

Cleaning Nairobi

A case study of community-based waste management and
environmental justice in an informal settlement

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Abstract

As a response to a lack of formal solid waste management (SWM), CBOs and youth groups have become the main providers of waste collection in informal settlements in Nairobi, Kenya. This thesis is a qualitative case study of community-based waste management (CBWM) in the informal settlements of Mathare, Nairobi. The material from interviews and participant observation is analysed through a lens of Schlosberg's (2004) environmental justice framework, examining three components of justice: distribution, recognition and procedure. Based on the perspectives of the community groups, the study aims to explore how CBWM contributes to or constrains environmental justice in Mathare.

The study finds that while there are certain prominent aspects of the CBWM that contribute to environmental justice, the features that constrain environmental justice are predominant. Some contributing factors are: an increased access to SWM for the communities, employment opportunities and a strengthened social capital. However, the local government does not recognize the groups' roles, activities or knowledge. Further, the groups are not adequately included in democratic decision-making and do not receive enough political and financial support from the local government. The study concludes that a majority of the constraints to environmental justice are linked to the responsibilities of local government.

Key words: community-based waste management, environmental justice, informal settlement, Nairobi, Kenya

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The title of the thesis is part of a quote from one of the interviewed leaders in a community waste group in Mathare. The quote was a comment on the community group's relationship with the local government:

“They assume that we are not there, but we have been cleaning Nairobi for a very long time and that is something to be recognized.”

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Abbreviations

CBO	Community-based organisation
CBWM	Community-based waste management
ISWM	Integrated solid waste management
MSWM	Municipal solid waste management
NCC	Nairobi City County
NEMA	National Environmental Management Authority
NGO	Non-governmental organisation
SWM	Solid Waste Management

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1 Introduction

Nairobi, Kenya, is one of the cities in Sub-Saharan Africa battling waste. The headlines of daily newspapers report in the spring of 2018 that the “garbage city” Nairobi is “choking in waste” (Standard Digital 2018; Nairobi News 2018). However, neighbourhoods in Nairobi have different levels of solid waste management (SWM). Commercial, high-income and most middle-income areas are well serviced by waste collection of primarily private companies, while there is no formal waste collection in low-income neighbourhoods and informal settlements¹ (UNEP 2005: 16-17). The vacuum of SWM has resulted in the emergence of community-based organisations (CBOs) and youth groups being the main waste collectors in informal settlements during the last twenty years (ibid).

To have access to an adequate and sustainable waste collection is significant, as uncollected waste may result in exposure to environmental and public health risks (WHO 2015: 14). The lack of formal SWM in informal settlements in Nairobi has been suggested as a case of environmental injustice (Njeru 2006: 1049), which links disadvantaged groups with disproportionate environmental burdens. The thesis explores this linkage further, by examining the intersections of environmental justice and the community-based waste management (CBWM) performed by CBOs and youth groups in the informal settlements of Mathare, Nairobi.

Throughout the years, the CBWM in Nairobi has lacked political and financial support from the local government. Bauer and Post (2004: 261) explain that relationships between CBOs and the local authorities generally were “either non-existing or antagonistic”. As community groups have not been integrated into the waste system, their role has remained limited (Ikiara et al. 2004: 76). During the last decade, however, national and county policy frameworks of waste management have increasingly acknowledged community groups as important stakeholders in SWM. The policy framework of Integrated Solid Waste Management (ISWM) Plan for Nairobi for 2010-2020 aims to “appreciate the significance of, and enable the amplified participation and contribution of CBOs”

¹ According to UN-Habitat, informal settlements are residential areas with inadequate housing, where the residents lack security of tenure and have limited or no access to basic services. Slums can be understood to be the most deprived forms of informal settlements (UN-Habitat 2015: 1-2). I will primarily use the term informal settlement as it is often preferred over slum due to the negative connotations of the term slum (Corburn et al. 2011: 6).

(CCN 2010a: 16). Against this backdrop, the thesis explores the experiences of community groups in addressing waste in Mathare.

1.1 Aim and research questions

The thesis is a qualitative case study, examining CBWM in the informal settlements of Mathare through a theoretical lens of environmental justice (see chapter 3). The case is explored using Schlosberg's (2004) theoretical framework of environmental justice, with distribution, recognition and procedure as three main components. Environmental justice has been argued to be a valuable theoretic approach to investigate SWM in urban areas of the Global South, and in particular Sub-Saharan Africa (Kubanza and Simatele 2016a: 437).

As the CBWM is the only available and viable option for waste collection in Mathare at the moment (see chapter 2), it is of interest to examine how environmentally just CBWM is as an alternative to municipal waste management (MSWM). Additionally, it is of importance to examine CBWM as it affects the more than 1.7 million residents in low-income areas or informal settlements in Nairobi (UNDP 2016a: 27).

The thesis aims to explore the community groups' experiences of their work, their relationship with the local government and their relationship with their respective communities. As current SWM policies in Nairobi present a more inclusive acknowledgement of community groups as stakeholders, it is important to examine whether this rhetoric has resulted in implications in the experiences of community groups. Furthermore, the thesis additionally aims to amplify the voices and experiences of the groups who are impacted by the structure of CBWM.

The main research question is the following:

How does community-based waste management contribute to and constrain environmental justice in Mathare?

The main research question is examined by responding to these three sub-questions:

- How do features of CBWM contribute to and constrain distributional justice?
- How do features of the relationship between community groups and local government contribute to and constrain justice as recognition?
- How do features of CBWM contribute to and constrain procedural justice?

In the questions, the term *CBWM* encompasses the community groups' work and their cooperation with local government. *Local government* refers to the county government, Nairobi City County (NCC), the sub-county administration and the ward administration. Mathare is one of Nairobi's seventeen sub-counties and consists of six wards (Infotrak 2015). *Community groups* signify the CBOs and youth groups active in waste collection in Mathare. *Community-based organisations* (CBOs) are non-profit grassroots organisations that work on a local level with development projects. *Youth groups* work similarly but solely with members aged 15-30, the defined age of youths in Kenya (Kenya 2010).

1.2 Scope and delimitations

The thesis' scope allows for a defined outlook on the case. Solid waste can be defined as non-hazardous refuse from residential, commercial and industrial areas. SWM includes "collection, transfer, treatment, recycling, resource recovery and disposal" of waste (Haregu et al. 2016a: 3). The thesis solely examines the collection and transfer of waste from primarily households and, to a smaller extent, public areas.

As the thesis focuses solely on the current CBWM in Mathare, it does not contrast the waste collection in Mathare with other residential areas in Nairobi or analyse the impact of CBWM on environmental justice over time. Furthermore, as only leaders of community groups are interviewed, the thesis does not aim to reach an objective statement of the CBWM's impact on environmental justice that is necessarily shared by all actors in SWM. In addition, the experiences of the interviewed may not fully reflect the perspective of all community groups in Mathare. Nevertheless, a level of saturation was reached as the leaders shared many experiences (see 4.2.5).

1.3 Outline of the thesis

The following chapter addresses previous literature related to the case and positions the thesis within this research field. Further, the case study area of Mathare is discussed. Chapter 3 explores the theory, with a brief overview of the academic scholarship of environmental justice and an outline of the thesis' framework and operationalization. Chapter 4 presents the study's methodology, including sections on research design, data collection and limitations. The results are analysed in chapter 5 according to the study's three sub-questions regarding distribution, recognition and procedure. Chapter 6 discusses the findings in a broader context. The thesis concludes in chapter 7 with a summary of its findings to answer the main research question of how the CBWM contributes to and

constrains environmental justice in Mathare as well as an outlook to future research. In the appendix, an interview guide is found.

2 Literature review

This chapter presents a background to the thesis' case. First, a synthesis of selected studies on SWM and CBWM in informal settlements in the Global South is presented. The presentation ends with a discussion of the research gap that the thesis aims to fill. Section 2.2 outlines the structure of SWM in Nairobi. Lastly, section 2.3 introduces the case study area of Mathare.

2.1 Waste management in informal settlements

Informal settlements in the Global South often have inadequate access to basic services such as SWM. For instance, municipal authorities throughout sub-Saharan Africa tend to prioritize waste collection in affluent areas (Kubanza – Simatele 2016b: 873). An underlying reason for limited government investments is the perception of informal settlements as illegitimate and temporary (Elliott 2013: 281). In Nairobi, Thorn et al (2015) argue that these perceptions result in policies that marginalize the informal settlements and inhibit long-term developmental projects. Furthermore, the lack of SWM can also symbolize the residents' marginalized situation. Urban poor tend to lack political power and influence (Elliott 2013: 265). Uncollected garbage can symbolize this inability of communities to effectively pressure the responsible actors to deliver the service of SWM (Runfola – Hankins 2010: 352).

CBWM has emerged in many countries in the Global South following the public sector's inability to effectively provide SWM services (Tukahirwa et al. 2010: 4). CBWM is linked to income-generating opportunities for youths (Gutbarlet et al. 2015), less community littering (Sekito et al. 2013), and a political platform for urban poor (Thieme 2013). However, studies also find that the informality of CBWM is challenging. Financial and political support is a vital factor for the successfulness of CBWM (Baud – Post 2004: 260). Without adequate policies and formal roles of community groups, government authorities are still able to neglect the groups (Tukahirwa et al 2010: 9).

This study aims to contribute to the literature of CBWM in informal settlements in Kenya. The research field on SWM in Kenya is not extensive and focuses mainly on the state of SWM (see Haregu et al. 2017; Njoroge et al. 2014; Rotich et al. 2006). The narrower field of CBWM in informal settlements has primarily discussed economic aspects of waste collection to sustain livelihoods and create entrepreneurship (see e.g. Holt – Littlewood 2017; Gutbarlet et al. 2015; Thieme

2010, 2013). This thesis therefore provides a new perspective on SWM in Kenya with its focus on environmental justice in CBWM from the community groups' perspective.

The study also aims to contribute to a less researched field within the theoretical approach of environmental justice (see chapter 3). While waste is a recurring theme in environmental justice scholarship, there is an emphasis on studies of the distribution of hazardous waste or waste facilities (see e.g. Huang et al. 2013; Jessup 2013). The literature on CBWM and SWM is considerably smaller. In addition, the thesis adds to the expanding of environmental justice studies to cases in the Global South and sub-Saharan Africa (see e.g. Willett 2015; Dixon – Ramutsindela 2006). Combining these two gaps in the environmental justice research, there is a specific lack of studies linking SWM and environmental justice in African cities (Kubanza – Simatele 2016a: 434) which this study aims to contribute to.

2.2 Waste management in Nairobi

In Kenya, the responsibility of governance of SWM lies with county governments and local authorities. In Nairobi, the Nairobi City County (NCC) is the responsible stakeholder of the provision, regulation and financing of SWM (Haregu et al. 2016: 12). The NCC's role has changed over the years, from providing to primarily supervising SWM services. The municipal waste management (MSWM) saw poor results in the end of the 1990s, which lead to an increase in the establishment of private actors in collection and transportation of waste (Ikiara et al. 2004: 61). Today, the SWM in Nairobi is challenged due to rapid urbanization and few resources. A lack of capacity and knowledge in the NCC also hinder its ability to implement policies and enforce legislation (NEMA 2014: 19). In addition, cases of patronage, corruption and crime create challenges for the county administration (APHRC 2017: 75).

Waste collection in informal settlements in Nairobi are mainly performed by CBOs and youth groups (NEMA 2014: 23). Private companies are unwilling and unable to cover these areas. In addition, the community groups provide a cheaper service, using handcarts instead of trucks. The community groups take the waste to a central collection point from where it is removed by the NCC or private companies contracted by the NCC (CCN 2010a: 34). As of 2009, there were over 135 CBOs and youth groups registered for waste management in Nairobi (Ngau – Kahiu in CCN 2010b) and the number has continuously increased.

CBOs are formally recognized as important stakeholders in Nairobi's current policy framework for SWM, 2010-2020 (CCN 2010a: 22). The policy frameworks are however acknowledged to lack a clear operationalisation of the coordination of partnerships in SWM (Haregu et al. 2017: 528). Community groups have

continuously faced challenges as they lack political, legal and financial support (Karanja 2005 in CCN 2010b).

2.3 Mathare

The study is set in Mathare, a collection of informal settlements located seven kilometres east of Nairobi city centre. It is one of the oldest and largest informal settlements in Nairobi with an estimated population of 200,000-500,000 inhabitants (Corburn et al. 2011: 6; Worley 2016). The population in Mathare is pre-dominantly poor. 87 percent of the inhabitants either work in the informal sector or as casual labourers (Corburn et al. 2011: 20). The high rate of youth unemployment in Kenya, 17.1 percent, is reflected in Mathare as well (UNDP 2016b). The few previous studies on CBWM in Mathare have mainly examined the informal economy of waste and its significance for livelihoods of youths (see e.g. Thieme 2010; 2013). There is however a lack of studies of CBWM in Mathare from a perspective of environmental justice.

3 Theory

A theoretical framework of environmental justice is used to explore the case of CBWM in Mathare due to its ability to analyse “the nexus between structural inequalities and environmental degradation” (Willett 2015: 558). Environmental justice therefore allows for a discussion that connects the socio-political opportunities and challenges that the community groups experience and the environmental impact of CBWM. Following in line with previous environmental justice research, the analysis is anthropocentric in its orientation and primarily examine issues of justice in relation to the people of Mathare (see Schlosberg 2007: 7).

The section starts with a brief introduction of the research field of environmental justice. The framework of Schlosberg (2004) is thereafter presented. The section ends with outlining the operationalisation of the framework.

3.1 Environmental justice

The idea of environmental justice originated with a social movement in the 1980s in the USA. The movement highlighted how minority communities were disproportionately affected by environmental burdens such as hazardous waste (Schlosberg – Carruthers 2010: 13; Williams 1999: 50). Alongside the movement, the academic field of environmental justice emerged. In the thesis, environmental justice is solely discussed in terms of the academic field and not as a social movement. Today, the academic field has broadened its scope to examine intersectionality between environmental risks and several structural injustices linked to marginalisation, such as class, gender, and age (Sze – London 2008: 1337).

Environmental justice research can be positioned in the broader domain of the research field of political ecology. Political ecology shares the focus on the connections between marginalization and environmental degradation from the perspective of marginalized groups (Holifield 2015: 1). Political ecologists “accept the idea that costs and benefits associated with environmental change are for the most part distributed among actors unequally ... [which inevitably] reinforces or reduces existing social and economic inequalities ... [which holds] political implications in terms of the altered power of actors in relation to other actors” (Bryant – Bailey 1997: 28-29 in Robbins 2012: 20). Swyngedouw and Heynen (2003: 909) argue that environmental justice’s traditional emphasis

differed from the political ecology's focus on connecting socioecological inequalities to a capitalistic system. However, as the environmental justice literature is broadening both its thematic scope to include new dimensions of justice, and its geographic scope to examine cases in the Global South, the fields are understood to have grown closer (Holifield 2015: 6-7).

3.2 Framework of environmental justice

The study's framework of Schlosberg (2004) suggests that environmental justice must look beyond its traditional emphasis of distributional justice, which is fair distribution of environmental burdens and benefits. In order to understand the underlying social context that creates distributional justice, issues of procedure and recognition must also be addressed (Schlosberg 2004: 518). Drawing on social justice theories by for instance Fraser (2000), Schlosberg ties these three components together to an environmental justice framework. The components are understood to be overlapping, and all three need to be addressed in order to reach environmental justice (Schlosberg 2007: 521).

Examining justice as recognition as a separate component has been criticized by liberal justice theorists, who argue that recognition is as a pre-requisite to a fair distribution and thus subsumed in distributional justice (Schlosberg 2004: 519-521). Schlosberg however argues that recognition is under-theorized by liberal theories. A trivalent understanding of justice is argued to better reflect actual cases of injustices, where social recognition of all groups cannot be assumed (ibid).

Among several conceptualisations of environmental justice, the framework of Schlosberg (2004) was considered most appropriate for this case. In addition to distribution, the components of recognition and procedure offer important aspects to explore the complexity of CBWM. Additionally, the framework conceptualises justice on the community level as well as an individual level (Schlosberg 2013: 43), which matches the thesis' perspective. The framework is however limited in its ability to claim causality. Instead, the imbrication of the components should be explored as all three components are closely linked.

3.2.1 Distributional justice

Distributional justice examines the distribution of resources and costs across groups that result from an environmental development, project or policy. These benefits and burdens can encompass environmental, social and economic aspects (Schlosberg 2007: 82-86). The distributional component is inspired by John Rawls' "Theory of justice" (1971). According to Rawls, principles of an equitable distribution of society's goods and resources can be developed by positioning

oneself behind a ‘veil of ignorance’ of one’s own position. This neutral starting point would produce principles that naturally support vulnerable and marginalized groups (Rawls 1971: 136-142).

3.2.2 Justice as recognition

Justice as recognition acknowledges the need to examine underlying social and cultural contexts of environmental justice. Injustice in the form of degradation or devaluation of a group can become the foundation for an unequal distribution of environmental burdens and benefits (Schlosberg 2007: 14). Fraser presents a structural conceptualisation where recognition is understood as a question of social status. Recognition refers to “the status of individual group members as full partners in social interaction” (2000: 113). Misrecognition is thereby when institutionalized patterns of cultural norms subordinate groups by viewing them as “inferior, excluded, wholly other, or simply invisible” (ibid).

Recognition can take many forms: it can both be formally institutionalized in policies or informally institutionalised through norms, social practices and established customs (Fraser 2000: 114). Schlosberg (2004: 521) emphasises that informal cultural, social and symbolic arenas are equally important as formal policies. The framework also acknowledges that misrecognition can be experienced on an individual level for people belonging to subordinated communities (Schlosberg 2007: 20).

3.2.3 Procedural justice

The third component emphasises the political realm of justice. Procedural justice examines the “fair and equitable institutional processes of a state” (Schlosberg 2007: 17) and emphasises the meaningful involvement of the people affected by an environmental issue. Democratic and participatory procedures in deliberation and decision-making must therefore be addressed (ibid: 27). The prevalence of procedural justice can help to improve conditions for recognition and distributional justice, but the latter two components are also key to address in order to create conditions for an equitable decision-making procedure (ibid: 19).

3.3 Operationalisation

This section describes how the theoretical framework is applied to the study’s case by an operationalisation of the three components of distribution, recognition and procedure (Table 1). Schlosberg’s framework does not include indicators, as it has a contextual approach that aims to emphasise different aspects of justice depending on the specific case (Schlosberg 2004: 533). Therefore, a list of

indicators was created for the thesis' purpose. Based on the literature review (see chapter 2), the indicators are adapted to the thesis' case in the column 'Examples', Table 1. The indicators and the examples guide the study's analysis.

The operationalisation is inspired by both academic literature and non-scholar frameworks. The distribution indicators are based on the literature review (see chapter 2). Indicators for recognition are in line with the principles by Schreckenberg et al (2016: 15). The indicators of procedural justice build on a report on environmental governance (Swedish EPA 2012: 29-35) and a framework for forest governance (WRI 2013). These multiple sources were drawn from as there is a lack of indicators of specifically governance of SWM with inclusion of community groups.

The indicators and examples are constructed in a broad way to capture a range of context-specific experiences in the interviews. If indicators and examples of recognition and procedure are realised, CBWM is suggested to contribute to environmental justice. If the exact opposite indicators emerge, a constraint on environmental justice is indicated. For instance, current and updated information suggests contributions to procedural justice, while the lack of information suggests constraints to procedural justice. The scope of the component of recognition is narrowed to primarily examine recognition in terms of the groups' identity of class and, to a smaller extent, age.

Table 1. An operationalization of Schlosberg's environmental justice framework (2004).

Distributional justice		
<i>Element</i>	<i>Indicators</i>	<i>Examples</i>
Distributional aspects of CWBM for the groups and the communities	Environmental aspects	Increased access to SWM; changed amount of littering
	Social aspects	Effects on social capital in communities; changed behaviour toward SWM
	Economic aspects	Financing the SWM; employment in SWM
Justice as recognition		
<i>Element</i>	<i>Indicators</i>	<i>Examples</i>
Recognition of groups and communities	Local government's recognition of groups as stakeholders and partners	Recognition of groups' knowledge and waste activities; patterns of respectful treatment of groups as "full partners in social interaction" (Fraser 2000: 113); non-discrimination by identity such as class, age
	Recognition of communities	Recognizing livelihoods and customs
Procedural justice		
<i>Element</i>	<i>Indicators</i>	<i>Examples</i>
Inclusive participation in political structures of SWM	Participation in joint analysis and decision-making	Meaningful participation of groups; consultation of groups on issues of SWM
	Opportunities for two-way dialogue with local government	Possibility for groups to initiate contact; invitation to forums for dialogue; process for hearing to, responding and resolving groups' concerns
Transparency and access to information	Information on SWM is comprehensive, current and readily accessible	Information on changes in e.g. procedures, collection sites, tenders
Accountability	Accountability of stakeholders	Possibility for groups to hold the NCC accountable for e.g. waste transportation

4 Methodology

This chapter presents the study's research design, structure of data collection, and method for analysing the findings.

4.1 Research design

The thesis is a qualitative case study based on field work conducted in the informal settlements of Mathare, in Nairobi, Kenya in April 2018. The study examined the experiences of eleven community waste groups in seven out of the thirteen sub-neighbourhoods in Mathare: Mlango Kubwa, Mathare no.10, Mashimoni, Thayu, Kwa Kariuki Village, Mabatini and Huruma. The selection of community groups is discussed in section 4.2.

The study is qualitative as it wishes to examine perceptions and opinions of the leaders of the groups (Teorell – Svensson 2007: 11). The study is thus of idiographic nature and strive to provide an in-depth examination of the particular case of CBWM in Mathare. A case can be suitable for a single case study if it is argued to be of specific importance (ibid: 151). The importance of SWM for the communities of Mathare, together with the proposed research gap of the intersection of environmental justice and CBWM, guided the selection of case.

The analysis is linked to both the particular location of Mathare and the specific time when the material was gathered. Therefore, the study does not primarily aim to empirically generalize its results for similar cases (Teorell – Svensson 2007: 44). The study's findings can nevertheless give insight to cases of CBWM in other informal settlements in Nairobi and Kenya, as community groups may have similar experiences. The analysis followed both inductive and deductive reasoning, as it was guided by both the theoretical framework and empirical findings (ibid: 11). The theory of environmental justice guided the scope of the interview questions and the research questions. The thesis has a focus on individuals' perceptions of the world, rather than finding objective, universal knowledge (Bryman 2016: 26) as it aims to explore the community leaders' experiences.

A personal contact in Mathare, who has previously been active in CBWM, acted as key informant to the study and provided information on the context of CBWM. She facilitated access to the 'field', set up the initial contacts with community groups and suggested a research assistant, another female community member in

Mathare. During the field research, the research assistant acted as gatekeeper and key informant. The research assistant facilitated a better understanding of the social and cultural context in Mathare as well as facilitated the interviews.

4.2 Data collection

4.2.1 Interviews

Interviews with eleven leaders of community groups active in CBWM were conducted. The interviewees were primarily regarded as respondents, which means that the interviews aimed to access their subjective perceptions of the CBWM (Esaiasson et al. 2017: 236). To a smaller extent, the interviewees also provided information on their work with their organisation. These two interview aims are commonly combined in studies (Teorell – Svensson 2007: 89).

The number of interviews in qualitative studies should be guided by the aim to reach theoretical saturation, which means that the collection of data continues until a plausible analysis of the theoretical concepts is possible (Esaiasson et al. 2017: 168) Esaiasson et al. (2017: 268) suggest that approximately ten interviews can often suffice. After eleven interviews had been conducted, a certain level of saturation was understood to have been reached as several common themes had emerged during a majority of the interviews.

The interviews were semi-structured, which has the advantage of a certain flexibility regarding the structure of the interview according to the interviewee's response (Bryman 2016: 486). All interviews were based on the same set of questions, yet the follow-up questions were adapted according to each interview. An interview guide is found in Appendix A. The research assistant facilitated the interviews and provided translation from Kiswahili and the local slang language Sheng to English when needed. A few interviews were partly translated, and a few were fully translated.

4.2.2 Sampling

Purposive sampling of participants was used, where participants were selected that matched the thesis' aim and research questions (Bryman 2016: 414). The aim with the sample of community groups and leaders was to gain an insight in the typical experiences of CBWM in Mathare. Initially, my key informant presented a number of community waste groups active in Mathare. The selected groups corresponded to certain established criteria. For example, all leaders and their corresponding groups had been active in CBWM in Mathare for several years and

had thus an extensive insight in its processes. The study aimed to interview both male and female leaders, as they may have different experiences of CBWM. In the end, four out of eleven interviewees were women.

4.2.3 Participant observation

Participant observation was used to gain greater insight of the CBWM. It allows the researcher to experience the examined context together with the study's participants to broaden one's understanding of the phenomenon (Bryman 2016: 493). I took part in a one-day event of community clean-up in the sub-neighbourhood Mabatini in Mathare, collecting waste in public spaces. Participants were from several community groups from both Mathare and other informal settlements. The event allowed me to engage in informal conversations with participants about CBWM and introduce myself and the study's objective to more people. Additionally, I showed that I had a sincere interest in waste activities.

4.2.4 Ethical considerations

When conducting field research and interviews, there are ethical issues to consider (Banks – Scheyvens 2014: 160). All participants took part in the interviews voluntarily. In the beginning of each interview, I presented myself and the objective of the study and asked for permission to record the interview. I provided the opportunity to ask questions before, during or after the study. The participants were informed that they would be anonymous throughout the study. The participants were given a small reimbursement for their time and effort to participate, as Bank and Scheyvens (2014: 177) suggest. The finished study will be shared with the participants, also according to Bank and Scheyvens (2014: 164).

4.2.5 Limitations of material

The study only discusses the perspective of CBWM of the community group leaders. These perspectives may not reflect the experiences of all groups or their communities, as communities are not homogenous groups (Stone – Nyaupane 2014: 28). As integrated community members, the leaders are however aware of many common perspectives.

The research assistant personally knew the interviewees, which potentially could impact the interviewees' responses (McLennan et al. 2014: 154). I did however not experience that the interviewees' responses were limited, as the interviews' themes of waste management and politics are quite common subjects in the chosen area. Instead, I experienced that the research assistant's contacts facilitated

my contact with the respondents. My identity as a white European may additionally have created certain limitations. Due to my privileges, I may have been perceived by the participants to have financial resources or influential contacts that could help develop the groups' activities, and thereby influenced their answers. In addition, the power imbalances between researcher and respondent can be increased, and thereby affect the interviewees' comfort during the interview. To limit these risks, both the respondent and I informally introduced ourselves, our families and backgrounds before the interview began. I also presented the limitations of my role as a student. In addition, my research assistant increased my understanding of the social and cultural context which helped limit the risk of misunderstandings.

4.3 Method for analysing data

The interviews were analysed by thematic analysis, which can be understood as a common approach to qualitative data analysis (Bryman 2016: 584). Large sections of the interviews that were found relevant were first transcribed, as suggested by Bryman (2016: 483). Through a thorough reading of the transcripts and field notes, subthemes related to the three components of environmental justice were identified. The operationalised indicators of the components, see section 3.3, guided the search for themes. The themes were identified primarily by topics that recurred across several interviews and were later categorized in an index.

5 Analysis

The chapter starts with a brief summary of the work of the community groups that the interviewed leaders represent. Following, the CBWM's contributions and constraints on environmental justice are analysed by examining the three components of the environmental justice framework: distributional justice, justice as recognition and procedural justice.

5.1 Contextual findings

The eleven community groups consist of members aged 18–35. All groups manage household collection of waste and all members earn a small income. After disposing the waste at collection sites in Mathare, the NCC is responsible for its removal and further transportation. The groups assist between 50 to 2000 households each, with most groups assisting approximately 200-300. Several groups also organize community clean-ups, which includes cleaning public spaces. It was difficult for the groups to specify the number of active waste groups in Mathare, as many groups cannot afford to officially register as waste collectors and the number of groups is constantly increasing. My key informant estimated there to be at least 50 waste groups in Mathare.

5.2 Distributional justice

This section examines the benefits and burdens for the community groups and the communities that follow from the present-day CBWM in Mathare. Following the operationalisation (see section 3.3), the environmental, social and economic benefits and burdens are examined. The benefits are first presented, followed by the burdens. The section ends with summarizing the findings to suggest how features of CBWM contribute to and constrain distributional justice.

5.2.1 Distributional benefits

The CBWM is understood to have several environmental benefits. All leaders shared the perception that public spaces such as ditches, corridors and roads have become cleaner compared to some years ago as a result of the CBWM. The decreased amount of waste and littering was also believed to have had positive

effects on health issues, by for instance decreasing the occurrences of diseases such as cholera. Many respondents believed that both the groups and community members have become more knowledgeable in issues of waste. The respondents shared stories of how the groups had gained the community members' trust and appreciation for the waste collection over the years, even though many were initially doubtful or suspicious about the service and the youths.

Waste collection also plays a significant social and economic role in Mathare. All respondents emphasised how waste collection is an important income-generating activity for youths today. They suggested that waste collection provides a structure and a social context for youths who previously had been idle. These socio-economic benefits primarily represent opportunities for young men, as they comprise the majority of the waste collectors. The whole community however benefits if the otherwise unemployed youths work. Several leaders connected for instance waste collection to decreased rates of crimes and drugs.

Furthermore, the groups' work with waste collection is perceived to have strengthened bonds between community members. This impact is captured in the following quote, where a respondent discussed the groups' contact with other community members: “[W]e feel good engaging with them, talking to them, being part of a program that makes us unite together, makes us know our neighbour... It makes us feel that we are doing something to the community” (Int. 11).

The group members' positive experiences of contributing to the community were brought up by several leaders as an important result of the CBWM. Many groups that initially started with waste collection have today broadened their activities to include other projects of for example sanitation and mentorship programs for youths.

5.2.2 Distributional burdens

There are nevertheless several interrelated environmental, social and economic burdens in the present-day CBWM. The transportation service of waste by the NCC is perceived as unreliable and is one of the main challenges shared by the groups. Although the waste is supposed to be collected according to a regular schedule, waste is often left piling up for a long period of time. In addition, several leaders pointed out that there are too few available collection sites in Mathare. Collection sites are often either congested or too far away for the groups as they use handcarts.

The shortage of available collection sites results in that some groups instead dispose the waste in unofficial places, such as alongside the roads or in the Mathare river. The groups risk to be heavily fined as it is illegal to dispose waste in public spaces. Furthermore, there is a risk that community members disregard the value of waste collection, and also dispose their waste in unofficial sites

instead. Collection of payment from customers is already a difficult aspect of CBWM according to the majority of leaders, and this further challenges it. Another environmental difficulty that several respondents raised was that Mathare's lack of a recycling plant minimized an efficient sorting of waste. To improve recycling would also increase the groups' funds, as sorted materials can be resold.

The groups' lack of financial resources is also perceived as challenging. Most groups cannot afford proper equipment and gear for the waste collection. It also limits the groups' possibilities to officially register as actors within waste collection, as this license is too expensive. The groups meet additional financial barriers in the development of their activities. One respondent expressed that it would be beneficial for the groups to establish companies, but the groups lack the funds and necessary knowledge. Some leaders also raised that the CBWM's economic benefits of employment for youths also create challenges of competition, due to the high demand of youths to work with waste collection. The increasing number of groups have so far managed to divide the households between them, but one respondent described that there have been a few incidents of conflicts between groups.

5.2.3 Summary

The findings suggest that the CBWM both contributes to and constrains distributional justice, by creating both distributional benefits and burdens for the groups and the communities. CBWM is perceived to have significantly increased the access to waste management for the communities, decreasing the public littering. As there are no other waste actors in Mathare, the waste would not have been collected without the community groups. Knowledge in SWM is also understood to have increased. Together with the social and economic aspects of income-generation for youths, organizational experiences of community development for the groups, and strengthened social bonds in the community, the CBWM creates several positively contributing features of distributional justice.

Nevertheless, the financial and social challenges that the groups experience obstruct a sustainable waste collection. Without adequate financial resources and an increased availability of collection sites, it becomes difficult for the groups to meet the needs of waste management in Mathare and make long-term environmental contributions to the community. Overall, these environmental, financial and economic burdens negatively constrain the distributional justice in Mathare and risk the stability of the distributional benefits as well.

5.3 Justice as recognition

Following the operationalisation, this section discusses whether the local government recognizes the community groups as stakeholders and partners. The findings also discuss the local government's recognition of the communities of Mathare in large. The section initially presents aspects of recognition, followed by aspects of misrecognition.

5.3.1 Recognition as stakeholders and partners

The findings show that some groups are at times recognized as stakeholders by the local administration, the sub-county or the NCC. Some groups have been invited to meetings and projects by the local government. The groups' waste activities also occasionally receive increased support. A few respondents shared that community clean-ups are sometimes facilitated by ward administrators with resources, such as tools and a truck, and help with spreading information about the clean-up. These findings therefore indicate a social relationship where the groups are treated as capable to consult on issues of SWM and with waste activities being worth supporting. These working relationships thus suggest a certain level of recognition of the groups as stakeholders and partners following Fraser's conceptualisation of recognition as social status (Fraser 2000: 113).

This recognition is however only partial, as the groups are not acknowledged as "*full* partners in social interaction" (Fraser 2000: 113, emphasis added) by the local government. Many respondents share the perception that the representatives of the local government do not genuinely consider the groups' opinions during meetings. Several leaders expressed similar experiences: "They [the NCC] just listen, write. But after that meeting, that's the end of your engagement with them" (Int. 2). The groups are thus only partially recognized as stakeholders, as they are invited to raise their opinions but in reality still have limited voice.

In addition, all groups do not share these experiences of partial recognition. Some leaders did not acknowledge any supplementary cooperation with, or support from, the local government. The limited recognition of the groups is similarly understood to devalue the groups' contributions of waste collection. One leader exemplified with the following quote: "They assume that we are not here, but we have been cleaning Nairobi for a very long time and that is something to be recognized" (Int. 11). The groups thus feel that their contributions are invisible, which is another example of misrecognition according to Fraser (2000: 113). A few leaders raised that the local government should be interested in supporting CBWM, as it is the formal responsibility of the NCC. One leader said: "Actually, we help them in cleaning... but they don't recognize us, that we are doing something [...] very important. They don't help us" (Int.6).

Another suggested reason for why the groups are not recognized as capable actors was the local government's devaluation of the groups' knowledge. One leader phrased it the following way: "We have never been asked about our opinion. They think they know everything" (Int. 6). The groups are hence not acknowledged to have additional contextual knowledge that can contribute to the NCC's understanding. The lack of recognition of the groups' knowledge was also suggested to risk the sustainability of the development of SWM in Mathare. One respondent gave an example of when the NCC had chosen to implement a development project of SWM in Mathare suggested by his group. The group had however been excluded from the development of the project and the project had shortly after its implementation died out. The group leader meant that for a sustainable project, it would have been essential to include the groups as they "have all the tactics and all the strategies on how to build this waste management" (Int. 6).

5.3.2 Recognition of communities

The findings suggest that prevalent negative perceptions of the residents and the communities of Mathare underlie the local government's misrecognition of the groups. The local government is understood to "not want to partner with people from the community to help and [...] clean this environment" (Int. 2). The local government was also perceived to not be concerned about the informal settlements of Mathare and their situation with waste. Statements such as "[t]hey [the NCC] don't care about us" (Int. 6) was voiced by several respondents, where 'us' refers to both the groups and Mathare as a whole. This perceived negligence was also linked to the factor that the NCC does not provide waste collection in Mathare, despite having the formal responsibility of SWM in all of Nairobi: "[T]he Nairobi city government has been neglecting the slum sector whereby it has remained as the responsibility of the people living in that area to clean that garbage" (Int. 2).

Additionally, the groups believe that the local government does not grasp the integrated role of CBWM in the communities. The local government is perceived to only acknowledge SWM as the delivery of a basic service, without recognizing the key social and economic aspects of CBWM for youths in Mathare. One respondent stated the following:

They [the NCC] just want to clean the city. And us, we are looking at how we can create jobs amongst ourselves, how we can reduce the crime rate, how we can make sure that the community is clean" (Int. 11).

One respondent proposed that the NCC cannot understand "the struggles that we get down here" (Int. 3) as they never visit the communities. The leaders believe that they are treated in a particularly negative way due to that they represent informal settlements, which can be connected to Fraser's conceptualization of

misrecognition as institutionalized social and cultural patterns that subordinate certain groups in society (2000: 113).

5.3.3 Summary

The findings suggest a picture of overall misrecognition and thus constraints on justice as recognition. The few contributing features include the partial recognition of certain groups as stakeholders and partners as a result of their invitations to meetings and support for their activities. The constraining features comprise of the local government's low support to the groups' waste activities and a devaluation of their contextual knowledge of SWM. Even when groups are invited to raise their ideas, they experience that their voices are not heard. This disrespectful treatment results in that the groups do not conceive themselves to be full partners in social interaction (Fraser 2000: 113) in the perspective of the local government.

The local government's perceived negative perceptions of Mathare and its residents were suggested to create barriers for sustainable and equitable partnerships. These perceptions were understood to create social structures that underlie the local government's unwillingness to cooperate with the groups and their lack of concern toward Mathare's waste situation. These practices could also further be reinforced by other perceptions of the informal settlements as illegal and temporary (Thorn et al. 2015). Likewise, the government's perceptions can build a foundation that socially justifies an unequal distribution of environmental burdens and benefits (Schlosberg 2004: 519).

5.4 Procedural justice

The component of procedural justice highlights political aspects of environmental issues (Schlosberg 2007: 27). The section examines the cooperation between the community groups and the local government with a particular focus on the groups' meaningful and inclusive participation in the development of SWM, and the experienced levels of transparency and accountability.

5.4.1 Participation

The groups have varying perspectives of their possibility to participate in analysis and decision-making on SWM in Mathare. As introduced in the previous section, some groups have experienced certain opportunities for dialogue with the local government by either being invited to meetings or forums or independently contacting the local government. The groups have for instance participated in trainings on SWM, discussed their suggestions on improvements and, to a smaller

extent, consulted on issues. According to one respondent, the sub-county administrator arranges for instance quarterly meetings on SWM in Mathare. The meetings encourage public participation and are held to update the public on the current state of SWM.

The majority of groups however experience that their opinions are not taken into account during the meetings they participate in. Their ideas, demands and concerns are rarely implemented or followed up on: “They listen to us. But after listening - nothing more, nothing less. It’s just they come to that place, they listen to you, give them idea – but they are not implemented” (Int. 10). Further, the groups experience that the local government does not respond to or resolve their suggestions and concerns, as the following respondent describes:

To us, it’s a negative partnership because we always go to their meeting to say how they work, but when it’s time for them to prove their loyalty to us, to help us [...] at least to come and collect the garbage and partner with us, [...] they are not interested (Int. 2).

Several other leaders experience that it is difficult for community groups to at all initiate a dialogue with the local government. The respondents explained that the NCC is “always busy” (Int. 2), “don’t take our calls” (Int. 9), and “don’t respond to anything you ask” (Int. 7). These respondents do not either acknowledge to be invited to meetings or forums.

The groups’ opportunities to participate in decision-making may be limited by their financial situation and their low recognition as community groups, as illustrated by the following two respondents’ experiences. One leader explained that the NCC does not initiate a dialogue with the groups due to the groups’ demands of financial support for the SWM: “They always complain: ‘Oh, you want money’. If you want a meeting with them, they dodge” (Int. 2). Another respondent expressed that the reason to why the group were not invited to meetings with the NCC was because “[t]hey [the NCC] don’t want to do a dialogue with garbage collectors” (Int. 6). A reoccurring discussion of the advantages of private, influential contacts further strengthens this line of argument (see section 5.4.3).

5.4.2 Accountability

Different opinions emerged whether the groups are able to hold the NCC accountable for their obligations in the CBWM such as waste transportation. Several respondents believed that the NCC can be held accountable through demonstrations or by pressuring through media. One respondent meant that the waste groups have developed a unified voice through networking, with which they can easier demand their rights. The significance of networking was also discussed during the community clean-up event during which participant observation was applied. The event introduced a vision of a community campaign to demand accountability of the NCC, where networks would be a vital part. Currently, there

is however a lack of a formal network including all waste groups in Mathare according to several interviewees.

Many of the leaders believe nevertheless that the groups cannot hold the NCC accountable. The lack of full recognition of the groups as stakeholders (see section 5.3) can be understood as a limiting factor, as it undermines the groups' voice and their possibility to contact the NCC. One respondent's experience of contacting the NCC regarding congested collection sites can illustrate this marginalized position of the groups:

Even if you take your time, you go and tell them: 'This area is full', they will tell you: 'Are you teaching us our job? We know our job. So what are you trying to show us?' They control themselves. They are the government (Int. 1).

The quote reveals power imbalances that limit the possibility of accountability and procedural justice. The leader explained that the NCC is well aware of its responsibility of waste transportation, but that the groups are not in a position to place these demands. The leader explained that they "don't have that power" (Int. 1).

5.4.3 Transparency and access to information

The respondents have varying experiences of their access to updated and complete information on SWM in Mathare. While some respondents perceive that they are well informed, others believe that information only occasionally or seldom reaches them. The schedule of the trucks is an example of information that is seldom available for the groups. The leaders acknowledged that their limited access to certain information can restrict their possibilities to develop. A respondent described for example the barriers for groups to access requests for tenders for actors in waste collection. Information on tender notices is often not distributed to the groups. The requests are only accessible on the website of the NCC, and most groups lack access to a computer and sometimes even electricity. In addition, many groups lack knowledge on how to access the requests and how to submit a bid.

Another respondent perceived that the governance of tenders was lined with a lack of transparency that hinders the groups from successfully submitting a bid. According to the respondent, the tenders are seldom given to the groups due to a lack of trust of the groups or because of corruption of cartels. The groups experience difficulties to win the bidding of even the tenders earmarked to community groups:

[Y]ou find like maybe there are ten tenders, but only one will be given to the community. And the one which you are been giving, you can't afford to deliver. [...] [T]hey try with something so big so that you can't afford to deliver, so that they can deny you the tender (Int.5).

This lack of transparency is additionally reflected in the groups' experiences of the benefits of influential contacts. The expression of the importance of "whom do you know, who is your godfather" (Int.7) reoccurred in the interviews. Several leaders suggested that a group's personal contact with the ward administrator or representatives at the NCC impacts whether the group is informed or has the opportunity to set up a meeting. Processes and activities of SWM are thus not fully transparent for the groups.

5.4.4 Summary

The findings show that the groups do not fully experience that CBWM has "fair and equitable institutional processes" (Schlosberg 2007: 17) as required for procedural justice. A few features have the potential to positively contribute to procedural justice: some groups perceive that there are opportunities for two-way dialogue and consultation with the local government as well as certain possibilities to hold the local government accountable. In addition, current information within certain issues are distributed to some groups.

The suggested features that constrain procedural justice are however predominant. The majority of groups do not experience that they are adequately engaged in the development of SWM. Half of the respondents do not believe that demanding accountability is possible, and even the leaders that do find it possible only proposed procedures outside of the formal SWM. No leader suggested for instance that the NCC can be held accountable through governance mechanisms. Many groups only access partial information that is not always updated and complete.

The findings suggest a close link between procedural justice and justice as recognition, as suggested by Schlosberg (2007: 17). The groups' few opportunities to participate in decision-making and formal structures such as tender requests are perceived to be linked with the lack of recognition of their roles and activities. Furthermore, some leaders expressed discouragement over their own powerlessness which risks to result in a decline of their attempts to participate.

6 Discussion

This chapter discusses the study's findings of contributing and constraining factors based on the community groups' experiences. Furthermore, it reflects on the future development of CBWM. In addition, the limitations of the findings and of the used framework are discussed.

A key result of the analysis is that the contributing features of environmental justice were mainly the results of solely community-driven work, while the constraining features can be primarily connected to the responsibilities of the local government. For example, the study primarily finds contributing factors in the role of distributional benefits. Aspects such as greater access to SWM for the communities, creation of employment and strengthened social capital, are to a large extent the results of the community-initiated and organized work with low governmental support. The constraining factors however, are largely connected to the local government: an unreliable waste transportation, misrecognition of the groups as actors, and low levels of political inclusion of the groups.

These results reflect the importance to emphasize that the responsibility of managing a viable and sustainable solution of SWM for the communities in Mathare still lies with the NCC. The local government has the responsibility to ensure that the community groups at least can perform the task of waste collection in a sustainable manner. A further strengthening of environmental justice thus relies on the efforts of the local government.

The CBWM's contributions to environmental justice can likewise be discussed in relation to the marginalized position of the communities of Mathare. The access to waste collection provided by the CBWM is of great importance, as there is a lack of government-contracted actors in SWM in Mathare. Similarly, waste collection is today a vital income-generating activity, as the youths of Mathare struggle to find other jobs in the formal sector. The environmental, social and economic benefits of CBWM are thus particularly important due to the already vulnerable state of the communities.

From the perspective of procedural justice, the CBWM's informality can limit the possibility to easy and efficiently include the groups in the political decision-making processes of SWM. As there are approximately over fifty waste groups today in solely Mathare, it may not be possible or desirable for each group to have individual contact with the local government. A community group network could thus be an important development. However, a network could be susceptible to the same perceptions of misrecognition of the local government as this study

suggests. Nonetheless, a network can still become a platform from which the groups can easier claim their rights and make demands in a democratic manner. A democratic network could also be an important development for the internal management of the increasing waste groups of CBWM.

The findings of CBWM's contributions to distributional justice are limited to the thesis' scope of the current state of the CBWM, and could differ if examined at a different time. Thieme (2010: 348) suggests that the CBWM in Mathare has changed drastically over the last decade, from activities lined with crime and perceived as filthy, to a well-sought opportunity of entrepreneurship. This sentiment was echoed by the participants in this study. As the CBWM continues to develop, new obstacles may arise that limit the current distributional benefits. As described in the findings, there is today an increasing competition between the increasing number of community groups that can create conflicts.

The results of that misrecognition underlies the local government's low support can also be expanded on. The study does not claim that social misrecognition of the groups is the single reason behind the local government's low support of the groups. Indeed, the NCC's low financial resources, difficulties with coordination of roles and lack of knowledge of SWM (see chapter 2) may additionally challenge this situation. The study cannot either eliminate that other actors and groups of residents are treated in a similar way by the local government. Nevertheless, the leaders experience an underlying discourse where the treatment of the groups is connected to negative perceptions of them as youths and residents of informal settlements. This is additionally strengthened by that the groups believe that the relationship with the local government differs depending on each groups' influential contacts. The local government's low support can thus be further enhanced due to the NCC's internal challenges, but equally rest in a social and cultural context of perceiving informal settlements as hierarchically inferior.

The framework by Schlosberg (2004) allowed for an analysis that captured a broad spectrum of the CBWM's features. The study's intrinsically linked findings strengthen the use of a tripartite framework of distribution, recognition and procedure. While the framework's broad definitions of the components were initially perceived as an advantage, it also required a limitation of the scope of each component in order to operationalize the framework. There may therefore exist other important indicators of the components that this study does not cover.

7 Conclusions

This thesis has examined how CBWM contributes to and constrains environmental justice in Mathare. With a tripartite environmental justice framework by Schlosberg (2004), the experiences of leaders of community waste groups were explored. While certain aspects of the CBWM were found to positively contribute to environmental justice, the analysis overall concludes that the majority of the CBWM's features negatively constrain environmental justice in Mathare. A number of environmental justice constraints were identified regarding all three components of distribution, recognition and procedure. These constraints were found to be primarily linked with the responsibilities of the local government.

The study suggests that CBWM has features that contribute to especially distributional justice. The CBWM increases access of SWM in Mathare, generates employment for youths and strengthens social capital. The community groups and their networks also create a platform for future local development projects and political organisation for claims of an increased environmental justice in Mathare. These distributional benefits result from the community groups' organized work of waste collection, and are not directly connected with the groups' cooperation with the local government. The findings however also show that several features of the CBWM constrain distributional justice. The community groups meet difficulties in providing an adequate, safe and sustainable SWM due to an unreliable waste transportation and low financial resources.

The examination of justice as recognition and procedural justice found some features that contribute to environmental justice, such as a certain social recognition of some groups and a few opportunities for groups to participate in decision-making and analysis. However, the contributing factors are few in number compared to the dominating constraints. The study indicates that the local government's partnership with the community groups is lined with social misrecognition of the groups' roles, activities and knowledge. The study therefore suggests that the increased formal recognition of the groups in county policies on SWM is not mirrored in an informal recognition of the groups as stakeholders and partners. This misrecognition is perceived by the groups to be linked with the local government's negative perceptions of the informal settlements of Mathare.

Further, the arenas of procedural justice do not sufficiently include participation of the groups. The groups' ideas, concerns or demands are not fully considered, implemented or followed up on. A lack of accountability and transparency also limits the groups' ability to develop their own activities. The groups' voice,

influence and meaningful involvement in SWM remain limited.

An integration of a formalised role of the community groups in SWM could be beneficial to create a more meaningful participation. This could also address the community groups' difficulties of developing their work by for instance acquiring licences, establishing companies and submitting bids for tenders. However, the components of distribution, recognition and procedure were found to be closely intertwined, as suggested by the theoretical framework. Currently, the groups experience that their opportunities of meaningful participation to the development of SWM are limited by their low recognition and their status of representing informal settlements. The findings therefore also stress the significance of informal social and cultural practices that underlie formal policies. A shift in the dominant perceptions toward youth in informal settlements might therefore also be required. To increase the potential of CBWM to contribute to environmental justice, the CBWM thus requires increased financial, political and social support for the community groups, as well as increased recognition by the local government.

7.1 Further research

Based on this study's findings, further research of the intersections of environmental justice, SWM and CBWM in informal settlements can be suggested. The extent of environmental justice of Mathare can be examined over time, with closer attention to the county SWM policies that aim to integrate the community groups as partners. Exploring the variety of experiences of CBWM of the broader community would additionally add to this study's findings. For example, other dimensions of identity such as gender and ethnicity could be included in an intersectional analysis of the effects of CBWM. A study problematizing the CBWM as a community-managed market-based delivery of basic services would also be interesting, in line with Thieme (2010). Studies can also compare the SWM of Mathare with other residential areas of Nairobi. This would allow for a more extensive understanding of the nexus of environmental, social, political, and economic inequalities. Comparing the CBWM in Mathare with the CBWM in other informal settlements in Kenya and other sub-Saharan African countries would also be an interesting approach. The comparison could especially examine the effects of CBWM's informality.

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Appendix A. Interview guide

A sample of the interview guide used for interviews with leaders of community-based organisations and youth groups in Mathare, Nairobi in April, 2018. The interviews took place in Mathare and each interview took approximately 45- 60 minutes. In addition to the questions below, the follow-up questions varied according to the given answers.

The interview started with a presentation of myself and a description of the study. The participants were informed that they would remain anonymous throughout the study and I asked for permission to record the interview. The respondents were given the opportunity to ask questions before, during and after the interview.

Date:

Place:

Name of participant and of community group:

The community group

1. For how long has the group been active?
2. What are your main activities?
3. What is your community group's objective with working with waste management?
4. How do you work with waste management? (e.g. household collection, community clean-up days, recycling, other)
5. How many households do you cover?
6. How many active members does the community group have?
7. Within what age range are the members?
8. How many members earn a small income on your activities?
9. Are you supported by an NGO?
10. Are you registered as a community group? Are you licensed for waste collection?

The work of the leader

11. What is your role in the group?
12. How long have you been involved in waste management?
13. What motivated you to start working with waste management and to become part of the community group?
14. When did you become a leader in the group?

The group's work of waste management

15. What are your main challenges with your work with waste management?
16. What are your successes with your work with solid waste management?

17. What is your opinion on that community groups are the providers of waste collection in Mathare, instead of private companies as in other areas of Nairobi?

Relationship and cooperation with local administration and NCC

18. How would you describe your community group's relationship with the local administration and the local government?
19. Have you ever been in contact with the local administration or the NCC regarding waste management?
20. Does the local administration / the NCC listen to you? Do they value your opinion?
21. Can your community group impact decision-making within waste management?
22. Is your community group informed about waste management in Mathare?
23. Is it possible to hold the local government accountable for their responsibilities within waste management?

The experiences of the members of the community group

24. What do you learn from your experiences of organizing waste management?
25. Does working with waste impact your life?
26. Are you both men & women in your group?

The relation with the community

27. What does the rest of the community think of your group's work with waste collection?
28. How is it to attract new members to your group?
29. Are other people in the community influenced by your group's organisation and provision of waste collection?

Empowerment

30. How would you describe empowerment? How would you describe disempowerment?
31. Is it possible to connect empowerment and disempowerment with your work with waste management?
32. Is your group empowered or disempowered by your work with waste?
33. Are members of the community more empowered or disempowered by your work with waste? If so, in what ways?
34. Are there any barriers to empowerment for community groups working with waste?

Way forward

35. What solutions are there for the obstacles that you face in your work with waste management?
36. What would be the way forward for your community group?
37. Anything that you wish to add?
38. Questions to me?