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# In the world of flying toilets -

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Perceived health benefits of improved physical  
environment.

A case study of Nairobi slums.

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## **ABSTRACT**

This study explores how community members in Nairobi slums perceive the health benefits of improvements of the physical environment with focus on water and sanitation, how it can be obtained, further sustained and how the community members can be involved. Location and socioeconomic status variations were also explored.

A comparative, qualitative case study was done inspired by the theories of social determinants of health and capability approach.

Seeing the analysis according to the health belief model, the threats and the barriers were dominating. Benefits of various kinds, especially less infectious diseases, self-esteem and job opportunities enhancing social inclusion were perceived, however the self-efficacy and cues to action were limited and actions mostly relied on external support and influences. Sustainability was seen to be mainly threatened by poverty however income generating activities were seen as possible solutions. Few variations in perception in relation to socioeconomic status were observed.

The outcome showed the inter linkages between the social determinants of health and people's perception of what they are capable of at an individual as well as at a community level and further that initiatives aiming to improve the physical environment in the slums should involve the slum dwellers.

**Keywords:** urbanisation, Nairobi, slums, water and sanitation, physical environment, health inequities, health benefits, slum dwellers' perception, social determinants of health, capability approach, health belief model, social justice, slum upgrading initiatives

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*Here starts my "story from the field"...*

*Sara*

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## **ABBREVIATIONS**

APHRC	African Population and Health Research Center
CSDH	Commission on Social Determinants of Health
FGD	Focus Group Discussions
HBM	Health Belief Model
HPS	Health Promoting Schools
IDI	In-Depth Interviews
KNBS	Kenya National Bureau of Statistics
KNEC	Kenya National Examinations Council
KSUP	Korogocho Slum Upgrading Programme
MDGs	Millennium Development Goals
NGOs	Non Governmental Organisations
NUHDSS	Nairobi Urban Health and Demographic Surveillance Study
PRB	Population Reference Bureau
SDH	Social Determinants of Health
UN	United Nations
UN-HABITAT	The United Nations Human Settlements Programme
UNICEF	The United Nations Children's Fund
WHO	World Health Organisation

# 1. INTRODUCTION

## 1.1 Research problem

Rapid urbanisation and urbanisation of poverty in the world has created new challenges in the area of health and development, particularly in developing countries such as Kenya in Africa.

Africa is still the least urbanised continent in the world, but it has the highest rate of urbanisation due to rural – urban migration and population growth (Macionis & Parrillo 2001). In the 1950s only 15% of the African population lived in cities but in 2010 the proportion was 38% (PRB 2010).

Globally the health gaps between different social groups have widened and social changes such as migration from rural to urban settings have increasingly created intra urban inequality, where informal settlements (slums) are the most prominent example of this widening gap (UN-HABITAT 2003). Further the rapid urbanisation has been followed by rapid degradation of the physical environment and the slums are characterised by an alarming lack of clean water, waste management and lack of access to sanitary facilities, which is resulting in a negative impact on the public health situation (Kjellstrom *et al.* 2007; Sclar *et al.* 2005; UN HABITAT 2003).



One striking example is the practice of the so called “flying toilets” in the slums, where simple plastic bags are being used as toilets due to a lack of sanitary facilities or resources to use existing ones. Once the plastic bag has served its’ purpose it is thrown out anywhere causing a significant health risk.

**Photo 1:** “Flying toilet”

The combination of the above with low socioeconomic status puts the slum dwellers even more at risk of exposure to health hazards, with resultant poor health status (APHRC 2002a; Lindstrand 2006; Helman 2007; Marmot & Bell 2010, WHO 2008). Other aspects such as housing, infrastructure, security and cohesion are also included in the concept of physical environment used in this study.



From a global perspective, renewed concern about poverty and the widening gap between social groups has emerged. This together with the acknowledgement of the pivotal role played by good health as part of development has led the United Nations (UN) to develop the Millennium Development Goals (MDGs). The MDGs have emphasised the connection between health and social conditions (CSDH 2008; Barten *et al.* 2007; Irwin *et al.* 2006). Three out of the eight goals addresses health challenges and specifically the seventh goal, to ensure environmental sustainability, target 7.C, of the MDGs, aims to improve the lives of at least 100 million slum dwellers by the year 2020 and target 7.D to halve, by 2015, the proportion of the population without sustainable access to safe drinking water<sup>1</sup> and basic sanitation<sup>2</sup> (UN MDG 2000). At the current pace the MDGs for improved sanitation will be missed globally, which means that 1 billion people worldwide would still lack adequate sanitation by 2015 (WHO/UNICEF 2010a).

Kenya is one of the countries that is not on track to reach the goal. Only 60% of the population in Sub-Saharan Africa can benefit from the use of improved drinking-water source making Africa the area in the world mostly lagging behind the particular MDG target. It is expected the world will exceed the goal of halving the proportion of the world population without sustainable access to safe drinking water; however 672 million people will still be in need by 2015 (*ibid* 2010a).

Worldwide 40% of the global population lack adequate sanitation and there are great disparities between urban and rural settings. For Sub-Saharan Africa 43% in urban and 24% in rural areas do use improved sanitation. For Kenya it is the reverse: 27% in urban and 32% in rural areas have access to improved sanitation (*ibid* 2010a).

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<sup>1</sup> Improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination with faecal matter (WHO/UNICEF 2010b). It is defined as coming from the following sources: piped water into dwelling, yard or plot, public tap or stand pipe, tube well or borehole, protected dug well, protected spring, rain water collection (WHO/UNICEF 2010a:34).

<sup>2</sup> Improved sanitation facilities is defined as one that hygienically separates human excreta from human contact and improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination with faecal matter (WHO/UNICEF 2010b). It is defined as the use of: flush or pour-flush system to piped system, sewage system or pit latrine, ventilated improved pit latrine, pit latrine with slab or composting latrine (WHO/UNICEF 2010a:34).

Kenya is making progress by means of programmes such as slum up-grading and implementation of water and sanitation projects in slum areas but the pace is insufficient to meet the MDG target of 2015 (WHO/UNICEF 2010a). Further when implementing projects aiming to improve the lives of the slum dwellers discussions whether or not the slum dwellers/community members of the slums are or should be involved in these kinds of projects are also heard.

The negative impact on health with higher morbidity and mortality due to the physical environment in the slums compared to other areas have been pointed out in various studies (APHRC 2002a; Sclar et al. 2005; Riley et al. 2007; Butala et al. 2010). However few studies have explored the slum dwellers own perspective of the health challenges they face and how improvements of the physical environment are perceived. Thus the aim of the thesis is to investigate how community members perceive the possible health benefits of improvement of the physical environment, with focus on water and sanitation.

The field study was conducted in Nairobi, the capital of Kenya, in Korogocho and Viwandani slums as a comparative case study between Korogocho, Kisumu Ndogo village, where a water and sanitation project has been implemented by the nongovernmental organisation (NGO) African Population and Health Research centre (APHRC). The project called Health Promoting Schools (HPS) project, included a sanitation centre, a waste management centre and health education, and Viwandani, Paradise village, where there is no such intervention implemented but used as control site during the HPS project. This study uses the HPS project as an entry point and an example of an intervention for improved water and sanitation; however the study is not an impact evaluation of the HPS project as such but employs a general perspective of the physical environment in the slums.

## **1.2 Purpose and research questions**

The purpose of this study is to contribute to the knowledge about how improvement of the physical environment, with focus on water and sanitation, is perceived to benefit health and how it can be obtained and sustained as perceived by the community members themselves and how they can be involved. Further to investigate whether there are variations in regard to location (where interventions have been implemented and where there are no such interventions) and in regard to socioeconomic status.

The physical environment and its' impact on the health of the population is of great importance within the slums and the desired result of this study is inspired by the social determinants of health conceptual framework and Sen's theory of capability approach where this applied research can be used to raise consciousness and increase awareness when outlining interventions and programs targeting slum areas and improvement of the physical environment (Mikkelsen 2005; Patton 1990).

*Research Question:*

How do the community members perceive the possible health benefits of improved physical environment interventions?

By investigating the answer to the main research question the following sub-questions will be explored:

- a. What are the drivers and obstacles to obtain and sustain improved physical environment interventions, as perceived by the community members?
- b. How and in what way can community members be involved in improvement of the physical environment?
- c. What variations in perception can be observed in relation to location and socioeconomic status?

### **1.3 Demarcation**

Slums are facing many challenges however the focus and starting point of the study is the problem of water and sanitation which most slum areas are facing today and its' relation to health. The findings are based on the slum dwellers' own perspectives and this study is an example of such a context, thus the study does not claim to generalise the findings and represent the voice of *all* slum dwellers whether in the particular slums, in Nairobi, in Kenya or in similar contexts around the world.

However, the situation is far from unique and the findings can serve as an inspiration and exemplify how slum dwellers might perceive the health benefits, the challenges of improvements, sustainability and involvement in the improvement of the physical environment.

## **1.4 Disposition**

This chapter gave an introduction of the study, the aim and purpose and the relation to a global perspective. The following chapter describes the empirical background to the setting, including literature review. Chapter 3 discusses the methodological standpoint of the study and present the methods used. Chapter 4 describes the theoretical frameworks that have given inspiration to this study; the social determinants of health and the capability approach, followed by a presentation of the health belief model which is used as the analytical framework to structure the data collection and the analysis. Chapter 5 presents and analyses the study findings based on the theoretical and analytical frameworks and chapter 6 summarises the main conclusions in relation to the theoretical background.

## **2. BACKGROUND AND LITERATURE REVIEW**

### **2.1 Definition of slum**

The word “slum” first appeared in the 1820s as part of the London cant, indicating areas with the poorest housing conditions and sanitation, high level of criminality and where the marginalised population found refuge. The Housing Reform Movement in England in the 1880s changed the popular word simply used for an awkward phenomenon to an operational term indicating “house materially unfit for human habitation” (UN HABITAT 2003:9). This was the first step to enable delimitation of slum areas geographically. During the 20<sup>th</sup> century more rigorous terms were needed as eradications of slums were to be authorised and the need for legal and technical definitions arose. During the same period social movements counteracted by claiming less stigmatising words for these settings which were populated by less favourable people of the society.

Today the word “slum” is still used loosely and generally to refer to informal housing, mostly of low quality and the coverage of settlement types are very complex. Other terms such as shanty, squatter settlement and informal settlement are used interchangeable by authorities, agencies and organisations. It is said “if Eskimos have many words for snow, some languages have many words for poor accommodation” (UN-HABITAT 2003:10). Slums are generally characterised by lack of basic services, substandard or illegal building structures, high population density and often overcrowding, insecure tenure, minimum settlement size and unhealthy living conditions. They are very often situated on a hazardous location such as

along rail ways, mud slopes and industrial areas. Further, in slums, poverty and social exclusion are high (*ibid* 2003).

In 2003 UN-HABITAT presented the first global assessment of slums, where an operational definition was introduced as well as the concept of “urbanisation of poverty”. This definition was recommended by a United Nations Expert Group Meeting held in Nairobi, October 2002. The operational definition combines the characteristics of the slum, however is restricted to only the physical and legal aspects and excludes the more complex social dimensions such as poverty and social exclusion. The measurable indicators are based on the MDG indicators when possible and are yet under constant review in order to be more accurate and reliable in the estimation of number of slums and slum dwellers (UN-HABITAT 2003). See table of the indicators and thresholds for the definition of slums in appendix 8.1.

## **2.2 The study area**

Nairobi, the capital city of Kenya in Eastern Africa, was established as a city in the year 1899, with British colonial origin. The name origin from a maasai phrase “enkare nyirobi” which means “the place of cool waters” referring to its’ high altitude (Macionis & Parrillo 2001).

Nairobi is home to the largest slums in Sub Saharan Africa and has one of the fastest city growth rates in Africa with an annual growth of 4.9% (UN-HABITAT 2010). It hosts more than 100 informal settlements (*ibid* 2010) like Kibera, Mathare, Korogocho, Kawangware and Viwandani, which are homes to more than half of Nairobi’s total population of 3,1 million (KNBS 2009), notably about 60% of the population of Nairobi where about the slum areas covers only 5% of the residential land of Nairobi according to UN-HABITAT (2010). Further Nairobi is ranked as the 5<sup>th</sup> most unequal city based on income in the world (*ibid* 2010).

Korogocho slum is one of the most densely populated and unstable slums of Nairobi, Kenya. It is an ‘illegal’ settlement born in the early 1980s and is ranked the 4th in population size after Kibera, Mathare and Mukuru Kwa Njenga with about 120,000 inhabitants within a single square kilometre. It is situated on the banks of the Nairobi and Gitathuru rivers and it borders the largest dumping site in Nairobi, the Dandora dumping site, posing environmental health and security risks for the residents and surrounding settlements. Conditions in Korogocho are typical of slum settlements in Nairobi; a large poor population, no access to minimum services such as proper sanitation and waste management, which has resulted in extensive health challenges (KSUP 2010).

The total ratio of toilets/population is 1:79 (APHRC 2008:8), including all types of toilets. Most slum dwellers buy water from kiosks and vendors mostly coming from illegal connections to the City Council water system using unsafe plastic pipes. Some households close to the rivers use the highly contaminated river water. The most common way of waste disposal is to dump the waste in the river (*ibid* 2008).



**Photo 2:** Water point in Korogocho

Viwandani slum is located in the industrial area of Nairobi and was established 1973 on a land bank of the Ngong River, left by the City Council of Nairobi. It is home for more than 56,000 inhabitants. The Ngong River, heavily polluted by industrial and household waste is to the south of Viwandani and to the north is the industrial area (Amunyunzu-Nyamongo & Taffa 2004).



**Photo 3:** View of Viwandani

industries and compared to Korogocho people are generally moving and changing location more often, so forth not as “established” as a slum area where you come with the intention to stay for very long.

Bordering to Viwandani there is also a “kware”, a big hole that is filled with rainwater during the rainy seasons, posing a risk of health hazards as the water is contaminated and a security risk as drowning accidents are common. Conditions in Viwandani are also typical of slum settings of Nairobi and interventions targeting the water and sanitation problems are even more limited in Viwandani than in Korogocho, as Viwandani is less known.

### **2.3 Health Promoting Schools project**

As the slums are characterised by high child morbidity and mortality (Kyobutungi *et al.* 2008) and poor academic performance (KNEC 2009) the APHRC initiated, with support from UN-HABITAT, a HPS project in Korogocho slum in the year 2008 based on a global World Health Organisation (WHO) initiative. It emphasised a holistic approach to health defining health as a physical, social and emotional wellbeing. Driven by the Ottawa charter of Health Promotion strategies and action areas in order to achieve “Health for All in the 21<sup>st</sup> century”, HPS aims to build health into all aspects of life in schools and in the community (WHO 1986). HPS has shown high impact in improving children’s healthy behaviours and academic performance (Long-shan *et al.* 2000; Lee *et al.* 2006; Laurence *et al.* 2007).

The HPS project goal was to plan, implement and evaluate a health promotion pilot intervention in Nairobi slums primary schools and community, using personal hygiene and sanitation promotion as an entry point. The pilot intervention was expected to enhance the knowledge and skills of the administrative and school staff about water and sanitation related health issues in order to promote healthy behaviours with the aim of improving both the health status of the community and the academic performance of school children (APHRC 2008). It has been proven to be effective and will be scaled up to other schools in Kenya.

The project consisted of two phases: the schools interventions and the community interventions with the objectives to evaluate the intervention’s impact on schools which go through the HPS capacity building process in comparison to schools that continue their regular curriculum. Further, to evaluate the impact of the additional community intervention of upgrading water, sanitation and waste management facilities, aiming to strengthen the supportive healthy environment for the implementation of healthy behaviours in water and sanitation for school community (*ibid* 2008).

Policy and school structure; capacity building; supportive environment; develop personal skills and parental participation were areas included in the intervention (*ibid* 2008). Besides the interventions directed to the schools, the community interventions included in the HPS project consulted with the community members which resulted in the construction of a sanitation centre providing toilets, showers and water points available for the community members at a small fee and a solid waste management centre allowing proper waste disposal within the community such as source separation of waste, small scale door-to-door waste collection, recycling and composting, in Kisumu Ndogo/Nyayo village in Korogocho slum.



**Photo 4:** Sanitation centre

**Photo 5:** Waste management centre

Both centres are run by community groups as income generating activities as the community members can enjoy the services at small fees. The intervention is further complemented by health education and the creation of Mamas' health club in the community. Lunga Lunga village in Viwandani has served as control site for the HPS project (*ibid* 2008). The community interventions serve as entry point for this study.

## **2.4 Literature review**

### **2.4.1 Physical environment and impact on health**

There are in numerous studies pointing at the health hazards caused by the physical environment in the urban slums.

Sclar *et al.* (2005) look at the wide range of health challenges facing urban slums in the 21<sup>st</sup> century. Communicable diseases are major problems where close to 50% of the urban population in Africa, Asia and Latin America have one or more of the communicable diseases related to inadequate water and sanitation (WHO 1999). Malnutrition, low immunisation level of children, chronic stress, mental health issues, injuries and high and increasing rates of HIV/AIDS in urban slums are observed as well as non-communicable diseases which are on the rise (Sclar *et al.* 2005) Riley *et al.* (2007) observed one slum community in Salvador, Brazil, and highlight the limited knowledge about the spectrum and burden of diseases in the urban slums in general. Chronic and non-communicable diseases are on the rise in the urban slums just like in other settings but little is known and slum dwellers might only reach the health sector at the end-stage of the disease.



The rapid urbanisation and the living conditions in the slums lead to health hazards with higher mortality and morbidity rates all over the world. However, little evidence on interventions for improved water and sanitation exists to guide policy makers. Upgrades in slum household water and sanitation have not yet been evaluated exhaustively to establish the direct link to improved health outcomes (Butala *et al.*, 2010). However, a study in Ahmedabad, India, shows that slum upgrading reduced waterborne illness from 32% to 14% and mosquito related illnesses from 25% to 10% which therefore serves as evidence of how slum upgrading can lead to improved health outcomes resulting in a positive change that can help to achieve the MDGs (*ibid* 2010).

#### ***2.4.2 Under five morbidity and mortality***

Many studies report on the increased morbidity and mortality rates in the slums, especially among children under five due to repeated episodes of diarrhoea which is directly related to the water and sanitation in the urban slums (Singhal *et al.* 1990; Kapoor *et al.* 2002, Buttenheim 2008; Kyobutungi *et al.* 2008).

Ingestion of unsafe water, inadequate availability of water and lack of basic sanitation contribute to cause the death of about 1,5 million children yearly and around 88% of death is related to diarrhoea globally posing one of the major risk factors for child mortality (Black *et al.* 2008:2227). For children in slum settings, the vulnerability is enhanced as it is the time when children begin to walk and play around in the contaminated environment (Ndugwa & Zulu 2008).

Neonatal mortality in urban slums is also shown to be related to underlying factors such as the living conditions and lack of basic services (Fernandez *et al.* 2003). A comprehensive study from APHRC (2002a) targeting Nairobi slums shows that infant and under-5 mortality rates in urban slums are 91 and 151 per 1000 births compared to 39 and 62 per 1000 births in Nairobi in generally and 76 and 113 per 1000 births in rural areas. The inequalities in infant and under-5 mortality rates are directly linked to the physical environment and lack of services such as clean water and sanitation and access to health care.

A study from the Gokul Puri slum of Delhi, India, found that the 14.6% of the children under five in the sample group had had an episode of acute respiratory infection during the last two weeks and the average had 1.7 episodes of acute diarrhoea per year showing the link between the physical environment and child health in urban slums (Gupta *et al.* 2007). A study from

Pampas de San Juan, a peri-urban community in Lima, Peru, shows the correlation between children's nutritional status and water and sanitation within the household. Children with poorest access to improved water and sanitation had lower nutritional status and more diarrheal episodes (Checkley *et al.* 2004). Malnutrition, which is a major and often underlying cause of child morbidity and mortality, can be related to environmental degradation (Amuyunzu-Nyamongo & Taffa 2004) and is the underlying cause for more than half of childhood deaths according to a study conducted in Nairobi slums (Kyobutungi *et al.* 2008). Bartlett (2003) takes it even further and looks at the implications on poor urban children's sanitary conditions related to malnutrition and long term effect on the mental and social development of the child. Interventions such as health education and health care can never be as cost-efficient as provision of improved water and sanitation (*ibid* 2003). The earlier assumed urban advantages in child health have faded the last decade since the speed of urbanization in most sub-Saharan African countries has not been matched by adequate increase of health services, sanitation and livelihood opportunities (Fotso 2007).

#### ***2.4.3 Slum dwellers' own perspective***

The comprehensive, representative sample survey of urban slum dwellers in Nairobi by APHRC (2002a) mentioned earlier had the aim to determine the demographic dynamics and the general health problems facing residents of the slums to enable support to policy making targeting the health and livelihoods needs of the urban poor. The slum dwellers identified lack of toilets, proper drainage and health services as the most critical health problems while lack of jobs, proper housing and affordable water supply were cited as the most important general needs.

APHRC (2002b) conducted yet another study to find the most critical health and livelihood issues facing slum dwellers of four of Nairobi slums partly based on qualitative methods. The slum dwellers identified a wide range of health and livelihood concerns where access to water and sanitation was one of them and they showed awareness of illnesses and treatment. However they pointed out their limited access to health care both due to lack of services and lack of financial resources.

A qualitative study covering four informal settlements in Nairobi was conducted to explore women's perception on the link between environment and their children's health. The results showed that mothers clearly understood the linkages between the environment and health

however their socioeconomic status hindered them to take the appropriate measures to protect their children (Amuyunzu-Nyamongo & Taffa 2004).

The later studies are actually the only studies I have found that clearly state that the aim is to directly look into slum dwellers' own perspective.

Thus the linkages between the physical environment and health are well-acknowledged. However, what has been given little attention is how one of the most exposed people to unhealthy physical environment – the slum dwellers themselves – perceives the link between physical environment and health.

### **3. METHODOLOGY**

#### **3.1 Logic of research design**

This study employs a comparative case study design characterised by in-depth knowledge, based on a relative small number of respondents, comparing the community members perception of possible health benefits in relation to location (experienced or without experience of water and sanitation interventions) gender (men or women) and educational level (high or low). Case-study design is often used when studying contemporary phenomenon within real-life contexts with the desire to understand complex social phenomenon (Yin 2003:1-2).

My epistemological and ontological stance are rooted in constructivism based on an inter-subjectivity constructed “truth” and interpretivism with the aim to “grasp the subjective meaning of social action (Bryman 2001:504) and where people is regarded as “creative interpreters of events” (Mikkelsen 2005:135).

Interpretivism is closely linked to phenomenology which studies “the subjects’ perspective of their world; attempts to describe in detail the content and structure of the subjects’ consciousness, to grasp the qualitative diversity of their experiences and to explicate their essential meanings” (Kvale 1996:53).

Kumar’s step-by-step guide (Kumar 1999 *in* Mikkelsen 2005:153) has been useful when designing the research plan, however it is not a “highway” where once one step has been passed you do not look back but rather a process of refining and reflecting around the process and the choices made all through.

## **3.2 Data collection process**

### ***3.2.1 Method for literature review***

While doing the literature review studies and reports of the risks to health due to the physical environment in slums, the health benefits of improved water and sanitation and the slum dwellers own perspective were sought. Water and sanitation, slums, informal settlements, health, health benefits, urban, slum upgrading, slum dwellers perspective, social determinants of health are some of the search words used in various combinations. Sources for scientific articles were LibHub, PubMed, The Lancet, Sage Journals online, BioMed Central and Google.

### ***3.2.2 Methods for data collection***

The main source of first hand data is different individuals and groups living in the informal settlements, complemented with photos for descriptive purposes. Descriptive field notes were taken during the visits in the fields and during focus group discussions (FGD) and in-depth interviews (IDI) (Mikkelsen 2005) a research diary was used as help in the explanatory method part of this study (Silverman 2005).

The data collection focused on in-depth knowledge rather than breadth and the empirical, qualitative methods used, such as FGDs and IDIs, allowed respondents to give their personal point of view, thus enabled a deeper understanding of the situation (Creswell 2003; Silverman 2005). “Qualitative interview is a research method that gives a privileged access to our basic experience of the lived world” (Kvale 1996:54). What is lost in terms of generalisation of the outcome to a wider population is gained in a deeper understanding of the research area. All FGDs and IDIs have been recorded digitally and field notes have been taken by me during the sessions.

The data collection was limited in time to Nov-Dec 2010 and practical issues such as access and transport to the field, recording equipment and funding were supported by APHRC. The “access point” to respondents, was the HPS project in Korogocho slum and the Nairobi Urban Health and Demographic Surveillance Study (NUHDSS) in Viwandani, both run by APHRC, which enabled me to establish contact with community members in the two informal settlements and to be accompanied by one of the staff members of APHRC when entering the informal settlements. This was necessary due to the security risks in these environments.

As the study was conducted within the APHRC's frames, the principles of compensation for the respondents' time were followed, which consist of 200 Ksh (2.5 USD) and refreshments like sodas and cakes.

### ***3.2.3 Selection of cases and criteria***

The selection of cases in this study was based on the water and sanitation situation in villages in two different informal settlements. The entry point was Kisumu Ndogo/Nyayo village in Korogocho slum, where APHRC had an ongoing water and sanitation intervention within the community under the HPS project where I was attached during an internship period. The aim was to compare this village with another village which had not experienced any water and sanitation project however the Lunga Lunga village in Viwandani slum used as control site for the HPS project had experienced a water and sanitation implemented by another NGO. After some inquiry the choice fell on Paradise village in Viwandani. Therefore, my first criterion was site: Korogocho – Kisumu Ndogo/Nyayo village and Viwandani -Paradise village.

Secondly the aim was to look into possible differences in relation to socioeconomic position where gender and educational level were chosen as the two other criteria on the basis of earlier studies (APHRC 2002a; APHRC 2002b; Ngware *et al.* 2008).

Gender is important in many aspects of the society and the position between men and women can be very different in different societies (CSDH 2008:145).

Educational level is assumingly related both to the ability to understand and express yourself further related to income level hence your level of material standard (Ngware *et al.* 2008). The classification used was low= completed primary school *at the most* and high= *at least* studied part of secondary school. This decision was based on the context of the sample group, where many people have been denied the opportunity to complete or even start secondary school mostly by financial constraints. However the objective for the groups of high education was to find respondents that had completed form four, that is, secondary school.

It is likely that the differences found between the sample groups are too small and they all experience more or less the same challenges as slum dwellers of Korogocho and Viwandani. The sample group is also relatively small which limits the findings.

### 3.2.4 Sampling

The units of the study are groups and individuals in the community and the initial idea was to do a stratified sampling by the use of APHRCs database NUHDSS which would have enabled a selection of individuals and groups with very specific criteria. However, seeing the time constraints and the budget implications for such an exercise the sampling strategy was reconsidered. Following discussions with the team on the ground and my supervisor at APHRC I decided to use the intervention and control schools with the HPS project as my entry point and to get access to groups of parents through those schools as they obviously also are community members. The teachers could ask about the educational level of the parents and could easily assist me in organising focus groups. The respondents were all between 18-50 years old. Accordingly, the focus groups were sampled by purposive sampling (Mikkelsen 2005:193) based on the criteria; location (Korogocho, Kisumu Ndogo/Nyayo and Viwandani, Paradise village), gender (male, female) and education level (classification low= completed primary school *at the most*; high= *at least* part of secondary), which indirectly correlate to income level (Ngware *et al.* 2008).

**Table 1:** Composition of focus groups

Kisumu Ndogo/Nyayo/ male/low education	Paradise / male/ low education
Kisumu Ndogo/Nyayo/female/low education	Paradise /female/ low education
Kisumu Ndogo/Nyayo/ male/high education	Paradise / male/ high education
Kisumu Ndogo/Nyayo/female/high education	Paradise /female/ high education

The decision to conduct eight FGDs was based on the aim to get a group representing each selection of criteria. It is a relative small number of respondents which limit the findings, however certain cross cutting saturation was observed as the answers did not vary extensively between the different groups.

The sampling of key informants for IDIs were based both on purposive sampling as individuals representing active community members, village elders and to some extent convenience sampling in terms of contacts and access (Bryman 2008:183). Key informants in Korogocho were members of: Korogocho Poverty Eradication and Development Group; Nyayo Youth development organisation (waste management centre); Mamas Health Club (community group), Korogocho Express Women's Club (sanitation centre) and village chiefs.

Members of these groups are directly and actively involved in the HPS project in Korogocho and are assumed to have a greater understanding of the interventions in relation to the community. In Viwandani the key informants were active members in the Slum Community Health Workers Group and village elder.

### ***3.2.5 Focus group discussions***

Focus groups should consist of eight to ten, with a maximum of 12 people (Mack *et al.* 2005:56). Eight qualitative, semi-structured FGDs have been conducted, four per site with eight respondents per group, with groups representing each of the above mentioned criteria and aimed to be heterogeneous to capture as many different angles as possible (Mikkelsen 2005). The first discussion also served as a pilot session as some questions needed to be reformulated to become straighter forward and clear for the respondents. At times the discussions took another direction than intended and I tried to set back the focus to the topic by repeating the question again after the respondents have aired out their point of views.

It was mainly a positive experience for both me, as a researcher, and the respondents and as Kvale (1996:36) mention it is not a common experience that someone else is only interested in and try to understand your views on a subject. During the sessions many aspects of qualitative interviews (*ibid* 1996:30-1) like change and sometimes ambiguity could be observed even though the main theme for the discussion was the respondents' life world. I tried to use deliberate naïveté as my previous experiences in a similar setting might make me draw conclusions in a subjective way, which I aimed to avoid.

### ***3.2.6 In-depth individual interviews***

Five qualitative semi-structured IDIs have been conducted, three in Korogocho and two in Viwandani, with respondents who are active community members in diverse ways such as leaders of community based organisations or village elders as they are assumed to have an overall perspective of the situation through contacts with many respondents as well as authorities. The same principles of deliberate naïveté and concerns of probing and prompting were in my mind even though it is a balancing act between naïveté and still showing that you understand what the respondent is trying to communicate to you.

Further the interpersonal dynamics (Kvale 1996) becomes even more tangible in an IDI compared to a FGD as you are more in the "limelight" of your respondent as you interact

more closely and directly with only one respondent, which is different from facilitate a group discussion such as FGDs.

### **3.3 Translation**

Preferably the interpreter is to be found locally, as a local person would understand both the language and actions (Bujra 2006:173-174). A local translator from APHRC assisted during all FGDs and some of the IDIs when the respondents had limited knowledge of English. Especially in the groups where the respondents had primary school level education at the most, the need was higher and at times when the lingua franca is inadequate to capture the exact essence of what respondents express.

Before the interviews and group discussions the translator was briefed shortly about the aim of the thesis, given some instructions and the interview and focus group discussion guides<sup>3</sup> to enable a better understanding of the topic and questions. It was positive in the sense of “being on the same line” of thinking, however challenges in terms of probing and prompting (Bryman 2008:206-7) aroused, when at some occasions the respondents needed further clarification of the question and the translator suggested possible answers as a way of explaining further which might have given slightly “skewed results” to some questions.

### **3.4 Transcription and analysis**

The analysis was initiated while I was still in contact with the field and had opportunity to go back for further information when needed. The different stages will be described in the following section with the aim to be as transparent as possible.

The quality of the study will be affected by the quality of the transcribing of the FGDs and the IDIs (Kvale & Brinkmann 2009) However, I was lucky to be assisted by a professional transcriber, who transcribed and translated the parts of the interviews that where conducted in Kiswahili to English. The feedback given by the transcriber during her work was very fruitful for me as she has a lot of experience in diverse techniques and approaches. Generally her feedback was positive and she found my way of listening out the respondents first before repeating the actual question of value and open to exhaust the respondents’ perceptions.

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<sup>3</sup> See appendix 8.4 and 8.5.



The analysis is done as a deductive, content analysis based on the health belief model and to further interpret and theorise the findings in relation to the SDH conceptual framework and the theory of Sen's capability approach, an "intellectual craftsmanship" as said by Wright Mill (Mills 1959 *in* Mikkelsen 2005:181).

Thus, a computer-assisted qualitative data analysis by the use of NVivo was conducted and codes were constructed according to the Health Belief Model (HBM).

A tree node was created with the following titles following the HBM: threats, benefits, barriers, self-efficacy and cues to action. Under each node sub-nodes were created that summarised aspects mentioned during the FGDs and IDIs, linked to each node. The FGDs and IDIs were analysed accordingly complemented with field notes and the research diary was used to keep track of the analysis.

Comments directly related to the HPS project were dealt with separately and extracted from the data collection further analysed according to the HBM. This enabled me to see what concerns were of general characters and which ones that were directly related to this particular project.

Once completed the analysis in NVivo I ran a node summery report and a coding summery report. The results in terms of frequencies of each sub-node were transferred to an Excel sheet which enabled an analysis of each FGD further do comparison by calculating the sub-nodes between the various criteria (location, gender, educational level).

There are advantages but also risks with the usage of computer-assisted analysis. The software will make it more manageable to handle large text materials and usually it is less time consuming to organise and do the coding of the data in the software. Further trustworthiness to the methodology would be an added value as the qualitative data analysis will be done in a more systematic and rigorous way compared to handle a large amount of paper documents. The possible risks have been stated as the danger of "being alienated" from your data and lose your methodological and theoretical standpoints (Mikkelsen 2005:192), however I only experienced the advantages of using computer-assisted analysis.

As Bryman stated "regardless of which analytical strategy you employ; what you must not do is simply say – 'this is what my subjects said and did – isn't that incredibly interesting' (Bryman 2001:402) but the aim is to apply an adequate analytical approach with the quality

considerations in mind all through the analytical process. However, exemplifying quotes are used to let the voice of the slum dwellers to be heard.

### **3.5 Quality considerations**

“Lay open your values and your methodology” (Mikkelsen 2005:195) is the foundation for validity and reliability in this study.

Let us start with validity which is another word for “truth” (Silverman 2005:210). Triangulation is to “look at things from different points of view or multiple strategies, as a method to overcome the problems that stem from studies relying upon a single theory, a single method, a single set of data from a limited sample, and from a single investigator” (Mikkelsen 2005:96). The validity and confidence in the findings is addressed by triangulation of multiple methods and by the use of multiple sources of data thus my rationale for using multiple methods and theories with the aim to increase the quality of the study. Further the analysis was genuinely based on critical analysis of all data collected with the aim to avoid anecdotalism, which would jeopardise the findings. Quotes are used only to give “life” to the study when reflecting general findings (Silverman 2005:210) and to give voice to the slum dwellers.

The quality of translation and transcription of recorded FGD and IDI will affect the quality of the study (Kvale & Brinkman 2009:180) and in this study the translation and transcription of data was done by a professional by the support of APHRC, which further increases the validity.

Next, reliability refers to if the results would be repeated if the study was to be replicated (Bryman 2008:31). By being transparent and document the procedures taken step by step will give sufficient information for replication of the study, which increase the confidence of the data. The concepts and their definitions are to be clearly stated and used consistently throughout the study. The reflexivity of the practices used reflects another criterion of good practice, where I as a researcher consistently reflect upon my own practices (Bauer & Gaskel 2000 *in* Mikkelsen 2005:197).

### **3.6 Ethical considerations**

The research process must ensure the respondents’ “dignity, privacy and safety” (Scheyvens & Storey 2003:140) and ethical issues concerns matters such as confidentiality and consent of

the respondents. The respondents were given a confidentiality note that was signed by both parties. This note was orally explained as all respondents were not literate. Informed consent was searched for and the respondents' confidentiality must be protected throughout the research process.

Another consideration to keep in mind is my own role as a researcher in this context of very poor people. The power relations (*ibid* 2003:149) (foreigner and white "muzungu") and the interpersonal situation is unavoidable to reflect about and to take into consideration all through the data collection and analysis. The fact that I am a foreigner, western white person, sometimes perceived as representing APHRC might have given a biased result for both self-efficacy and cues to action, as the capacities to act and take own initiatives might have been diminished with the hope of getting some sort of support from me or the organisation I was associated with at the time of the study. This created expectations on me and on the reciprocity of the study. On the other hand it gave me an entry point and the atmosphere for discussions was open. I had to be very open and explained my inferior role in APHRC as an intern with no influence on the set up of projects in these settings. However I could ensure the results of the study will be communicated to APHRC.

### **3.7 Reciprocity**

The main challenge during, or rather after the FGD, was my last question - if they members of the group had any questions for me. Every group raised their expectations of reciprocity and was asking for the way forward, will there be an expansion of the current project, will people from the slum be employed, how will they follow health messages when they could not afford even soap for hand washing, would there be more sanitation centre, could I do something about the security issues in the slums...? As one woman clearly articulated "the information we have given you here will benefit you, but how will it benefit us?" Of course she is right and I told her so. The information I have received will help me to conduct this study which will hopefully result in a Master's Degree. My hope is that it will be used as applied research by APHRC, or any other organisations/institutions implementing projects, e.g. water and sanitation project, in the slums and serve as "giving voice" (Ragin 1994:83) for the community members' perceptions.

## **4. THEORETICAL FRAMEWORK**

This section describes the two theories that have inspired me: the social determinants of health conceptual framework and Sen's theory of capability approach. Seeing the complexity in these two theories I have chosen to use the health belief model as my analytical framework in order to structure my data collection and the analysis, which will be explained in this section as well.

### **4.1 Social Determinants of Health**

All over the world vulnerable and socially disadvantaged people are more at risk of health problems, they get sick more often, they die earlier and they have less access to health care. Traditionally the society has looked to the health sector when dealing with concerns about health and disease, however the greatest share of health problems are attributed to the social conditions in which people live, referred to as the social determinants of health (SDH) (Irwin *et al.* 2006, Wilkinson & Marmot 2003).

In order to advance the knowledge of health as an integrative and cross government department goal the WHO created the Commission on Social Determinants of Health (CSDH) in March 2005 with the objective to strengthen health equity by globally supporting countries and health partners, including WHO itself. The health sector is to take the lead, however it cannot operate alone but health should be integrated in all other sectors by tackling the underlying factors which determine the health outcome (Irwin *et al.* 2006).

The SDH is a new approach to development and the SDH comprehensively includes all the conditions which people are born, grow, live, work and age which further rely on the policies guiding the distribution of resources, money and power to influence at all levels – globally, nationally and locally (CSDH 2008). The guiding ethical principle of the SDH is health equity, defined as “the absence of unfair and avoidable or remediable differences in health among social groups” (Solar & Irwin 2007:9).

It is rooted in a holistic social justice approach and sees the systematic differences between different groups of people as unfair and imbalanced resulting in health inequity. Holistic approach can be defined as an “interdependence of all elements that are part of development – social, structural, human, governance, macroeconomic, financial and environmental elements” (World Bank 2007) where the governments have the primary responsibility to protect health equity according to the SDH (Solar & Irwin 2007).

These health inequities are socially stratified and are currently found both between and within countries (CSDH 2008; Marmot *et al.* 2008). Without action on SDH and efforts to “close the gap” and reach health equity, countries, and especially developing countries such as Kenya, will not be able to reach the MDGs (Irwin *et al.* 2006).

The overarching principles of actions from CSDH are to: improve the daily living conditions – the circumstances in which people are born, grow, live and age; to tackle the inequitable distribution of power, money and resources – the structural drivers of those conditions of daily life globally, nationally and locally; and to measure and to understand the problems and assess the results of action to develop a workforce that is trained in the SDH and raise public awareness (CSDH 2008).

Kenya is one of the partnering countries (Sweden is another) where the CSDH in partnership with the Government of Kenya (GoK) is developing and testing governance mechanisms to coordinate cross sectional work on SDH capacity building where the Ministry of Health (MoH) is to effectively lead cross sectional SDH policy work and create mechanisms for sustainability by incorporating SDH and health equity into government planning tools for spending choices (Irwin *et al.* 2006). The approach of SDH is a long-term agenda which demands major changes in social, economic and political policies and actions.

The Adelaide Statement on Health in All Policies (2010) is one outcome from an international meeting held in Australia last year, which built on earlier work by WHO including the Declaration of Alma-Ata on Primary Health Care 1978; the Ottawa Charter for Health Promoting 1986; the Adelaide Recommendations on Healthy Public Policy 1988 and subsequent global health conferences held. The Adelaide statement (2010) emphasises the equity approach taken by SDH, which push for cross-sectional collaboration and action at all levels with health in focus of all policies.

The CSDH has created a conceptual framework which seeks to summarise the key elements of the lessons learned from SDH. It consists of structural determinants of health inequities on the basis of socioeconomic and political context and socioeconomic position, the intermediary determinants such as material circumstances, behaviour, biological and psychosocial factors further related to health systems. Social cohesion and social capital is a cross cutting element. See graph 1 in appendix 8.2.

**Table 2:** The pillars of the social determinant of health conceptual framework:

<i>First element</i>	<i>Second element</i>	<i>Third element</i>
socioeconomic and political context	structural determinants and socioeconomic position, including gender	intermediary determinants such as material circumstances, psychosocial factors, behaviour, biological factors

***Cross cutting elements;*** Social cohesion and social capital.

*Source:* CSDH 2008.

In this study all three pillars are considered; the first element was initially seen as a set situation of the context, the second element as basis for choice and construction of focus groups and interviewees and the third and cross cutting elements as possible outcomes in the analysis. However during the data collection all the three pillars and the cross cutting elements were mentioned on various levels.

#### **4.2 Capability approach**

Close to the SDH approach is Amartya Sen's capability approach, which further is related to social exclusion which can be seen as easily applicable on the slum dwellers' situation. It does not come as a surprise that he is one of the members in the CSDH (CSDH 2008).

Sen's viewpoint of individuals as active agents with the ability to live the life they value has offered an alternative way of thinking where people are not only seen as passive recipients. It applies to SDH but the capability approach puts people more at the centre, where the ultimate end of public policies is to expand human capabilities, the freedoms down at an individual level, while SDH is integrating both the individual capacities and freedoms and the institutional importance to enhance individuals' freedoms (Ruger 2003; 2004).

This point of view defines development as expansion of individual freedom instead of measurement of economic growth at different levels. Further health and economic development is seen to be two-directional and dependant on each other. Health can affect labour productivity and therefore income, while in the other direction income can affect health as it is related to the ability to get food, housing conditions etc. The theory of SDH focuses more on the inequities in SDH such as income and position.

As Sen sees a person's capability to take an active role in their social, political and economic life as ends in itself, the SDH suggest that lack of these capabilities is harmful for a person's health (Ruger 2004).

Out of the capability approach grew the idea of seeing poverty as capability deprivation, where a person does not have the capability to exercise his human freedoms. However poverty is not seen as merely related to income but of poor living meaning impoverished lives which lack the freedoms to influence which leads to social exclusion. The idea is not entirely new, even Adam Smith defined already in 1776 "necessaries in terms of their effects on the freedoms to live non impoverished lives and the ability to appear in public without shame" (Sen 2000:4).

Social exclusion limit the living opportunities both constitutively and instrumentally as being socially excluded might lead to economic impoverishment which in turn will lead to other deprivations such as no access to healthy living environment (*ibid* 2000).

The concept of social justice is seen from the perspective of freedoms by Sen. Compared to SDH, where social justice depends on just institutions, Sen claims that institutions alone cannot ensure social justice but what matters is the outcome in terms of individual freedoms (Sen 2009).

I believe these two theories; the social determinants of health and the capability approach very well complement each other and take into account both the capacities at the individual level as well as the important role of the institutional framework of the society to offer equal rights and possibilities to all, regardless of where you grow, live, work and age. From my point of view these two theories are complex and comprehensive and therefore serve as my theoretical foundation- the reason why I have chosen another model, the health belief model (HBM), as my analytical framework to structure the data collection and the analysis.

### **4.3 Health belief model**

The HBM has generated more research than any other theoretical approach aiming to explain, influence or predict health related behaviour (Winkelman 2009). The origins of the model dates back to the late 1950's with roots in public health but findings from research applying the HBM was first summarised as a conceptual framework in 1974 by Becker (1974) and has been further developed by many contributors. It has been compared and further merged with the concept of self-efficacy from the social cognitive theory by Bandura (1977) as the

spectrum of usage of the model has expanded towards more complex health behaviours and not only simple preventive actions, such as acceptance of immunisation, treatments or health screenings of various kinds which was the application of the HBM initially (Rosenstock *et al.* 1988).

The HBM theorises that for behaviour change to take place the individual must have an incentive to take action, feel threatened by their current behaviour patterns and believe that change would benefit them and result in a valued outcome at acceptable cost, however it is necessary that the person feels competent (self-efficacious) to implement such a change (Bandura 1977; Rosenstock *et al.* 1988; Janz & Becker 1984; Janz *et al.* 2002). The dimensions are: perceived susceptibility and perceived severity which often are combined as perceived threats; perceived benefits, perceived barriers, self-efficacy and cues to action. See appendix 8.3, table 1. The dimensions in the HBM depend on individual perceptions, modifying factors such as socioeconomic level, knowledge and personality which contribute to the likelihood of action. See appendix 8.3, graph 2.

Notably critics against the HBM point out that despite the extensions made, the model does not address other factors such as emotions and interpersonal relations in relation to a person's decision-making for certain behaviour. Contextual factors such as economic and political ones have been found to play important roles in influencing health behaviour in earlier studies (Winkelman 2009).

## **5. ANALYSIS**

This chapter is structured according to the analytical framework – the health belief model. The findings from the data collection have been analysed accordingly and are presented into the sections: perceived threats, perceived benefits, perceived barriers, self-efficacy and cues to action followed by a summary of the differences. Direct quotes are presented with the aim to make the slum dwellers' voices heard. The HBM was used to organise the data collection and the analysis further discussed in relation to the SDH conceptual framework, the capability approach and the literature review. A summary of the main findings from the data collection can be found in appendix 8.6.

### **5.1 Perceived threats**

The dimension of perceived threat is a combination of perceived susceptibility and perceived severity often used as it merge the subjective perception of the risk of contracting a health



condition and the perception of the seriousness of contracting a health condition including both medical and social consequences (Janz & Becker 1984; Janz *et al.* 2002:48-50). The analysis in this study is not directly analysing risks of contracting particular diseases but threats to health in relation to the physical environment in general.

Overall the respondents indicated waste management and the immense problem in the community with lack of dumping sites, how waste is just thrown out on the road, in the trenches or in the rivers, that no one collects the waste resulting in exposure to waste and seen as the main threat to health for both adults and children. The risk is perceived as higher for the young ones mainly in terms of infectious diseases but other health hazards such as asthma was mentioned as well. Waste management was the number one threat to health, particularly for children, mentioned in both Korogocho and Viwandani slum. Earlier studies have highlighted the physical environment as the cause for increased morbidity and even mortality where children under five years are at most risk (Singhal *et al.* 1990; Kapoor *et al.* 2002; Buttenheim 2008; Kyobutungi *et al.* 2008; Black *et al.* 2008).

The waste management centre could benefit the community if the garbage is collected from the households. However at the point of the data collection, the garbage is bought from the local market, not yet from the households, and the activities at the waste management centre are still in the initial phase.

The issues of lack of safe water and lack of toilets were the two issues that followed after exposure to waste as threats to health according to the respondents.

The lack of water is related both to limited accessibility due to the costs and the low quality of the water which often is contaminated. The slum dwellers of Viwandani report long periods of water shortages when they are forced to fetch pond water from the Kware. The Kware is a big hole nearby, which is not safe both in terms of quality both also safety. As it is just a deep hole of rain water several people have drowned while trying to reach the water. The quality of the water is a major health concern and it is said the water often passes through sewers or gets contaminated due to leaking pipes. Consequently there is a concern about the risk of contaminated water both due to pollution or contamination by faecal matter.

Respondents repeatedly explained that they use the “flying toilets”, plastic bags for their needs as they do not have enough toilets or limited or no access to the toilets. The lack of

toilets is also interlinked with the cohesion in the community as this practice sometimes causes conflicts in the community.

Cohesion is not directly defined as a health threat, however societies characterised by insecurity, threats and conflicts will have a negative impact on the health. According to the SDH (CSDH 2008) social cohesion is a cross cutting element affecting both the socioeconomic positions and the intermediary determinants of health which has been expressed by the community members in various ways.

Threats mentioned to sustain interventions that have been implemented, like the sanitation centre and the waste management centre in Korogocho, are water scarcity within the community or in the centres, technical problems during constructions creating blockages in the sewage system and conflicts within the managing community group or in between different community groups. These factors would threaten the sustainability as well as the running of the centres.

The conflicts are often related to the nearly omnipresent poverty in the slums. One threat to sustainability is that these types of interventions involving community members often are based on volunteerism on the slum dwellers' behalf. Even though the interventions will benefit the community members in the end, it puts even more pressure by relying on poor people's time and efforts who at the same time are struggling daily to be able to cover the basic needs in the households.

The housing conditions as well as the population density are other concerns related to health hazards clearly linked to the increased risk of falling sick in communicable diseases (WHO 1999). Social problems such as idleness, alcoholism and insecurity within the slums are also mentioned as threats to health in terms of chronic stress, injuries and mental health likewise to other studies (Sclar *et al.* 2005; Butala *et al.* 2010).

## **5.2 Perceived benefits**

The dimension of perceived benefits is looking into the perception of the benefits of taking action and the perceived effectiveness and impact of various actions, in this case the HPS project. However this study uses the HPS project as an entry point and as an example of an intervention for improved water and sanitation, thus the study is not an impact evaluation of the HPS project as such but employs a general perspective of the physical environment in the slums (Janz & Becker 1984; Janz *et al.* 2002:48-50).

Two topics came out strongly from the respondents as the major benefits of improved water and sanitation – the rate of infectious diseases will go down, especially for children and their own self-esteem and “feel good” will increase which perceived as linked to increased job opportunities.

In Korogocho, first in mind was the decrease of infectious diseases especially for the children while residents in Viwandani put more emphasis on increased self-esteem linked to the increased possibilities to obtain a job if you look clean and are healthy.

The decrease of infectious diseases is related to the improvement of the physical environment, which would benefit the children in the first place as they are more vulnerable to infections due to unsafe water and basic sanitation (Black *et al.* 2008). Access to safe water and basic sanitation is perceived as related to better living condition in general as it would enable a healthier life and less exposure to infectious diseases.

Health is further perceived as related to fewer expenses for health care and more capacity for earning an income, so forth ill health is seen as associated with poverty.

*“If you were also clean you will save some money because you will not become sick when you are clean”*

(woman, high education, Korogocho).

Hereby health is not only seen as an end goal in itself but as an increased capability to sustain yourself and your family and to be an active member in the society thus socially included. Social inclusion is seen as limited for unhealthy people for two reasons; both due to the person’s physical weakness but also due to the expenses for healthcare that effects the individual economy and might lead to (deeper) poverty and social exclusion. The SDH conceptual framework recognizes the inter linkages between illness and an individual’s social position where illness can compromise employment opportunities and reduce the income. On a higher level certain epidemics, for example HIV/AIDS, can affect the functioning of institutions such as social, economic and political (Solar & Irwin 2007). This is much in line with Sen’s capability approach, which do not only see health as an end in itself but related to your capacity to act as an agent to influence your living conditions (Sen 2001).

In the SDH conceptual framework the impact on equity in health and well being is interdependent of your socioeconomic position which in turn has an impact on the

intermediary determinants of health such as material circumstances, work and living conditions (CSDH 2008; Solar & Irwin 2007).

Social inclusion might be perceived achievable only if you are not slum residents, as slum dwellers often are looked down at and considered as among the lowest standing on the social and economical scale in the society. However life in the slums is characterised by lots of social contacts and dependency on neighbours both for security and practical reasons, which stands for another kind of social inclusion. Mostly people tend to move out of the slums if they are able to get a stable job and income, both because of the living standards but also due to the security risks such as being robbed, jealousy, pressure to assist others and social exclusion from the society in the slums.

While women highlight improved living conditions as one of the major benefits, men have the tendency to see job opportunities as a major benefit, both within the slum as the interventions might give job opportunities and outside the slum due to increased self esteem which is perceived as enhancing the chances to be find a job.

Possibly the different focus in the two setting is due to the different set up in the two slums. Korogocho is more of an established slum setting where people stay for long; many are born and brought up there while Viwandani is more unstable as an informal setting due to the ownership of the land, which belongs to Kenya pipeline and Kenya railway, and as Viwandani is situated in the industrial area many people, especially men, come there with the ambition to find job opportunities to support themselves and their families.

The APHRC sanitation centre is an example of an intervention to improve the water and sanitation for the people living nearby and it serves a great number of residents.

*“This time they are happy. Kisumu Ndogo has really much improved. If you watch people coming out of the centre they are happy because they are using shower and they can even flush (the toilet)”*

(IDI, Korogocho).

Cohesion is another benefits indirectly related to improved physical environment as expressed by the community members. One respondent (woman, low education, Viwandani) expressed that:

*“When we have toilets we are going to be in good terms with our neighbour as we will not be throwing flying toilets to one another”*

Accordingly, with improved access to toilets the practice of “flying toilets” would be abandoned resulting in reduced conflicts.

### **5.3 Perceived barriers**

The dimension of perceived barriers looks at the perceived negative aspects and impediments to undertake actions (Janz & Becker 1984; Janz *et al.* 2002:48-50). This study looks at what factors are being perceived as barriers to improvement of the physical environment by the slum dwellers.

Perceived barriers have been indicated to be the most powerful of the HBM dimensions in a review of earlier studies (Janz & Becker 1984), which is the result also in this study. The challenging and dominating barrier for improvement is poverty according to the slum dwellers. One respondent’s striking comment was:

*“Capability comes with money”*

(man, low education, Viwandani).

All groups stated in various ways that they are forced to live in the slum due to poverty and lack of possibilities to change their situation. If they had the possibility they would move out to a better and more serviced area.

*“You know you can be happy if you have money, we have none. Otherwise that is the reason why we are forced to live here. If I had money I could live in a good house where it is not raining, where I am not seeing rats”*

(woman, low education, Korogocho).

Despite the fact that there are a few sanitation centres serving the population, the limited accessibility is mainly perceived as related to poverty. Most respondents reported that they have difficulties to pay the cost of using the bathroom or the toilet, reason why they still are forced to bath inside their one room house at night and use the flying toilets for their needs.

They are willing but often unable to pay for the services and it is a matter of being able to pay for a whole family's need on a daily basis. They calculated that half the cost could be affordable<sup>4</sup>.

Insecurity and threats come next in both the sites as another strong barrier. Due to the insecurity the slum dwellers avoid going out at night and available toilets and sanitation centres cannot operate, as nobody is willing to give the service and people will not come because of fear of being threatened, robbed or even raped. It affects the access to sanitary facilities as well as causing problems during construction. When there is money involved there are insecurity obstacles in terms of the risk of being threatened or robbed and an improved social cohesion could contribute to improve the physical environment, thus a cross cutting element affecting several aspects of the physical environment comparable with the SDH conceptual framework (CSDH 2008).

Apart from the barriers of insecurity, poverty such as inability to pay the user fee for the sanitation centre was often expressed as another barrier. Other barriers for access to the sanitation centre were due to the distance to the centre; however this is mainly put in relation to security issues. The problem of long queues leading to limited access was highlighted as well as there are few sanitation centres serving a high number of community members.

Other major obstacles pointed out by the community members is the access to decision makers and the limited political influence experienced by them. Further Kenya is a country struggling with corruption at any level in the society and the words "kitu kidogo" (meaning "something small" in Kiswahili) is well known by everyone and is according to the findings sometimes the only way to get access to the decision makers in their closest environment. Corruption can be seen as compromising people's rights and freedoms as it is rooted in a system that gives privileges to the ones that have but excludes poor people thus threaten the principles of social justice, equal rights and opportunities for all. The slum dwellers recommended implementing organisation to realise the interventions themselves without the resources passing through any authorities.

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<sup>4</sup> The APHRC sanitation center in Kisumu Ndogo, Korogocho, charge 2 ksh to use the toilet and 5 ksh to use the bathroom/shower. For an average unit of three members (APHRC 2008) using the toilet minimum 3 times a day/person and shower once a day/person the cost is about 990 ksh/family/month (about 12\$).

*“Just the same way Osnat<sup>5</sup> did, if you want a toilet she builds for you a toilet, if you want a school she builds for you a school and no money is going to anyone’s pocket /.../ if it goes to the government we will cry”*

(man, low education, Korogocho).

Threats seemed to be related to access to the decision makers when some focus group respondents gave examples of mobilisation for change within the community. Their demands for better environment have been met by threats both by authorities and landlords such as:

*“/.../you will be told that by tomorrow we don’t want to see you here otherwise your head will be found at the riverside, so we fear security”*

(man, high education, Korogocho)

Several of the respondents gave examples of how landlords force the family out of the house by the use of inhuman methods such as demolishing the door to the house or setting fire on the block of houses as reported in several groups.

Women perceive insecurity and poverty as the major barriers while men indicate poverty and access to decision makers as the major barriers.

Not only is the access to decision makers perceived as a barrier but the unwillingness by authorities to take actions to improve the physical environment is mentioned as a barrier.

*“If they had the mood or the will to assist I think we could not be having what you have found here now. At least we could have gotten certain change health wise”*

(man, low education, Korogocho).

Statements showing a low perception of the political willingness to ensure or initiate improvement of the physical environment came up repeatedly in all discussions and interviews.

Lack of education and awareness are other factors indicated as strong barriers to improvement of the environment. Slum dwellers with low education highlighted lack of knowledge and

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<sup>5</sup> Mrs Osnat was the project coordinator of the APHRC HPS project in Korogocho.

education as a major barrier, while compared to slum dwellers with high education that emphasised lack of political willingness. However both groups see poverty as the main barrier.

Ignorance was a word often mentioned but sometimes in relation to education and awareness, other times in relation to poverty and sense of being incapable of changing or influencing the situation.

#### **5.4 Self-efficacy**

Self-efficacy is defined as the confidence and conviction that one can successfully execute and change behavior to produce a positive health outcome (Janz & Becker 1984; Janz *et al.* 2002:48-50). In this case it relates to the perceived capacity to initiate and take action for improvement of the physical environment.

The main factor for the capacity to initiate and take action for improvement of the physical environment is collaboration, which depends on that people are in agreement, are willing and most of the time even based on volunteerism.

Seeing the general social set up in Kenya where men often are perceived as the bread winner in the family, thus more focused on getting a job the women are often more willing to be involved in group activities and give of their time and efforts as voluntary workers within a community group for improved physical environment. Example of such a group is Mamas' Health Club within the HPS project, a women's group who is having activities such as cleaning up waste, digging trenches, soap making, community awareness campaigns and demonstrations of healthy behaviours such as washing hands. However the poor socioeconomic and material level are constraints for such activities and without either support from outside actors in terms of materials and educations or initial support to start up income generating activities, groups based on voluntarism risk to die after a while.

Though most respondents did say it is themselves as individuals that are responsible for the physical environment, the driving force for change can only be realised if exercised in a group. As a group they perceived the capacity to take action is there for limited actions in the slums such as go together for everybody to contribute something small for materials for cleaning up the trenches. As one respondent expressed it, even though she does not have the financial and material capacity but



*“I have the capacity in my mind”.*

(woman, high education, Viwandani).

However the political influence was perceived as limited or even non-existent, thus major changes in the slums were perceived as impossible to initiate without external support.

Generally the self-efficacy was low and the capacity was interlinked with poverty, financial constraints and the perception of low, if any, political influence and access to authorities and decision makers.

### **5.5 Cues to action**

Cues to action are defined as stimulus, either unconscious or conscious to instigate action (Janz & Becker 1984; Janz *et al.* 2002:48-50), which in this study refers to actions for improvement of the physical environment.

The cues to action are related to the self-efficacy, which is perceived as very limited at the individual level as the only option was perceived to take action within a group to obtain major changes.

External support, either from non-governmental organisations, churches or the government is the strongest indicator for cues to action.

*“You know, before we start doing it we need to have a vision what we are aiming at, because we might want to be clean and we don’t have the a vision who will help us and who will assist us”*

(man, high education, Korogocho)

*“We feel that there should be a change but you know the changes that we expect to come will depend on what others is to bring for us”.*

(woman, low education, Viwandani)

Most FGDs ended with requests for different kinds of support to improve the standard of living either in terms of community interventions supporting the community or support to an individual.

Health messages are one way of promoting change and spread awareness of various health related topics. Various sources of information such as radio, TV, newsletter when accessible, health talks in the community, in church, in clinics, in schools and messages on t-shirts were mentioned but generally oral health messages, preferably face to face was the preferred method in both the slums.

However the health messages, such as given in the HPS project, were not always easy to follow due to financial constraints.

*“This thing of wash your hands after visiting the toilets it has given us a lot of pressure because they know after visiting the toilets I have to wash my hands and maybe you don’t have money to buy water and when you have the child that wants to wash his hands all the time and sometimes he has done maybe the toilet is very far from home and he comes back picks mango along the way back and eats because where he was maybe there was no water, so here in Korogocho cleanliness is very hard”*

(woman, low education, Korogocho).

Increased education and awareness of the health benefits of improved water and sanitation is perceived as a driving force for behaviour change, both at the individual as well as the community level.

The cues to action are linked to the barriers and as poverty is perceived as the major barrier in both sites, activities resulting in some income (income generating activities) is seen as one way of motivating slum dwellers to act. The two quotes below related to the HPS interventions, give an example of this perception:

*“That one (waste management centre) will make us work; it will be earning for us something so this will be the driving force”*

(IDI Korogocho).

*“The women (managing the sanitation centre) to get something by the end of the day so as to motivate them”*

(IDI Korogocho).

## **5.6 Differences**

The findings from the data collection indicate just a few significant differences between the various groups while the similarities were more common regardless of location, gender or educational level. A short summary of the differences follows here.

### ***5.6.1 Location***

Lack of toilets is more of a concern in Korogocho and the issue of water is more a priority in Viwandani.

In Korogocho the first benefit in mind is the decrease of infectious diseases especially for the children while residents in Viwandani put more emphasis on increased self-esteem and enhanced opportunities for job.

### ***5.6.2 Gender***

While women highlight improved living conditions as one of the major benefits, men have the tendency to see job opportunities as a major benefit.

Generally women tend to look at the closest environment when thinking about barriers and indicated the insecurity and poverty they face in the slums while men tend to raise the issue of poverty and political influence as major barriers.

### ***5.6.3 Education level***

Slum dwellers with low education highlight lack of knowledge and education as a major barrier, compared to slum dwellers with high education that emphasise lack of political willingness.

## **6 CONCLUSION**

### **6.1 Summary and answers to research questions**

The purpose of this study is to contribute to the knowledge about how improvement of the physical environment, with focus on water and sanitation, is perceived to benefit health, how it can be obtained and sustained as perceived by the community members themselves and how they themselves can be involved. Further it sought to investigate whether there are variations in regard to location (where interventions have been implemented and where there are no such interventions) and in regard to socioeconomic status.

The study is inspired by the social determinants of health conceptual framework and Sen's theory of capability approach, and aims to raise consciousness and increased awareness among actors outlining interventions and programs targeting slum areas and improvement of the physical environment. By investigating the community members' perspective the aim was to find answers to the following research question:

How do the community members perceive the possible health benefits of improved physical environment interventions?

By investigating the answer to the main research question the following sub-questions were explored:

- a. What are the drivers and obstacles to obtain and sustain improved physical environment interventions, as perceived by the community members?
- b. How and in what way can community members be involved in improvement of the physical environment?
- c. What variations in perception can be observed in relation to location and socioeconomic status?

### ***6.1.1 Perception of possible health benefits***

The community members perceive health benefits of improved physical environment such as decreased rate of infectious diseases within the slums, especially in regard to the youngest children. By having access to safe water and basic sanitation the living conditions in general would improve as it would enable a clean environment at all levels; community, household and individual level, thus reduce the risks of infectious diseases. Further, improved living conditions in general would, as perceived by the community members, not only lead to better health but also lead to higher self esteem which would enhance the chances of finding job opportunities and thus lead to social inclusion. These benefits are two-directional, as increased job opportunities and social inclusion are perceived as also benefitting health as the capability to improve the standards of living is enhanced when obtaining an income as well as the possibilities to be an active agent influencing the decision making in the society.

### ***6.1.2 Drivers and obstacles to obtain and sustain improvement of the physical environment***

The drivers to obtain and sustain improved physical environment interventions, as perceived by the community members, depends mainly on external support by actors outside the slums

such as NGO's, the UN or the government, though the latter received little respect and optimism. Political willingness is the underlying factor for such support to be given.

Collaboration was a key word for any change, where the community members must be willing to be involved and make investments in terms of time or workforce, sometimes even in terms of financial or material resources. A way to increase the willingness for collaboration was to create awareness and education, which are other drivers that can possible lead to a common vision of how improvements should be done, what should be prioritised and on what terms, thus lead to improved physical environment. However material, financial and educational issues were elements seen as constraints, but can be turned around and seen as possibilities to change the physical environment if access and level is being reinforced.

The nearly omnipresent poverty in the slums is the major obstacle to obtain and sustain improvement of the physical environment. A way to get around this issue is to include some kind of income generating activity during the intervention that can attract people to get involved and be self sustained in the longer run and reinforce their own capability to act as agent to take control of their own physical environment. The HPS project is one example of where such activities have been included, though there is need to reinforce and possible expand the ideas on how to sustain the community interventions.

Insecurity is an obstacle to obtain and sustain interventions done, as this can affect the whole design and practical arrangements of interventions. Improved social cohesion could contribute to obtain and sustain interventions aiming to improve the physical environment.

Access to decision makers and the limited political influence are perceived as other obstacles whereas corruption is, according to the findings, sometimes the only way to get access to the decision makers. Corruption is a threat to social justice and is perceived as an obstacle in itself.

### ***6.1.3 How and in what way to be involved***

The community members can, and in my point of view, should be involved in interventions aiming to improve the physical environment in the slums. The involvement is related to the self-efficacy and the perception of their own capability to influence and change their own situation. These factors seem to be compromised mainly due to poverty, the perception of low political influence and lack of social cohesion within the slum.

The community members do see themselves as responsible but have difficulties to give examples of how and in what way they could get involved at an individual level but rather point out their strength as a group. The key words are collaboration and external support to strengthen the capabilities for own actions.

Education is mentioned as a way to become a role model as an individual. As a role model you can demonstrate and pass on the information to your family, your friends and your neighbourhood even though the impact is perceived to be higher if you come together as a group.

The poor socioeconomic and material level is a threat to sustainability of interventions based on volunteerism however with initial support from outside actors to start up income generating activities the ownership of interventions can be given to the slum dwellers instead of being dependent on external actors.

#### ***6.1.4 Variations***

Seeing the different perceived benefits from improved immediate environment it is possible the HPS intervention has had a positive impact in Korogocho with increased awareness about the link between water and sanitation and infectious diseases, especially regarding children. Community members that have experienced improvements of physical environment (e.g. water and sanitation) are more informed and prone to see the benefits in relation to health than community members that have not experienced such improvements.

Women seem to look at the living conditions overall while men are concerned about the job opportunities, however the differences in being able to communicate the perceived health benefits no significant differences could be found between the different groups. Nevertheless women seem more willing than men to be involved in voluntary work to obtain and sustain improvement of the physical environment though the sustainability is threatened due to poverty. Community members with low education level express more frequently the issue of education and awareness compared to community members with high education who tend to focus more on the political influence than knowledge issues.

## **6.2 Back to theory**

When comparing the findings from analysis done by the help of the HBM with the conceptual framework of SDH, the findings are very much what one would expect in relation to the three pillars of the SDH framework.

The socioeconomic and political context, such as poverty, lack of political willingness, awareness and the cross cutting element of social cohesion (CSDH 2008), are found to be the underlying, major determinants and barriers for improvement of the physical environment to take place. The (perceived) very low socioeconomic position in the society, with lack of income, occupation and education leads to challenges both in material circumstances, living and working conditions, which further are contributing factors for constraints for behaviour change and own capacity to both initiate or influence positive change for improved physical environment within the slums.

Social cohesion and social capital are cross cutting determinants and much interlinked with all the three pillars of determinants (CSDH 2008). Poverty and financial instability leading to deplorable living and working conditions is hardly compatible with a harmonious living environment. Challenges such as lack of access to safe water and basic sanitation are further putting pressure on people and can be seen as related to the three pillars of the SDH conceptual framework and to have a negative impact on the capability of taking own action and influencing policies for improved physical environment.

Sen's view of seeing individuals as agents is interlinked with a person's well-being and health, as it enables the person to function as an agent. Inequalities in health are recognised as affecting people's capability to function which further compromises the freedoms (Sen 2001). When such inequalities are constructed systematically as a consequence of socioeconomic position governments have failed in one of its most important responsibilities; to ensure the conditions and opportunities to its' citizens to exercise the freedoms to live a life they have reason to value. The casual link between health and agency is two-directional. Health enables agency however increased opportunities for agency and freedom results in better health.

This mutuality recognised by both the SDH framework and Sen's capability approach has consequences for policymaking and should be given priority when decisions are made.

### **6.3 Future research**

Areas for further research could compliment this study's demarcations. For example to investigate the "grey area" of what is actually taking place within the slums at various levels for improvement of physical environment, from national to local level, as there are many initiatives but seemingly many obstacles. An impact evaluation of the HPS project targeting the second phase of the project, the community interventions, would complete the HPS project. Further comprehensive research on how slum upgrading programmes are being implemented; how the slum dwellers are involved, the relation between slum upgrading initiatives and SDH, outcome and lessons learned of slum upgrading programmes in various parts of the world could be helpful for implementers. Research based on the slum dwellers' own perspective of their living situation, experiences of various and numerous challenges and own ideas for improvement could also be of highest value for implementers.

### **6.4 Implications**

The main contribution of this study stems from the fact that it explicitly investigates the slum dwellers' own perspective of the relation between improvement of the physical environment and the impact on health. Although attention was mainly given to the deplorable situation of access to safe water and basic sanitation, the outcome clearly shows the inter linkages with SDH and people's perception of what they are capable of at an individual as well as at a community level. Poverty and political influence have been showed to be the major barriers for improvement of the physical environment, which are highly dependent on the institutional framework of which the population in the slums grow, live, work and age under, further linked to the capability of exercising the freedoms according to Sen's theory.

The HPS project as an example of intervention with components of direct support in the slums, education and awareness in the community as well as contributing to policy change. Even though the needs in the slums are much greater than covered by this project and the efforts need to be stepped up several levels to meet the overall basic needs of water and sanitation within both Korogocho and Viwandani it is an example of a project that has both direct impact in the slum but also a higher vision with the aim to change the political agenda and the political willingness for change. It also serves as an example of greater participation of the people that will be directly affected when implementing projects that effects their own physical environment.



This study has shown that the slum dwellers should not be seen as and should neither act as, totally capability deprived but deprived of their freedoms. Projects and programmes, whether initiated by the government, NGOs or the UN, aiming to improve the physical environment in the slums should not hesitate to involve the slum dwellers in the planning and implementation but rather build on the many existing ideas, initiatives and support long term support coming from inside.

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## 8 APPENDIX

### 8.1 The indicators and thresholds for defining slums

Characteristics	Indicator	Definition
Access to water	Inadequate drinking water supply (adjusted MDG Indicator 30)	A settlement has an inadequate drinking water supply if less than 50% of households have an improved water supply: Household connection Access to public stand pipe Rainwater collection such as well or spring with at least 20 litres/person/day available within an acceptable collection distance.
Access to sanitation	Inadequate sanitation (MDG Indicator 31)	A settlement has inadequate sanitation if less than 50% of households have improved sanitation: Public sewer Septic tank Pour-flash latrine Ventilated improved pit latrine The excreta disposal system is considered adequate if it private or shared by a maximum of two households.
Structural quality of housing	a. Location	Proportion of households residing on or near a hazardous site. The following locations should be considered: Housing in geologically hazardous zones such as landslide, earthquake, flood areas

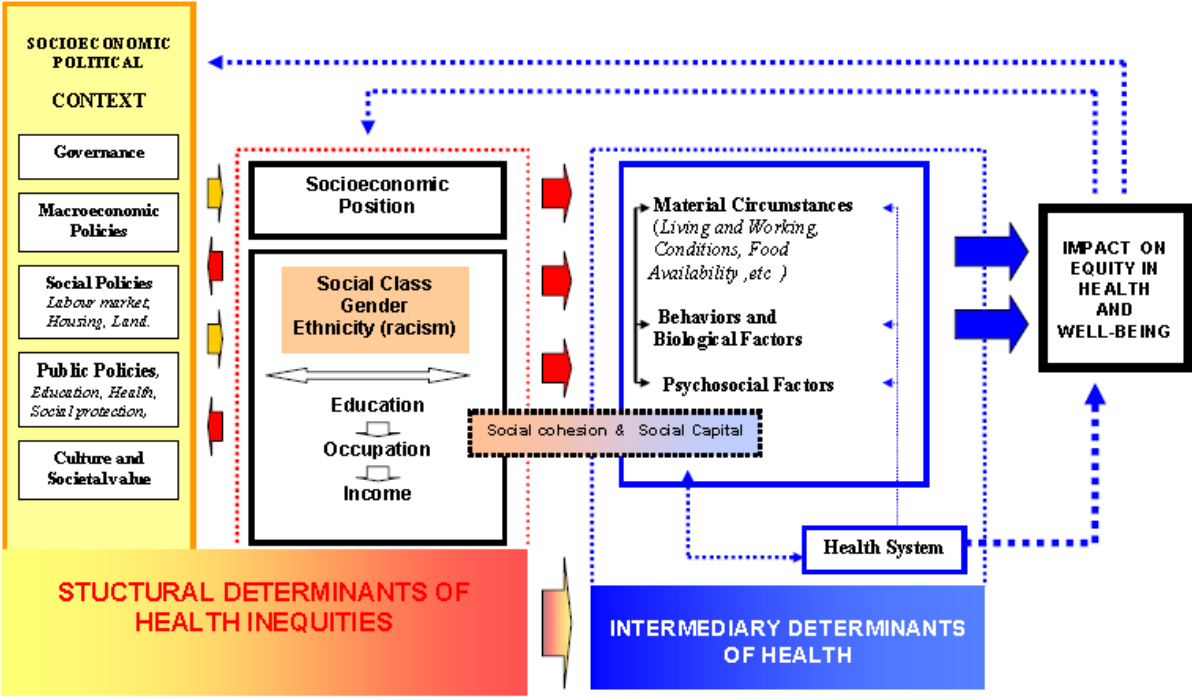


		<p>Housing on or under garbage mountains</p> <p>Housing around high-industrial pollution areas</p> <p>Housing around other unprotected high-risk zones (eg railroads, airports, energy transmission lines)</p>
	b. Permanency of structure	<p>Proportion of households living in temporary and/or dilapidated structures. The following factors should be considered when placing a housing unit in these categories:</p> <p>Quality of construction (eg material used for wall, floor, roof)</p> <p>Compliance with local building codes, standards and bylaws.</p>
Overcrowding	Overcrowding	<p>Proportion of households with more than two persons per room. The alternative is to set a minimum standard for floor area/ person (eg 5 square metres)</p>
Security of tenure	Security of tenure (MDG Indicator 32)	<p>Proportion of households with formal title deeds to both land and residence.</p> <p>Proportion of household with formal title deeds to either one of land or residence.</p> <p>Proportion of households with enforceable agreements or any document as proof of a tenure arrangement.</p>

Source: UN-HABITAT 2003:12.

### 8.2 CSDH conceptual framework

Graph 1: Social determinant of Health framework



Source: Solar & Irwin, 2007:48

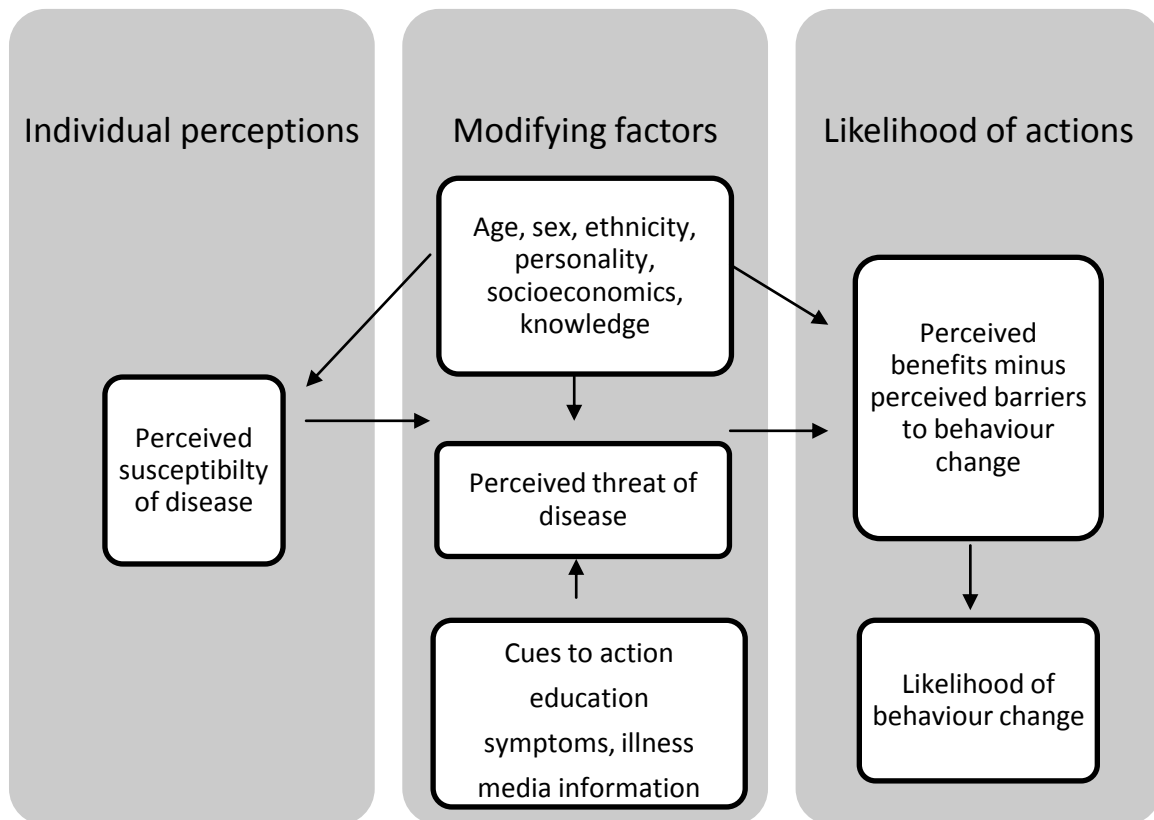
### 8.3 The Health Belief Model

**Table 1:** The dimensions of the HBM

Perceived susceptibility	One's subjective perception of risk of contracting a health condition
Perceived severity	Perception concerning the seriousness of contracting a health condition which includes both medical/clinical consequences and social consequences.
Perceived threats	A dimension often used as a <b>combination of perceived susceptibility and perceived severity</b> , also used for the analysis in this study as it is not directly analysing risks of contracting particular diseases but rather threats to health in the immediate environment in general .
Perceived benefits	Perceived benefits of taking action, the perceived effectiveness of various available actions.
Perceived barriers	Perceived negative aspects of an action and impediments to undertaking recommended actions.
Self-efficacy	one's confidence and the conviction that one can successfully execute the behaviour required to produce the outcome
Cues to action	Stimulus, either unconscious or conscious, to instigate action.

(Janz & Becker 1984; Janz *et al.* 2002:48-50).

**Graph 2:** The Health Belief Model



Source: Glanz et al. 2002:52

## 8.4 Guide for in depth individual interviews

Briefing:

Thank you for your willingness to participate in this interview. My name is Sara and I'm a student from Sweden. This study is being carried out for my Master Thesis at Lund's University. The purpose is to learn from you and especially about how you as an active community member/village elder perceive the link between environment and health. Some questions might seem a bit odd to you, but please answer them as honest as you can, so I can understand your point of view.

The discussion will be recorded, but the material will be anonymous and confidential. I'll also take a few field notes. No name will be mentioned in the study.

The interview will take about 45-60min. Please speak freely. Remember that your opinions and way of thinking are valuable!

Personal information: sex, age, village, occupation, highest level of education, perceived level of income, no of children, engagement in a CBO/role in the community

Why have you chosen to take an active part in the Youth group/Mamas Health Club/organisation/as village elder?

How would you describe the living environment in Korogocho/Viwandani slum?

Are you satisfied with your living place/environment? If no, why not? If yes, why?

If you generalise and answer as a spokesperson for the community, how would you think the community members would answer the above question?

Do you personally feel you happy with the quality of life and wellbeing? If no, why not? If yes, why?

If you generalise and answer as a spokesperson for the community, how would you think the community members would answer the above question?

What should be done to improve the immediate environment in Korogocho/Viwandani according to you? Who should take the lead to improve it? Who is responsible according to you?

What could drive respectively hinder the improvement of the physical environment (water and sanitation) to be done?

What could drive respectively hinder the improvement of the physical environment to remain?

How would you perceived improvement of the immediate environment and its' possible impact on people's health within the community?

As you are familiar with the APHRC interventions (sanitation centre, waste management centre and health education) what do you think is well done, what could be done better, recommendations, further needs and possible health impact in the community?

What could drive respectively hinder these improvements of water and sanitation to sustain?

Do you have any further questions or comments?

Asanteni sana!

## **8.5 Guide for focus group discussions**

Briefing:

Thank you for your willingness to participate in this focus group discussion. My name is Sara and I'm a student from Sweden. This study is being carried out for my Master Thesis at Lund's University. The purpose is to learn from you and especially about how you as community members perceive the link between environment and health. Some questions might seem a bit odd to you, but please answer them as honest as you can, so I can understand your point of view.

The discussion will be recorded, but the material will be anonymous and confidential. No name will be mentioned in the study. The session will take between 1,5-2 hours. Please speak freely, debate, agree and disagree. Remember that your opinions and way of thinking are valuable!

X is here to translate for us in case there is a need and by the end of the session refreshments will be served.

Field notes

Consent and confidentiality note to be explained and signed

Compensation to be given and signed on the list.

Let us present ourselves as introduction

How would you describe with a few key words the living environment in Korogocho/Viwandani slum?

As residents of Korogocho/Viwandani, are you satisfied with your living place/environment?  
If no, why not? If yes, why?

Do you personally feel you happy with the quality of life and wellbeing? If no, why not? If yes, why?

Tell me about the situation you face when you are:

managing your personal hygiene access (water supply, bathroom/latrine/toilet access at home, shared by how many, brush teeth, hand washing..)

using the sanitation centre or other sanitary facility

managing your waste (individual and household level)

How do you feel about the management of waste in the community (security issues, financial issues)?

Do you see many people suffering from bad health? If so, what do you think could be the reasons?

Do you experience that your child/children often have health problems? If so, what do you think could be the reasons?

What is the importance to stay clean, washing of clothes, clean your home, clean outside your home/closest environment (“to appear in public without shame” concept by Sen) according to you? How would you feel if not able to stay clean? Would it affect your social life?

What are the sources of information of health messages, preferred source for information, what kind of information seems most important, why, how often do you get them, and do you follow them? If not, why?

How would you describe how improvement of water and sanitation could benefit your health?

What can you, as a community member in Korogocho/Viwandani, do to improve the environment in the slum?

Have you experienced or can you imagine a situation where you would take action (cues to action), when you would feel “enough is enough”, something needs to be done?

Who is responsible for the immediate environment in Korogocho/Viwandani according to you? Do you feel you have the capability/power to influence the living place/environment? If yes, how? If no, why not?

What recommendations would you give if a water and sanitation project was to be implemented here?



***Korogocho only***

Have you heard about the sanitation centre? Do you feel you have access to it? Have you used or do you plan to use the sanitation centre? Why? Why not? What are the advantages or disadvantages?

Have you heard about the waste management centre? Do you feel you have access to it? Have you given waste already or would you give waste to the waste management centre? Why? Why not? What are the advantages or disadvantages?

Are you familiar with the APHRC interventions (sanitation centre, waste management centre and health education)? If yes, what do you think is well done, what could be done better, recommendations, further needs and possible health impact for you and your family?

Do you have any further questions or comments?

Asanteni sana!

## 8.6 Summary of data collection

	<b>Total</b>	<b>Korogocho</b>	<b>Viwandani</b>	<b>Women</b>	<b>Men</b>	<b>High education</b>	<b>Low education</b>
<b>Threats</b>	Waste	Waste	Waste	Waste	Waste	Waste	Waste
	Water	Toilets	Water	Water	Toilets	Water	Water
	Toilets	Water	Toilets	Bathroom	Water	Toilets	Toilets
<b>Benefits</b>	Less inf diseases	Less inf diseases	Self esteem	Self esteem	Self esteem	Self esteem	Self esteem
	Self esteem	Self esteem	Less inf diseases	Less inf diseases	Less inf diseases	Less inf diseases	Less inf diseases
	Improved living conditions	Improved living conditions	Social inclusion	Improved living conditions	Job opportunity	Social inclusion	Job opportunity
<b>Barriers</b>	Poverty	Knowledge	Poverty	Poverty	Poverty	Poverty	Poverty
	Insecurity	Insecurity	Insecurity	Insecurity	Access to decision makers	Insecurity	Access to decision makers
	Political unwillingness	Access to decision makers	Land issue	Social exclusion	Knowledge	Political unwillingness	Knowledge
<b>Cues to action</b>	Support	Support	Health messages	Health messages	Health messages	Support	Support
	Health messages	Health messages	Support	Support	Support	Health messages	Health messages
<b>Self efficacy</b>	Collaboration	Collaboration	Collaboration	Collaboration	Collaboration	Collaboration	Collaboration
	Willingness				Cohesion	Political influences	Role model



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