominantly in SWM and sanitation innovation within Dar es Salaam. It is also one of the NGOs, that in collaboration with DAWASCO is developing a City Sanitation Planning Guide, detailing urban environmental sanitation. In addition, it's also working with the informal settlement residents of Mlalakuwa to—clean up the river, help empty pit latrines using SLUDGE-GO (another prototype of GULPER), conduct community competitions like the “Cleanest Mtaa (sub-ward) Programme” and on-site sanitation marketing in the form of mobile sanitation exhibitions. To get an in-depth understanding, the Social Facilitator for the NGO, who works as a liaison between the residents and BORDA consultants was interviewed.

a) Stakeholder Perspective

The facilitator started by explaining how BORDA began its work within Mlalakuwa with the Mlalakuwa River Restoration Project, which includes solid and liquid waste management projects. They focused on the Ward and Sub-Ward Level and all the households along the river who directed their liquid waste to the river.

After starting with this project, BORDA started conducting surveys in the settlement to find out the existing infrastructure provision. They found that most of the people in Mlalakuwa used pit latrines and only 15% of the total population (about 40-80 households) in the centre of the settlement were connected to the network. Their findings indicated that *“there is a need for new toilets, around 2.5 to 3.8 million TZS are required for making new toilets”*¹⁵.

Lastly, the social facilitator mentioned that they were *“astonished with the trials and difficulties the residents coped with on a day to day basis”*.

Hence, the NGO first started conducting workshops with local leaders in Mlalakuwa—the WEO and community leaders. The NGO then tried to create awareness

¹⁵ Interview conducted with the Social facilitator for BORDA on 09th April, 2015. For more details, see Appendix 9.

amongst the residents and landlords for repairs in existing sanitation infrastructure. The next step was to conduct a “Sanitation Bazaar”—on-site sanitation marketing in the form of a mobile sanitation exhibition where the consultants asked the residents about the design of toilets they wanted, advocated for their usage, surveyed the area and focused on both toilet provisions and solid waste extractions. The NGO then helped make designs for toilets based on the survey answers. The Bazaars focused heavily on Faecal Sludge Management (FSM) since most of the surveys highlighted a high demand for emptying the pit latrines. The NGO consultants for Mlalakuwa advocated strongly for decentralized waste water treatment (DEWATS) and FSM for the settlement (see Fig. 4.13).

The facilitator also elaborated on how they employ a fundi and advocate that the fundi is trained to provide for all kinds of toilets- VIP (Ventilated Improved Pit), VIP Diversion and Pit Latrine. The consultants further advocated for the inclusion of drainage in squatting toilets. Additionally, the facilitator highlighted that through this, the NGO aimed to upgrade the existing toilet systems in the settlement.

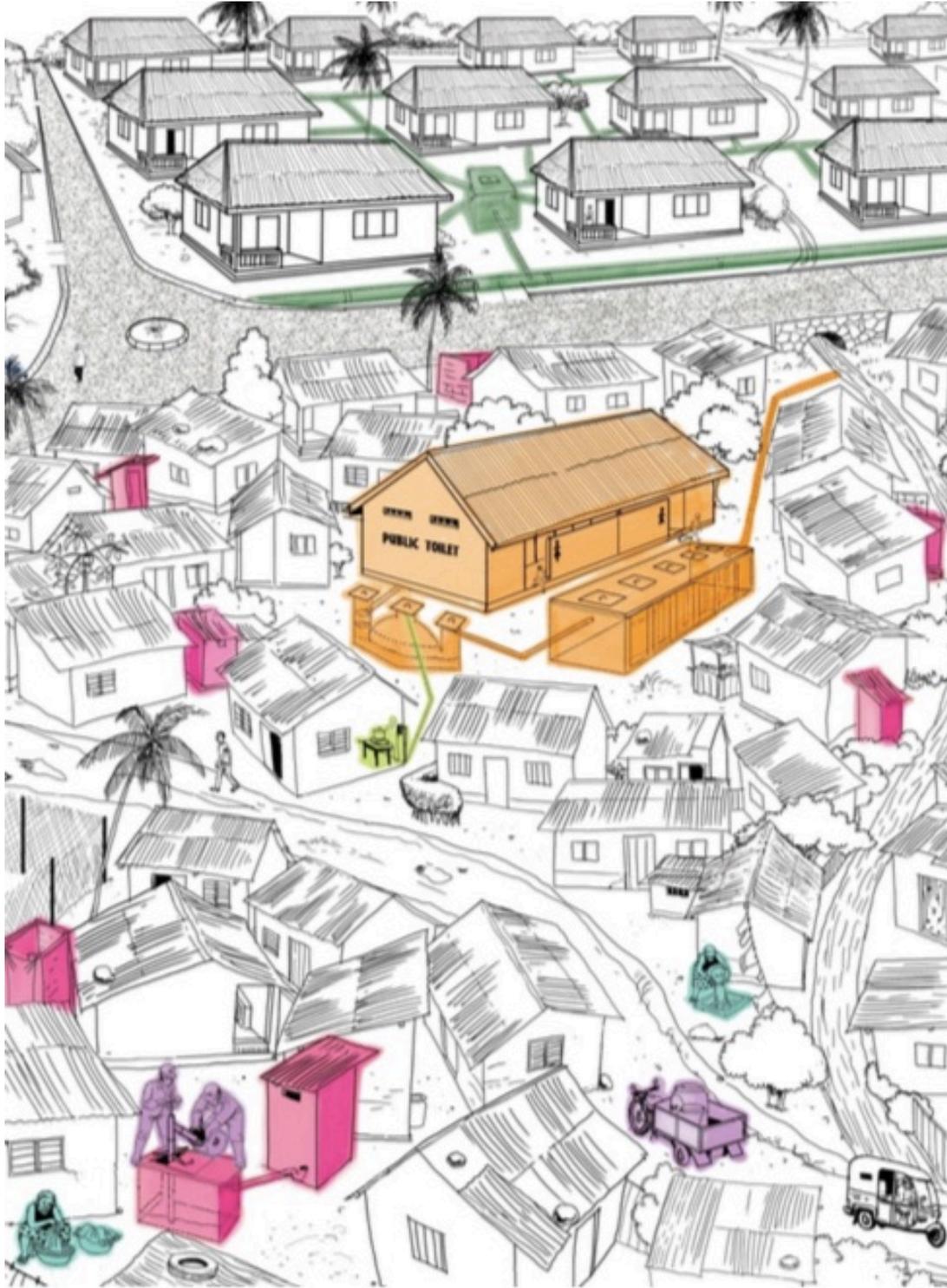


Fig. 4.13 Image showing BORDA's imagined vision for Public toilets using DEWATS and FSM in Mlalakuwa, Dar es Salaam (Source: Bright-Davies, Schmidt, Duma, & Mbuduka,2015;12)

Lastly, the facilitator explained in detail about the GULPER prototype called SLUDGE-GO (Fig. 4.14) that aids in emptying pit latrines.



Fig. 4.14 Image showing *Sludge-Go* pit latrine emptying truck in Dar es Salaam (Source: Bharadwaj, Haynes, Paravanethu, Pilcicki, & Sodemann, 2014; 22)

b) User Involvement

The facilitator's role in BORDA was to act as a liaison between the NGO and the local consultants. The facilitator ensured that the surveys undertaken, included questions on asking the residents to cite what their priority was when it came to pit latrines—provision or extraction. However, since most residents were renters, the facilitator explained that they did not hold the decision-making power, only house owners did. Lastly, it was highlighted in the interview that women residents of Mlalakuwa often participated in surveys and workshops they conducted.

c)Contestations and Negotiations

The NGO faced a number of challenges from both the residents and the state actors. While they felt that the attitude of the government was changing by the incorporation of decentralized SWM in the settlement by the community, there was still a long way to go before a concrete attitude shift. The initiatives or coping mechanisms proved to be not sustainable in hindsight. The sub-ward staff was set up with different officials leading to miscommunication. Promising initiatives of other CBOs were often smothered by corruption and often the projects had no concepts on how to link to the network service and ended up in failure.

The NGO also often found solid waste left behind in pit latrines. This required intervention from the local leader to find someone to remove solid and liquid waste as often the Sludge-Go suction pump had trouble entering the settlement due to no roads being present inside the settlement. Nonetheless, the NGO was also able to formalize a co-production system for Decentralised Solid Waste management (DESWAM) projects in solid waste by supporting them with loans.

4.6 Lived Experiences of the Residents

1. Users: Female Residents of Mlalakuwa Informal settlement

Semi-structured interviews based on an interview questionnaire were conducted with women residents of the Mlalakuwa in two field visits. The questionnaire¹⁶ began by asking general questions. The respondents were predominantly between the ages of 26-60 and were mostly housewives, involved in informal work. All the respondents stated being responsible for water collection for drinking and sanitation, for the households. Most women were involved in “*informal economic activities like selling “Mandazis” (a home-made sweet made from white flour and sugar)*” and one respondent stated that she “*used the money (she) earn to buy a 10-litre bucket of water for 20 TZS per day*”. Additionally, women residents placed the highest priority on water and sanitation infrastructure in their everyday life, instead of other infrastructures like transport and electricity. Upon

¹⁶ See Appendix 10 for the questionnaire.

inquiring about what kind of toilet type would they prefer, most respondents stated preferring a squatting flush toilet if they had to share. However, if the toilet facility was provided within their own household, they all preferred a sitting flush toilet. Nonetheless, the majority of women mentioned that they had access only to “shared toilets/multi-family private toilets (terminology used by some residents) with the most prominent toilet type being the squatting pit latrine”. Fig. 4.15 shows the existing conditions of the shared toilets in the settlement.



Fig. 4.15 Image showing shared toilets in Mlalakuwa with waste collection bucket and water cans outside for toilet use. (Source: Author)

Hygiene issues were stated as the biggest challenge being faced by them with most of the women complaining of contracting UTI. Another observation that emerged during the interview were the difficulties that women confronted in health and hygiene which was highlighted by one of the respondents’ husband. He was sitting nearby during our interview, fixing his bicycle, when he overheard us and stated that “my daughter complains of UTI all the time”. However, he was asked by his wife not to elaborate further. Women also raised issues of fear and security. Most respondents stated that they usually asked “someone to accompany me at night” and one said “I ask my son sometimes to come with me”.

It was striking that almost all women when asked about what made them uncomfortable at night stated “it’s dark at night”, and then they proceeded to mention their perceptions

in diverse ways such *“feeling insecure and unsafe going to the toilet at night”, “getting attacked by robbers”, “being scared of men hiding behind trees”* and *“being beaten up by men before but now feel safe as the toilet has light now so it’s comfortable”*. These perceptions were further reinforced when the respondents stated rape and sexual abuse as being the severest of GBV crimes, followed by harassment and molestation.

Furthermore, women also claimed to access the toilets frequently since they accompanied their children. However, they were all concerned about their children catching infections due to poor hygiene. Residents also replied that the toilet made them uncomfortable because *“the door didn’t have a lock”, “the toilet has no door so we put a cloth in front but it’s uncomfortable”* or *“drunk men use my toilet at night”*. A pictorial analysis (Fig. 4.16) of the various toilet designs present on the site also highlighted the lack of locks on the toilets and their temporary construction.



Fig. 4.16 Image showing toilets without doors in Mlalakuwa. (Source: Author)

Lastly, most women complained of the price they had to pay for emptying the pit latrine and that it could go up to 100,000 TZS, which most of them found difficult to afford. Hence, most respondents either paid once a year or dug another pit.

The next section will now discuss the findings from the interviews with male residents of Mlalakuwa.

2. Users: Male Residents of Mlalakuwa Informal settlement

Male residents of Mlalakuwa were interviewed¹⁷ during the second period of fieldwork in February- April 2016. The respondents interviewed were mostly between the ages of 26-60 and were mainly tenants. All of them were self-employed, with small businesses like—cycle repair work, *Dukaa* (Swahili for small stores selling household items and groceries sometimes) or wood-workshops. The respondents were mainly from five villages (within Mlalakuwa sub-ward)—*Makazimapyia*, *Mlalakuwakati*, *Mlalkuwa Ngalapa* and *Survey* villages.

Most of the respondents shared a “*squatting pit latrine*” with very few using “*pour flush*”. For most of them, “*the owners of their houses had constructed the toilets at least 15-20 years ago*”. They all used “*shared toilets or as some residents called them multi-family private toilet*” but when inquired about their personal preference, they responded wanting “*to use a private toilet of my own*”. Upon being asked what kind of toilet type they would prefer, they stated wanting to use a squatting flush toilet as a shared toilet and a “*WC seat*” toilet for private use.

Except for one, all the respondents had no DAWASCO connection in their households. The one who did, said that the connection emptied out directly into the nearby Mlalakuwa River. For the ones living near to the river, they emptied their buckets in the river. Fig. 4.17 shows the toilet block connected with a make-shift pipe that empties into a bucket, due to the lack of a sewer drain.

Moving further, just three respondents had a DAWASA connection to their household and one was in the process of receiving a connection. They generally bought water for 100 TSH per bucket and paid between 100,000-150,000 TSH for emptying the pit latrine once it was full. The men stated using the toilets seldomly, found them spacious and easily accessible. In addition, they all unanimously responded that they did not accompany their children to the toilets. They also stated having no trouble accessing the toilets at night but a few stated that they “*escort my wife because she is afraid of the darkness*”. Upon being probed further, all of them revealed that their wives faced a lot of challenges using the toilets at night such as, “*the toilet is outside*”. They were also very clear in expressing their wives’ fears while accessing toilets. Some of the responses shared by men were: “*she is afraid of being chased by people, thieves or dogs*”, “*she is afraid*

¹⁷ See Appendix 11 for the questionnaire.

of being chased by people or men who are drunk”, “there is problem due to inadequate water”, “she has fear of darkness” or “the toilet has no electricity”.



***Fig. 4.17 Image showing toilets with buckets for solid waste collection in Mlalakuwa.
(Source: Author)***

All the respondents felt that it was unsafe for women to use shared toilets and described how their wives complained about contracting UTIs and about the general lack of cleanliness in toilets. They all stated not having any knowledge of cases of GBV but upon being asked to describe the severity of GBV crimes, placed rape and sexual abuse, as the most severe; followed closely by harassment and molestation. Additionally, all the respondents stated that their wives were responsible for the maintenance and cleanliness of the toilets and they only contributed to purchasing cleaning equipment. Most shared challenges in *“accessing the toilets in the morning due to crowding or the pit being full and being too expensive to have it emptied”*. Lastly, they all replied that there was no community group responsible for cleanliness, repair or maintenance, and no advocacy was done on GBV related to inadequate sanitation.

Chapter Summary:

Dar es Salaam presents an interesting intersection of interactions between multiple stakeholders but lacks clarity in the delineation of responsibilities. Data gathered from

the field revealed complex issues of coordination between local government authorities, uncertainty about the roles of non-governmental actors', lack of sharing information between actors and inconsistent user participation. The findings also highlighted a major focus on technical expertise and service provision, with stakeholders going into technical details like diameters of the water pipes. Nonetheless, the state actors and development partners showed awareness around major challenges being faced by the residents, namely—lack of roads within the settlement leading to restricted access, lack of adequate sanitation infrastructure like sewer network and piped connections, reported cases of violence against women surrounding shared toilets and inability to pay for emptying pit latrines due to unaffordable prices.

The lived experiences of the residents' interaction with sanitation infrastructure presented a curious insight into their everyday routines. Most women residents were responsible for procuring water for their households for drinking and sanitary usage. However, a few stated using the money they earned from selling homemade sweets (as part of informal work) for purchasing buckets of water for their households. In addition, they also placed the highest priority on water and sanitation infrastructure in their everyday life. Furthermore, most women relayed a sense of fear while accessing the shared toilets at night and stated reasons varying from fear of darkness to fear of being attacked by men. The construction of the sanitation facilities with missing locks or doors, also added to their apprehension of using them at night. Lastly, issues of health and hygiene were prominent within their narratives with fear of contracting communicable diseases themselves or by their children also contributing to their everyday coping mechanisms.

The male residents presented a different view in their everyday routines. All the residents had their wives bear the responsibility of procuring water for household and sanitary usage. While they did not express any fear while accessing the shared toilets, they were very clear in expressing their wives' fears while accessing those toilets. Additionally, despite expressing discontent with the state of hygiene of the shared toilets, all the residents claimed maintenance and cleanliness as being the woman's responsibility.

Therefore, these two themes of organizing the research findings provided thought-provoking insights into the case study of Dar es Salaam. The next chapter will present the findings from Nairobi.

CHAPTER 05.

NAIROBI CASE STUDY

Introduction

This chapter presents the research findings from Nairobi in Kenya, focusing on the varied stakeholders interviewed based on their respective functions and roles in sanitation service provision.

5.1 Nairobi, Kenya: Location and Demographic Overview

Nairobi is the capital and the largest city in Kenya. The city is located within the Athi River Catchment area and is traversed by three key rivers namely Nairobi, Mathare and Ngong. It is also the second largest city within the east African sub-region after Dar es Salaam and accommodates more than one-third of Kenya's total number of urban dwellers (UN HABITAT, 2014:149). The city has a population of 3.1 million inhabitants according to the last census done in 2009, while estimates done in 2011, approximated 3.36 million persons (Mwaniki, et. al, 2015:1).

However, over 65% of the residents of Nairobi are low-income earners with a large proportion of them living below the poverty line in urban slums and informal settlements in the city, occupying less than 10% of the land area (Cities Alliance/SDI, 2010; Obeng-Odoom, 2010 as cited in Corburn & Karanja, 2016:2). Rapid urbanization due to inadequate measures by the state and local authorities has further contributed greatly to the growth of informal settlements and "much of the city's growth has taken place without any definite urban development framework" (Mwaniki, et. al, 2015).



Fig. 5.1 Map of Nairobi Metropolitan Region (Source: UN Habitat 2010:168)

The Kenya Population and Housing census conducted in 2009, indicated that “75.7% of Nairobi’s households have access to piped water (either into the dwelling or to a communal water point) and only 47.7% are connected to the main sewer system” (NCWSC/AWSB 2009 as cited in Mwaniki, et. al, 2015:4). These numbers were even lower for informal settlements where the Nairobi City Water and Sewerage Company (NCWSC) and Athi Water Services Board (AWSB) estimate that about “24% of the population have access to a latrine or a flush toilet, 68% use public toilets and that 6% resort to open defecation or defecation in plastic bags commonly dubbed flying toilets” (NCWSC/AWSB 2009 as cited in Mwaniki, et. al, 2015:4).

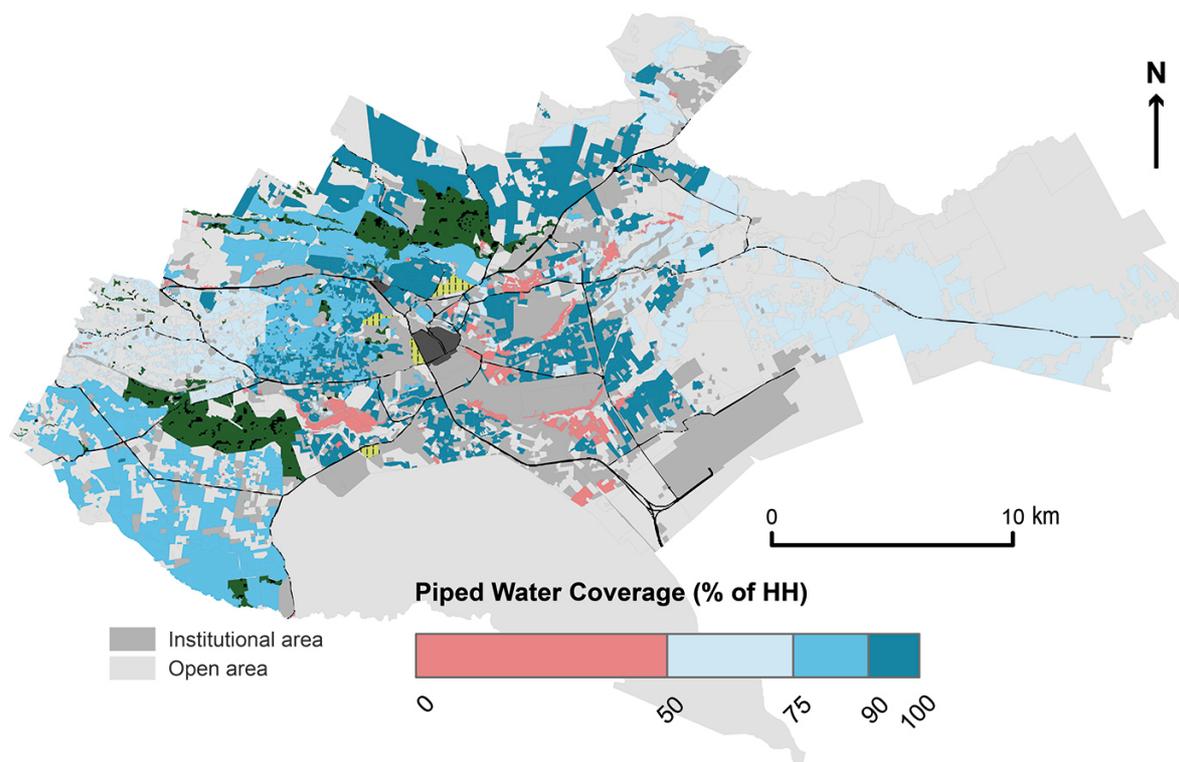


Fig. 5.3 Image showing Piped water connection across Nairobi city (Source: Ledant, 2013:387)

Since 2013, Athi Water Board Services is responsible for designing and implementing shared communal toilets/ablution blocks in informal settlements. Additionally, Nairobi Water and Sewerage Company's Informal Settlements Department (ISD) is responsible for sewerage implementation, collection, disposal and treatment. Furthermore, Nairobi City County is responsible for solid waste management. However, the funding of these implementations comes from a collaboration between government agencies and development partners. The Water Services Trust Fund (WSTF), which is run by the Kenyan State Corporation works in collaboration with international development partners to fund various projects within the city of Nairobi, including ones for informal settlements (Nairobi Water, 2015). Within sanitation programmes, the World Bank has been funding the ISD's Water and Sanitation Improvement Programme which is responsible for improving water services and sewers in Mathare. Lastly, apart from formal actors, informal water vendors/cartels and small private pit latrine emptying 'GUPLERS' businesses also provide services in informal settlements, especially in areas that still use shared toilets.

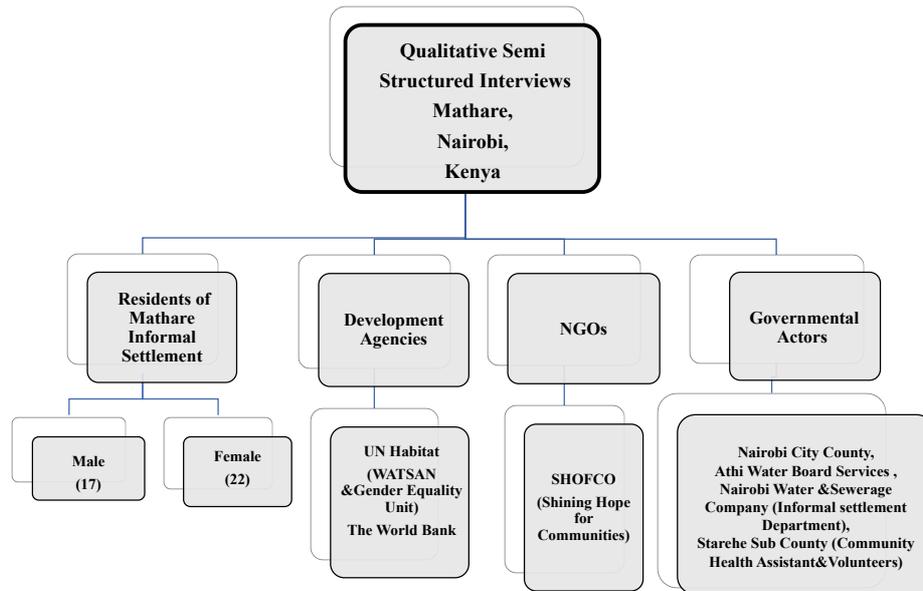


Fig. 5.4 Stakeholder overview for Nairobi. (Source: Author)

5.3 Mathare Informal Settlement

Earlier research states Nairobi city’ slums and informal settlements as the worst in SWM, leading to calls for a greater demand for services and good sanitation (UN HABITAT, 2014:171). In the case of Nairobi, Mathare informal settlement was chosen for this research. Mathare informal settlement in Nairobi, comprises of 13 different villages (Fig.5.5). It is one of the oldest settlements in Nairobi and is built in the small valley carved out by the Mathare river between Juja Road to the south and Thika Road to the north, and located only around 4 km from the CBD (Corburn and Karanja 2016:4). Mathare is often considered a hot-bed of violence and hasn’t seen as much investment from developmental agencies and NGOs as Kibera. However, since 2008, the Informal Settlements Department (ISD) under the Nairobi Water and Sewerage Company has been responsible for the Water and Sanitation Improvement Programme and has been working with the informal settlements across the city, including Mathare and has received funding from the World Bank. “The water mains feeding Mathare is located along Thika Road. There are also two sewer trunks serving Mathare namely the new sewer along the Mathare River and coming from Parklands and the older sewer from the Mlango Kubwa area. The old Mathare sewer has been rehabilitated by AWSB with assistance of French Development Agency while new Mathare sewer is now operational” (Karanjambugua & Nahasonmuguna, 2016). Fig. 5.6 shows existing sanitary blocks across the entire informal settlement of Mathare.

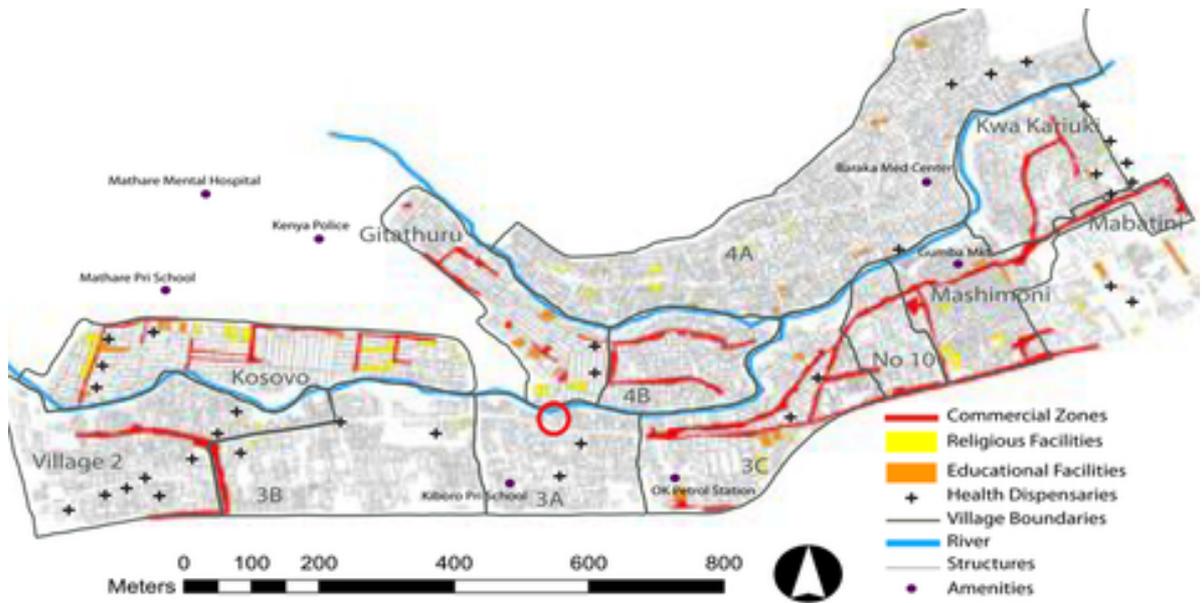


Fig. 5.5 Mathare Informal Settlement Map. (Source: roadmaptomathare.org accessed on 10th October, 2017)

Mathare Valley, where 4A village (chosen for this research) is based, has shared ablution blocks constructed by ISD and a local NGO called Mathare Children’s Fund (MCFPanairobi) has been running a Reusable Sanitary Pads Programme.

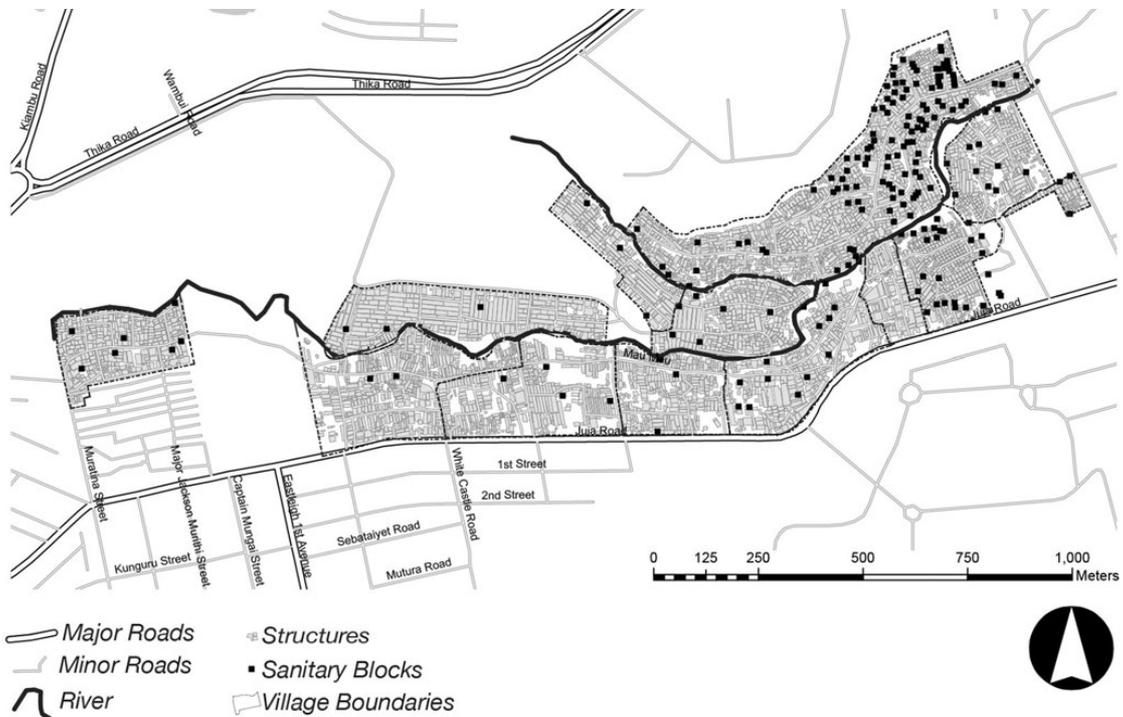


Fig 5.6 Image showing map of Sanitary Blocks across all villages in Mathare (Source: Corburn & Karanja, 2016;6)

The ISD also has a sociology department which is responsible for engaging with the community on a daily basis to help facilitate the construction of sewers, water kiosks and ablution blocks. Hence, these collaborative arrangements observed in Mathare made this an interesting case for this research.

5.4 Framework organising research findings

The research findings from various interviewed stakeholders have been organised (as depicted in Fig. 5.7) under two themes, namely governance shaping the city infrastructure and the lived experiences of the residents of the informal settlement. The chapter will follow the same organisation structure as the previous chapter on Dar es Salaam case study.

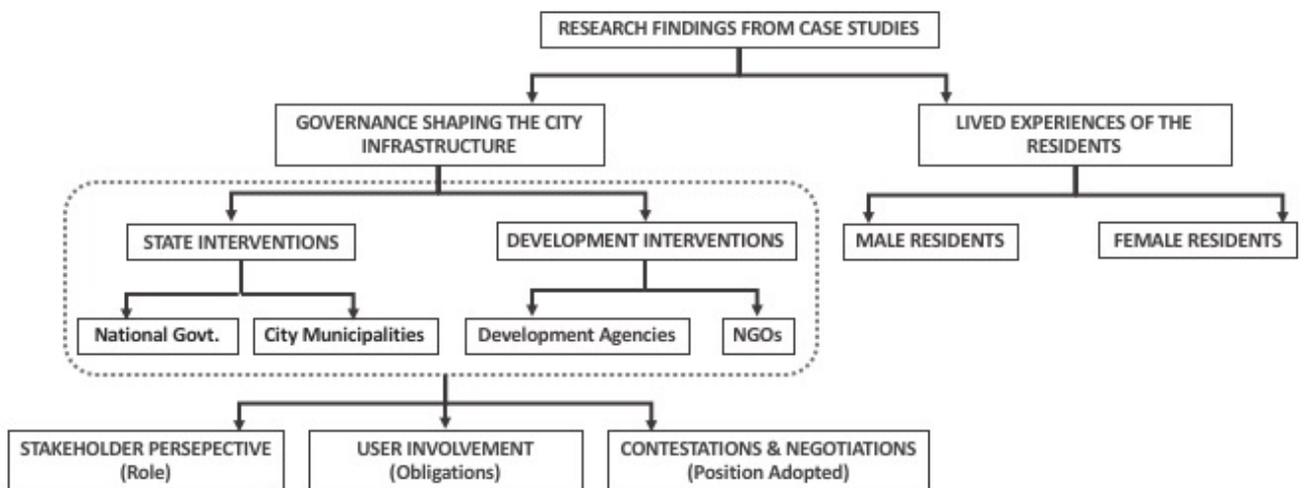


Fig. 5.7 Image framework organising the research findings (Source: Author)

5.5 Governance Shaping the City Infrastructure

5.5.1 State Interventions: Nairobi City County

1. Urban Planner, Nairobi City County, Kenya

The first stakeholder interviewed was the urban planning Department at the Nairobi City County, which is responsible for SWM in Nairobi. Nairobi City County was created in the year 2010 under the new Kenyan constitution. It was formerly known as the City Council of Nairobi. Nairobi city was changed to a county based on a new constitution and the city was to be managed by city managers who were considered professional. There is a plan to establish an entity to professionally managed urban development.

The city planning department is responsible for urban planning in Nairobi. The urban planner was interviewed to understand the existing context, the challenges being faced in city planning, the attitude of planners towards informal settlements, strategies being implemented (if any) to deal with the growing documented violence in the city and lastly, the complexities of violence against women intersecting with inadequate infrastructure provision.

a) Stakeholder Perspective

The first Master Plan documented was formulated in 1926 for the colonial city. Three more Master Plans have since been planned and implemented; in the years of 1948, 1973 and 2014. The 1948 Master Plan was to plan the colonial city, the 1973 Master Plan was to rationalize densities and improve on the colonial planning policies.

The 2014 Master Plan, however envisioned to improve Nairobi as the capital city and a regional hub, through improvement in infrastructure, liveability as well as creating sustainable neighbourhoods through compact mixed-use concepts with emphasis on public transport. Within the Plan, environmental and social impact assessment must be undertaken during the planning phase as a requirement of the law under EMCA (Environmental management and coordination Act, 1999 Revised). Environmental audits are done during and after implementation.

The actors involved in the city planning process were the city planners and professionals in the building industry along with development partners and funding agencies. The new Master Plan went through an intense process where varied actors were involved in the process namely—planners, professionals, academics, community leaders, CBOs, Faith Based Organizations (FBO), NGOs, youth groups, women's groups, groups of adolescents and elderly, and funding agencies.

The planner explained¹⁸ that the role of an urban planner in the city council included formulating policies and guidelines to manage the city development, processing development applications submitted by land owners and developers for approval to the county, preparation of land use plans, enforcement of development regulations and by-laws, and undertaking research to inform policy and planning.

However, the plan adopted was the one being funded by JICA (Japanese International Cooperation Agency) after the approval from a Joint Coordination Committee consisting of: Permanent Secretary of the Ministry of Local Government, Permanent Secretary of Ministry of Nairobi Metropolitan Development, Town Clerk of City Council of Nairobi, Director of Urban Development Department; Ministry of Local Government, Director of City Planning Department; City Council of Nairobi City and Senior Representative; JICA Kenya Office. Upon inquiring about the key focus/strategic areas in city planning, the planner stated that infrastructure and sanitation layout especially for the urban poor, were their main focus.

To elaborate further, infrastructure planning was done by sectors, ministries and developmental agencies; depending on the scale and whether the region is developed or not. Based on this mandate, Athi Water and Services Board was put in charge of sanitation infrastructure, where they mainly handled designing as well as implementation of trunk sewer and water infrastructure.

¹⁸ Interview conducted with Urban planner at the Nairobi City County on 31st March, 2016. For more details, see Appendix 12.

The interview then focused on the perspectives of informal settlements in the eyes of the County. Informal settlements exist in Nairobi and were referred to as informal/unplanned settlements, stated the planner. An estimated 60% of the city's population resides in these areas which are mapped and receive basic infrastructure through the special area planning interventions. The Kenyan Government has come up with strategies for slum improvement and upgradation mainly through the improvement of basic infrastructure and economic empowerment of the slum dwellers.

The planner also elaborated that the County is further *“implementing some strategies to improve land tenure security and basic infrastructure through various projects such as KISUP (Kenya Informal Settlements Improvement Programme), KENSUP (Kenya Slum Upgrading Programme), WSUP (Water and Sanitation for Urban Poor) etc., that are being done in collaboration with the World Bank and the UN-HABITAT. These programmes are taking an infrastructure-led upgrading approach in informal settlements and slums”*.

Lastly, with regards to the growing violence in the city, the planner detailed that *“the County is aware of cases of GBV and there are various initiatives in collaboration with the national government, local community, CBOs, FBOs and NGOs to manage rescue centres for reporting and rehabilitation of victims”*. The planner stressed that their laws and legislations under the Kenyan constitution, prohibited any violence against women as *“the stipulations offered the victims a platform for justice in case of such unfortunate events as well as medical and counselling aid for the affected residents e.g. Nairobi Women's Hospital and FIDA Kenya (Federation for Women Lawyers)”*.

b) User Involvement

While the planner stressed that they actively seek engagement from community leaders and different groups, there was no formal process of incorporating their participation, which was considered a soft aspect. The planner further stated that community participation through the Public Participation Act is required by the constitution.

Nonetheless, the users are involved in the process of implementation of service provision during need-prioritization, planning and implementation because public participation is mandatory by law. Furthermore, through KISUP and other projects, most residents of informal settlements and slums are being engaged in planning and implementation of infrastructure upgradation. However, the planner admitted that *“the people living in the informal settlements had limited access to infrastructure compared to people living in the planned neighbourhoods”*.

Lastly, the planner also emphasized that *“women made up a very large part of the stakeholders involved, who must be engaged as an interest group throughout the project phase”*.

c)Contestations and Negotiations

The planner highlighted a number of challenges faced by the County and the city namely—lack of updated data on the demand and rate of growth in the city, urban sprawl and congestion which lead to inaccurate planning for the necessary services, lack of sufficient funds; making implementation of the plans extremely poor, current statistics on service provision being not readily available, inadequate access to basic infrastructure and insecurity of land tenure and lack of economic opportunities.

The City County was also completely focused on SWM within sanitation infrastructure provision. This was done via firstly, addressing the issue within the Master Plan. However, JICA, who are funding the current Urban Development Master Plan (2015-2030) of Nairobi, insisted that *“informal settlements are not to be touched”*, according to the urban planner. This made it challenging for the County office to work towards service provision and integration of informal settlements within infrastructure planning. In addition, the official stated that they were only involved in the broader Master Plan for the city and Athi Water Board Services designed and implemented the services within the city on a smaller scale. Furthermore, the official elaborated that the people could give feedback through the Neighbourhood Associations and that they had a women’s representative included in the process. However, the official admitted that *“they haven’t been able to integrate these ‘soft aspects’ within the broader technical planning”*.

2. Acting CEO (Chief Executive Officer), Athi Water Board Services, Nairobi, Kenya

The next stakeholder interviewed was Athi Water Board's acting CEO.

a) Stakeholder Perspective

Athi Water Board is responsible for sanitation infrastructure planning and provision in Nairobi City, by designing and implementing the shared communal sanitation facilities, sewer trunks and SWM network. The board was created by the Water Services Regulatory Board in 2004. The acting CEO explained that the Board's role was chiefly: ownership and holding of water and sewerage assets/infrastructure, planning, development and expansion of water and sewerage services, contracting out water and sewerage services to Water Services Providers (WSPs) and monitoring and supervision of water and sewerage services to WSPs.

The respondent¹⁹ further explained how their yearly accountability mostly was on construction of water pipelines in informal settlements, construction of sanitation facilities in identified plots in informal settlements and capacity building for CBOs. The Board in compliance with the Master Plan 2014 had been running various projects namely; the WASSIP (Water and Sanitation Services Improvement Plan), KWSP (Kenya Water and Sanitation Programme) and WSBSP (Water Services Board Support Programme, which is being funded by African Development Bank and UN Habitat and is focused presently on Kibera).

The respondent stated that their aim was to maintain technical services within ablution blocks provided to the settlements. Fig. 5.8 shows the standard technical plans of ablution blocks that Athi Water provides in slums and informal settlements as a shared sanitation facility.

¹⁹ Interview conducted with the Acting CEO of Athi Water Board Services on 31st March, 2016. For more details, see Appendix 13.

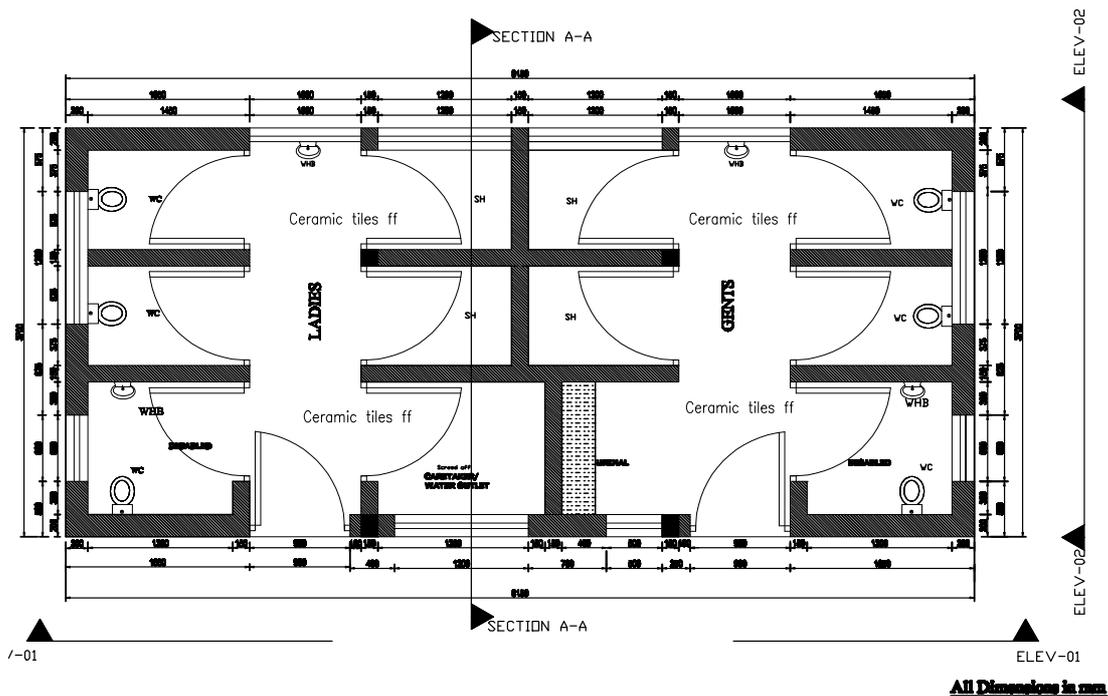


Fig. 5.8 Image showing Ablution Block plans by Athi Water, Scale: 1:20 (Source: AWSB)

b) User Involvement

In terms of user involvement, even though the official admitted that they designed toilets differently for men and women *“by providing more space for women, they don’t include the users in the design process”*.

c) Contestations and Negotiations

The official described their challenges as availability of space, squatters occupying identified spots, corrupt elected officials, hostility from the locals, connection to existing piped and sewer connections in informal settlements and lastly, accessibility to service provision due to lack of space and people having to walk more than 10 minutes to reach the facilities. Lastly, the official also stated that while they take extreme care in making sure the toilet designs include ramps to be disabled friendly, they didn’t incorporate any design measure specifically for women except for providing more space for women in ablution blocks.

3. Sociologist & Ecologist (Environmental Assessment Department), Informal Settlements Department (ISD), Nairobi Water and Sewerage Company, Kenya

I. Sociologist, ISD, Nairobi Water and Sewerage Company

Nairobi Water company was privatized in order to bring services closer to the people. According to the Kenya National Bureau of Statistics population census, 48% of households in Nairobi are connected to the main sewer and Nairobi Water and Sewerage Company accounts for 70% of national sewerage coverage as well as water and sanitation coverage (as stated by the Ecologist interviewed).

The Informal Settlements Department was created as a government initiative in 2008. The aim was to defuse the tension in existence; between the residents and the water company as a result of frequent water disconnections which was perceived as denial of service provision by the residents of slums and informal settlements. However, water cartels (informal water vendor groups) quickly capitalized on the situation to provide water and sanitation services but at an exorbitant fee which could hardly be afforded by most residents.

Furthermore, Nairobi Water and Sewerage Company recognized the role of stakeholder involvement in coordinating planning activities and to avoid conflict with other organizations. Thus, infrastructure planning and implementation was done together with stakeholders. Some of the main stakeholders were—Nairobi City County, Water Service Regulatory Board (WASREB), the company's board directors, staff and the residents (customers) of the informal settlements. Currently, the company has its headquarters in Kampala Rd, Industrial Area and has its area of jurisdiction divided into six administrative regions namely Northern, Southern, Eastern, North Eastern, Central and Western which are further devolved into 25 zones.

Thus, the first official from ISD that was interviewed was the sociologist, who was responsible for acting as the liaison between the community and the officials at Nairobi Water. The sociology department was setup specifically to mediate and encourage participation of all stakeholders within the service provision process and to provide the residents with access to decision making as well.

a) Stakeholder Perspective

The sociologist started by explaining²⁰ that the department was funded by Nairobi Water Company but its activities and all field coordination were funded by partners and stakeholders such as the World Bank, Water & Sanitation for The Urban Poor (WOSAP), Water Services Trust Fund (WSTF) and Athi Water Services Board. The department was now considered a very strong unit within the company with a full chain of command. Their role within the city services was mainly—planning activities such as mapping the areas demarcated for water and sanitation projects, mobilizing and sensitizing residents on the different projects in the settlements so they can participate actively and give their inputs. The key focus/strategic areas for the ISD were water and sanitation infrastructure provision specifically, within informal settlements.

The sociologist further elaborated that “*informal settlements do exist and they are referred to as unplanned*”. The ISD estimated that about 60% percent of the urban population in Nairobi reside in informal settlements, were not recognized by the government and couldn’t access basic water and sanitation services, housing and infrastructure. Due to lack of infrastructure and basic service provision in informal settlements, the residents ended up spending up to 30% percent of their meagre incomes towards basic water services.

Since the ISD was formed with focus on informal settlements, they were planning and implementing various programmes such as installing “*more water kiosks (prepaid water dispensers), extension of sewer lines, water pipes and sensitizing the residents on the same*”. There was water connection in every village to ensure that every resident was near a water and sanitation facility. There was a water ATM project (paying for water based on consumption) initiated by the ISD as well as additional provision from water vendors and water cartels. The sociologist admitted that the “*implementation process is rather slow*”.

²⁰ Interview conducted with the Sociologist from ISD in Nairobi on 30st March, 2016. For more details, see Appendix 14.

as the department still needs partners to fund these projects which cover a very large area of the population in these settlements”.

Upon inquiring about the impact of the projects that have been implemented by the ISD, the sociologist stated that *“there is usually an impact assessment carried out by the environmental impact assessment department through frequent researches, household data collection, baseline surveys and data analysis”.* The sociologist indicated that *“this usually assists the department in measuring the strength of water and sanitation projects in the informal settlements and whether or not they bear great impact within the settlements. This is also used to gauge how far they go in services provision and how much the residents’ standards of living have been improved as a result of the departments input in service delivery provision”.*

The questionnaire then focused on queries about GBV and whether the ISD had heard about any cases and if yes, were there any measures being taken up to tackle it. The Sociologist explained that ISD believed that the challenges that were faced by women were mostly security based especially when they access sanitation points. *“These security issues arise due to unnecessary harassment, sexual abuse and rapes that occur as a result of idlers hovering around the sanitation points especially when they’re deserted during the day. Sometimes, they have to travel long distances in search of this scarce commodity with children strapped on their backs just to satisfy the needs of the household.”* The sociologist also mentioned about health issues related to infrastructure, stating that *“when the sanitation points are not kept clean and hygienic, they are also exposed to vaginal diseases”.*

For ISD, the only available tools to stop or minimise these occurrences came from the legal framework, e.g. by seeking legal redressal against perpetrators with the help of the village elders, the area chief, with information from the public and the police. There were also fundamental laws in place within the constitution to assist the victims in getting justice as the perpetrators were apprehended and taken to the court. In the eventuality of rape/molestation, Médecins Sans Frontiers (MSF) as an organisation, dealt with giving the victims

medical attention and counselling services while FIDA assisted and supported women in accessing justice by taking on pro-bono cases. Fig. 5.9 shows an Ablution block managed and constructed by the ISD in Mathare, where the funds for its construction were received from the County Development Fund (CDF).



Fig. 5.9 Image showing Ablution Block in Mathare by CDF (Source: Author)

b) User Involvement

The sociologist explained that they took user involvement very seriously. They tried to incorporate the residents by conducting surveys through questionnaires, took frequent photos of both new and existing water and sanitation facilities, conducted Focus Group Discussions and held frequent meetings and consultations with the water committee as well as the residents. According to the sociologist, *“there is massive community participation in the decision-making process through Focus Group Discussions, committee meetings, Barraza (a public meeting) with the area chief and villages elders which involves all local residents in the informal settlements”*.

The sociologist also emphasised that the ISD, after these public meetings or Barraza then reorganized, mobilized and sensitized residents as it was the main link between the residents and the main water company. These were done through efficient planning, bringing on board landlords and forming wa-

ter committees within the community; with the aim to come up with permanent solutions to the water and sanitation situation in the informal settlements: *“the users are always involved in the process of implementation of service provision as the ISD always goes directly to sell Nairobi Water’s schemes which also gives them a platform to air their views and concerns regarding the various projects that are being implemented at the time. This is usually co-ordinated by the village elders, community leaders and the residents themselves.”* Moreover, the sociologist stated that the participation of the village elders *“neutralized any vested interests and resistance from the community at large”*.

Lastly, the sociologist stressed that *“women are given priority as users during planning and they are usually involved in impact assessment as well”*. As they form the majority of users and stakeholders of water and sanitation infrastructure, their needs have to be taken into account. Apart from the fact that they’re mostly available in the day, the women were the strongest link between various households and water/sanitation points.

c) Contestations and Negotiations

The sociologist highlighted numerous contestations and negotiations within service provision and maintenance. While ISD took over the maintenance of the shared toilets upon the completion of design, they were not involved in the designing or site selection process. The official stated that many of these facilities ended up being unused due to its location. Additionally, the shared communal toilets also put women and children at a disadvantage, namely their—health, privacy and security due to their location.

Moreover, the official mentioned that the people cited GBV (including child defilement) as a challenge but apart from an awareness programme, it was difficult to address the challenges as most of the shared toilets were manned by boys from the youth groups. The ISD was aware of such occurrences but had no mechanisms put in place to deal with such cases as it was not within their mandate to get involved, apart from advising the victims to seek legal redressal. ISD was particularly aware of cases of violence against women while accessing toilets among informal settlement residents but as mentioned above

has limitations to intervene. The challenges faced by the residents in informal settlements were also varied—not every area of the settlement was mapped (the ISD was trying its level best to ensure that at least every village was mapped in terms of water and sanitation) and most of the residents did not have allotment letters from the government (security of land tenure for the urban poor). The sociologist explained that some measures were being undertaken to tackle these challenges by residents in these settlements. These included looking for more partners and stakeholders to put up more water kiosks, water and sewer network extensions and to install more pipes for un-disrupted water connection into homes at a subsidized fee.

Hence, while the ISD had been taking initiative to increase and encourage participation at all levels, they were also aware of restrictions they faced due to existing mandates and not having more power to intervene. The setting up of ISD itself presented an encouraging view on wanting to provide services to all residents in the city, but due to delineation in roles of service provision, their power of intervention was faced with barriers.

II. Ecologist, Environmental Assessment Department, ISD, Nairobi Water and Sewerage Company

After speaking with the Sociologist at the ISD, the Ecologist within the department was interviewed, since their sub-department was responsible for impact assessment of all the projects ISD implements, monitors and maintains in informal settlements.

a) Stakeholder Perspective

The Ecologist started by explaining how sanitation infrastructure was planned to adequately handle and manage the waste water arising from the use of treated water. Provision of basic services was considered important by the ISD, especially with regards to health, sanitation and avoiding an outbreak of waterborne diseases like cholera. Nairobi Water, to tackle these outbreaks had planned to extend sewer coverage in Nairobi by 60km at an equitable staggering length of sewer line extension of 12km annually in the next five years. He stated that “*although Nairobi Water faces various challenges during planning of*

sanitation infrastructure but the company values a bottom-up approach while contemplating on infrastructure development”²¹.

The Ecologist further explained that during the period of 2014/15 - 2018/19 plan, Nairobi Water had planned various investments to enhance and expand its relative contribution to the achievement of water, sanitation and sewerage coverage in the informal settlements. Nairobi Water had plans for specific water and sanitation extensions in 11 informal settlements areas, including Mathare (20km, 3000 connections). The company was also implementing major rehabilitation of sewer trunks in 8 identified sewers.

a) User Involvement

When it came to user involvement, the ecologist stated that the company was always in touch with the members of the community especially in informal settlements to understand what were the immediate needs of the residents that require improvement and to promote ownership on infrastructure.

b) Contestations and Negotiations

The Ecologist highlighted numerous challenges faced by Nairobi Water and its ISD namely, rapid growth in population within the city and especially in the informal settlements, as an enormous challenge during every planning phase for all projects. To tackle this challenge, the company brought on board all the relevant identified stakeholders on board e.g. National Environment Management Authority (NEMA) and NBS.

Hence, the ecologist highlighted the technical and material installation focus for Nairobi Water when it comes to service provision.

²¹ Interview conducted with the Ecologist from ISD in Nairobi on 30th March, 2016. For more details, see Appendix 15.

5.5.2 State Interventions: Municipal Interventions

1. Community Health Assistant/Extension Worker (CHA/CHEW), Nairobi

After speaking with personnel from Nairobi Water Company, findings revealed that the City County Sanitation provision is monitored by sub-county offices. In the case of the chosen informal settlement of Mathare, Starehe Sub-County was responsible. Within the Sub-County, the health director (under whom sanitation was based due to a health and hygiene perspective) stated the personnel directly responsible for each settlement were the Community Health Assistant (CHA or as formerly known as Community Health Extension Worker/ CHEW) working in Mathare. The CHA explained to me their role within the provision process.

a) Stakeholder Perspective

The CHA started the interview by explaining that the County Government was in charge of sanitation infrastructure planning and provision for Mathare informal settlement. The Community Health Assistants and Community Health Volunteers (CHV) were the main link between the community and the Ministry of Health (MoH). This was ensured by the CHAs filing monthly reports on all the activities that took place in the community.

The main focus of the county was on giving essential provision of water and sanitation to the residents in each settlement (Mathare in this research) as well as controlling the spread of communicable diseases in the community. The Ministry of Health funded all the activities especially in the informal settlements through the County Development Fund (CDF).

The CHA further elaborated that *“informal settlements are termed as unplanned because the ratio of health and sanitation/infrastructure provision outweighs the number of residents in the informal settlements”*²². Additionally, the CHA detailed that it was not easy to give the most appropriate figure of how many people reside

²² Interview conducted with the Community Health Assistant in Nairobi on 27th March, 2016. For more details, see Appendix 16.

in these settlements but the county estimated around 70% percent of the city's population. The CHA claimed that these settlements were mapped but received inadequate provision of basic services due to high population in the settlements.

In terms of sanitation infrastructure, a huge percentage of the population in the settlements used shared/public toilets. On an average *“more than 140 residents of the informal settlements population use either one public toilet or one water cartel runs toilet with very poor sewerage, piping and water infrastructure. This makes the spread of communicable diseases very easy, rapid and extremely difficult to contain”*.

The CHA believed that while the county government was trying their best to tackle these challenges, the pace was extremely slow due to the ever-increasing population of informal settlements. However, the county government, in conjunction with the Ministry of Health and Nairobi Water Company, had been able to put up more water points in at least every village in the settlement but the number was still inadequate.

Lastly, the CHA described that their role with regards to VAW was to: create awareness, especially amongst women users on how they can protect themselves when accessing shared toilets, engaging residents and community leaders in what measures can be taken to curb these violence against women, referring victims to hospitals and clinics where they can access medical attention in case of any form of violence against them e.g. MSF and the Eastern Deanery, assisting victims in reporting these cases against their perpetrators to the relevant authorities. Fig. 5.10 shows the form every CHA had to fill out describing the state the existing dwelling units. The form included questions on households with/without functional sanitation facilities.

Although there were poor mechanisms to deal with issues surrounding violence against women in these settlements, the incidents were usually reported to the village chief, village elders and the CHA's who in turn report to the police for intervention.

b) User Involvement

The county generally involved the community leaders and NGO's for Focus Group Discussions, however the community always ended up feeling frustrated because very few programmes would get implemented.

The users were not involved in the process of implementation of service provision. There was usually no impact assessment carried out either during planning/after implementation of an infrastructure or service provision. A section for assessment had never been created for such activities within the CHA's department. They only gave weekly reports of all the activities that they were dealing with in a particular month to the sub-county health office. The women were given consideration as users during the planning phase but they were usually not involved as stakeholders.

COMMUNITY HEALTH EXTENTION WORKER SUMMARY

MOH 515

Province: _____
 DISTRICT: _____ DIVISION: _____
 LOCATION: _____ SUB LOCATION: _____ Total Villages: _____
 NAME OF CU: _____ NUMBER OF CHWs: _____ Total Reported: _____
 CHEW Name: _____ Month: _____ Year: _____

Sno	Indicator	Number	Sno	Indicator	Number
1	Number of households				
2	Total population				
3	Total women 15-49 years				
4	Total children 0- 6 months				
5	Total children under one year old				
6	Total children under five years old				
7	Adolescent and youth - Girls (13 - 24 years)				
8	Adolescent and youth - Boys (13 - 24 years)				
9	Total population of the elderly (60+ years)				
10	Number of household not treating water				
11	Number of households not using ITNs				
12	Number of household without hand washing facilities e.g. leaky tins in use		39	Number of deaths	
13	Number of households without functional latrines			< 1yrs	
14	Total pregnant women			1-5yr	
15	Number of pregnant mothers who did not attended at least 4+ ANC visits			Maternals	
16	Number pregnant women referred			Other deaths	
17	Number of pregnancies under 18 years			Total deaths	
18	Number of deliveries by unskilled attendants		40	Number of Households without staple food	
19	Number of births		41	Number of Households without the package of IEC materials	
20	Number of Newborns Referred		42	Number of school drop out	
21	Number of women(15-49yrs) provided with FP commodities			Male	
22	Number of children not fully immunized			Female	
23	Number of children less than 5 years not supplemented with Vitamin A				
24	Number of immunization defaulters traced				
25	Number of children not de-wormed				
26	Number of children <6 months not exclusively breastfed				
27	Number of severe malnutrition cases referred				
28	Number of moderate malnutrition cases referred				
29	Number of fever cases managed				
30	Number of diarrhea cases managed				
31	Number of injuries and wounds managed				
32	Total number of cases referred				
33	Number of people with chronic illness or cough for more than 2 weeks referred				
34	Number of people who do not know their HIV status.				
35	Number of elderly persons who had routine check ups				
36	Number of dialogue days				
37	Number of community action days				
38	No. of meetings with CHCs				

Remarks _____

Signature _____

Fig. 5.10 Image showing Form of CHEW. (Source: CHA)

c) Contestations and Negotiations

The CHA detailed the challenges faced by the residents of informal settlements as the lack of essential basic services such as clean water, sanitation, infrastructure, proper piping for manholes, very poor drainage systems and electricity. Moreover, he recognised the violence associated with political tensions and their effect on infrastructure provision by elaborating how *“a private NGO had come up with a project to put up more toilet facilities in the area which gave hope to Mathare residents but the project was stalled due to the 2008/9 post-election violence witnessed in the area. The ones that were almost complete were either vandalized or grabbed by people with vested interest in the project”*.

The CHA further stated that at the moment, there were no upgradation programmes being either planned or implemented due to the political tension/unrest being experienced in the country due to the up-coming government elections in 2017. The residents till then had to utilise existing programmes such as the water kiosks that have been put up by Nairobi Water and public toilets being run by cartels and private vendors.

The CHA spoke clearly about the many challenges that women residents faced: they had to walk long distances with children strapped on their backs in search of water for their households, several GBV cases were reported every month in informal settlements, and no proper access to sanitation facilities either during the day or night due to fear of being molested or raped. This according to the CHA led to different methods of defecation e.g. flying toilets, defecating in trenches and often using buckets which they emptied in the mornings. Nonetheless, the CHA praised the MSF for always being available on site to assist with medical attention and counselling services for the victims.

2. Community Health Volunteer (CHV or also known as Community Health Worker CHW), Kenya

The county government was responsible for sanitation, infrastructure, planning and provision for Mathare. The role of the Community Health Volunteer was to be a link between

the community and the ministry of health by preparing monthly reports. The CHV reported to the CHA, who further reported to the Municipal Health Director at the Starehe Sub-County Office for Mathare Informal Settlement. The main focus and strategic areas that the CHV's worked on were—essential provision of water, toilets and outbreak of communicable diseases in the community. Most of the times, the CHVs work was on a voluntary basis, but they were responsible for 100 households and monitored the existing sanitation conditions of the households as frequently as possible.

a) Stakeholder Perspective

The CHV stated that informal settlements in Nairobi were termed as unplanned. Additionally, Mathare as a settlement was mapped and they didn't receive provision of basic service like water kiosks and sanitation (ablution blocks) though these services were inadequate due to high population in these settlements.

The CHV detailed that the main challenge faced by women in informal settlements was GBV in terms of rape and sexual violence while trying to access sanitation infrastructure but this also led to unhygienic practices like *“throwing used sanitary towels outside on the roads”*²³. However, *“the community chiefs and the police are also usually involved in these cases though they can't do much due to witness intimidation and victims opting to settle the cases outside police jurisdiction.* The role of the CHV'S thus, was to create awareness on the do's and don'ts of using shared toilets in the community,

b) User Involvement

The CHV explained that the community was rarely involved in the decision-making and implementation process of service provision of water and sanitation programmes. In addition, women as users were not involved as stakeholders during planning or in impact assessments. The CHV was however not aware how infrastructure planning and implementation is carried out. The CHV believed that individual plot owners who were the landlords, had the ultimate say in regards to planning since they owned the land in which the houses were built.

²³ Interview conducted with the CHV in Nairobi on 27th March, 2016. For more details, see Appendix 17.

c) Contestations and Negotiations

The CHV outlined some challenges faced by the residents in informal settlement of Mathare—poor basic service provision, no piping for manholes, poor drainage systems that got worse during the rainy season and very few toilets compared to the population in Mathare. The CHV highlighted that not much was being done to tackle these challenges as the population continued to grow rapidly. Nonetheless, the Nairobi Water and Sewerage Company was working closely with Pamoja Trust and the community to be able to provide more water points and build ablution blocks for residents in Mathare community. The youth groups were also being involved with garbage collection within the community but at a fee which some residents were still not able to afford.

Many NGO's had also come up with upgradation programmes but few were being implemented due to the hostility being faced from some residents. The CHV explained that this frequently happened since the community was never involved in the decision-making and implementation process of these programmes. The CHV stated the need for the residents to be sensitized on the importance and benefits of these programmes.

Furthermore, despite the CHV's monthly monitoring of the sanitation condition of each assigned household, no impact assessment was ever carried out. There were no surveys carried out to determine the needs and wants of the community in regards to basic service provision in the informal settlement. In addition, measures to respond to GBV were always through MSF only, who treated and offered counselling to rape victims. Hence, despite CHA and CHV being present, the residents felt comfortable calling an international agency for help instead of relying on the state actors for help. Fig. 5.11 below is the form every CHV has to fill out for any resident seeking any kind of medical attention. This form then has to be handed to the nearest health care facility. The CHV interviewed stated how these forms were often used in GBV cases.



Serial No.

MINISTRY OF HEALTH 1808901
CHW's Referral Form

<i>Section A (Client's data)</i>	
Name of patient/Client _____	Date _____
<input type="checkbox"/> Child <input type="checkbox"/> Adult	Age _____
Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female	
Name of Community Unit (CU) _____	
Name of Link Health facility for the CU _____	
<i>Section B (Reason for referral)</i>	
<input type="checkbox"/> Reproductive <input type="checkbox"/> Child <input type="checkbox"/> TB <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Others	
Main Problem _____	
Treatment Given _____	
Referred to _____	
Comments _____	
<i>Section C (CHW referring)</i>	
Name of CHW _____	
Signature _____	
<i>Section D (Receiving officer)</i>	
Name of the receiving officer _____	
Profession _____	
Name of health facility _____	
Action taken _____	
Signature _____	

Fig. 5.11 Image showing Form of CHV. (Source: CHV)

5.5.3 Development Interventions: Development Agencies and NGOs

The interviews with state actors revealed development agencies as key stakeholders within infrastructure provision in Nairobi. The two infrastructure-led upgrading projects that were brought up by all state actors (KISIP and KSUP) involved the UN-Habitat and the World Bank as—funding partners, knowledge sharing/capacity building networks and implementing agencies. Both these agencies are global entities with projects all over the world, but within Nairobi, their infrastructure focus towards upgrading had brought a new lens on approaches being adopted by local government authorities.

Hence, the first development agency interviewed for this research was the UN Habitat. As experts were identified based on their function, the first to be interviewed was the Water and Sanitation Expert and then the Gender Equality Unit leader at UN Habitat's head office in Nairobi. After speaking with the UN Habitat, a group interview with experts from the World Bank was conducted to discuss their perspective on infrastructure led-upgrading approaches and whether they have come across intersections of violence within these projects.

1.UN-Habitat, Water and Sanitation (WATSAN) Expert, Kenya

The UN habitat is one of the UN agencies that is a global entity, working on issues affecting its member states. Nairobi city happens to be the headquarters of UN Habitat on the global level. However, they are not an implementing agency but rather are a facilitating agency.

Hence, to facilitate the investigation, I interviewed the Water and Sanitation (WATSAN) expert to discuss how the agency came up with infrastructure led upgrading and the community's response to it.

a) Stakeholder Perspective

The expert started by explaining that the position UN Habitat adopts during projects is that of *“facilitate(ing) and engage(ing) in knowledge management and research innovation. In the process of doing that, we engage in pilot projects, start giving out new knowledge and we make it available to any country. Development as a top down approach has never worked since it has to be from the grassroots upwards.*

Hence, the modality of the process of engaging people has to be embedded within the program²⁴”.

The expert detailed that since they weren't an implementing agency, they worked through locally established agencies or through government institutions. In Nairobi, the policy for slums and informal settlements had for a long time been eviction but not upgrading. The eviction process was followed by bringing in a new class of people as residents. However, displaced residents often ended up creating new informal settlements and the movement flow within the city remained constant. Hence, the agency advocated upgrading as a preferred choice to minimise displacement of residents.

The agency's role was to also support the government in improving in technical aspects. Hence, their engagement with the community was through a certain entity; that could be either an NGO or a government body that was responsible for a particular activity that is problematic. The expert explained that *“if the residents of the area are not legal according to the required international standards, then we come in, but just to bear the cost and put in the water supply in the slums”*.

The expert believed that the lack of infrastructure services within slums and informal settlements had led to a *‘it would be what it would be’* attitude amongst the residents. The informal settlements presented a challenge with regards to provision of space. Although there were spaces demarcated for storm water drains, most people had built over them, leaving no space for the waste water to flow. However, the expert sounded optimistic about planning to accommodate solid-waste and explained that lack of proper access to sanitation facilities had led the residents to resort to coping mechanism *“since they have to respond to the call of nature, have to get the waste out of the house and the provision for services is not there, the residents end up creating their own by the way of flying toilets. This is what I suppose is outside my door syndrome”*.

²⁴ Interview conducted with the WATSAN Expert from UN Habitat on 23rd March, 2016. For more details, see Appendix 18.

Moving on, the expert then described the agency's involvement with the Kenyan government in upgradation programs specially the Kenyan Slum Upgrading Programme (KSUP). The program was responsible for implementing housing, for which all plots that had been earmarked for occupancy were being granted permit. The agency has ensured that the plots were distributed through ballots. The expert described it as a Participatory Slum Upgrading Project where they *“conducted a survey of needs assessment and people ranked water and sanitation as number one. This led the agency to determine that putting in water and sanitation infrastructure projects could also be an entry point to slum upgrading. All these projects had to be done through a participatory approach, where they must build a sanitation facility, and the community then takes over the role of managing the facilities that are finished, ensuring that they maintain records and then they have to use the proceeds from this and put into their co-operative savings”*.

Within sanitation infrastructure provision, the expert revealed that they *“built abolition blocks that are shared and are gender sensitive”*. Also, the design took into accordance vulnerable groups like the physically disabled people and the design of the blocks had *“separate male and female toilets, a space for taking care of young children and a small space for laundry. The facility was fitted with a 10-litre water storage tank on the roof to ensure that at any given time, if there is shortage of water supply, the storage water can be used in the facility as back-up. The coordination office run by the community was responsible for controls issues like management of toilet paper, water collection points and cleanliness of the whole place. A basic fee was set for the people through community led process. The charges were set as 1 KSH (Kenyan Shilling) to use the toilets and 5 KSH to use the bathroom, because the bathroom used a lot more water”*.

Furthermore, the expert explained that the toilet designs varied from place to place depending upon the availability of other related services like sewage connections. They also ensured that the environmental safety standards were in place. The expert explained that *“in a public utility you want to put a lot more of squatting toilets for hygiene issues. We cannot say for certain a particular type of toilet will be used for all because others might not approve of this. But any development that you want to do or take to another place must stick to local dynamics and*

cultural values. So, it has to be what they want, what type of the toilet do they prefer? So, based on that demand you only have to add the technical aspects to it, but the design must first be responsive to local norms”.

The expert also highlighted that *“even in the Joint Master Plan Regulations, at some point a shared toilet was not accepted and pit latrines are not acceptable. But in a proper informal settlement, there is no light, no water, no sewage connection, there is issue of land and water. So, where do you want them to go? So, we had to meet with these people and talk about their definitions and look at what shared facilities we can put in place and to hear from people how environmentally safe they were”.*

Hence, the agency used infrastructure-led upgrading as an entry point to engage further with the community. With the help of an NGO, they further included community mobilisation, awareness creation, provision for a road to open up movement within the settlement, included youth for solid waste collection, set up trainings and workshops for the youth, installed a healthcare centre, a rehabilitation centre for the disabled, a hall for community meetings and lastly, installed computers for the youth and any other person who wanted to learn some basic courses.

Moreover, the expert stated that the component of road provision was appreciated the most by the local government authorities. The authorities proposed an upgraded 12-meter-wide road which included a 6-m carriageway, 2-meter walkway, 2-meter drainage on both sides and took the responsibility for the first 500 meter as opposed to the usual 2 kilometres. However, despite their enthusiastic response, the project cost increased from about \$500,000 to a million plus. Nonetheless, *“such an approach of infrastructure led upgrading created a major impact within the approaches to slum upgrading in Kenya. The very first entity to pick it up was the World Bank who instead of putting their money into the KSUP, which was already there, decided to create their own program called KISUP- Kenya Informal Settlements Upgrading Programme, which is also being run in collaboration with the Kenya government”.*

Furthermore, the pilot project of KISUP was conducted in Kibera but ended up influencing the approach to slum upgrading in the governmental levels too as *“in the*

last two years, the Kenyan government started rolling out some infrastructure improvement in all the major slums in Kenya including Mathare. If you go there now, you can see that there is a road now and all the Matatus go in all the way”.

After talking in detail about the agency’s role and actions, questions on informal settlements and the attitudes towards service provision were discussed. The expert stated that within the development corridors, the preferred term for unmapped settlements is informal settlements since *“slum is a degrading term and unplanned is not correct because some informal settlements are planned, at least you have planned roads so you have roads and spaces for putting up housing structures but it is illegal as the housing structures have not gone through what we call approval, so they don’t meet the standards that are required for putting up a house. So, in that case they each become informal and for you to formalize them, you need to do some improvements so that they meet certain standards”.*

The expert further elaborated that residents of informal settlements were major stakeholders in the urban economy. They also had a right to access services within the city like any other resident but *“because of the mentality; that these places are illegal, for a long time no service provider would go there and provide water supply, sewerage, electricity and roads. Because by doing so you seem to be informally legalising them. Why should you want to put water supply in a place that can be flattened?”*

These arguments brought forth by the expert raised further questions on land tenure and ownership. The expert detailed that informal settlements often have no legal documentation, thus making it difficult to redevelop it. However, in KISUP, apart from infrastructure provision, the UN Habitat also ensured ownership of the newly built structures through a community led participation process, that developed into cooperative housing. The plot ownership was not free but was a highly-subsidised mortgage fixed by the cooperative. Furthermore, the community ensured an enumeration of households to issue valid proofs.

The questions then focused on GBV and if any intersections had been observed in the infrastructure projects being developed and supported by the UN Habitat. The

expert stated that gender-based violence was often observed more in informal settlements. This had led them to a discussion around policy and related issues and to look at ways of addressing GBV because such issues appeared throughout the neighbourhood, especially around sanitation infrastructure. The expert elaborated that *“even though we remain the technical advisors, we ensure that the structure put in place is adequate enough for such kind of eventualities, namely segregation by gender so that there is no room for these kinds of unwarranted practices to continue”*.

b) User Involvement

With regards to user involvement, the expert stated that often on field visits, the programme officers met with the people to verify the project’s progress to make sure it was an inclusive process. For KSUP, the agency worked with a SEC (Settlement Executive Committee). The SEC was formed from all the participating groups in Kibera: youth groups, landlords, tenants, woman’s groups, disabled people and political action groups for government administration. Once all the members were brought in, they worked towards having an elected leadership- the chairman, the secretary and the treasurer. There was a constant a feedback process between the community. They also ensured a position for women in the leadership hierarchy; so that in the decision-making processes they are a part of the core group.

This feedback process also included looking at the design of the toilet, how was it seen by the community of the disabled, if it was sensitive towards women, the satisfaction level in terms of the toilet’s usability, security measures in place and affordability of the sanitation infrastructure. The feedback process was aimed at *“trying to bring them out of the coping mechanisms that they are used to, which is flying toilets and creating a new situation where they get used to going to a proper sanitation facility. But beyond this, it can also lead to demand for a household sanitation since they don’t have their own sanitation facilities in their houses or in their yards which provides access to privacy and at no cost”*.

Lastly, the SEC also worked on the road design as there was a difference between an all-weather road and Murram Roads (roads built with Laterite soil/dirt roads, which in East Africa vary considerably in the proportions of the stones which are

very small, in relation to earth and sand), to avoid minimum displacement of residents. The UN Habitat was majorly responsible for funding and technical support but the local community would make appropriate sites available depending upon the design of facilities that had been approved.

c) Contestations and Negotiations

The WATSAN expert throughout our discussion explained the numerous contestations and negotiation processes the agency dealt with, especially with infrastructure led upgrading projects. As a facilitating agency, the UN Habitat had to engage with both the users and the government to facilitate a smooth running of the projects. However, the expert stated numerous contestations faced in the field and in policy making.

The expert started by explaining that *“at the time the Millennium Development Goals (MDG) were set as indicators, they were perceived as the record setters. However, they proved to be vulnerable to technology, growing population and other factors that were instrumental in them coming to an end in 2015. This led to the Sustainable Development Goals (SDG), which were based on the reviews of the MDG and on previous literature”*. However, according to the expert, *“development is evolving and I don’t think that development is something achievable because it’s a relative term. What the development agenda is today may not necessarily be the same in the next five years or so. Hence countries, governments and the international community should be able to keep reviewing how they see the relevance of these (development) goals that we are not being able to meet and improve on them. But I don’t believe that any flexibility that has been given in the SDGs. It is still lacking within the new SDGs”*.

The expert further expanded on the SDGs by stating that within the SDGs, the response to solid waste was not very clear. There was more investment in the water service provision but the SDGs were not very explicit in solid-waste despite solid waste being one of the most critical liveable issue, particularly in slums.

Furthermore, there were also a number of challenges being faced within informal settlements that made infrastructure upgradation a challenge. Firstly, an infrastructure plan was lacking, there was no provision for how and where the solid waste would be separately delivered; either for onward transfer or even for regular collection. Secondly, conducting the survey to understand the priorities of the residents was met with scepticism. The Nairobi slum residents were not receptive towards anything to do with slum upgrading because they perceived these surveys as a way of eviction due to their past experience. They believed that the government would evict them and bring in new residents. Hence, they looked at the UN Habitat perhaps, as a neutral entity that would ensure that they were not evicted. Thirdly, even though electricity was provided within projects to allow the ablution blocks to be operational at night, but beyond any unregimented hours i.e. from 10 PM onwards, they did not have control over the security measures. Fourthly, the project assessment included impact assessment, where they looked at how it impacted all the other facilities and how it influenced policies. However, an impact assessment from residents still had to be carried out for the KSUP.

Fifthly, the expert explained that they carried out a survey of ablution blocks to determine usage at peak hours, namely from 6am to 9pm and found low usage by women users. They conducted *“a one-month survey in all the facilities to determine the number of users for each facility daily from 6 AM to 9 PM in the night and they wanted to know— how many women within the given time period used this facility along with their children, what was the population demand for this facility on peak days and within the peak hours and peak days, how many were registered users of the facilities, specifically with regards to gender and children”*. The survey revealed that *“even within peak days, a lot more men use the facility than women. Even the peak hours that are in early morning or late evening, there is a lot more men than women in these facilities. So, the usage of these facilities by the women according to the survey was not comparable to the men”*.

The expert provided insights on potential reasons for low usage by women being them using flying toilets, using Open Defecation (OD) and long walking distance between the toilets and houses. The expert believed that *“maybe these could be the reason why we register a lot more men. Sadly, it was not a part of the research, where*

anyone wanted to know the reason. Maybe we need to talk to the women to find out why they aren't so many".

To deal with these potential security issues, male and female facilities were separated. They wanted that the facilities are used in orderly manner *"so that, even if the woman might be drunk, they will be directed towards the women's wing"*.

Lastly, the most pressing challenge was land ownership and tenure. The expert explained how within Kenya, if a certain piece of land was occupied and resided on for a period of 10 years, then the occupier had a legal right to claim its ownership. However, through advocacy; the UN Habitat had been changing the governments' perception at various levels. Initially, the informal settlements were treated as illegal and considered to blank spots on maps. Nonetheless, the agency had been successful in shaping a positive outlook towards informal settlements by highlighting how they contribute to the development of Nairobi. They had described their contribution in the informal economy and how Nairobi as a city couldn't grow without them.

2. UN-Habitat, Gender Equality Unit, Unit Leader, Nairobi

After a detailed discussion with the WATSAN expert, the Gender Equality Unit leader was interviewed to find out how gender responsiveness, mainstreaming and sensitisation is being tackled within the projects and perspectives of the agency.

a) Stake holder perspective

The UN Habitat gender equality unit was based on the Gender Policy Plan (GPP) of 2002. Within this Plan, a Gender Audit was done along with a new gender policy plan. The GPP was used to formulate indicators to measure gender impact. The UN Habitat had further developed a gender marker tool for all its programs. This tool was used in design and implementation to monitor and evaluate gender mainstreaming within an ongoing project. The evaluation was done alongside the project design and implementation especially for urban planning and projects. Fig. 5.12 shows the tool in detail, with the criteria defining how a project is assigned a code depicting whether its gender blind or gender transformative.

GENDER EQUALITY MARKER		
CODE	DESCRIPTION	CRITERIA
0	Gender negative/blind	<ul style="list-style-type: none"> × No reference to gender of stakeholders, experts and/or target group × No reference to current gender relations and/or gender inequalities × No plans to collect sex-disaggregated data in project document and/or log frame
1	Gender aware	<ul style="list-style-type: none"> ✓ Gender Strategy contains gender analysis relevant to context of the project ✓ Specifies gender of stakeholders, experts and/or target group ✓ Plans to collect sex-disaggregated data in project document and/or log frame
2a	Gender sensitive	<p>All criteria in (1); and</p> <ul style="list-style-type: none"> ✓ Gender Strategy is linked to the log frame with specific activities, outputs, indicators and budget provisions to promote gender equality and/or women's empowerment ✓ Risk assessment discusses effects of gender-sensitive activities specific to context of the project ✓ Monitoring and Evaluation strategy includes a gender perspective
2b	Gender transformative	<p>All criteria in (1 and 2a); and</p> <ul style="list-style-type: none"> ✓ Project activities, indicators, expected achievements, outputs and budget are central to promoting gender equality and/or women's empowerment in achieving positive development outcomes



Fig. 5.12 Image showing Gender Marker Tool. (Source: UN Habitat Gender Policy Plan)

The respondent further elaborated that the “UN Habitat has gender specific projects on renewable energy, capacity building and non-traditional economies”²⁵. There were other sister units within the UN Habitat on Safe Public Space and the UN Safer Cities program, which had been running for 20 years. The respondent additionally stated that they also worked with local economic development partners and local authorities. This enabled an increase in efficiency of collection for services and gave them access to finance.

b) User Involvement

Upon inquiring about user involvement, the unit leader stated that within their projects on post-conflict countries, they emphasised on how women are placed in resettlement planning. However, other than this their role was very limited in determine inclusion of users.

²⁵ Interview conducted with the Gender Equality Unit Leader at UN Habitat on 04 April, 2016. For more details, see Appendix 19.

c) Contestations and Negotiations

The Unit leader described that the agency's level of involvement was restricted only to advocacy. However, their chief motive was to work with the gender marker tool, which was available online. If the tool indicated a value of zero, the project was considered gender blind and wouldn't get funded.

However, at present this tool was more of a software tool that looked at the soft aspects within the language of the project proposals and policies to determine gender inclusiveness rather than on-site impact assessment of projects being implemented.

3.The World Bank- Social Development Specialist, Co-Task team leader WATSAN Operations, Urban Informal Settlements Specialist & Urban Water and Sanitation Specialist, Nairobi Office, Kenya

The interview with the experts from UN Habitat revealed the World Bank to a key stakeholder, especially when it came to funding projects in collaboration with the Kenyan Government and specifically in Nairobi City County. The Bank, alongside UN Habitat was also working specifically on infrastructure led informal settlements upgrading projects (also in Mathare). Hence, a group interview was conducted with four experts from the Bank, who elaborated the Bank's perspective on informal settlements, infrastructure provision and GBV.

a) Stakeholder Perspective

The experts started by explaining how they worked with different stakeholders involved, especially within the context of Nairobi. They stated that *"the first engagement is with the government, national or international. In terms of financing, it goes to the national government who decides the beneficiaries and agencies involved in planning and supervision. We invite tenders to initiate competitive bidding. Our line consultants and the work contractors are competitively procured and they have to work with all the institutions. Basically, it's the national government, city country and the ministry and then its water sector institutions and the water service board.*

*In case of Nairobi, we work with Athi Water Service Board and Nairobi Water Company and the money comes from the national bank and the subsidy from the World Bank*²⁶.

The experts stated that generally, it was the government that asked them to engage in projects and requests for funding. The two then discussed to see if a project could come out of their collaboration and further move towards the financing agreement for it. The Bank has been engaging in one infrastructure project in Nairobi, but it hasn't been going so well.

Additionally, the experts elaborated that they started within Nairobi with institutional support and then water infrastructure project. Currently, the Bank had been working on a number of projects within Kenya, but two significant ones had an infrastructure focus. Within the Bank, they had a—Water and Sanitation Streamlining Force. It was started in 2007. The projects possessed a large waste water infrastructure, institutional network and an informal settlement sector. The first prominent project discussed by the experts was the water and sanitation improvement project (WSIP), which is focused on water. However, the Bank also has some other urban projects with water and sanitation aspects. The WSIP project was initiated in 5 towns—Eldoret, Mumias, Nairobi, Mombasa and Malindi. The experts elaborated how they *“moved the government view of slum upgrading to infrastructure upgrading to help the settlement upgrade themselves. We know that informal settlements are predominantly in urban areas. So, what we did was to provide some institutional support through technical assistance. We provided additional facilities to the water boards and even to the water utilities to come up with proper policies that were able to address the affordability component. So, we were able to put what we call social connection policies.”*

The expert elaborated that these social connection policies standardised and subsidised the costs of service provision, making them affordable for the residents. Whatever amount was fixed; its method of payment was targeted over a period of time rather than being a one-time payment and thus, ended up not being a burden

²⁶ Interview conducted with World Bank Experts on 30th March, 2016. For more details, see Appendix 20.

on the households to pay. The expert highlighted that in the case of Mathare, there was a hygiene component that has allowed an NGO to work there. The NGOs were able to mobilise and support work with the social component.

Hence, the Bank's engagement in informal settlements developed through improving regulations, intensifying the networks to bring in transmission lines and to ensure that primary lines remain close to the settlement. The experts highlighted that *"when you do network for the main city, water and sanitation are a big part of informal settlements. You will have a trunk line that passes through an informal settlement, so in that way we are supporting the settlement. We have a main project passing through a sewer via an informal settlement, then we have an informal settlement component that will do the necessary regulation of connecting to all households in the settlement"*.

Apart from regulating connections, the second component was Blended Financing mechanism at household level. Usually, most residents of informal settlements found it challenging to be able to pay regularly for connection services due to economic barriers. This would lead to their connection being labelled illegal and the utility provision would be cut. Hence, the Bank along with the utility company started acting on the behalf of the residents to *"provide money with blended financing with the bank called GPOBA (Global partnership on Output-based Aid), which provided subsidies for the poor and its only triggered for domestic issues/money being targeted for domestic use. They pay for this over a period of time, through a monthly bill with a 500 KSH and 100 KSH loan"*. Nairobi Water based on GPOBA, agreed to step in and was able to finance a little money and provide a loan to other water utility companies. This way the households were able to collect for the utility and pay for the connection. The utility companies were able to collect money over a period of 12 months.

Therefore, three key items of engagement emerged from the WSIP —first; social connection policies developed and adopted by water utility companies to allow for subsidised connections for low income houses; helped in regular payments, second; the utility companies acted on the behalf of the residents to gain loan from

a commercial bank or cooperatives to get them connections and the third, the incorporation of blended financing.

However, despite their initial view on WSIP and success of blended financing initiative, the Bank had been working on incorporating new and more innovative ways of engaging, because they observed that it took a long time for its influence to reach the people. Hence, at present, there was an on-going debate on what they need to do differently.

Apart from WSIP, the experts elaborated on other ongoing projects that were sanitation infrastructure based. The Nairobi Sanitation OBA Project was targeting 16,000 households in which the key was connecting households using blended financing. According to the experts, *“one of the key sanitation component that the project was able to deliver on construction was ablution blocks. The reason for this provision was based on the kind of housing that was present, making it difficult to give individual infrastructure at all and there was the issue of cost of connection. It made it more prohibitive to connect to the network to the network present in the area. Nairobi has a very small percentage of sewers, it is only 30% sewerred, so the trunks Lines are pretty far from these areas. So, the project was able to support the construction of ablution blocks connected to a septic tank”*.

These projects also informed the Nairobi Water and Sanitation Plan, which was an amenable plan. However, such a plan was still undergoing negotiations to be able to address high density informal settlements and slums, which said an expert *“makes it difficult to clean up.”* The experts stated how the conditions of the informal settlements posed problems since *“there is no space to build an ablution block. You have to buy the land from an owner who is not the actual owner because they don’t have any paper. It becomes quite messy and still the households are not served by the primary source of sanitation needs’*.

Hence, moving the discussion further towards informal settlements, the experts then discussed the Kenya Informal Settlement Upgrading Program (KISUP), which has a component of regularising land ownership to tackle these issues that the OBA Project was facing as *“once the ownership is established and regularised land is provided, we develop what is called are a Path/Settlement Development Plan for*

the settlement which physically opens up the area for access roads, which has made it easy to work. Besides that, there has been a component of community engagement where the community and water company work together". In addition, through all these projects, the Bank's target has been to find out what are the push factors for a low income household to want a (sewer) connection, what is the optimum price for a connection for these low-income households and what is the impact of sewerage in the settlements.

While they recognised that gender was one of the key indicators that had to be reported, no impact assessment had been initiated yet for the water and sanitation project. The experts elaborated that they *"focus on a lot on the prevention of violence through urban design especially in poor areas to decrease the rate of crime. The prevention is based on identifying hotspots of crime, having information on where and how the crime occurred and information to decide the placement of infrastructure.*

This information was *"important to help decide where to put toilets, especially what we have seen most of the times in informal areas community is that; areas that are close to the transportation nodes and areas inside the market, probably have a higher crime rate. The causes given generally lighting and the access pathways. These elements are linked more to do with urban design".*

Hence, based on these aims, the experts explained that the Bank's main focus with regards to GBV at present was a *"mapping process with an aim to identify the perceptions of women of security, because they are weaker from the rest of the population or maybe not. We also want to look at different forms of violence like sexual harassment, that are more prevalent among women. So, this is what we plan to try out with KISUP (...) I am not interested in looking at the violence but more interested in looking at how the public space is affected by this violence. I want to measure what women feel then they are going to the work, coming back from work, where do they feel safe and why they feel safe in these areas".*

b) User Perspective

The experts stated that for WSIP, the water company was required to work with the community and provide space physically before the water line would arrive.

Another innovation of the WSIP project had been the ICT component which had basically allowed the locals or low-income people to pay their bills. They took a self-meter reading and paid their bills via phone. They sent their meter reading to the system and paid the balance through the system as it was not a regular billing cycle. This was a necessary component as the implementing agencies in the project realized that the *“people in informal settlement have jobs in informal sector and they are paid wages and not a salary. They are sometimes paid for a week and if you give them a bill at the end of the month, and that is a huge amount and they will not pay. But if you allow them to give 100 KSH per week, they won’t get disconnected from water. This allows them the varying economic difference which allows payment at different income cycles”*.

Lastly, the experts highlighted that since the community owned/resided (even if illegally) on the space required for infrastructure provision, the process of site selection allowed community engagement and cohesion.

c) Contestations and Negotiations

While talking with the experts on the intersection of infrastructure provision with violence and informal settlements, a number of barriers were brought to light. Firstly, a major barrier highlighted was financial costs which were quite prohibitive for a normal household. The second one was the lack of infrastructure at household level. Thirdly, the perception of the water service providers and other actors about— the informal settlement residents being unable to pay, being high risk areas, the settlements being unsafe to walk with land issues within the settlement. Lastly, the land tenure insecurity had historically barred extension of service provision to these areas.

These perspectives of other involved stakeholders weren’t unfounded. With regards to payment issues, a normal connection in Nairobi, generally cost 12-15,000 KSH. For low income or below poverty income households, that was a whole month’s income, which brought in challenges in regular payment for continuation of services. Even after output based aid programmes, the average connection cost 30000 KSH, which was still relatively expensive for the household to pay. Hence,

often most plots with several families living together, had to negotiate an arrangement of payment and accessing subsidies. This became eventually a negotiated process for OBA for sanitation services.

Furthermore, as far as safety and security was concerned regarding using toilets, multiple issues were raised as existing already within the context *“especially how many women would go take a walk and take a bath at night (...) Toilets for women is something completely different. It’s for their children and it is also a private place for them. But they don’t find the ablution blocks providing them security. For them the facility has to be a clean place, and not just to do make-up. So, the women still want their privacy and prefer to do these in their small mirrors, they won’t walk for a small distance to pee”*.

The experts also raised concerns about ablution blocks, their usage and impact. But as their responses indicated, their focus was only on providing the infrastructure and not on the usage as *“even though there are ablution blocks, women are using flying toilets. To be honest we don’t have a proper evaluation of these projects for the ablution blocks as they are not our main focus. We focus on providing access to basic sanitation. When the situation is dire, the biggest priority is to give them whatever is the fastest solution possible. Since these ablution blocks are given for this reason, we have not gone back and done an evaluation. Hence, we conduct studies at the beginning and enquire from the informal settlement and water service providers. I would also actually want to know why are they not using these blocks. Is it security concerns or what did the UN Habitat find?”*.

Additionally, the experts talked about the importance of gender indicators but had no knowledge on how many women were using the facilities they provided. They admitted to understanding the intricate intersection women had with water infrastructure in Nairobi, yet hadn’t included any impact assessment so far despite admitting that women *“are key respondents for the water. They are responsible for searching for water, they also queue up for water for a longer duration and also have to carry the jerry-can for longer distances. They are the ones who face the burden of this”*.

The experts did however state that they had some measures being planned to evaluate violence. But it was again a broader perspective of violence and they were curious about other organisations like the UN Habitat and their findings. They explained their strategy for Nairobi, wherein they *“hire a separate company to work on the KISIP project and develop a tool that will map the violence, but not just gender-based violence rather different forms of inter-personal violence. The tool will have two components: It will be a participatory mapping tool and it will be based on GIS system as well. Once you get the primary data from different organisations regarding where are the hotspots of crime and violence in the specific settlement, then you work with the community to draw these maps and then you relay this information. Gender-based violence also raises issues of ethical and cultural significance so we want to be respectful of that. The other thing planned to do is to approach the UN Habitat because they already have some existing infrastructure with regards to this at the UN Women”*.

Lastly, upon inquiring about Mathare, they stated that the issue was land ownership and tenure. They admitted that Mathare was a risky settlement and so far, the Bank was not working with any Water Utility Companies, *“but there is a village near Mathare, called Mashimoni, which is bordering Mathare and is regularised, the Bank has funded the sewerage there. Where the land issue is pretty clear, the bank has been able to provide services’*.

This led to further issues being raised with regards to the terminology used to define un(der)serviced settlements. The experts stated that *“like slums, illegal, informal and squatters have a different meaning, formal is very general and unplanned is very specific; meaning no planning has been done, but the World Bank essentially looks at land ownership. Land tenure issues are the biggest game changers for all other projects. The settlement areas that are probably unauthorised, so for a very long time the maps of Nairobi City County reflected them as blank spots. Hence, they were considered as non-existing and were not developed. (...) but for the World Bank, I don’t think there is any specific terminology used other than informal settlements and slum. For the two projects in Nairobi (WSIP & KISIP), we have called them informal settlements. Informality has certain elements. The word formal is*

used as a legal term. There is a slum upgrading project so the terminology is there but for infrastructure upgrading its informal”.

Hence, the Bank; despite listing contestations over the understanding of the word with the Nairobi City County, themselves also used slum and informal settlements interchangeably to suit their projects. Lastly, a lot of influence from Latin America was observed on the policies, especially within GBV and slum upgrading, despite Nairobi being vastly different in context. The experts stated that *“within the Bank, work on slum upgrading has been done with respect to the terms from Latin America. The Bank is reformulating the terms based on Latin America as urban revitalisation. We are looking at more integrated approaches similar to ones we have conducted in Latin America based on the situation of prevention, whether it is preventing violence against women or youth violence, it tends to be more effective as we have observed”.*

4. WASH Officer, NGO-SHOFCO (Shining Hope for Communities), Nairobi

The last development stakeholder interviewed was the NGO SHOFCO. Although it is an NGO primarily based in Kibera and works there in 17 villages. They have constructed community toilets and water kiosks in the informal settlement and were planning on expanding their services within Mathare.

a) Stakeholder Perspective

The head officer explained that the *“culture prohibits talking about sanitation and private parts”*²⁷. However, the most common toilet type used within the settlement was a flying toilet. The NGO and the government had constructed pour flush and pit latrines, but they were mostly closed at night. Often, one house was demolished to construct a toilet in that plot with the landlord ‘s permission.

Furthermore, the NGO had also sought permission for a borehole from Nairobi Water Company. They had also hired a contractor for design and the technology is

²⁷ Interview conducted with SHOFCO head engineer on 25th March, 2015. For more details, see Appendix 21.

being sourced from India. Additionally, they plan to implement and install the design of an 'Aerial Water Pipe Network', since the settlement had space congestion.

In the settlement of Mathare, the NGO mostly focused on advocacy and hygiene prevention work with a long-term plan of infrastructure implementation in the pipeline. The NGO was initially involved only in maintenance and repair but is now focusing on design as well e.g. they have conducted transect walks to address security concerns. Lastly, the NGO takes one month to design, plan and implement their projects.

b) User Involvement

The community acts as a consultant team for the NGO, specifically for operations and maintenance, which has seen a rise in girls being trained. They are now also part of the technical working groups dealing with menstrual hygiene practices.

c) Contestations and Negotiations

The officer highlighted that despite the occurrence of GBV cases, the *"donor agencies only focus on infrastructure numbers, they want to know the number of toilets only"*. Additionally, women residents were never asked what toilet they prefer. It had been observed that walking even a distance of 3 metres was a risk. Hence often women used a container between 9 PM and 5 AM. Since it was an informal settlement, people didn't have a choice or were considered ignorant. The toilets constructed by the government were too expensive for the community as they cost 5-10 KSH for one time usage, which the people found difficult to pay. However, these shared toilets were also a type of employment for the youth of the settlement. They had noticed that most water kiosks were run by men or boys. The women were mostly responsible for water collection and often queue at the kiosk (Fig. 5.13) but there had also been cases reported of water vendors asking for sexual favours.

This had been observed to propel fear within female residents as the men often used intimidation and fear tactics. Despite the shared toilet facility, open defecation sites were observed along the railway line, littered with flying toilets and *"cases have been reported of women being locked inside the toilet for not being able*

to pay the charges. The toilets are inadequate as they close at 7 PM, have security issues, insufficient electricity and less lighting in the settlement”.

Lastly, the NGO conducted safety audits but only after the implementation phase and not during planning. The NGO also maintained water and sanitation and gender-based violence working groups separately.



Fig. 5.13 Image showing Water Kiosk installed by SHOFCO. (Source: Author)

5.6 Lived Experiences of the Residents

1. Users: Female residents of Mathare 4A village (Focus Group Discussion- Teenage Mothers Empowerment Programme, NGO Mathare Children's Fund (MCF), Mathare)

The focus group discussion was conducted with females who were undergoing training at the NGO Mathare Children's Fund (MCF). Mathare Children's Fund was setup in 1999 to assist former street children and to give them opportunities in education. MCF currently ran a Teenage Mother's Empowerment Programme where teenage girls with children were provided skills like tailoring, hair cutting, grooming etc. in order for them to be able achieve gainful employment to provide for themselves and their families. MCF not only provided the training but also space for the children of most of the participants to play and learn. The staff at MCF was involved in the process of raising awareness on health and hygiene and were in the process of receiving re-usable sanitary pads from Uganda as part of a collaboration between them and the Austrian Development Agency (ADA).

I decided to interview the women from the Teenage Mother's Programme for my focus group discussions as they were all local residents. Most of them had been living in Mathare either since childhood or for 10 years at least. Upon being asked if they were willing to sit down and discuss issues regarding sanitation, all the young women agreed to answer the questions individually while still maintaining the group discussion in parallel. The women ranged between an age group of 16-23 years and were all learning the craft of tailoring and stitching.

They all had one child and for most, the father of the child was absent. The discussants divulged firstly, how most of them shared toilets with other households, squatting but not flushable. The toilets were constructed in the area by a Member of Parliament in conjunction with County Development Fund(CDF). The respondents stated that they *"use the toilet at nearby school in day and at night become creative"* and *"some of them have no water so you have to carry your own water for*

use after visiting the toilets but the ablution blocks have water connection from Nairobi Water and Sewerage Company”²⁸. One of the respondent was clear in highlighting the limitations of the provision by stating that the “shared toilets have not impacted in the Mathare neighbourhood as the provision of toilets is very poor as compared to the current overpopulation so you find that most residents still have no access to the toilets”.



Fig. 5.14 Image showing different ablution blocks with reserve water tank in Mathare.

(Source: Author)

They all agreed that the toilets were not maintained and complained of contracting UTI. This was a major source of distress as the treatment included a trip to a private hospital which was more than what they could afford. The treatment was also costly with the women divulging that “the toilets are overcrowded and spread communicable diseases and vaginal infections” and one respondent divulged that “just a topical cream costs 2000 Kenyan Shillings (KSH), which I can’t afford”.

Their toilets were described as unhygienic and dirty most of the time with the respondents stating how “some are dark even during the day and have no lighting and “no proper disposal methods of sanitary towels cause blockage of the toilets”. There

²⁸ Focus Group Discussion conducted with female residents in Mathare on 24th March, 2015 and 21st March, 2016. For more details, see Appendix 22 and 23.

seemed to be a general consensus that emerged within the group regarding the community toilets in the settlement also being too expensive for them to afford as they had “to pay ‘10 Kenyan shillings’ for one-time usage”.



Fig. 5.15 Image openly discarded sanitary napkins and makeshift toilets in Mathare.

(Source: Author)

The conversation then shifted focus towards cases of rape and harassment around the toilets which they all recounted as being heard of “*now and then*”. The women discussed “*the difference between rape and molestation*” and debated on what they felt was more severe. The women were asked about the severity of GBV crimes and they rated rape and sexual abuse being the worst crime, closely followed by cases of child defilement.

The discussion shed light on how the age of the woman was not a condition. Most of the times, the victim was left on the street and Red Cross or MSF was the designated organisation called in to help instead of local authorities. Furthermore, they all had the number of MSF on speed dial and stated that they preferred to go to MSF for treatment since they were “*scared of the police*”. Some women were more forthcoming about sharing the severity of crimes with one stating how “*cases of child defilement rampant but no one reports*” and another describing how “*the previous month (February), a woman was found raped, murdered and her private parts mutilated inside the shared toilets*”.

Most women described having being intimidated with guns, knives and being asked for money. The Eastern Deanery (which is managed by the Starehe Sub-County) also assisted rape victims who were infected with sexually transmitted diseases and HIV by providing access to Anti-Retroviral Drugs (ARV's). They also offered counselling and provided a daily ration of food to the victims, who mostly came from the informal settlements.

Additionally, women also found it difficult to access the toilet at night with one discussant claiming to *"not drink any water at night after 6pm"*, another stating that *"there is no light at night in the settlement"*, and the next one saying that the *"toilets were mostly locked at night"*. Another respondent said that she took *"different routes to open defecation at night"* and others mostly stated using *"a tin bucket at night and emptying it in the open drain in the morning"* and lastly, one after some hesitation said, *"I use a flying toilet at night"*.

Furthermore, upon inquiring about the maintenance of the toilets, the respondents claimed that *"the toilets are usually cleaned by us after we are through washing our clothes (...) with the dirty water that remains"* and *"some community toilets are maintained by the local youth groups within the community"*. The respondents highlighted the challenges faced in maintaining the toilets as namely inaccessibility to clean water, no disinfectants and cleaning agents/no proper equipment for cleaning the toilets like toilet brushes, gumboots and gloves since most toilets are shared. The local youth groups were only responsible for the maintenance and cleanliness of the toilets but not safety or repairs.

Lastly, upon inquiring what type of toilets would they prefer, all of them stated *"private WC seat flushable toilets for private use because they have more privacy, are easy to maintain, safe and comfortable for personal usage"*.

2. Users: Male residents of Mathare 4A Village (Focus Group Discussion- Male Youth Group, Mathare 4A)

After interviewing the female residents, in my second field visit I interviewed male residents, most of whom were members of the Mathare Youth Group. The respondents had lived in Mathare for almost all their lives in area 4A respectively and were between the age range of 18-35.

Most respondents did not have toilets in their house and *“the one available is shared amongst residents in a storey building; one per floor with an average of 10 households. It is a squatting but not flushable toilet²⁹”*.

According to the respondents, the toilets were *“constructed by the owner who is also the landlord and the toilets are approximately 20 years old”*. They also described the conditions of accessibility by saying that it was *“shared 24 hours a day by all the tenants; locked during the day but readily open during the night”*. Moreover, *“one tenant holds the key to the toilet during the day and all the other tenants have to pick the key from her to access the toilet”*.

Most respondents claimed that the tenants have their days when they clean the toilet and this is done when the women do their daily washing. The toilets were not good in terms of cleanliness as well as hygiene and there was no provision for water leading to a high risk of communicable diseases. In addition, the respondents preferred having their own toilets as compared to a shared one due to varied reasons like—privacy, cleanliness, exposure to diseases, complete accessibility to the toilets throughout the day and less incidents of arguments with uncooperative tenants etc.

²⁹ Focus Group Discussion conducted with female residents in Mathare on 22nd March, 2016. For more details, see Appendix 25



Fig. 5.16 Image openly discarded waste in Mathare. (Source: Author)

The respondents complained that there was no water provision in the toilets, thus leaving them to either buy water for use in those toilets or rely upon water that is left behind when women who are washing clothes, leave a filled-up bucket inside the toilet. The youth groups were also in charge of the garbage collection fee of 50 KSH per house which some of the residents were not able to afford. They were also in charge of cleaning and maintenance of the toilets but the residents had to pay for those services, which most didn't pay. They also stated that the toilet is used by the entire household including the kids and that there wasn't enough space in the toilet *"as its too narrow and small but it's easily accessible since every tenant has the right to use it as long as they are able to pay for rent at the end of every month"*.

The respondents considered the shared toilets safe in terms of physical security as it was situated in the main plot but no lighting made them scary to use at night for the children. The respondents felt that shared toilets had not impacted the community as they are very few compared to the community population since Mathare in itself was not originally planned as a settlement. They also believed that the community needed to work closely with the Nairobi Water and Sewerage Company to be able to bring water and sewerage services closer to the people in informal settlements and the community. Moreover, the respondents mostly preferred the *"WC seat toilet"* where their household didn't have to share with so many people with different family lifestyles and very poor hygiene practices.

The respondents stated that almost all of them used the toilets during evenings or at night since they were accessible but felt that women have difficulties in using the toilets at night because of various reasons. Though the men acknowledged that *“the building is safe at night, there is a fear of getting raped or molested by a neighbour as these are normal occurrences in the area though has never happened within my building”*.

They were also clear to point out the consequences for husbands as internal infections *“can lead to problems at the household level since their husbands might feel that they are being unfaithful to them because very few of them understand the origin of these infections”*. Men also talked about the impact of rape in a community with one stating how *“the previous month, a child was raped and killed as she was all alone trying to ‘help’ herself and that incident spread so much fear in residents. The worst part was that the perpetrators were never found’*. Male residents only faced crimes such as muggings as they tried to access the toilets, *“hence, they prefer using the dingy bushes to do their thing’*.

The respondents felt that most cases often went unreported since there were very poor reporting mechanisms in place to deal with such a rise in these GBV cases, due to which the perpetrators go scot-free. Lastly, upon inquiring from them about the severity of GBV related crimes, the respondents stated sexual abuse and rape being the severest of crimes.

Chapter Summary

The aim of this chapter was to bring forth the different perspectives on the provision of sanitation infrastructure in informal settlements and its intersection with violence in Nairobi. The settlement studied showed various contestations and negotiations within all the actors responsible for the governance of the city, which in turn shapes the infrastructure service provision. User involvement was mainly restricted to normative participatory tools and inclusion as stated in project policy documentation, but real participation of users and knowledge sharing through their experiences was observed to be lacking. Intriguingly, while almost all actors wholeheartedly agreed on the prevalence of cases of

violence against women being reported near shared sanitation facilities, there had been no impact assessment or evaluation carried out as of yet to determine the cause/s.

Though, the development partners did show an inclination towards debating potential reasons and measures to tackle them, they were also firstly restricted in their capacity as facilitators and not implementers. Lastly, the respondents all stated various everyday interactions with the shared sanitation facilities which also showed numerous contestations and negotiations within their coping mechanisms. Both male and female residents claimed the shared sanitation spaces to be unsafe spots however, it was interesting to observe that male residents were more forthcoming about the challenges being faced by the women in their family. Nonetheless, the female residents were more forthcoming about the various coping mechanism they employed on an everyday basis to negotiate their way around these informal settlements. They displayed a sense of everyday resilience through these coping mechanisms to challenge the observed oppressive infrastructure provision regime, which rarely incorporates them as a user and more importantly, knowledge producer. Finally, the presence of MSF, an international agency within the local informal settlements as the first responder to any case of GBV is intriguing, despite sanitation being placed under health services in Nairobi. The fact that the women residents felt more at ease contacting MSF instead of the LGA, makes one wonder about potential reasons behind the decision.

Moving further, the next chapter will now delve into analysis and discussion of these findings from the field research.

CHAPTER 06.

ANALYSIS AND DISCUSSION

Introduction

The chapters describing the two case studies, present a picture of the multi-scalar stakeholder involvement in sanitation infrastructure provision, its intersection with governance that's shaping the city, especially state and municipal interventions along with development cooperation and the lived experience of the infrastructure by residents living in informal settlements. The case studies also give a glimpse into how broader processes of urban policy and planning affect the settlement dwellers' access to infrastructure like sanitation facilities, roads, and everyday practices of the residents. While these case studies are by no means an exhaustive sample of the types of informal settlements, they were selected for the diversity of stakeholders participating in infrastructure access and provision and they provide an empirical grounding for a conceptual understanding of an intersectional analysis within existing urban infrastructure planning.

It is clear from the case studies that residents (both male and female) have diverse uses, meanings, and experiences of their everyday interaction with sanitation infrastructure. Both conflict and negotiation are elements in how residents engage with and through shared infrastructure services. Shared spaces themselves manifest in various spatial forms such as shared toilets, streets, open spaces and the norms, rules, and everyday

practices around these spaces have similarities and differences from settlement to settlement.

Hence, in this chapter I will present my analysis of the findings from the field to understand the varying views of residents, state actors and cooperation partners towards urban infrastructure provision and usage. This chapter is divided into two sections. The first section will address all the research objectives and present conjectures from the case studies and then examine the assumptions I made for the hypothesis. By analysing the stakeholder perspectives on infrastructure provision and intersection of everyday lived experience of residents, this chapter will set out to determine what each research objective sought to understand. I will then move on to discussion and present the themes that have emerged within the conjectures that will help define my conclusions for this research in the next chapter.

6.1 Insights from the field: Analysis and Conjectures

This research was based on four research objectives, each with its own specific agenda to understand and investigate urban infrastructure services from an intersectional perspective. For this research, I chose to investigate the sanitation service provision (or lack of thereof) in informal settlements from an analytical lens of violence the (women) residents (may) face due to inadequate access and provision.

Therefore, I will now present an analysis of the research objectives through the findings and present brief conjectures before discussion.

5.1.2 Research Objective 1: insights from the field

My first research objective for this research was to investigate the existing sanitation conditions in the chosen case studies. My findings from the field sought to reveal how the governance was shaping infrastructure provision through—state interventions, development partners’ mediations and everyday interactions of the residents. The stakeholder perspectives that highlighted factors determining sanitation infrastructure provision leaned heavily towards technical expertise, demonstrated through the following insights that I will map out for both the case studies. The next paragraphs will detail the conjectures from the interviews with the stakeholders.

Dar es Salaam, Tanzania

State Interventions

Within Dar es Salaam, the state interventions highlighted that their perspective of service provision barely included user participation. On a national level, the Ministry of Health and Social Welfare's Nation Sanitation Campaign firstly, stated within its mission statement to be— implementation guidelines under Environmental Health and Sanitation Section; which are “responsible for improving latrines, providing public sanitation service, reducing outbreak of cholera and diarrhoea, and increase the number of toilets in schools”. The statement demonstrated an incline towards public health concerns. Secondly, the interviewed official explained that one of the key lesson learnt from the WSDP Phase I was inadequate technical assistance and limited capacity (in terms of knowledge, skills, number of staff and experiences) to manage sanitation and hygiene interventions. Additionally, the second phase was focused towards maintenance and upgrading of existing drainage, waste water treatment, alongside expansion of the network to cover newly settled areas. Although the campaign aimed at trying to provide social services to all the people living in informal settlements, the official was of the view that often residents in informal settlements chose to not construct toilets. Lastly, the Ministry despite being aware of GBV that women residents in informal settlements were facing, stated the issue to be the responsibility of other departments that deal with issues of law and medical aid.

Hence, the campaign policy and interview both highlighted the focus of the campaign on public health and technical aspects, respectively. In addition, the intersection of violence with sanitation infrastructure was not observed as an analytical lens that was incorporated in the Ministry's outlook.

Moving forward, on a city level, the Dar es Salaam City Council explained their involvement with sanitation infrastructure provision as only being responsible for solid waste management and not provision of infrastructure. Their involvement in SWM was further elaborated through their detailed description about—how they manage city-wide waste collection, transportation of the waste to the dump sites and working with DAWASCO to connect better to sewer trunks to reduce health hazards and water borne diseases. Despite their involvement being restricted to SWM, the officials stated facing challenges in coming up with strategies to tackle the sewerage of the growing population of the city, of

which 70 percent was unplanned with no household access to services. They also complained about the residents letting their pit latrines overflow during rainy season, causing a possible communicable disease outbreak.

This position showed a disconnect from the users as almost all the residents interviewed in Mlalakuwa specified about being unable to pay the amount required to empty out pit latrines due to high cost charged by private Vacuum Tank Owners. In addition, despite the City Council working in a collaborative framework with private Vacuum Tank Owners in the city, the Tank owners mostly over-charged the households for collection of waste without the City Council intervening on behalf of the residents. Lastly, within the City Council, user involvement was limited to only one process—they could write a feedback letter to the council regarding any complaints /suggestions/queries regarding solid waste management. However, this process was a dead-end process as there was no strategy on firstly, whom to address the complaint to and secondly, on how to incorporate the user knowledge/suggestions.

Turning towards the next stakeholder at the city level, the Municipal Health Officer (MHO) stated the office's responsibility to be specifically—hygiene management, environmental cleanliness, providing public toilets, monitoring and prevention of outbreak of communicable diseases in planned and informal settlements. Despite the official stating the difficulty experienced in accessing houses within the informal settlements due to lack of narrow roads, their reasons for reaching out were solely to advocate hygiene awareness to prevent outbreak of diseases like cholera and diarrhoea, especially amongst women and children.

Additionally, the official relied on the concept of cultural differences to explain difficulties in access to sanitation and said that *'according to their culture, most of their toilets are supposed to be built at a distance from the house.'* Despite the MHO depicting an understanding of socio-cultural practices with respect to placement of sanitation infrastructure, I observed in Mlalakuwa informal settlement that almost all the owners of the plots had constructed shared or multi-family toilets themselves within their household plots.

Apart from the City Council and the MHO, DAWASCO was another key stakeholder involved in service provision. DAWASCO elaborated their responsibility as being solely for maintenance and repair services for water and sanitation infrastructure provision in the

city of Dar es Salaam. The Engineer interviewed said that *'their responsibility was from the main piped network till outside the household wall'*. DAWASCO also depicted their focus on the technical aspects of provision, detailing their usage of—class B and class C pipes, which are essentially small pipes of 2-inch diameter and are used to pump through low water pressure situations. Additionally, even though the local government was trying to make sure the provision was sufficient for the people, DAWASCO was concentrated on trying to increase its production of water from 182000 cubic meters to 200,000 cubic meters from 2 different plants via extension. With respect to user involvement, the Engineer interviewed specified that firstly, only paying customers were considered as 'users' and secondly, the only way of participation was for the paying customers to file a feedback form reporting any misuse. This emphasised how the formal service providers viewed the inclusion of users, as ones who could pay and yet, not have any say in the planning, design or implementation processes.

The last actor involved on a city level was the Ward Executive Officer (WEO) of the Ward Executive Committee (WEC), which as a 10-member elected body, was responsible for monitoring and implementation of national and city-wide strategies/campaigns/services within the settlement. Upon inquiring about what kind of interventions does the Executive member office undertake, with regards to sanitation infrastructure provision, the WEO stated disinfecting the toilets every month to prevent outbreak of diseases. Conversely, despite the WEO expressing their involvement in infrastructure service provision, most of the residents specified no interventions being carried out by the WEC and most of them not having financial resources to empty the toilets. The female elected member of WEC even stated that most toilets were not in a good condition and the people weren't in a position to afford better ones.

Thus, despite what the WEC claimed, the residents' everyday lived experiences provided a contrasting view. Most men and women complained about the price for emptying the pit latrine costing up to 100,000 TZS, which they couldn't afford and hence, they either paid once a year or dug another pit.

The next section will now shed a light on mediations by the development partners in service provision.

Development Partners

In Dar es Salaam, GTI, Water Aid and BORDA were key-actors in facilitating sanitation infrastructure provision on a city and informal settlement level. They all faced some contestations but still presented a perspective profoundly in the favour of technical aspects and public health concerns.

Firstly, GTI focused very little on sanitation with the only exception being a proposal circulated in January 2015 that focused on a training course on health and hygiene. However, the officer being interviewed stated the lack of addressal being present due to them not being approached by any NGOs or CBOs. The officer admitted to a growing problem of sexual harassment cases around sanitation infrastructures in informal settlements and schools but insisted about them not being approached as of yet to intervene. Despite their mandate expecting them to be approached, they had restricted means to intervene to improve service provision. Additionally, GTI's trainings had a heavy focus on Female Genital Mutilation, teenage pregnancy and child marriage which were more prevalent within rural areas than urban areas.

Secondly, Water Aid was working in collaboration with DAWASCO and NGO BORDA. However, Water Aid had been commissioned by DFID to develop a Sanitation Business Model (SBM) model for WASH in unplanned settlements in Dar es Salaam. The SBM was focused on training local entrepreneurs on managing finances and linking them with institutions providing loans/funds to own a sanitation business based on Gulpers. The concept was to view sanitation as a business opportunity for the locals. However, their assessment disclosed that the raise in supply of Gulper service did not lead to a raise in the number of toilets as people still couldn't afford to have water connections or the means to construct a toilet. Nonetheless, their assessment led them to admit that sanitation could no longer only have an engineering and advocacy related focus and that there was a need to provide a variety of options in technology.

The last actor was found to be a key player in infrastructure provision within the informal settlement. The NGO BORDA, provided the only contrasting view by proactively including users. Specifically, women residents of Mlalakuwa often participated in surveys and workshops they conducted. The NGO described being astonished by the *"trials and difficulties the residents coped with on a day to day basis"*.

This led them to conduct on-site sanitation marketing in the form of mobile sanitation exhibitions where the consultants asked the residents about the design of toilets they wanted, advocated for their usage, surveyed the area and focused on both toilet provisions and solid waste extraction. However, the mobile sanitation exhibition heavily focused on FSM since most respondents in their surveys described the challenge of emptying their pit latrines. Additionally, since most residents were renters, the facilitator explained that they didn't possess any decision-making power, (only the house owners did) leaving them with little to no choice in the matter..

Therefore, the multi-actor involvement in sanitation infrastructure provision in Dar es Salaam; depicted an outlook on service provision being greatly influenced by technical aspects and public health concerns, with a lack of user involvement. The next section will now present insights from Nairobi.

Nairobi, Kenya

Within Nairobi, the state interventions highlighted that their standpoint on service provision barely included user participation. In Nairobi, starting from the city level, the first actor involved was the Nairobi City County.

Upon inquiring about the key focus in city planning, the planner stated infrastructure and sanitation for the urban poor to be their key focus. However, upon clarification, it was elaborated that, infrastructure planning was actually done by different sectors, ministries and developmental agencies. Based on this, AWSB was put in charge of sanitation infrastructure. The County was only involved in the broader Master Plan for the city and AWSB designed and implemented the services within the city on a smaller scale.

Nonetheless, similar to Dar es Salaam City Council, the Nairobi City County was also completely focused on SWM within sanitation infrastructure provision. However, JICA who were funding the current Urban Development Master Plan (2015-2030) of Nairobi, insisted (according to the planner) on not including informal settlements within their planned actions. This made it challenging for the County office to work towards service provision and integration of informal settlements within infrastructure provision. In addition, the official elaborated that despite the funding agency's view, the residents were included and could give feedback through the Neighbourhood Association, where they had a women's representative participating in the process. However, the official admitted

that they hadn't been able to integrate these 'soft aspects' within the broader technical planning. Hence, the City County's involvement in sanitation infrastructure provision proved to be ambiguous in nature except for being responsible for master planning, due to the restrictions put on their functions by JICA.

As explained in the previous paragraph, AWSB was responsible for sanitation infrastructure planning and provision for Nairobi City by— designing and implementing the shared/communal sanitation facilities (like ablution blocks), sewer trunks and SWM network. The respondent stated that their aim was to maintain technical services within ablution blocks provided to the settlements and though they create different ablution block designs for male and female users, they don't include users in the design processes. In addition, although they ensured their designs included ramps to be disabled-friendly, no measures were incorporate specifically for women users. Thus, AWSB focused greatly on ensuring technical and engineering of the sanitary ablution blocks was implemented correctly.

Moving forward, alongside AWSB, Nairobi Water and Sewerage Company has been an important factor in service provision. When Nairobi Water company was privatized in order to bring services closer to the people, the Informal Settlements Department (ISD) was created as a government initiative in 2008. The aim was to defuse the tension in existence; between the residents and the water company as a result of frequent water disconnections which was perceived as denial of service provision by the residents of slums and informal settlements.

The conception of the department revealed a possible outlook on state interventions acknowledging informal settlements within formal service provision. However, the sociologist interviewed admitted that the implementation process was rather slow as the department still needed partners to fund projects which cover the population in these settlements. Due to this, water cartels had quickly capitalized on the situation to provide water and sanitation services but at an exorbitant fee which most residents couldn't afford.

Additionally, the ISD claimed to include users in the process of service provision. Nonetheless, though ISD was responsible for the maintenance and repair of the shared toilets upon the completion of design and worked in close collaboration with the local residents,

they were not involved in the designing or site selection process by AWSB. Thus, many of the installed ablution blocks ended up being unused due to their location, a fact that may have been prevented, had the two agencies worked in collaboration with each other and the residents.

Furthermore, the ecologist from ISD added that during the period of 2014/15 - 2018/19, Nairobi Water had planned various investments to enhance and expand its contribution to the achievement of water, sanitation and sewerage coverage in the informal settlements, and provided detailed numbers for the connections, highlighting the technical and material focus for Nairobi Water when it came to service provision as well. Therefore, while the ISD revealed themselves to be technically inclined but as an institution, they also took initiatives to increase and encourage participation at all levels. However, their role also made them aware of constraints they faced due to delineation of services at the city level, thus leaving them with diminished power to intervene. Nonetheless, the conception of Informal Settlements Department itself presented an encouraging view on wanting to provide service to all residents in the city, regardless of their status as a paying/non-paying user.

The last two actors responsible for service provision in Nairobi were the Community Health Assistant (CHA) and the Community Health Volunteer (CHV). The CHA explained the main focus of the county was on the giving essential provision of water and sanitation to the residents of informal settlements as well as controlling the spread of communicable diseases in the community. The Ministry of Health funded all the activities especially in the informal settlements through the Community Development Fund (CDF). This underlined their standpoint of public health and hygiene concerns when it came to viewing sanitation infrastructure provision.

With respect to the CHAs, no user involvement was incorporated within their responsibilities. They were only responsible for filing reports of all the activities that they were dealing with in a particular month. There was usually no impact assessment carried out either during planning/after implementation of an infrastructure or service provision, and the CHA were solely focused on monitoring and reporting. Additionally, although the CHVs worked on a voluntary basis, they were responsible for 100 households and monitored the existing sanitation conditions of the households as frequently as possible. The

CHV outlined some challenges faced by the residents in informal settlement of Mathare—poor basic service provision, no piping for manholes, poor drainage systems that gets worse during the rainy season and very few toilets compared to the population in Mathare. They explained the lack of user involvement but the main challenges highlighted by them still focused on lack of technical and material aspects.

Moving on to the mediations conducted by the development partners, Nairobi had extensive support and funding being provided from the UN Habitat and the World Bank, with both assisting the national and the county government in various projects.

Firstly, the UN Habitat despite leading an infrastructure led upgrading programme, firmly insisted on not being ‘an implementing agency for infrastructure provision’. They stated working exclusively through locally established agencies or through government institutions. The agency’s role was described as to support the government in improving in technical aspects of service provision. Within sanitation infrastructure provision, the WATSAN expert revealed that they built ablution blocks that are shared and are gender sensitive. Also, the design of these blocks took into accordance vulnerable groups. The expert stated their commitment to keeping the design responsive to the local socio-cultural norms by describing how they included squatting toilets in public utilities not just as a hygiene-based decision but one that was also informed based on local dynamics and cultural values.

Conversely, despite their attempts to incorporate gender and socio-cultural norms, their surveys of usage of the implemented ablution blocks revealed that even during the peak hours (early morning or late evening), there were a lot more men than women in these facilities. So, the usage of these facilities by the women was not comparable to the men. Even though the expert provided his insights on what could be potential reasons for the low usage by women (by naming open defecation and the use of flying toilets), he also stated that finding the reasons was not a part of their research and neither did the agency show an inclination towards finding the reasons. This provided a rather revealing outlook on service provision, especially the part where they showed no interest in finding reasons of low usage of infrastructure provision by women. It provided an ambivalent view of women specifically as users of infrastructure.

The second development partner in service provision, the World Bank also provided an equally intriguing, ambivalent perspective on women as users and their focus on technical services. The Bank's engagement involved—improving regulation, intensifying the sewerage networks to bring in transmission lines and to ensure that primary sewer lines remain close to the settlement. This shed a light on engineering taking precedence over the outlook of sanitation infrastructure provision.

Furthermore, the experts highlighted that the Bank was interested in delivering the fastest solution possible. In addition, the experts demonstrated rather archaic views on how women residents interact and inform sanitation infrastructure, despite not having conducted any impact assessment of their provision. They questioned the usability of the toilets by women as users at night due to security concerns but stated that women placed more importance on cleanliness and how for them *“the facility has to be a clean place, and not just to do make-up. So, the women still want their privacy and prefer to do these in their small mirrors, they won't walk for a small distance to pee”*.

The views of the experts highlighted a somewhat trivialised outlook of how women as users interacted with not just the infrastructure, but also the space by stating the usage of the space as being for 'make-up' or not wanting to take a bath at night. Hence, while the Bank maintained an outlook that was more financially invested in the engineering components, the usage of the infrastructure was not a priority.

Lastly, NGO SHOFKO working in Nairobi had been deeply invested in improving service provision and was incorporating innovative solutions within informal settlements. SHOFKO detailed that they were initially involved only in maintenance and repair but were now also focusing on design and usage by conducting transect walks to address security concerns. They however, highlighted that their main challenge was balancing the donor's demands of focusing only on the 'number' of toilets provided with the actual service provision that was required.

Thus, the NGO despite initially only working on maintenance and repair, gradually shifted their focus also to provision. They further demonstrated a pragmatic view on their capacities and acknowledged barriers they faced in service provision due to financial dependency on external revenue sources.

Hence, the multi-actor involvement in sanitation infrastructure provision in Nairobi depicted an outlook on service provision being greatly influenced by technical aspects and some public health concerns, with a lack of user involvement.

Conjectures

My first research objective for this research was aimed at investigating existing sanitation conditions within informal settlements. My objective was based on an assumption that what is provided as sanitation is often determined by obscure engineering and public health concerns that are far removed from local needs of women and their socio-cultural practices.

My insights from the field revealed some expected and a few unexpected findings. The multi-actor, multi-scalar provision in Dar es Salaam exhibited an outlook of technical focus, with a major emphasis on public health concerns when it came to sanitation infrastructure provision. However, NGO BORDA; one of the key actors involved in service provision in collaboration with municipal interventions, unveiled not just a perspective but concrete practices that included users (both male and female) and incorporated their needs. Their approach towards the residents of informal settlements and their concurrent collaboration with municipal service providers offered an encouraging view on how sanitation may come to be determined in the future for the city of Dar es Salaam.

The findings from Nairobi didn't deviate much from Dar es Salaam but presented a more enhanced focus on engineering and technical aspects along with concerns for public health and hygiene. Despite the presence of major infrastructure-led upgrading programmes, the glaring lack of user incorporation was very evident. Furthermore, the mediations by the development partners rather presented trivialised outlook on women as users, with one stating no interest in wanting to know the reason behind low usage of the provided infrastructure and the other reducing the interaction of women users to wanting to occupy the space for make-up. The everyday lived experiences of the residents, especially women were almost non-existent, despite claims by various state actors and development partners of incorporating socio-cultural norms in service provision. These claims were unfounded within the insights from the field.

Therefore, based on my research objective, assumption and analysis of findings, it can thus be suggested that the provision of sanitation is possibly determined by engineering

and public health concerns that often do not incorporate the needs and socio-cultural practices of women as users of infrastructure service provision. However, due to a small sample size, it is important to bear in mind the possibility of potential biases within the responses from the field.

The next section will move forward to the second research objective.

6.1.2 Research Objective 2: insights from the field

Another research objective of my research was to evaluate women's everyday access to sanitation infrastructure. My findings from the field sought to reveal how the lived experiences and everyday interactions of the residents on informal settlements, both male and female shed a light on (if any) gender-related differences in accessibility. The next paragraphs will detail the conjectures from the interviews with the residents.

The lived experiences of the residents emphasised how users interact, inform and transform infrastructure is determined by their identified gender identity. Thus, through the following insights, I will map out for both the case studies the perspectives of the male and female residents on sanitation infrastructure provision in informal settlement.

Dar es Salaam, Tanzania

Female Residents

The women I interviewed offered a glimpse into their everyday life which intersected with sanitation infrastructure (amongst others) as part of their daily routine. Urban routines constitute an infinite range of occurrences: from the everyday life, to events, such as disruptions of access to a public space, like shared sanitation facilities.

Interactions

Within Mlalakuwa, the interactions of women residents with sanitation infrastructure was mostly in the form of accessing and using shared toilets or multi-family private toilets, which often comprised of a squatting pit latrine. Almost all the women claimed to accompany their children to use the facility as well. However, they all stated concerns about their children catching infections due to poor hygiene practices and usage of the toilets by large a number of people. Hence, this highlighted that women interacted with

the shared sanitation facilities more often than male residents. In addition to this, the women raised two issues as being their challenges.

One of the biggest challenge of interacting with these shared facilities was issues of hygiene. Every woman interviewed complained about contracting a UTI and facing further challenges of not being able to afford medicines to treat it. However, within my set of the interviewed women ranging between 26-60 years in age, almost all the women within the age range of 45-60 exhibited hesitation in admitting to contracting communicable diseases like UTI. In contrast, the younger generation of women were more forthcoming about the issue, especially due to the additional financial burden and inconvenience caused to their health. Furthermore, the settlement often faced outbreaks of cholera and diarrhoea, which severely affected the children the most due to unhygienic conditions within the toilets.

The other biggest challenge these women faced was the issue of fear and insecurity while accessing toilets, especially at night. The feelings of fear and insecurity were exacerbated due to a number of reasons highlighted by the women. Firstly, the darkness of the night was stated as a reason that induced fear in them. This 'darkness' was enhanced more due to a lack of physical infrastructure like street lights and lamps within the settlements and the shared toilets. The women felt that darkness provided potential perpetrators a sense of anonymity and the ability to get away with a crime. These fears weren't completely unfounded and incidents of violence were brought up by some respondents. Upon hearing these responses, I wanted to inquire about the women's perception of the severity of GBV crimes, in order to understand if there were any other socio-cultural understandings of such acts of violence against women, other than the normative understanding. However, almost all respondents ranked rape and sexual abuse as being the severest of crimes. This made me wonder about the potential reasons for hesitation to divulge more information within the older generation of women.

Moving further, the women felt that the existing conditions of the shared sanitation facilities further contributed to their imbibed fear and insecurity. The women specifically pointed out the lack of locks on the doors, waste disposal methods and cleanliness, amongst other issues as the ones that made them feel uncomfortable. Furthermore, poor construction of the toilets, shortage of water and inadequate lights in the toilets; made

the women hesitant in wanting to use the facilities at night. This highlighted how spatial interaction and the materiality of this infrastructure provision was experienced by women. Additionally, this fear propelled an insecurity in accessing shared toilets at night. This insecurity led to the women often asking their husbands or sons to accompany them at night or worse, led to them resorting to other ways of defecating, thus transforming the infrastructure provision into a space emanating fear.

Thus, the insights of women residents highlighted a notion of an oppressive infrastructure regime, through the interactions and intersections of women with the shared sanitation facilities. It was observed to not only inculcate fear and insecurity but also to propel the feeling of inadequate provision turning oppressive and putting their lives at risk.

However, faced with these risks every day, the women also showed resilience in dealing with these fears through varied coping mechanisms.

Coping Mechanisms

Women within these settlements and generally within the cities of Global South have an intricate relationship with water infrastructure (Chant, 2013; Domestos, et al., 2013). They are the ones mostly responsible for fetching water for households. My responses from the field revealed all the women interviewed to be responsible for water collection for drinking and toilet usage for the households.

For example, some of the women were forthcoming in explaining that they used buckets at night to defecate, which they then emptied out in the Mlalakuwa river. Based on this, I inquired from them about their preferred sanitation infrastructure. Almost all of them preferred a 'squatting flush toilet' if they had to share with other tenants, to keep communicable diseases at bay. However, if it was within their own household, they all preferred a 'sitting flush toilet'. Thus, while the women residents faced an increasing sense of fear and insecurity when it came to accessing sanitation infrastructure, they also displayed resilience through varied coping mechanism, which defined their complexity filled lived experiences.

Additionally, most women complained about the high prices for emptying the pit latrine, which most of them found difficult to afford. Hence, as a coping mechanism, most respondents resorted to either paying once a year collectively with all the tenants or would eventually dig another pit.

Intriguingly, some of the women in the informal settlement of Mlalakuwa worked as 'Mandazi' (a homemade sweet from white flour and sugar) or Cassava (a local fruit) sellers on the roadside. They stated using the money earned through selling Mandazis to buy water from residents with a water connection from DAWASA for their toilets. Not only did they view it as empowering, but their participation in the informal economy provided them with purchasing power. I found this finding to be extremely powerful in contrast to the existing narrative of women residents of informal settlements. It highlighted a subtle shift towards the women trying to break the normative, academic mould of poor, oppressed women and silently taking power within their own hands to decide how they defined empowerment for themselves.

The next section will analyse the insights of male residents from Mlalakuwa to determine if gender-related differences in accessibility deepen the existing inequalities in informal settlements.

Male Residents

After initially interviewing female residents, I realised that to understand gender-based disparities in usage, I had to speak with male residents as well, since most of them had been more forthcoming about their wives/daughters facing challenges in accessing toilets at night than the women themselves. Interestingly, while the women residents interviewed were almost solely working in the informal sector, almost all the men were self-employed, with small businesses and yet, the women were responsible for purchasing water for the households.

Interactions

Most of the male respondents had access to shared/multi-family private toilets within the settlement. The men stated that they used the toilets seldomly but found them to be spacious and easy to access. The only challenge to access that was brought up was overcrowding in the morning due to high number of users.

However, none of them accompanied their children to the toilets, making their interaction seem as if being restricted to personal usage. Interestingly though, they all admitted to escorting the female members of their families to toilets at night. While they didn't feel unsafe themselves while accessing these toilets, they all felt these spots to be unsafe for the women to access alone. Surprisingly, they were more forthcoming about the challenges the women faced, with them detailing the fear their wives had of thieves, dogs, drunk men, darkness, inadequate lighting and water in the facility. One man, during my interview with his wife also brought up the trouble his daughter faced due to unhygienic conditions and the additional financial burden of paying for medication for UTI. In addition, they also revealed that their responsibility towards the facility was only in purchasing cleaning equipment, and that the women were responsible for the maintenance and cleanliness of the toilets.

However, when approached with queries regarding any known cases of GBV, they all stated not having knowledge of any cases. This again made me wonder if the socio-cultural norms prohibited disclosing such crimes to an outsider like me or disclosing them in general in public. Their declaring the shared toilets as unsafe and the imbibed fear women residents displayed was in contrast to the glaring lack of evidence of an actual crime. Their responses in contrast made me wonder if this perceived potential violence was more a social construct to exert control over women's urban routines or was there more to the story than it was being revealed.

Nonetheless, the men also revealed some coping mechanisms, which were in contrast to the ones women highlighted.

Coping Mechanisms

The men resorted to various coping mechanisms when it came to waste disposal. They all talked extensively about not having a DAWASCO connection. Most of them directly emptied their waste collection buckets in the river. Additionally, upon being asked what kind of toilet type they would prefer, they stated wanting to use a squatting flush toilet as a shared toilet and a "WC Seat" toilet for private use to tackle unhygienic facilities.

Hence, these interactions of male and female residents in Mlalakuwa show differences in how each of them interacts with the infrastructure and adopts diverse coping mechanisms in their everyday practices in informal settlements. Interesting observations from

both the actors revealed contestations and negotiations that are conducted on a daily basis within the settlement to access the infrastructure provision.

Nairobi, Kenya

Female Residents

The women I interviewed offered a glimpse into their everyday life which intersected with sanitation infrastructure (amongst others) as part of their daily routine.

Interactions

The women divulged that they all used shared toilets, which were squatting toilets but not with flush facilities. However, most complained about the state of the toilets. The toilets always had a scarcity of water and most were locked at night, forcing some women to use the toilet at a school nearby.

Their challenges were similar in essence to women residents from Dar es Salaam. The first challenge brought up was issues with health and hygiene. This was a major source of distress as the treatment included a trip to a private hospital which was more than what they could afford. The women divulged that UTI was a prevalent disease and most of them were unable to afford even a topical cream. Despite the unhygienic condition of the toilets, even the fee for the shared toilets was too expensive for them, as almost all of them accompanied their children to the toilets frequently as well. With inaccessibility to clean water, no disinfectants and cleaning agents and no proper equipment for cleaning the toilets, the women confided in resorting to varied ways of defecation and disposal.

The second and the biggest challenge was gender based violence. In contrast to the hesitation I observed in Mlalakuwa, women in Mathare were extremely forthcoming. The women described cases of rape and harassment around the toilets, which they all recounted as to be heard of 'now and then'. What was intriguing to witness was how open they were about discussing the difference between 'rape' and 'molestation' and debated on what they felt was more severe.

The women were very vocal about the cases of violence and described in detail a case where an old woman was attacked, a case where the victim had been left on the street or dismembered inside a shared toilet and how they had experienced intimidation tactics through the use of force or with guns and knives. Their openness on talking about these

violent crimes could be seen as a form of empowerment. In contrast to the general silence and taboos around sexual violence, these women were not afraid to speak up about their intersections and interaction with violence which was perpetuated through them trying to access an infrastructure which was a part of their everyday lived experience.

However, this is not to say that they didn't vocalise fear and insecurity. They further discussed in detail the numerous coping mechanism they resorted to in order to maintain their daily routines.

Coping Mechanisms

The discussion on the existing violence against women led to the women revealing their resilience through various coping mechanism. The women highlighted extreme measures like not drinking fluids in the evening, taking different routes to open defecation, using buckets to defecate, to using flying toilets and discarding sanitary napkins in open drains. These mechanisms highlighted how the sheer inadequacy of infrastructure and intersecting violence was leading women residents to innovate solutions for themselves, that required courage and resilience.

Within the discussions on violence, the women intriguingly mentioned MSF as being their preferred choice to call for help in cases of violence instead of the local medical facility managed by the Sub-County. The fact that MSF, an international agency was involved on such a micro-level in the settlement was startling to say the least. The women stated their apprehension towards local authorities and felt they were victimised and marginalised due to their status as a resident of an informal settlement. However, MSF provided them with emergency medical care, protected their identity and allowed them access to other resources like counselling.

Lastly, I decided to also inquire their preferred toilet type, to cope with the growing health issues. They all stated wanting a WC-flush toilet for private use because they presented privacy, are easy to maintain, safe and comfortable for personal usage.

Hence, while the women residents faced increasing violence while accessing sanitation infrastructure (amongst other facilities in the settlement), they also displayed resilience through varied coping mechanism, which defined their complexity filled lived experiences but also their dominant voices.

The next section will present an analysis of the insights of male residents from Mathare to determine if gender-related differences in accessibility deepen the existing inequalities in informal settlements.

Male Residents

I interviewed male residents in my second field visit, most of whom were members of the Mathare Youth Group. The respondents had lived in Mathare for almost all their lives in village 4A.

Interactions

The men had access to shared toilets in the settlement, which were squatting but not flushable toilets. They stated unhygienic conditions as a challenge they faced while accessing the toilets as it left them exposed to diseases and openly discarded sanitary napkins, lacked privacy and led to incidents of arguments with other tenants.

While none of them accompanied children to the toilets, they stated explicitly that no lighting in the toilets made it scary for the children. This was interesting as the women had brought up cases of child defilement being rampant in the settlement, with mostly adolescent boys being subjected to sexual abuse and molestation. However, most of the men chose to not rank the severity of child defilement as a crime when I inquired.

Despite ranking sexual abuse as the severest of crime that women confronted, none of the men claimed to accompany their wives or any females to shared toilets. They felt that these spaces were unsafe for women due to rampant crimes and the fear of them being raped. In addition, they also implied that the women contracting diseases due to unhygienic conditions might lead to further violence. Some of them explained that the lack of awareness about diseases could cause their husbands to accuse them of extra-marital relations and lead to more abuse. This finding revealed how socio-cultural norms and existing gender constructs played a role in how women interacting with an infrastructure had to resort to coping mechanisms. The misinformed view possessed by men on how women could contract communicable diseases reiterated the possible risks women faced if and when they overstep the boundaries of social legitimacy and private spaces (Paul, 2011:420).

Coping Mechanisms

The male residents also resorted to some coping mechanism to deal with inadequate sanitation infrastructure provision. The men did complain that as far accessibility was concerned, they considered the toilets to be less spacious and expensive to access. However, they also explicitly stated relying on open defecation as being an easier option for them. They further stated that since most of the toilets had no water provision, instead of having to buy water, they relied upon water that is left behind when women who may be washing leave a filled-up bucket inside the toilet. Lastly, upon inquiring what type of toilet access would they prefer, the respondents stated preferring the WC flush toilet for personal usage.

Hence, these perspectives from Nairobi highlighted a different view on interaction with shared toilets. The residents highlighted cases of violence explicitly, but both the men and women presented very different views on addressal and coping with them.

While the women recounted the various coping mechanisms they used, they also highlighted it wasn't a preferred choice of theirs', rather a choice derived from a resilience-based narrative. The men, despite being aware of VAW, somehow appeared detached from the everyday violence women faced and presented a very different everyday lived experience.

Conjectures

My insights from the field revealed some expected and a few unexpected but powerful findings. In Dar es Salaam, my insights revealed how fear and insecurity was being imbibed within the women residents. While no explicit cases of violence against women were described by either men or women residents, the infrastructural inadequacy was possibly contributing to propelling a fear of experiencing violence, leading to increased insecurity in accessing the limited shared sanitation facilities. Furthermore, the findings revealed how socio-cultural norms may have been prohibitive towards women residents being more forthcoming about their experiences. However, the men provided the much sought-after insight into how women interacted and intersected with fear. Although this investigation actively sought narratives from women to understand if the infrastructure was turning oppressive, the disclosures from men about the fears of their wives and daughters helped shed a light on these topics being a taboo.

Additionally, the insights also brought up the reasons of what made the women fearful and insecure. The way women residents navigated through the settlement and infrastructures shed a light on what components they placed an importance on while interacting with different infrastructures. The 'darkness of the night' was stated as a reason that induced fear in them. The women felt that the darkness provided potential perpetrators a sense of anonymity and the ability to get away with a crime. This showed how women associated visibility with insecurity and the lack of these additional components potentially increased their feeling of vulnerability and insecurity. Conversely though, the men's insistence on shared toilets being unsafe despite the lack of evidence of an actual crime brought forth issues of perceived potential violence as a construct to exert control over women's urban routines and access to public spaces.

An unexpected finding revealed a rather powerful (in my opinion) insight. The involvement of women residents in the informal economic activities had provided evidence of them experiencing 'purchasing power', which they viewed as an empowering act. While women of informal settlements are often viewed from an analytical lens of constant oppression, this finding revealed a quiet but firm way of women defining empowerment and the tools of achieving it for themselves. It resonated with my hope of describing the women residents as somewhat breaking the academic mould of the 'poor, oppressed African women' and also from the rather normative violent narratives that often emerge from these settlements, especially from the Global South. This finding could possibly provide an encouraging view towards possible shifts in analytical lens on how women are written about and depicted within urban informal planning.

Moving on to Nairobi, the findings provided a very different perspective, but only with regards to actual evidence of violence against women. The women residents revealed immense unanticipated courage in exemplifying their everyday interactions with violence and assumed a powerful position with me as a researcher and did not narrate with a victimised perspective. Rather, their narratives were explicit about the violence they faced and the coping mechanisms they resorted to in daily life. They described them with an openness and understanding that relayed a strong sense of wanting to be proactively included as equal participants and decision makers. Unlike women in Dar who were hesitant to speak up, the women in Nairobi detailed their coping mechanisms as them trying to create new ways of access to shared toilets every day.

Conversely on the other hand, the men revealed a rather expected insight and to some extent possibly leaned heavily towards what I sought to investigate. They highlighted gender related disparities in access but provided no resonance or understanding of the women's perspective. To them, the unequal access and deepening inequality was not within their means to tackle. Their somewhat indifferent attitude towards how violence and oppression can affect everyday lives of women highlighted that while infrastructural inadequacy might be turning oppressive for women, but for men, it just relayed an inconvenience and not a barrier to their freedom to access public space without fear and insecurity.

6.1.3 Research Objective 3: insights from the field

My next research objective sought to highlight the existing knowledge gap between the experts and the users. My findings from the field determined if there is an existing gap between service providers (national and global) and local knowledge through the interviews I conducted with key stakeholders involved in sanitation planning. The next paragraphs will detail the insights from the interviews with the stake holders.

Contestations within Actors with regards to Service Provision

My findings from the field illustrated a number of contestations and negotiations that took place within service provision in both the cities, which revealed a gap within the service provision expertise and local knowledge. Additionally, most of these contestations were incurred due to lack of user involvement within the process of infrastructure planning and implementation. Furthermore, the insights from all the stakeholders also revealed users being imagined by service providers, disclosing what I consider subtle 'gender scripts' within the services. In the next paragraphs, I will highlight some of the key contestations that highlighted the knowledge gap.

Dar es Salaam

On a national level, the Ministry of Health and Social welfare has been responsible for the country-wide National Sanitation Campaign. However, the official interviewed showed a disconnect from the users by stated poverty was not a factor in people not constructing toilets, rather they chose not to.

night specifically pointed out the lack of —locks on the doors, waste disposal methods and cleanliness, amongst other issues as the ones that made them feel uncomfortable. The lack of inclusion of these indicators highlighted possibly how the users may have been imagined by the officials and described in the Campaign Dossier as well as the guidelines within the campaign included detailed construction drawings of how to construct a toilet without these additional features that induced fear and insecurity.

The last gap observed was the lessons learnt from the first phase of the WSDP that led to the inclusion of sanitation as a key focus within urban settings (as compared to the initial rural focus of the campaign), but the campaign still emphasised on— maintenance and upgrading of existing drainage, waste water treatment, alongside expansion of the network to cover newly settled areas (particularly in informal and peri-urban areas). Although the insights from the users, both male and female revealed them wanting access to connections and proper facilities to use, the WSDP II failed to incorporate these views and remained focused on technical aspects.

Moving further, while the Ministry of Health and Social Welfare had been aware of the cases being reported of VAW, they had yet to approach the Ministry of Community Development, Gender and Children (MoDGC). The main responsibility of the MoDGC was to promote community development, gender equality, equity, women and children's rights through formulation of policies, strategies and guidelines in collaboration with stakeholder's active in the community. But there was no collaboration done and the MoDGC had no role to play within sanitation planning, implementation, monitoring or advocacy. However, since the commencement of my fieldwork, this ministry has now become a part of the Ministry of Health and Social Welfare and is collectively called Ministry of Health, Community Development, Gender, Elderly and Children. Hence, while an existing gap was present, the combining of the ministries can be seen as step in a positive direction with ways to include the MoDGC as stakeholders to ensure inclusion of women user's experiences within planning processes and more inclusive measures to tackle the growing violence against women.

Now at the Dar es Salaam city level, the planners are mainly focused on infrastructure, public areas and open places for future use. Additionally, the actors involved within the development process included—all councillors, departments, city management team and

ward executive office, with the exception of the community members. This glaring lack of inclusion is evident as the City Council is responsible and working on the Dar Metropolitan Development Project. It's a new plan which is based on specific issues of the city. It is essentially a replica of Community Infrastructure Upgrading Programme (CIUP) but aimed for the coming years. However, in the first phase of CIUP 2000-2010, only 1 public toilet was built in the entire Kinondoni municipality (where Mlalakuwa is based) and the rest of the focus was heavily on SWM, as shown in the Fig. 6.2.

S/N	DESCRIPTION	MUNICIPAL			
		K/NDONI	TEMEKE	ILALA	TOTAL
1	Bituminous roads	2.47	3.2	3.50	9.17
2	Gravel Roads	10.13	17	13	11.96
3	Footpaths	7.47	6.34	0.68	14.49
4	Secondary drains	20.10	30.09	16.14	66.33
5	Major drains	2.25	2.21	0.68	5.14
6	Solid waste facilities	9	14	12	35
7	Public toilets	1	0	2	3
8	Water Kiosks	20	12	12	44
9	Street lights	420	694	510	1,624

Fig. 6.2 CIUP 2000-2010, Phase 1 implementation of upgraded facilities. (Source: Documentation of CIUP Experience, Dar es Salaam City Council, 2010)

In contrast to this, almost all residents used local techniques to empty their pit latrines in Mlalakuwa and did not rely on the Vacuum Tank Operators registered with DAWASCO. The priority of the residents was based on provision of service and not SWM.

Additionally, the Municipal Health Officer (MHO) explained that they involve both the community members as well as their leaders when discussing awareness strategies and campaigns. Often, they hold meetings with all the local leaders so that they can know what problems are being faced. They focus on the environmental cleanliness, provision of public toilets and ensuring good services to the community. However, I observed in Mlalakua informal settlement that almost all the owners of the plots were responsible for constructing these shared or multi-family toilets. Furthermore, almost all residents stated there being no advocacy programmes or campaigns, apart from the ones conducted by BORDA. This made me wonder if there was a gap within knowledge transfer

between the two stakeholders. Thus, while the measures of inclusion and participation are present on paper, the ground reality presented a starkly different outlook where the local actors stated the lack of interaction, advocacy and disconnect present within information dissemination.

Moving on to the Developmental agencies, Water Aid in Dar approached sanitation infrastructure provision again from a SWM perspective and implemented business models focused on the collection of SWM. However, it emphasised a glaring gap where sanitation provision was combined together with technical aspects like SWM instead of usage. Furthermore, they did not take into account that every informal and unplanned settlement had individual problems and may not necessarily place high priority on sanitation. In addition, most women residents placed more importance on accessing water for drinking and sanitation, and rather listed the challenges in being unable to afford a GULPER for emptying their pit latrines. Thus, they posed challenges for the business models developed by Water Aid aimed at developing pit latrine emptying scheme.

The insights from NGO BORDA revealed that they tried to proactively include user perspectives. Their realisation of the fact that the decision-making power was in the hand of the land owners and not tenants showed their attempts at trying to bridge the gap. They tried to create awareness amongst the residents and landlords for repairing existing sanitation infrastructure. The social facilitator ensured that the surveys undertaken included questions on asking the residents to cite what their priority was—provision of service or extraction from the pit. The NGO tried to incorporate user perspective but also realised barriers to do that since tenants possessed no decision-making power. Lastly, the NGO also focused heavily on Faecal Sludge Management (FSM) since most of the surveys highlighted a high demand for emptying the latrines. However, most women residents were concerned with hygiene and security related issues. They found it challenging to access the toilets at night and instead depicted an inclination towards wanting more discussion around choosing sites for service provision rather than sites for FSM.

The next section will now highlight the contestations between the various actors and user involvement within the city of Nairobi.

Nairobi

At the city level, the City Planner, based at the Nairobi City County emphasized that women made up a very large part of the stakeholders involved, who were engaged as an interest group throughout the project phase while designing and implementing planning strategies. However, while the planner stressed that they actively seek engagement from community leaders and different groups, there was no formal process of incorporating their participation, which was considered a soft aspect.

Upon inquiring about knowledge exchange between the users and the service providers, the official claimed that the people could give feedback through the Neighbourhood Associations and that they had a women's representative included in the process. However, the official admitted that they haven't been able to integrate these 'soft aspects' (feedback forms) within the broader technical planning and were yet to address the concerns raised. Despite the exclusion of the information received from the feedback form, there was no denying the fact that the forms potentially relayed important information about usage of the ablution blocks by women residents e.g. ablution blocks being locked at night, the harassment of women by the youth managers or women being locked up inside the facilities. These lived experiences of the women users depict useful information for the service providers. However, the lack of knowledge sharing had led to the women being left with no other alternatives and resorting to open defecation or flying toilets.

Additionally, AWSB has been responsible for designing and implementation of ablution blocks/shared sanitation facilities within Nairobi. The official admitted to not interacting with or incorporating the users. Rather, they designed toilets differently for men and women by providing more space for women. This finding led me to believe that not only were the users being imagined by the designers and innovators, this imagined usage may be also contributing to the existence of "gender scripts" in the service facilities designed and implemented. Furthermore, there was no feedback received from the users by Athi Water as well, possibly leading women and children to a disadvantage, namely to their—health, privacy and security due to their location.

While AWSB was responsible for designing and implementation, Nairobi Water and Sewerage Company was responsible for maintenance, repair and monitoring. The formulation of ISD showed a step in a positive direction. The department had a sociology section

where urban sociologists worked as liaison officers with the settlement and helped gain insider status and access. Nairobi Water gave priority to women as users during planning and in impact assessment as well. The Company recognised that apart from the fact that they're mostly available in the day, the women were the strongest link between various households and water/sanitation points since women were responsible for water collection. This knowledge sharing between the women and the company had led to the company selecting sites to install water kiosks with participation of users in site selection.

Lastly, within the city actors, the CHA explained that despite the women residents willingly relaying their fears to them (walking long distances, frequently accessing toilets with children, fear of rape or molestation, health and hygiene issues), they were usually not involved as stakeholders during the planning process. There was also no impact assessment carried out either during planning/after implementation of an infrastructure or service provision

Moving on with development partners, the UN Habitat displayed glaring gaps within their strategies of provision, highlighting a disconnect between them and the users. Firstly, they conducted a needs assessment survey which highlighted people prioritising water and sanitation as number one, which led to them coming up with a new infrastructure-led upgrading model for informal settlements and slums. This led the agency to determine that putting in water and sanitation infrastructure projects could also be an entry point to slum upgrading. This aspect of knowledge sharing highlighted how users can inform and transform the policies and strategies applied for service provision.

However, despite this survey, there were still disconnects. While the expert revealed that they built ablution blocks that are shared and are gender sensitive, a survey of peak hour usage revealed that more men than women used the facility. Surprisingly, they did not conduct an assessment survey to understand the usage and instead 'imagined' women residents as resorting to flying toilets and open defecations. Additionally, the expert stated that since this was not a part of the research, no one at the agency wanted to find out the reason for low usage by women. Conversely, the expert did concede the need to 'talk' to the women residents to find out what their reasons were.

Furthermore, my findings from the UN Habitat Gender Equality Unit were even more startling. The gender marker tool that the unit used was at present more of a software tool

that looked at soft aspects within language of the programme and policy to determine the gender inclusiveness rather than on-site impact assessment of implementation of planning. In addition, they had no strategy in place on how to incorporate actual women users of the implemented service provisions to determine how inclusive the projects really were.

The last actor was the World Bank who exhibited a serious knowledge gap, despite working with the local government. Their imagination of women users trivialised the women to normative and archaic notions of how they interact, inform and transform these spaces. To them, the usage of a toilet by a woman was essentially for—their children (as mothers), their privacy (socio-cultural understanding of women's bodies) and to do make-up (vanity). They further raised questions as to whether women users would even consider venturing out at night to—take a walk or take a bath, describing an inherent assumed bias about women not accessing public spaces at night. They depicted evidence of imagined users within their designing and planning process.

Additionally, these imagined uses were unfounded as the Bank had not conducted any kind of evaluation of the ablution blocks provided by them. They further assumed that women used flying toilets despite the service provision. Upon being asked if providing ablution blocks was the best solution for the residents, the officials stated their focus was to provide the fastest 'solution' possible, a solution which had neither reduced open defecation or use of flying toilets nor reduced violence against women while accessing the facilities. Their strategies highlighted the use of rather reductive design strategies within their mandate. This also further highlighted firstly, the presence of a "gender script" within the infrastructure provision and secondly, made me wonder if the violence women faced was an unintended consequence of implementing reductive design strategies that led to further oppression of women.

Finally, the final piece of evidence indicating a gap within global expertise was my observation of both the infrastructure-led upgrading programmes being implemented in Nairobi by two developmental agencies. While they both had ended up providing shared ablution blocks, neither of them had conducted an assessment of this infrastructure provision to determine the scope and sustainability of such upgrading programmes. In addition, there appeared to be a lack of interaction regarding knowledge sharing between the

two agencies with the Bank officials wondering out loud whether the experts at the UN Habitat had found anything to answer the question of low usage by women residents.

Conjectures

For this research objective, my assumption was that urban infrastructural planning processes lack inclusion of a gendered perspective. My findings revealed an expected pattern of exclusion of women users and their lived experiences within sanitation infrastructure planning. In both the cities, all actors involved in service provision showed an imagining of the users and usage of the infrastructure by the designers. This imagined usage led to presence of gendered scripts within these spaces, which failed to address the concerns raised by the women residents while accessing and using the sanitation infrastructure facilities in both Mlalakuwa and Mathare. Additionally, these imagined users also brought forth the biases and reductive perspectives of the designers and planners about women residents of informal settlements. These biases rather led to what could be described as reductive design strategies that failed to curb the violence these women faced and propelled more insecurity within the women.

However, this imagining of users, identification of gender scripts within the service provision and evidence of acts of violence raised further questions about whether these shared sanitation facilities were becoming oppressive for women residents. Furthermore, it also brought forth the issues of such practices of imagined users leading to service provision that is unable to curb the acts of violence surrounding it, making me ponder whether this violence might be an unintended consequence of non-participatory and exclusive planning strategies.

The next objective will shed more- light on the findings and conjectures from all the three research objectives.

6.1.4 Research Objective 4: Insights from the field

My final research objective was a general one, where I expected to contribute to existing conceptual debates in feminist planning discourse on intersectionality through the perspective of urban and infrastructural development issues in the Global South by examining the inclusion of public infrastructure under the taxonomy of systems of oppression of women.

Urban infrastructure regimes can be said to be en-route to becoming a key puzzle piece within the rapid urbanization being observed within the cities of the Global South. To furnish this perspective with more depth, attempts are underway to gather evidence to examine the intersections of lived experiences of infrastructures with everyday lives of residents of world's burgeoning cities, people who have often remained invisible within the narratives emerging from these cities.

Within the cities of Global South, rapid urbanisation has been observed in cities of East Africa, with massive investments being undertaken in transforming urban infrastructures planning and provision. Dar es Salaam and Nairobi are two such examples, where infrastructure led upgrading processes are leading to a broad range of narratives of how intersections of infrastructure mediate every-day life.

My conjectures from my findings on the intersection of—women residents of informal settlements, their everyday interactions with infrastructure inadequacy and acts of violence— has led me to identify the emergence of three broad themes surrounding urban infrastructure regimes. Since the concept of intersectionality has not yet been applied to the urban and infrastructural geographies of the Global South, I hope to contribute valuable theoretical and empirical insights for the debate on gender planning and on gender and technology through the themes I have identified within my conjectures of the previous objectives. I will present this in the next section.

6.2 DISCUSSION

The discussion is organised around the following three themes: sanitary regimes, everyday encounters and placing oppression (with)in public infrastructures. The next three sub-sections will present and discuss each theme emerging from my analysis.

6.2.1: Sanitary regimes: Mediating inequality through (in)adequate access

The first theme that I identified through the varied responses from the stakeholders was how inequality was mediated through inadequate access to sanitary regimes, specifically within informal settlements. Sanitation has been universally perceived as an action/act usually conducted and confined to a private space. However, when the lack of a private space forces the action/act to become a matter of public intervention, i.e. open defecation, or use of flying toilets; there is a sense of 'shame' attached with it due to socio-cultural constructs of the female body (Desai, McFarlane, and Graham 2014:14). In this context,

the female body becomes not just a site of oppression, but also one of contestation, negotiations and a socio-political tool within urban infrastructure regimes.

Hence, this section focuses on firstly, how publicness and privacy are negotiated through embodied spatial practices and the negotiation of access to public space. The interplay of what constitutes public and private space is dependent on how these constructs get assembled and when a private space becomes a matter of public intervention. Additionally, within existing sanitary regimes, the negotiations and contestations are no longer just multi-actor but multi-scalar, relaying the existence of a lay-expert divide. These are further exacerbated by potential invisible risks that maybe in places where temporalities are a part of the daily negotiated life, access to services and space.

The lack of/ inadequate service provision often leads to public interventions in the form of 'shared/communal toilets' which are seen as a fast solution by state actors and developmental agencies alike, as evidenced within my own findings. However, these everyday appropriations of urban public spaces (like communal/shared toilets) by marginalized groups represents their claim for a space of privacy and security within emerging and existing inequalities. Additionally, the different ways in which individuals and groups invest in a space, puts an emphasis on how they seek to shape the city to their needs. Hence, these different ways of mediating through infrastructures reveals an important and dynamic pattern, especially to understand how these users see the infrastructure and interact, inform and transform it.

To exemplify this, one of the key findings pointed at how the sourcing and purchasing of the water for drinking and sanitation facilities is often viewed as gendered landscape within both Dar es Salaam and Nairobi. The women are generally responsible for water sourcing and collection, often investing time in fetching water and as observed in Mlakuwa in Dar es Salaam, they used the money earned from their participation in informal activities to purchase water. Therefore, the mediation through the provided (yet rather inadequate) sanitation facilities is highlighted through these marginalised group of women negotiating their intersection of inadequate infrastructure with involvement in informal economic sector.

Moving further, the second focus of this section is on how often within developing sanitary regimes, the emphasis on solid waste management contributes to the imagination of

spatial boundaries based on an adherence to minimise contact with bodily waste. This emphasis depicts the analytical lens of state interventions and developmental agencies, who have so far observed a streamlined effort to adhere to possibly an 'aesthetic mode of governing' (Ghertner 2011: 280 as cited in Roy & Ong, 2011). In both the case studies, the City planning authorities, namely Dar es Salaam City Council and Nairobi City County, were explicitly involved in SWM. However, Stephanie Brown (as cited in Graham & McFarlane, 2014:156), while discussing sanitary regimes in Kampala Uganda, poignantly stated that *"to interpret vernacular toileting as uncivilised and 'dirty' is therefore to ignore the inherent logic of the flying toilet as a system to manage the containment and expulsion of bodily waste, which is exactly what the flying toilet does. You shit into a plastic bag and wrap it up. This conceals the faeces and limits further emanation of its smell. You then throw it away; the shit is no longer in your home. Throwing it away into some space outside of the home does not necessarily mean defiling public space but is rather transferring it to that which is not inside"*.

She provides a compelling and contrasting viewpoint. When faced with inadequate service provision, the process of mediating through this unequal access to service is through the use of flying toilets, amongst other coping mechanisms. However, whether it is the use of buckets at night or flying toilets, the concept to conceal the materiality of human waste is evident within the coping mechanisms used by women in Dar and Nairobi. The adherence to minimise contact with body waste depicted a rather harsh reality when women respondents from Nairobi further stated not eating or drinking after 6pm in the evening to avoid having to defecate or urinate all together, exposing themselves to severe health risks.

Additionally, this imagination of spatial boundaries of contact with waste may also be leading to advocacy of shared sanitation facilities, disguised under the ruse of the 'fastest' solution possible. This mode of governance, it can be said; is further intersecting with the emergence of violence-filled pathways in service provision in informal settlements. To elaborate on this, the conjectures revealed that almost all women residents in both case studies categorically highlighted the potential fears and insecurities they face when accessing these shared/multi-family toilets. These fears and insecurities were induced and being propelled despite shared sanitation facilities being promoted as a way to curb open defecation, where spatial boundaries are difficult to enforce. The women stated how the

existing conditions of the shared sanitation facility further contributed to their imbibed fear and insecurity. The women specifically pointed out spatial elements as the ones that made them feel uncomfortable. This further highlighted how spatial interaction and the materiality of sanitation infrastructure provision was experienced by women. The insights of women residents highlighted a pathway to an oppressive infrastructure regime based on the interactions and intersections of women with the shared sanitation facility.

Lastly, the mediation of inequality by the residents is also based on a perceived ignorance of sanitary provision within both Mlalakuwa and Mathare community. This was amply displayed by the state actors in Dar, where user involvement was almost non-existent in-service provision measures. Additionally, the state actors adopted a view to cast aspersions on the residents of the informal settlements by stating that construction of toilets was not a matter of poverty but rather of choice. These perspectives briefly demonstrate how such imagination may be disenfranchising the residents from rights to the city. Such imaginations were also observed within hierarchies of knowledge and expertise, thereby providing justification for a lay-expert divide in sanitation infrastructure interventions that lead development practitioners to assume poverty means acceptance of infrastructure without contestations. What is critical to note here is that for a client who is paying for designs and services, often a number of options are provided. But when it comes to poor inhabitants, the very providers never inquire the possibility of choice nor provide options, rather their knowledge often turns into 'expertise' aimed at telling the residents what's best for them.

Therefore, the existing sanitary regimes in Dar es Salaam and Nairobi highlight the different ways through which the residents of informal settlements mediate through unequal access in service provision. The coping mechanisms that emerged help them in combatting the near absence of sanitation infrastructure, as well as using it as an advocating mechanism to show resilience within their everyday life. The adherence to imagined spatial boundaries also highlighted the multi-actor and multi-scalar negotiations, which further relayed a 'lay-expert' divide and possibly led to more questions about who has a right to take part in debates about city life (Brown in Graham & McFarlane, 2014:156), and whether those include narratives of the poor and marginalised women.

The next section will now delve deeper into the insights from the residents on the existing sanitary regimes (or the lack thereof) and discuss everyday practices and materialities of sanitation infrastructure provision. This discussion on the cities' sanitary regimes, then, clarifies how urban social inequalities are manifested, and allows for a reading of infrastructure practices that is mindful of the creativity, aspirations, and politics of all urban residents (Brown in Graham & McFarlane, 2014:168).

6.3.2: *Everyday Encounters: Women's interaction with technological artefacts*

Urban infrastructure and its intersection with everyday urban routines of women residents of informal settlements provided a deeper insight into user's interaction with technological artefacts. The 'everyday' encounters have gained prominence for highlighting how practices and regimes are regulated, negotiated, contested, resisted and interacted with.

Everyday practices and materialities of stratifying sanitation infrastructure access reveal several meanings attached to sanitation infrastructure that challenges normative understandings of infrastructure as a solid waste disposal tool. As highlighted in the previous section, the strict adherence to maintain control over contact with waste; legitimises the city authorities' lack of engagement with the residents of Mlalakuwa and Mathare. By stating their responsibility as only towards SWM, the Dar City Council and Nairobi City County evaded questions on toilet provision in informal settlements. Furthermore, other actors in Dar es Salaam—the Ministry of Health and Social Welfare and Municipal Health Office—also stated technical aspects as being their focus of service provision and did not take into account the everyday practices and interactions of the residents to form a new perspective on sanitary infrastructure provision regime.

However, women residents interacted and understood the infrastructure in a different way. Women residents from both cities had every day interactions with infrastructure tempered with often fear of but sometimes also actual acts of violence. In Dar es Salaam, women revealed how they imbibed fear and insecurity due to inadequate lighting. With an enhanced darkness, the interactions of the women residents were severely restricted, inculcated fear and insecurity and also propelled the feeling of inadequate provision turning oppressive and putting their lives at risk. However, what made these interactions intriguing was the perspectives of male residents who declared shared toilets to be unsafe

for women, despite lack of evidence of an actual crime. This observation demonstrates how everyday encounters of women with technological artefacts or infrastructure can lead to perceived potential violence being used as a social construct to exert control over women's urban routines and access to public spaces.

Furthermore, in Nairobi, women resident's interactions with shared sanitation infrastructure was almost to some extent marred with acts of gendered violence. But the way they contested, resisted and negotiated every day lived experience presented another view of empowerment. While vocalising the crimes, they also spoke about their fears and insecurities but being faced with these risks every day, the women also demonstrated resilience in dealing with these fears through varied coping mechanisms. These mechanisms shed a light on how inadequate infrastructure intersecting with violence against women had led the women residents to develop resilience-based narratives.

In addition, these encounters also brought forth an intersection of global flows with local vulnerability in Nairobi. Within the discussions on violence, the women described the role MSF played in being the first responders to the crime and helped the victims. This micro-level involvement of a global entity could have been exacerbated by the outlook presented by informal settlements and its inhabitants. With regards to informal settlements, vulnerability is often observed as a chronic state of being where social vulnerability intersects with gender violence. This vulnerability might extend to infrastructures confined within the settlement spaces, leading them to become implicitly associated with violence and oppression.

Moving on, the lived experiences of the men also highlighted some key observations. The lack of understanding and seldom indifference displayed by male residents with regards to the risk faced by women (health risks, bodily harm) also emphasised how socio-cultural norms and gender related differences played a role in how women interacted with an infrastructure, which was heightened by existing gender inequality embedded in the settlement. Hence, while infrastructural inadequacy might have been perceived as turning oppressive by the women, but for men, it just relayed an inconvenience and not a barrier to their freedom to access public space without fear and insecurity.

Therefore, the conjectures on everyday lived experiences exhibited a perspective of a growing normalization of violence in public life in the city and little being done to break

this paradigm. While urban settings in these cities offer women opportunities, their freedom is tempered with violence. However, evidence highlights that the fear of violence is far greater than actual violence and it ends up controlling the perception of the women's rights to the city. Rather, an intersectional perspective can help provide an analytical lens to this growing urban violence against women. With the incorporation of an intersectional perspective, the female body can be understood as a category of analysis, especially how the female body may interact with the materiality of infrastructure regimes. This can further allow women residents of informal settlements to be invested as full participants in projects, to contribute their knowledge from their everyday encounters to determine what they want and need more explicitly. Literature on Afrocentric feminist thought (James & Busia, 1993; Ogunjipe-Leslie, 1994) talks about the importance that knowledge plays in empowering oppressed people. For social change to be visible, there has to be co-production of transformation—the changed consciousness of individuals and the social transformation of political and economic institutions. Innovating and creating new knowledge is imperative for the change to reflect in both directions.

Thus, in the next sub-section, I will build up from this theme and discuss how an implicit theme of reductionism was observed and how it intersected with the residents, spatial interaction and knowledge production.

6.2.2: Placing Oppression (with)in Public Infrastructures: Reductive Strategies, Gender Scripts and Unintended Consequences

My last research objective was focused on examining whether public infrastructure could be included under the taxonomy of multiple systems of oppression that women face in the cities of the Global South. I sought to conduct this examination through an analytical intersectional lens on sanitation infrastructure. Through this lens, I gathered evidence from—the lived experiences of female (and male) users of infrastructures residing in informal settlements and the interventions (state and developmental agencies) that were shaping the governance of infrastructure provision within the cities of Dar es Salaam and Nairobi—to pursue my assumption. Within my investigation, I decided to uncover intersections (if any) of violence filled narratives with infrastructure service provision.

My analysis led me to identify three common themes that emerged from the case studies, namely— Reductionism, Presence and Incorporation of Gender Scripts and Unintended Consequences. In the next sections, I will discuss the emergence and identification of these themes and their possible contribution to identifying oppressive strategies placed within sanitation infrastructure provision.

Reductive Strategies

The analysis of the findings highlighted reductionism observed within various processes and also stakeholder's perspectives. I first observed a theme of reductive notions within the existing literature and then also within the field where concepts on gender were regarded as a rather simplistic binary formulation (male and female) and dominated by one gender (male). In addition, within technological artefacts, it was observed that a specific set of values was assigned to what was described as hegemonic male and female. Furthermore, gender and women were often used interchangeably within strategies. These observations were also depicted within my interviews with the state actors and their responses to gender-based strategies as adhering to 'women-only' focus. A case in point was a Gender Budgeting Manual created by GTI in Dar which was heavily focused on ensuring incorporation of equality of women within all ministerial budgets. However, the manual failed to make an impact beyond the budgetary issues within the ministries and did not include specifics about user involvement.

Secondly, I also observed gender-based disparities when it came to cultural coherence of African women as compared to African men. The existing socio-cultural norms showed how men in both cities felt accessing shared sanitation facilities to be unsafe for women, but yet for themselves, acknowledged it as a mere inconvenience. It raised questions of whether social constructs contributed to limiting the access of women to public space. Additionally, the different dynamics that women and men residents established with sanitation facilities in informal settlements, highlighted how women negotiate their everyday encounters with sanitary regimes as users but removed from design. The reductionism for me raised the question of what to place importance on when providing access to sanitation facilities in informal settlement—maintenance of the body or maintenance of the infrastructure. These contestations with regards to body politics versus infrastruc-

ture led me to wonder if the interaction with shared sanitation facilities by women residents of informal settlements as users was leading to them become a socio-political tool within urban sanitary regimes as a consequence.

Thirdly, the lived experiences of women users often reduced them to merely interacting with the infrastructure and were also perceived as women having an ambiguous relation with technology/technological artefacts. However, the everyday experiences stated by the women during the fieldwork specifically described their fear and insecurity while trying to access the shared sanitation facility, rather stating the risks they faced quite articulately. They exhibited their involvement as users producing knowledge within the technological determinism of the infrastructure. It then additionally highlighted, that how they interacted with the infrastructure, had the potential to inform and transform the current service provision despite the implicit reductive attributes assigned to them as only mere informants.

Fourthly, strategies incorporated as part of state interventions and through collaboration of developmental agencies also showed a reductive perspective when it came to sanitation service provision. With the emphasis on providing service where none existed and to reduce the practice of open defecation, the implementation of shared sanitation facilities was viewed as a quick and easy solution. Earlier research had also shown that open defecation further puts women at a risk of exposing themselves to violence. However, developmental agencies found after the implementation of shared toilets, that women residents were not accessing the provided toilets even during peak hours. Furthermore, violence against women was observed and explicitly stated by the women residents in Nairobi and fear of being attacked was stated in Dar es Salaam when trying to access these shared facilities. These intersections with violent narratives revealed women to be conversant with the challenges they face in their everyday lives while accessing these facilities. Additionally, it had led them to devise and utilise various coping mechanisms to negotiate their daily lives and access routines within urban public spaces.

Thus, despite the evidence demonstrating the perception of shared toilets by women residents as—undesirable, inducing fear and insecurity, exposing them to diseases, exposing them to violence—their continued advocacy by governmental and developmental agencies raised some poignant questions about implementing reductive design and planning

strategies in informal settlements under the guise of possible measures to tackle inadequate infrastructure provision.

Lastly, an unanticipated but revealing observation led to me raising questions on reductive notions applied within feminist discourses. There have been studies that have implied the notion of women as being touched through multiple systems of oppression. However, previous studies have also highlighted that when it came to women residents of countries of the Global South, a normative and rather reductive mould of ‘oppressed third world women’ was generally implied as a given. The reason for this assumption was that they were bound together by a sociological notion of the ‘sameness’ of the oppression. However, the narratives of women from Dar es Salaam and Nairobi highlighted their daily interactions with multiple systems of oppression, but it also brought forth evidence of everyday resilience and resistance. Both sets of women did not believe themselves to be bound by the oppression and rather showed their own interpretations of how small acts of being able to purchase water or being vocal about dealing with everyday violence empowered them. To me, this briefly demonstrated how these women, despite experiencing oppressive acts, dealt with them in their own and unique way. They highlighted that the ‘sameness’ lay only in the form of experiencing oppression and not necessarily the ‘same’ oppression. However, I must also state that this observation is in no way done to romanticise the notion of empowerment of women overshadowing their experiences of oppression. Rather, it is to shed a light on how within academic constructs, empirical evidence can potentially highlight subtle contestations and lead to further inquisition.

The next section will highlight how technologically reductive strategies highlighted the presence of ‘gender scripts’ within the infrastructure provision schema.

Gender Scripts

My interviews with governmental actors presented an imagined view of usage of infrastructure. In Nairobi, officials from AWSB imagined the usage of the facilities by the users (male and female) when designing the shared toilets for informal settlements. Similarly, in Dar es Salaam the National Sanitation Campaign in their dossier produced drawings and guidelines on how to construct toilets within the settlement. Additionally, developmental agencies—UN Habitat and the World Bank also imagined how users use the infra-

structure. The World Bank experts, on one hand reduced the usage by women to normative and trivialised imaginaries, while the UN Habitat provided infrastructure that wasn't used and stated no motivation to find the reasons. These observations from the field suggested imagination of users in both the cities by a number of service providers. It leads me to surmise firstly, the presence of 'gender scripts' in shared/ multi-family sanitation facilities. In addition, the contestations that emerged between the design of artefact (giving form to content) and design of user experience (shaping life) highlighted the lack of a presumed neutrality of technology/technical artefacts. Secondly, these imaginaries also brought forth the biases and perhaps reductive perspectives through which the designers and planners perceived the women residents of informal settlements. These biases rather further led to what could be described as reductive design strategies that may have contributed to the failure to curb the violence against women in places of inadequate service provision.

State actors in collaboration with developmental agencies have viewed infrastructure technology always as a political tool. The provision of infrastructure is a complex political, social and spatial process. Nonetheless, despite the present frameworks of participation and inclusion, infrastructure can no longer be perceived with a presumed neutrality. The presence of gender scripts is a part of the process of technological determinism process for a city. While there is no concrete evidence pointing at the incorporation a 'masculine' gender script, there is pre-determination of users and user attitudes that is inferred. However, the intention here is to not put forth a romanticised notion a feminine gender script to be incorporated. Rather, it is to shed a light on their presence to see whether technological design can mediate inadequacy in service provision through a more inclusive process that doesn't restrict the envisioned users to a selective set.

Additionally, these inferences raise some questions which require more inquisition and evidence from the field which was beyond the scope of this study. Nonetheless, I wondered with the incorporation of gender scripts in infrastructure design, whether first, the predetermination of users and user attitudes could shed a light on the potential reasons for oppressive nature of technology and second, whether people designed infrastructures or did infrastructures design people.

However, the empirical evidence also highlighted the role women users are playing in re-writing the gender script of the sanitation infrastructure. The coping mechanisms and limited usage of shared toilets in both settlements has provided an insight into how the glaring lack of user involvement and further imagined usage can lead to infrastructure becoming redundant and at worse, complicit in propelling fear or violence. Hence, the role women residents play in shaping infrastructure and technology needs incorporation within the gendered scripts of the infrastructure service provision. Hence, there is an emerging need to not just incorporate women as merely 'informants' to mediate technological design but to acknowledge the emerging power of women residents as 'knowledge producers' in design and planning of infrastructure.

Lastly, these imaginaries of women users, identification of gender scripts within the service provision and evidence of acts of violence reiterated whether these shared sanitation facilities were becoming oppressive for women residents. This reiteration further made me ponder whether this violence might be an unintended consequence of non-participatory and exclusive planning strategies. The next section will look at this inference in detail.

Unintended Consequences

Women have often found themselves marginalised within infrastructure provision and new technological standards that are being developed (Donna Haraway 1997:37 as cited by Scott et al., 2013:7). This marginalisation often results in imaginaries of women that are envisioned by service providers, which don't match the realities of the everyday lived experiences of the women. This mismatch can sometimes lead to unintended outcomes of choices in the design process (Oudshoorn, Saetan, and Lie 2002:481).

As discussed in the previous sections, the imaginaries of user sets led to the identification of gendered scripts within sanitation infrastructure that was provided to residents of the informal settlements. However, it made me wonder whether the pre-determination of users and user attitude incorporation and the subsequent limited interaction of women users with the provided facilities could lead to some unintended consequences, since these consequences often end up constraining instead of facilitating the technological artefact. This made me determine if the intersection of violence with the shared toilets could be understood as an unintended consequence of technological determinism.

However, there has been empirical evidence detailed in cities of East Africa and South-East Asia (Anand & Tiwari, 2006; Narayanan, 2012; Reddy & Snehalatha, 2011b; Arku, Angmor, & Seddoh, 2013; Kareem & Lwasa, 2014) highlighting the presence of violence intersecting with inadequate infrastructure provision namely of water, sanitation and transport. All the cases highlight the common point of lack of spatial access to infrastructure, exacerbating the inadequacy and forcing women to travel longer distances to seek the infrastructure provision.

Within this research, the data gathered from both settlements highlighted how water collection for drinking and sanitation usage is a highly gendered landscape in both cities. Women were responsible for fetching water for the households. For this, they had to often either wait in long lines at water kiosks or buy water buckets from people with piped connections. This is not to say that women accessing urban public spaces for longer duration exposed themselves to more risk of violence, but evidence from earlier studies has highlighted how women do subconscious safety mapping to negotiate vulnerability. These complexities, intricacies and diversity of embodied and lived experiences of women residents in these cities further emphasize the intersectional relationship of social vulnerability with predisposition to violence. The chronic state of vulnerability of these women and the varied coping mechanisms highlight how the maintenance of body (and bodily waste) becomes a challenge for women residents, who lack a safe and hygienic place to defecate. This challenge is further exacerbated by state interventions that shape the infrastructure provision for by choosing the maintenance of infrastructure over its citizens. Hence, this it can be argued that it makes the infrastructure implicitly complicit in adding a spatial dimension to violence against women.

Hence, the empirical evidence gathered in this study also corroborates with the growing violence. This leads me to argue for more detailed analyses into urban infrastructure planning to determine with more surety if infrastructures are themselves turning into systems of oppression or whether the reported violence is an unintended consequence of infrastructural inadequacy and reductive design strategies.

Concluding Remarks

This chapter focused on first, analysing the findings from the case studies through a multi-scalar and multi-actor lens. I applied the perspective of an intersectional analytical lens

on the research objectives defined for this research and sought to incorporate and specify varied interactions between state actors, development partners and users of informal settlements. My analysis revealed some key conjectures, which I then further used to identify three emerging issues, namely—mediating inequality in sanitary regimes, examining everyday encounters of women users with infrastructures and lastly, investigating whether public infrastructure could be placed within oppressive regimes through reductive strategies, gendered scripts and unintended consequences.

My conjectures demonstrated that firstly sanitation infrastructure provision exhibited a technical focus, with a major emphasis on public health concerns in Dar es Salaam. The findings from Nairobi presented a more emphasised focus on engineering and technical aspects along with concerns for public health and hygiene. Secondly, fear and insecurity were being imbibed within the women residents of informal settlements. While no explicit cases of violence against women were described by either men or women residents in Mlalakuwa, the residents of Mathare 4A village stated numerous cases of violence against women surrounding shared/multi-family toilets. This led me to determine that the infrastructural inadequacy was possibly contributing to propelling a fear of experiencing violence, leading to increased insecurity in accessing the limited shared sanitation facilities. Thirdly, the lived experiences of women users contrasted with the imaginaries designed by service providers highlighting the possibility of a knowledge gap between experts and local knowledge producers. In both the cities, all actors involved in service provision showed an imagining of the users and usage of the infrastructure by the designers. However, the women residents' restricted interaction with the infrastructure highlighted key information that could help bridge some of the gap in knowledge acquisition. Lastly, a more detailed analysis into urban infrastructure planning needs to be carried out to determine with certainty if infrastructures are themselves turning into systems of oppression or whether the reported violence is an unintended consequence of infrastructural inadequacy and reductive design strategies.

The next chapter will now present concluding thoughts on this research with recommendations.

CHAPTER 07.

CONCLUSION

Introduction

As one of the Millennium Development Goals that spectacularly failed, providing access to adequate sanitation infrastructure has proved to be a much more complex challenge than it was previously imagined. Cities around the world are experiencing growing inequalities; posing incremental challenges for development practitioners and policy makers. In Lewis Carroll's *Alice in Wonderland*, Alice ponders what the world is like on the other side of the mirror's reflection. Much like Alice, it is my firm belief that the present generation is standing at the intersection of discourse and praxis; no longer just pondering but rather experiencing the residues of the past still acting as a tracer for the trajectory of urban development of metamorphosing cities.

As an architect and urban development practitioner highlighting the intersection of gendered violence with inadequate infrastructure provision, I consider it imperative to address the structural shift being observed in the cities of metamorphosing countries. With 2.4 billion people still lacking access to improved sanitation facilities, the shift towards a global sanitation crisis is no longer looming, but rather being faced head on by the residents of the cities in the Global South.

The focus on sanitation service provision has largely retained a perspective on provision in the form of health and hygiene awareness, combined with technical aspects of solid waste management. Furthermore, despite the on-going WHO /UNICEF Joint Monitoring Programme globally providing measures for access to sanitation and incorporating internationally agreed definitions for 'improved sanitation', it still lacks a deeper analysis into gendered access to service.

The state of current research highlighted the prevalent views and gaps. Firstly, current literatures in development studies often neglect existing gender-related inequalities or

provide simplistic, one-dimensional views overlooking on how gender-related inequalities intersect with urban poverty, poor sanitation infrastructure and gender-based violence. Secondly, research on urban poverty in rapidly urbanising African cities has not yet systematically comprehended the gender-related inequalities regarding access to infrastructure service provision, the specific demands and everyday lived experiences of women residents living in informal settlements. Thirdly, research has further treated sanitation infrastructure as gender-neutral and has neglected both, the unequal access to basic sanitation within the diverse groups of the urban poor and the impact of existing technological designs in propelling gender violence.

These gaps and further in-depth theoretical analysis led me to want to draw attention towards women residents in urban informal settlements; who stand on an intersection of multiple categories that often can be oppressive and can affect how they interact with the cityscapes and infrastructure provision in their everyday lives. Risking health issues, harassment, shame, indignity and exclusion from decision making processes due to an inherent lack in gender equality within sanitary regimes, these women often stand on an intersection of inadequate access to infrastructure, poverty and gender amongst other issues.

In summary, the extensive research on gender and sanitation fails to capture the magnitude and scope of gender-based disparities and reveals a need to examine the injustice against women through infrastructural inadequacy. The studies further show a dearth of empirical evidence regarding the intersectional relationship of women's everyday interaction with sanitation infrastructure. Hence, in this research, I have attempted to capture some of the complexity within sanitation infrastructure provision by focusing on the ways in which women interact, inform and transform infrastructure.

7.1 Restating the Research Objectives

The point of departure for this research was to seek a new explanation that incorporates and specifies the interaction of multiple social dynamics. Since, this research was designed to be as inclusive as possible to different experiences of residents of informal settlements; I interacted and interviewed both men and women and contrasted it with the perspectives of the service providers. I firstly, narrowed down my focus to research two informal settlements in cities of East Africa, namely within Dar es Salaam in Tanzania and Nairobi in Kenya respectively. The reasons amongst others, were primarily that empirical

evidence had highlighted how both these cities were shaped by collaborative and co-productive arrangements of service provision, with state interventions being supported by developmental agencies along with the inclusion of informal vendors to cover areas still not connected to state supply.

Thus, as part of my research objectives, I set out to firstly, investigate the existing sanitation conditions in informal settlements in Dar es Salaam and Nairobi in East Africa. Secondly, I wanted to evaluate women's access to sanitation infrastructure and how it affects their everyday life in informal settlements, their access routes during the day and night and how it contributes to gender violence. Thirdly, I aimed to highlight the existing knowledge gap between actors involved in sanitation planning processes and women users' perspectives. Lastly, gathering all the evidence and conjectures from the three objectives, I sought to contribute to existing conceptual debates in feminist planning discourse on intersectionality through the perspective of urban and infrastructural development issues in the Global South by examining the inclusion of public infrastructure under the taxonomy of systems of oppression of women.

Based on these objectives, I decided to structure my research to firstly study the existing literature to create an analytical theoretical framework to help guide my analysis of the data I wished to gather from the fieldwork. The next section will briefly recount the chapter outlines to help set the scene for the conclusions derived from this research.

7.2 Brief Recounting of Chapters

This research started with an introduction into the imminent global sanitation crisis that metamorphosing cities in the Global South are faced with. Chapter 1 discussed the problem looming at large, introducing the hypothesis of wanting to create a new analytical lens for sanitation infrastructure, one which is removed from the existing normative health, hygiene and technical perspectives. The argument I raised within the chapter was to add another layer of complexity within analyses on urban infrastructure provision; a layer that aimed at trying to understand and incorporate narratives of gender-based violence intersecting with inadequate service provision in informal settlements. Hence, I assumed the need of an intersectional lens for data collection and analyses to furnish my research with more qualitative depth.

To develop an in-depth understanding and to shed a light on existing debates that frame the intersection of gender, technology and violence, within Chapter 2, I sought to investigate how gender inequality in urban planning manifests through inadequate sanitation infrastructure provision and access. In order to understand more about the need for an intersectional analytical lens, I explored through a theoretical—how women have been placed (with)in the discourse on development, how gender interacts, informs and transforms technology and how violence intersects and impacts gender debates within urban public space. The review included the concepts that helped form a concluding perspective of dividing fieldwork into state interventions, user involvement within various processes of planning and implementation and lastly, the identification of contestations and negotiations that might get highlighted.

Based on this broad analytical framework, I developed my research design in Chapter 3 to incorporate the methodology and research techniques that I employed to conduct this research. I detailed an account of the specific data collection methods and instruments used in my fieldwork conducted in March-April 2015 and February- April 2016, including in-depth, semi-structured interviews, participant observations, focus group discussions and secondary document collection; to illustrate how the evidence from the field and theory was gathered. I aimed to lay out how I planned to implement my research design as a means of answering the research objectives. In addition, I organised my case studies in the style of parallelism to ensure the focus on the narratives of the respondents rather than my narration of the cases.

My case studies were based in—Mlalakuwa Sub-Ward Settlement in Dar es Salaam and Mathare 4A Village in Nairobi. Both these chosen case studies presented a similar population size, had been previous sites of World Bank Structural Adjustment Programmes, shared a similar colonial trajectory, depicted similar gender disparity indices and lastly, were extensively shaped by co-productive and collaborative infrastructure service provision within the city, along with municipal service provision. The case studies presented in Chapter 4 and 5 discussed context settings and findings from the field, divided in two themes—Governance Shaping the City and the Lived Experiences of the Residents. These two themes were presented through the identification of perspectives from the theoretical framework, namely stakeholder perspective, user involvement and contestations /negotiations. I described an account of the narratives gathered from the field to illustrate

the evidence gathered from the field through semi-structured interviews and focus group discussions. The findings revealed an intriguing way of delineating sanitation infrastructure provision responsibility within Dar es Salaam and Nairobi. While Nairobi presented a rather simplified-looking service provision delineation with individual authorities responsible for everything, my findings revealed a lack of coordination and interaction with the users with a focus on technical aspects of Solid Waste Management, amongst other things. Dar es Salaam provided a complex delineation model, which highlighted issues of communication and coordination amongst other findings. These findings helped set up the foundation for my analysis.

My Chapter 6 focused on firstly, analysing the findings from the field, which I structured under each objective by presenting conjectures from the insights revealed from the field and then presented a discussion the three broad themes that emerged from all the insights and conjectures, namely—Sanitary Regimes: Mediating inequality through (in)adequate access, Everyday Encounter: Women’s interaction with technological artefacts and Placing Oppression (with)in Public Infrastructures: Reductive Strategies, Gendered Scripts and Unintended Consequences. Secondly, the chapter presented a discussion on the themes that emerged from the conjectures of each research objective.

7.3 Conclusions from the Analyses

My analysis highlighted some key conclusions. Firstly, sanitation infrastructure provision exhibited a technical focus, with a major emphasis on public health concerns in Dar es Salaam whereas the findings from Nairobi presented a more emphasised focus on engineering and technical aspects along with concerns for public health and hygiene. Nonetheless, the analysis revealed that the focus on sanitation service provision has largely retained a perspective on provision in the form of health and hygiene awareness, combined with technical aspects of solid waste management. Thus, despite the presence of acts of violence against women intersecting with shared/multi-family toilets, the layer of violence is yet to be addressed within sanitation provision.

Secondly, fear and insecurity were being imbibed by the women residents of informal settlements. While no explicit cases of violence against women were described by either men or women residents in Mlalakuwa, the residents of Mathare 4A village stated numerous cases of violence against women surrounding shared/multi-family toilets. This led

me to determine that the infrastructural inadequacy was possibly contributing to propelling a fear of experiencing violence, leading to increased insecurity in accessing the limited shared sanitation facilities. While existing literature already highlights women facing risk and shame when faced with the possibility of open defecation, my analysis briefly demonstrated themes of reduction within service provision process that could be exacerbating the induction of fear and insecurity within the women residents.

Thirdly, the lived experiences of women users contrasted with the social imaginary designed by service providers highlighting the possibility of a knowledge gap between experts and local knowledge producers. In both the cities, all actors involved in service provision showed an imagining of the users and usage of the infrastructure. While it would be naïve to assume the presence of gender neutrality within technological determinism processes, yet the presence of gendered scripts highlighted a gap within inclusion of actual women users to determine the infrastructure determinism. Insights from the field presented ample evidence of resilient narratives defined by the women residents to combat oppressive acts surrounding sanitation infrastructure usage. Furthermore, the women residents' restricted interaction with the infrastructure highlighted key information that could help bridge some of the gaps in knowledge on socio-spatially relevant sanitation infrastructure.

Lastly, a more detailed analysis into urban infrastructure planning needs to be carried out to determine with certainty if infrastructures are themselves turning into systems of oppression or whether the reported violence is an unintended consequence of infrastructural inadequacy and reductive design strategies. Evidence from the lived experiences of the women residents highlighted the recurring acts of violence which created a more oppressive environment for them to live in every day, specifically the intersection of violence with inadequate service provision was identified to instigate an oppressive environment around shared sanitation facilities. Furthermore, from the empirical evidence, I could identify that inadequacy and reductive design strategies may have also been complicit in inducing the oppression that might be manifesting itself through fear and insecurity amongst women residents. In addition, this induced fear may have also been propelled by the social imaginary of women by the designers/innovators, who may have assigned predetermined gendered scripts to design of shared toilets, that excluded lived experiences of women residents as users.

Based on these analyses, I will now present some broad suppositions from this research and the future scope of this research.

7.4 Scope of Research: Recommendations for Future Interventions and Further Inquisitions

This research as stated earlier, sought to introduce analysing sanitation infrastructure provision through the analytical lens of gender-based violence. Based on the conclusion from the research objectives presented in the previous section, some broad recommendations regarding studying sanitation infrastructure further can be deduced, which present potential for future research and steps on ensuring how this research can enable further investigations into related topics.

Recommendations with Potential Future Interventions

The first potential focus would be to advocate proactively for bridging the gap between academia and praxis by understanding how to pragmatically incorporate academic rigour with on-site implementations. To exemplify, my research shows how women users inform, interact and transform urban sanitation infrastructures and in the process, re-write the 'gender scripts' innovators imagined while designing the infrastructure provision. This re-writing is evidenced in the various coping mechanisms women of informal settlements employ to access shared/communal toilets at night due to fear of being sexually assaulted or attacked, especially at night. The role of the state actors and development agencies hence, can re-orient towards approving finances for projects that limit the use of 'imagined' users by innovators/implementers and create concrete outlines for 'resident/user' inclusion as not just informants but as knowledge producers. Additionally, steps like safety audits could be enforced within the planning phase to determine the viability of the project before funding and reduce reductive strategies implemented on-site.

The second recommendation is to encourage steps to include the re-imagining of the normative understanding of linearity in policy level set-up; by firstly, acknowledging and secondly, creating defined spaces for complexities and wicked problems on a multi-scalar level. To illustrate this, my research shows how women's bodies have become not just a site of oppression but also of contestations, negotiations and a socio-political tool within urban infrastructure regimes. Inadequate provision of sanitation services has forced the

lack of a private space for the action/act to become a matter of public intervention. In addition, evidence in my work highlights that design strategies of providing shared/com-munal toilets have not prevented or diminished sexual assault on women, which were provided as a measure to tackle violence against women due to open defecation. These kinds of reductionisms are a complexity within the present normative and linear under-standing of 'resolving' issues of inadequate sanitation service provision within both for-mal and developmental actors through 'fast' solutions. The role of the service providers thus, can be to re-focus and re-mould the staying power and longevity of programmes on again a multi-scalar level. By defining space for these complexities, contextual evidence-based policy planning and implementation can provide innovative financing and creative solutions and save money on rather short-sighted and reductive strategies.

The third recommendation is to investigate the expanding role of various manifestations of violence and its detrimental effects. The service providers should no longer ignore the cost of 'violence' to sustainable development programmes in various countries of the world. There is an urgent need to include, evaluate, measure and understand (contextu-ally) the cost of imagined and real violence suffered by the programmes funded and im-plemented by the state in collaboration with developmental agencies. In my research focused on analysing urban gender violence intersecting with public infrastructure pro-visions, empirical evidence from south-east Asian cities and east African cities highlight presence of violence against women intersecting with inadequate infrastructure provi-sion namely water, sanitation and transport. This leads me to suggest a more detailed analysis into urban infrastructure planning to see if these infrastructures are themselves turning into systems of oppression and whether the reported violence is an unintended consequence of reductive planning strategies, by collecting more evidence from the field to analyse oppressive environments. Within this, the role of the service providers there-fore, could be to re-construct and adapt their policies and implementation strategies to include and mandate 'co-production of safety' in dealing with challenges at local, regional, national and global level. Additionally, interventions need to be based on evidence that includes contextual risk profiling along with resilience mapping of communities and peo-ple.

The last recommendation is to advocate for the use intersectional analyses within urban (infrastructure) planning and development. With rapidly morphing and mutating cities

and countries, I believe that the subject of the urban infrastructure regimes from a violence and feminist perspective must be researched from a new analytical lens on the growing challenges being faced in the global community. Working with feminist discourses within urban infrastructure policy planning and implementation, I consider the incorporation of an intersectional perspective within the multi-scalar framework of the developmental agencies and infrastructure service providers; could be asset that can firstly, provide a deeper understanding to the growing complexities and secondly, help innovate unique resolutions that are also interdisciplinary in nature.

The reason to advocate for intersectionality is also based on a rather positivist finding from my research, which is still quite nascent in its development, but could prove to be quite promising, if further research is directed towards it. One of the key findings from the Mlalakuwa Settlement in Dar es Salaam had revealed how women residents, through their involvement in the informal economic sector by selling Mandazis, were able to purchase water for their households. Not only did they view it as empowering, but their participation in the informal economy provided them with purchasing power. This finding for me is a powerful one from the perspective of imagining an intersection of informality with feminist urban planning. Informal discourses often highlight the role of women in the informal economic sector due to the lack of opportunities of gainful employment and better wages within the formal economic sector. What this finding revealed to me was how informality can be re-envisioned and used within feminist planning in ways that are congenial to feminist epistemologies and politics. These informal practices can represent a new kind of critical engagement with feminist intersectionality that is grounded on the critical agency of gender inclusive urban planning and poor women's rights to the city, on which more investigative research can be commenced.

The next suppositions raise some inquisitions, that require an in-depth analysis, which is beyond what this research could accommodate.

Further Inquisitions

Firstly, the inadequate service provision of sanitation facilities highlights the issue of privacy and public interventions to tackle the provision of a secluded space to defecate. However, the notion of privacy within a public intervention raises some challenging questions. If the provision of shared services is done with the foundation of providing access

to privacy while using toilet facilities, is the solution (or should we be) aiming for a private space for sanitation for everyone? Furthermore, if that is the aim, then isn't the provision of privacy also adhering to a western ideal of usage and interaction with sanitation facilities? Additionally, the discussion on privacy and its intricate linking with a western ideal and the incorporation of this ideal in metamorphosing cities of the global south makes me wonder whether sanitation models should be/need to be/aimed at being a 'global product'? These inquiries bring forth a more intriguing perspective than previously imagined about sanitation.

The second line of inquiry looks at intersectionality and its lack of incorporation within urban planning discourses. While there is extensive work done within feminist geography with regards to using intersectional analyses, urban planning and development discourses are yet to incorporate this analytical lens. Despite previous evidence of violence surrounding inadequate infrastructure provision from countries in South-East Asia, it makes me wonder why has the intersection between infrastructure and gender-based violence been overlooked for so long despite evidence emerging from the global south? However, I would like to state that my intent here isn't to build an ideal view of this method of analysis. The analytical lens also raises questions, specifically with regards to whether a multi-dimensional framework can obscure or reveal the dynamics of specific intersections? These specific intersections can prove to be very challenging as they may vary diversely within different contexts. Furthermore, more evidence is needed to examine whether the discourse on informality can be compatible with feminist epistemologies through interrogating the connection of inclusionary practices in urban planning and development in cities with intersectional analysis.

This research also raises further questions of possible ways of inclusion of users in infrastructure planning processes. Although, all the state actors and development partners interviewed stressed on participatory processes, a gap was observed in how to include users from a gendered perspective without falling into the loophole of "gender scripts". Thus, it's also important that sanitation planning be further investigated from different standpoints. The perspective of 'sanitation for all' on a broad scale has highlighted the need for perhaps 'sanitation for women' to be included, not just in a way of them becoming a 'category', but rather in a way that includes both men and women to acknowledge gendered usage of the infrastructure and its implications and informing of the infrastructure

provision process. Such a research could explain in more detail to what extent lived experiences of the infrastructure differ when envisaged by the city officials and planners, and the residents. In addition, it could also be important to investigate causes and consequences of the gaps between desired and developed infrastructures.

Finally, the role of planners and architects in decision-making for shaping the rapidly urbanizing cities in East Africa and in general in the Global South, also raises questions of the planner/user divide. Therefore, further research could be conducted on analysing how can this divide be bridged and what other tensions drive this divide. In addition, on an urban planning level, academic research can also delve into questions of whether this divide be contested through the modalities of place-specific practices and blurring of the formal-informal divide through hybrid processes.

Therefore, these are all possible frameworks for forthcoming studies that would, similarly to this one, contribute to a better understanding of the future of our metamorphosing cities.

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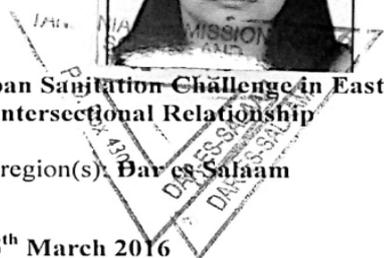
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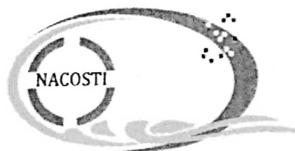
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APPENDIX.

01. Research Permits

TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY (COSTECH)	
	Ali Hassan Mwinyi Road P.O. Box 4302 Dar es Salaam Tanzania
Telephones: (255 - 022) 2775155 - 6, 2700745/6 Director General: (255 - 022) 2700750&2775315 Fax: (255 - 022) 2775313 Email: rclearance@costech.or.tz	
RESEARCH PERMIT	
No. 2015-66-NA-2015-61	16 th March 2015
1. Name : Anshika Suri	
2. Nationality : Indian	
3. Title : Women and the Urban Sanitation Challenge in East Africa: Tracing an Intersectional Relationship	
4. Research shall be confined to the following region(s): Dar es Salaam	
5. Permit validity from: 16 th March 2015 to 15 th March 2016	
6. Contact /Collaborator: Prof. Wilbard J. Kombe, Institute of Human Settlement Studies, Ardhi University, P.O. Box 35124, Dar es Salaam	
7. Researcher is required to submit progress report on quarterly basis and submit all Publications made after research.	
 M. Mushi for: DIRECTOR GENERAL	



**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
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When replying please quote

9th Floor, Utali House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/16/25896/9472**

Date:

15th March, 2016

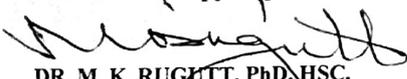
Anshika Suri
Technical University of Darmstadt
GERMANY.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Women and the urban sanitation challenge: An inter-sectional relationship,”* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for a period ending **31st December, 2018.**

You are advised to report to the **County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


DR. M. K. RUGUTT, PhD, HSC.
DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

**COUNTY COMMISSIONER
NAIROBI COUNTY
P. O. Box 30124-00100, NBI
TEL: 341666**

The County Director of Education
Nairobi County.



02. Questionnaire for Female Residents

Age 16-18 () 18-25 () 26-35 () 36-50 () 51-60 ()

Background Student () Professional () Housewife () others (specify) _____

Questions

1. Do you live in this area? How long have you lived in the area?
1. Do you have a toilet in your house? Yes () No () If yes, what kind of toilet is it? (Pit latrine, squatting, WC seat, open-space make-shift place) If no, what type of toilet do you use? (Shared, community, public, others-----)
2. Who constructed the toilet? When was the toilet constructed?
3. Do you use a shared toilet? Yes () No () YES - How often? _____
4. Do you prefer using the shared toilet or a private toilet of your own? _____
Shared/Communal () Private ()
5. Do you have water provision in the toilet? Do you have connection from DAWASCO/DAWASA to the toilet?
6. How often do you use the toilet in a day? Frequently () Seldom () Others _____
7. Do you go to the toilet alone or with your kids also? Yes () No ()
8. Is there enough space in the toilet for you? Do you find it easy to access? Yes () No ()
9. Is it safe and comfortable for you? Yes () No ()
10. Do you have any problems while using the toilet? Specify please-----
11. Do you use the toilet at night? Yes () No () If No, why?
12. Do you feel scared or have you had problems of harassment when you go to the toilet during evenings or night? If yes, what makes you fearful? Describe-----
13. Do you know of any cases of harassment/ molestation/sexual abuse/rape in your neighbourhood? If yes, who helps the victim?
14. Mark in order of intensity of violence- (from 1- 4, with 1 being the lowest)
15. Molestation
16. Harassment
17. Rape
18. Sexual Abuse
19. Is the toilet maintained and cleaned? Who is responsible for its maintenance? Do you maintain it? Do you face any challenges in maintaining the toilet? Please elaborate _____
20. Are there any community/residents group that are responsible for safety, maintenance, repair of the toilet?
21. What challenges do you face while using shared/ community toilets?
22. How do you think shared toilets have impacted your neighbourhood?
23. Are you aware of any advocacy programmes on violence against women being promoted in the neighbourhood?
24. What would be the best and most comfortable toilet type for you to use?

03. Questionnaire for Male Residents

Age 16-18 () 18-25 () 26-35 () 36-50 () 51-60 ()

Background Student () Professional () self-employed () others (specify)

Questions

1. Do you live in this area? How long have you lived in the Area?
2. Do you have a toilet in your house? Yes () No () If yes, what kind of toilet is it? (Pit latrine, squatting, WC seat, open-space make-shift place) If no, what type of toilet do you use? (Shared, community, public, others-----)
3. Who constructed the toilet? When was the toilet constructed?
4. Do you use a shared toilet? Yes () No () YES - How often? _____
5. Do you prefer using the shared toilet or a private toilet of your own? _____
Shared/Communal () Private ()
6. Do you have water provision in the toilet? Do you have connection from DAWASCO/DAWASA to the toilet?
7. How often do you use the toilet in a day? Frequently () Seldom () Others _____
8. Do you go to the toilet alone or with your kids also? Yes () No ()
9. Is there enough space in the toilet for you? Do you find it easy to access? Yes () No ()
10. Is it safe and comfortable for you? Yes () No ()
11. Do you have any problems while using the toilet? Specify please-----
12. Do you use the toilet at night? Yes () No () If No, why?
13. Do you feel scared or have you had problems of harassment when you go to the toilet during evenings or night? If yes, what makes you fearful? Describe-----
14. Do you think women face difficulties accessing toilets at night? If yes, what types of challenges?
15. Do you think it's unsafe for women to use shared toilets? Have you heard about this from women you know?
16. Do you know of any cases of harassment/ molestation/sexual abuse/rape in your neighbourhood? If yes, who helps the victim?
Mark in order of intensity of violence- (from 1- 4, with 1 being the lowest)
 - a. Molestation
 - b. Harassment
 - c. Rape
 - d. Sexual Abuse
17. Is the toilet maintained and cleaned? Who is responsible for its maintenance? Do you maintain it? Do you face any challenges in maintaining the toilet? Please elaborate _____
18. Are there any community/residents group that are responsible for safety, maintenance, repair of the toilet?
19. What challenges do you face while using shared/ community toilets?
20. How do you think shared toilets have impacted your neighbourhood?
21. Are you aware of any advocacy programmes on violence against women being promoted in the neighbourhood?
22. What would be the best and most comfortable toilet type for you to use?

04. Questionnaire in Male/Female Residents in Swahili

DODOSO LA KISWAHILI KWA WANAWAKE UTANGULIZI

- Miaka 16-18 () 19-25 () 26-35 () 36-50 () 51-60 ()
- Usuli mwanafunzi () mtaalamu () mama mwenye nyumba () mengineyo.....

MASWALI:

1. Unahishi katika eneo hili? Kwa muda gani?.....
2. Je, una choo katika nyumba yako? Ndio () hapana (), kama ndio ni cha aina gani? [choo cha shimo, choo cha kufash, choo cha kukaa, sehemu ya wazi] kama hapana unatumia choo cha aina gani? [choo cha pamoja, choo cha umma] elezea.....
3. Nani kajenga choo? Na lini kilijengwa?.....
4. Unatumia choo cha pamoja? Ndio () hapana (), mara ngapi?
5. Unapendelea kutumia choo cha pamoja au choo binafsi? Choo cha pamoja () , choo binafsi ()
6. Je, kuna utoaji wa maji chooni? je, kuna uhusiano wowote na DAWASCO/DAWASA na chooni?
7. Mara ngapi unatumia choo wakati wa mchana? kilamara () marachache ()
8. Je, unaenda chooni mwenyewe au na watoto? ndio () hapana ()
9. Kuna nafasi ya kutosha chooni? Na ni rahisi kutumia? Ndio () hapana ()
10. Je, ni safi na salama kwa ajili yako? Ndio () hapana ()
11. Je, kuna tatizo lolote kwenye utumiaji wa choo? Elezea.....
12. Unatumia choo nyakati za usiku? Ndio () hapana ()
13. Je, kuna hofu au umekuwa na matatizo yoyote ya unyanyasaji wakati wa matumizi ya choo nyakati za usiku? kama ndio, elezea.....
14. Ulishawahi kusikia malalamiko yeyote kuhusiana na unyanyasaji /udhalilishaji /unyanyasaji wa kijinsia/ubakaji kwenye eneo lako? kama ndio nani alimsaidia mhusika?
Panga viwango vya unyanyasaji kuanzia (1-4, no 1 anzia kiwango cha chini)
 - Udhalilishaji ()
 - Unyanyasaji ()
 - Ubakaji ()
 - Unyanyasaji wa kijinsia ()
15. Je, choo kinaimarisha na kufanyiwa usafi? nani anawajibika kukisafisha na kukitengeneza? unakumba na matatizo gani kwenye kusafisha na kuimarisha choo? Tafadhali elezea.....
16. Kuna jamii yeyote/ kikundi chochote kinachowajibika kwa ajili ya usafi, kuimarisha na ku-karabati choo?
17. Ni changamoto gani unazipata unapotumia choo cha pamoja/jamii kwa ujumla?
18. Ni kwa jinsi gani choo cha pamoja kina athari gani katikajamiiyako?
19. Una ufahamu wowote kuhusiana na semina za utetezi wa wanawake kwenye jamii?
20. Je, ni choo cha aina gani ambacho ungependa utumie kwa matumizi yako?

About the Author.

Ms. Anshika Suri holds a bachelor's degree in Architecture from the Sushant School of Art and Architecture, India, and a Joint European Double Degree Masters (MSc Mundus Urbano) in both International Cooperation in Urban Development from the Technische Universität, Darmstadt, Germany, and International Cooperation in Sustainable Emergency Architecture from the Universitat Internacional de Catalunya, Barcelona, Spain.

After her bachelor's degree, she worked as a consultant architect for two leading architecture firms in New Delhi, India. During her bachelor's degree, she worked with a squatter resettlement colony in New Delhi and designed an Incremental Housing Prototype for the resettlement colony as a part of her Bachelor Thesis. She further continued her work on housing and land rights for the urban poor with a feasibility study for an affordable housing project in Ulaanbaatar, Mongolia in cooperation with Geoffrey Payne and Associates (GPA), London, and The World Bank.

She began researching urban infrastructures through a gendered perspective for her master's thesis and analysed gender segregation in the urban transport infrastructure in New Delhi. Her PhD project is in line with this continued interest in understanding the urban sanitation challenge being faced by women in informal settlements in the cities of Dar es Salaam, Tanzania and Nairobi, Kenya. She was part of the graduate program "Urban Infrastructures in Transition: The case of African Cities", as a scholarship holder from Hans Boeckler Foundation, Germany.

She successfully defended her PhD titled "Women and the Urban Sanitation Challenge: Tracing an intersectional relationship" at the Department of Architecture at Technische Universität, Darmstadt on 25th April, 2018; securing a grade 1,0 with Magna cum Laude.