Owning Our Urban Future: Enabling Healthy Cities in Eastern Africa

Sciences for Prosperity

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A Collaborative Consensus Study Report by the National Science Academies of Ethiopia, Kenya, Tanzania, Uganda, the Young Academies of Ethiopia and Uganda, and the African Centre for Global Health and Social Transformation

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Cities, like dreams, are made of desires
and fears, even if the thread of their
discourse is secret, their rules are absurd,
their perspectives deceitful, and everything
conceals something else.

-Italo Calvino in *Invisible Cities*, 1972

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List of Acronyms

100RC	100 Resilient Cities
AAMSP	Addis Ababa Mortality Surveillance Program
ACHEST	African Centre for Health and Social Transformation
APHRC	Africa Population Health Research Center
ARI	Acute Respiratory Infection
AU	African Union
BRT	Bus Rapid Transit
CDP	Consensus Development Panel
CDs	Communicable Diseases
CEDOVIP	Centre for Domestic Violence Prevention
CoCT DMS	City of Cape Town Development Management Scheme
CSO	Civil Society Organization
EAC	East African Community
EANCDAI	East Africa Non-Communicable Disease Alliance Initiative
EAS	Ethiopian Academy of Sciences
EtYAS	Ethiopian Young Academy of Sciences
HCM	Healthy Cities Movement
HiAP	Health in All Policies
IAP	Indoor Air Pollution
IAP-R	InterAcademy Partnership-Research
IDP	Internally Displaced Person
IPV	Intimate Partner Violence
KENSUP	Kenya Slum Upgrading Programme
KNAS	Kenya National Academy of Sciences
NBS	National Bureau of Statistics
NCDs	Non-Communicable Diseases
NCWSC	Nairobi City Water and Sewerage Company
NDP	National Development Plan
NIH	National Institutes of Health
NUA	New Urban Agenda

NYS	National Youth Service
RAP	Nairobi Railway Relocation Action Plan
RTI	Road Traffic Incident
SACCO	Savings and Credit Cooperative
SASA!	Start, Awareness, Support, Action!
SDGs	Sustainable Development Goals
SoT	Statement of Task
STISA 2024	Science, Technology, and Innovation Strategy for Africa 2024
TAAS	Tanzania Academy of Sciences
TFR	Total Fertility Rate
UDDT	Urine Diversion Dry Toilet
UN	United Nations
UN-Habitat	United Nations Human Settlements Programme
UNAS	Uganda National Academy of Sciences
UNDESA	UN Department of Economic and Social Affairs
UNFPA	United Nations Population Fund
UPA	Urban and Peri-Urban Agriculture
WHO	World Health Organization

Foreword

Urban health refers to the wellbeing and health of people who live in urban areas. If we take this straightforward definition, then urban health will clearly be of growing concern to decisionmakers across Africa in the decades to come. Our continent is urbanizing—whether that will help or harm us in the long-term remains a topic for debate, but the facts are undeniable.

This important and timely report, however, goes far beyond the simple above definition of urban health. By digging into the environmental, social, economic, cultural, and spiritual determinants of health in urban areas, this report points to the causal linkages between what we build or legislate today, and the health of populations tomorrow. The rapid growth of cities in the eastern African region presents policymakers with a ticking time bomb situation—the impact of decisions taken today will not be fully seen for years to come. But if they are not taken thoughtfully now, then the outcomes can be catastrophic tomorrow.

Urban health, ultimately, is about trade-offs. Cities present immense opportunities for prosperity and for better service delivery. But they also present immense challenges for better health, as today's cities and also those of tomorrow face the triple threat of infectious diseases, non-communicable diseases, and violence and injuries. As this report so accurately articulates, the fundamental challenges to improving the health outcomes of growing urban populations comes down to governance. How can we effectively coordinate road construction, for instance, while considering the economic needs of businesses, the safety of communities, and the future mental health of unborn citizens? I am confident that the recommendations presented in this report lay down a coherent roadmap to move us in that direction.

Science Academies are ideally positioned to undertake this crucial and forward-looking work for the region. As institutions representing the most respected and accomplished scientists and scholars from their respective countries, the Academies can grapple with many of the questions that policymakers will not face for years to come. Additionally, as neutral and independent institutions the Academies can stand above the political fray and issue advice that is based simply on the available body of evidence before them. The Academies, then,

represent the considered views of our elders—and decisionmakers would be wise to heed their advice.

Finally, I would like to commend the eastern African Science Academies and their partners for demonstrating exactly the type of cross-border and cross-disciplinary collaboration that will be necessary for our nations to tackle the major urban health challenges before us. Such collaboration is neither simple nor straightforward. But it is essential if we are to truly Own Our Urban Future.

Sincerely,

Prof. Blaise Nguendo Yongsi
Incoming President of the International Society for Urban Health

1

Introduction

Human beings are in the midst of profound changes to their ecology. More than 50% of the global population now live in urban areas, and this demographic shift is reshaping the way that humans—along with the flora and fauna we interact with—live and die. Across eastern Africa, for instance, cities are now the major centres of livlihood opportunities (The Lancet, 2015). Beyond livlihood opportunities, cities also have important impacts on our social structures and health. Cities are not only where we seek material well-being but are increasingly the sites where we ask our most vital questions about social connection, cultural life, and subjective experiences of meaning.

The aim of this report is to examine the ways in which this demographic, infrastructural, and cultural shift is likely to interact with the health of populations in eastern Africa,[1] and what might be done to improve outcomes. In other words, to analyse the changing urban health dynamics of eastern Africa. The study of urban health, an emergent academic field over the past two decades, looks to the complex interconnections between the built environment, social dynamics, and the health of individuals (Galea & Vlahov, 2005). As these aspects become increasingly interconnected in dense cities, urban health is in large respect a study of this complexity itself (Bai, Nath, Capon, Hasan, & Jaron, 2012). The study of urban health thus moves beyond simply documenting the health of populations in urban areas to a study of the inter-relations between material, social, mental, and spiritual factors that determine the health of individuals.

Originally emerging from the field of public health in the United States and Western Europe to examine the effects of the built environment on lifestyle and long-term health outcomes, the specific lens of urban health has

1 For the purposes of this study report, "eastern Africa" refers to the countries of the participating academies: Ethiopia, Kenya, Tanzania, and Uganda—although corroborating evidence from other African countries will be considered.

gradually been applied to developing countries (Jackson, 2003; Malizia, 2006; The Lancet, 2015). Changes in lifestyle and diet, along with reduced physical activity in urban areas, contribute to growing rates of non-communicable diseases (NCDs) such as obesity, diabetes, and cardiovascular disease (Haregu, Oti, Egondi, & Kyobutungi, 2015). Exposure to elevated levels of pollution and toxic materials in informal settlements also contribute to chronic health conditions and early death (Nandasena, 2013). Simultaneously, inadequate water and sanitation services in dense, fragile urban settlements facilitate the spread of infectious diseases (Mberu, Wamukoya, Oti, & Kyobutungi, 2015). As urbanization promotes both of these patterns, many rapidly urbanizing countries, such as those in eastern Africa, experience what is referred to by researchers as the "double burden" of disease—both infectious and chronic conditions affecting populations simultaneously (Agyei-Mensah & Aikins, 2010; Kushitor & Boatemaa, 2014; Siddharthan et al., 2015). The study of urban health thus now includes the complex impact of interactions between the physical and social environments on both the short- and long-term health of populations in urban areas.

The impact of urbanization on health is, of course, not all negative. Globally, research shows that average health status is better among urban than rural populations (The Lancet, 2015). Positive aspects of urban living such as education, higher incomes, and relatively easier access to healthcare all contribute to this pattern (Bai et al., 2012). However, sedentary living, unhealthy diets, sub-standard housing, overcrowded living conditions, contaminated food, unclean water, inadequate sanitation, poor solid and liquid waste disposal, air pollution, and traffic congestion are also aspects of urban living. As many of these conditions tend to afflict poorer populations to a greater degree, urban areas are also home to the highest levels of health status inequality (The Lancet, 2015). Further research has since shown that economic inequality itself is highly correlated with negative health outcomes for both the rich and the poor (Rowlingson, 2011). Some recent rigorous studies even provide evidence of a causal relationship between income inequality and health problems (Kondo et al., 2009).

A key finding from the field of urban health is that policymakers and other stakeholders have an opportunity to change this situation (Bai et al., 2012). If physical and social environments have such profound effects on our health, and if those environments are amenable to intervention, then we can improve the health and well-being of those living in urban areas. Currently in eastern Africa, however, rapid urbanization is leading to overwhelmed systems of all kinds. Despite the best efforts of governments, such rapid spatial and population growth undermines the ability of cities to invest proactively in public health.

Part of the problem is that eastern African cities were never designed for so many residents (UNAS, 2017). In Uganda, Kenya, and Tanzania, for example, cities existed primarily as centres of colonial administration and residence for Europeans. In Ethiopia, Addis Ababa was established as an imperial palace and residences for the elite.[2] The lives of most eastern Africans were oriented primarily toward rural areas, with wealth and prestige understood in the form of land, agricultural produce, and cattle. With the dawn of self-government, however, eastern Africa began to see unprecedented rural-to-urban migration. Accelerated population growth, improved transportation infrastructure and services, more educated populations opting for waged work over agricultural work, and, more generally, the deepening penetration of a monetized economy, all contributed to this migration (Burton, 2017; Frank, Jr., 1968; Gugler, 1969; O'Connor, 2007; Sabot, 1979). As urban populations have swelled over the past 60 years, the systems in place to safeguard the health of populations have become overwhelmed. As eastern Africa continues to rapidly urbanize, population growth trajectories are overtaking city planning efforts. As a consequence, health in urban areas exists in a constant state of crisis management with little room left for preventative service initiatives (Hove, Ngwerume, & Muchemwa, 2013).

Evidence suggests that when analysing urban health challenges, it may be helpful to switch from a mindset that focuses on the vulnerability of residents, to one that emphasizes their resilience. Most papers on urban health describe the serious challenges that urban dwellers face in regard to their health (Zulu et al., 2011). This emphasis is an extension of industrialized urban medicine that aims to treat the weakness and sickness of the body, instead of encouraging positive physical, psychological, socio-cultural, behavioural, environmental, and spiritual beliefs and practices that lead to better long-term health and wellbeing. Namely, it focuses on prescribing solutions for residents to increase their health and decrease their vulnerability. But as Chelleri et al. (2015) describe, "urban resilience is far from being merely the flipside of vulnerability, and should... [be addressed]... in the context of broader sustainable development, where adaptation and transformation of complex systems play an important role (Chelleri, Waters, Olazabal, & Minucci, 2015)." Urban populations in eastern Africa already deploy strategies to ensure their own health and survival with a remarkable degree of success considering the immense challenges of city life. What can be strengthened—rather than delivered—for urban populations to protect and promote their health? What

2 Although Ethiopia never experienced colonization, its capital city Addis Ababa was nevertheless designed and constructed as an administrative and political capital for elites. Like other countries in eastern Africa, the majority of the Ethiopian population continued to experience rural-centric lives and values. As such, Addis Ababa and other urban centres in Ethiopia today experience many similar challenges to the rest of the region.

factors aid their resilience and adaptive capacity, rather than decrease their vulnerability? How can urban space itself be "treated," in addition to the treatment of individuals, to support improved long-term health outcomes? These are some of the questions that the study of urban health seeks to address.

The science academies of eastern Africa are well positioned to tackle this issue because of their ability to act as an unbiased and politically neutral convener of interested parties. By synthesizing the viewpoints of academics and practitioners, the science academies are able to present a holistic discussion of the issues influencing urban health in the region and lay forth a series of conclusions and recommendations for consideration by policymakers. As so many factors influencing health outcomes in urban areas fall beyond the remit of the health system, it is important to convene a diverse array of perspectives towards addressing the issue.

Following this introduction to the issue, the report lays forth the Consensus Study Methodology taken by the Expert Committee to respond to its Statement of Task (SoT). Using a Consensus Development Panel (CDP) approach, the Expert Committee addressed its SoT by synthesizing the multidisciplinary viewpoints of committee members and practitioners that presented to the committee. This approach is best adapted to respond to issues for which there is not already an overwhelming consensus of empirical evidence, such as the issue of urban health in eastern Africa. Following a discussion of the methodology, the report defines what precisely is meant by "healthy eastern African cities." By examining the evolution of the concepts of urbanization and health separately, the Expert Committee synthesized them into a definition that encompasses the primary challenges facing the region. The report next positions its findings within the existing landscape of regional and global policy agendas. The conclusions and recommendations issued in this report largely align with existing policy agendas and achieving them is more a matter of emphasis than one of defining new overarching policy agendas.

The remainder of the report is divided into three main sections. The Health Landscape in Urban Eastern Africa seeks to summarize the existing evidence on health in the region, with sub-sections on Communicable Diseases, Non-Communicable Diseases, Mental Health in Urban Settlements, Alcohol and Substance Use, Violence and Safety, Urban Health Services, and Spiritual Health in the City. The Urban Determinants of Health section draws some causal linkages between the evidence presented in the preceding sections and the Urban Mobility systems, Urban Planning and Housing systems, Water and Sanitation systems, and Food Systems and Nutrition present in urban eastern Africa. These linkages extend the discussion beyond the conventional field of health and demonstrate the complex interconnections between health

outcomes and other spheres of urban policymaking. Finally, the section on the Governance of Complex Systems ties the preceding two sections together with a brief discussion on the challenges of managing all of the necessary actors to achieve desired urban health outcomes and discusses some relevant frameworks and success stories.

For ease of analysis this study separates the relevant themes into sections and sub-sections throughout the report. A core conclusion of the report, however, is that the built environment, socio-economic factors, and subjective experience of individuals are all interconnected in a complex manner and cannot be addressed individually. Thus, while many of the recommendations are grounded in one of the themes discussed, they often encourage interconnection with the other themes.

Importantly, this report does not seek to comprehensively summarize all of the available evidence on health outcomes in the Kenya, Tanzania, Uganda, and Ethiopia. Rather, in a spirit of trans-sectoral and international learning, it seeks to summarize the most relevant data points from a practical policy perspective. In this way, the report seeks to provide useful insights for policymakers and leaders in eastern Africa about the urban systems in their countries and potential interventions. Although many similarities exist among the settlements of eastern Africa, there are also important differences. This report therefore offers a starting point for those East African leaders seeking to take a Health in All Policies (HiAP) approach towards urban space. More granular research in each country will be required for successful implementation.

Finally, urban development is by its nature a political process. As demonstrated in cities around the world, the environmental and social changes precipitated by urbanizations have important distributional implications many years into the future. The urban investments we make today will shape the health and wellbeing of our children and grandchildren. This report has therefore been produced with future East African citizens in mind.

2

Consensus Study Process

Consensus methodologies have emerged in recent years as a powerful tool to establish expert agreement on questions of practice (Bowling, 1997; Jones & Hunter, 1995; Murphy et al., 1998). Consensus methodologies respect expert opinion as a product of diverse experience and provide a formal structure for reflection on that experience and the identification of areas of agreement or disagreement between individuals (Ager et al., 2007). This particular study followed a Consensus Development Panel (CDP) methodology that brings together experts to produce multidisciplinary responses to a specific Statement of Task (SoT). The most well-developed CDP methodology has been deployed by the National Institutes of Health (NIH) in the United States, and this study takes its inspiration directly from that methodology (Waggoner, Carline, & Durning, 2016). CDPs are most useful for developing policies and strategic plans to forward-looking problems for which there may not yet be a conclusive volume of empirical evidence (Ager et al., 2007). CDPs bring together multidisciplinary committees to address a specific statement of task in a way that is accessible to both professionals and non-professionals alike (Waggoner et al., 2016).

Some advantages of the CDP methodology include its interdisciplinarity, accessibility, evidence-based nature, and ownership by experts. Inviting researchers and practitioners from a wide variety of relevant fields to participate helps ensure the inclusion of a broad range of perspectives (Waggoner et al., 2016). By targeting non-specialist policymakers with its recommendations, the CDP methodology further ensures that the language of the study remains easily understandable to a lay audience (Halcomb, Davidson, & Hardaker, 2008). The CDP approach also encourages more evidence-based opinions than other consensus study methodologies through its reliance on a published

literature review as a grounding document for the in-person committee dialogue (Waggoner et al., 2016). Finally, the CDP methodology is likely to encourage ownership of the study process by participating experts as the material impacts them directly (Waggoner et al., 2016). Thus, participating experts are more likely to take the study process seriously, which Halcomb et al. (2008) suggest adds to the validity of the CDP methodology. In sum, the CDP methodology allows for a synthesis of the best available evidence in the field to provide policy recommendations on topics where conclusive empirical evidence may not exist.

Research into the drawbacks of the CDP approach is limited, although some possibilities remain. One, for instance, is that consensus results become biased through a particularly vocal member of the Expert Committee (Waggoner et al., 2016). Additionally, committees may experience a "bandwagon" effect whereby participants unconsciously alter their opinions to conform with the majority (Waggoner et al., 2016). The face-to-face nature of the Expert Committee convening may exacerbate these risks if some committee members feel reluctant to share unpopular or divergent opinions. Other consensus study methodologies, such as the Delphi Technique, avoid these risks by asking committee members to submit their opinions through an anonymized questionnaire. While anonymous questionnaires limit the possibility of bias and bandwagon effects, they also produce a decided lack of collaboration. As participants consider and respond to questionnaires in isolation, there are fewer possibilities for a synergy of the available evidence and for truly multidisciplinary work (Waggoner et al., 2016). Given the highly multidisciplinary nature of urban health, the in-person CDP process was chosen by the study directors instead of the Delphi Technique.

Instead of anonymous surveys, UNA mitigated the risks of bias and bandwagon effects through an extensive period of remote contribution from Committee Members. During this process, Committee Members were explicitly encouraged to provide individual feedback on the specific conclusions and recommendations developed during the in-person meeting. Additionally, the peer-review process helps ensure that the study report remains balanced and unbiased through consultation with independent international experts on the topic.

To initiate the study process, partner organizations, including the Uganda National Academy of Sciences (UNAS), the Kenya National Academy of Sciences (KNAS), the Ethiopian Academy of Sciences (EAS), The Tanzania Academy of Sciences (TAAS), the Ethiopia Young Academy of Sciences (EtYAS), and the African Centre for Global Health and Social Transformation (ACHEST), were all invited to submit between three and five nominations to the expert committee. From these nominations the Secretariat of UNAS, in

consultation with the Study Chairs, produced a committee slate of 14 experts balanced as much as possible along lines of gender, nationality, and discipline.

The final committee slate includes nine self-identified men and five self-identified women. Five of the experts are from Uganda, four from Kenya, two from Ethiopia, two from Tanzania, and one from Nigeria. Disciplines represented on the committee, as self-identified by members, include the following: medicine, paediatrics and child health, communicable diseases, respiratory infections and health systems, maternal and slum population health, public health, microbiology and water systems, health policy, human settlements and regional planning, architecture and design, macroeconomics, education systems, gender and cultural studies, and African philosophy and ethics.

The study Secretariat at UNAS subsequently developed a SoT for the Expert Committee in consultation with the Study Chairs and the InterAcademy Partnership-Research (IAP-R), the study's primary funding partner. For this consensus study the SoT was the following:

> *Identify the underlying social, political, and economic factors impacting health in East African cities. Define healthy cities in the context of a rapidly urbanizing East African region. Examine and comment on lessons related to urban health that can be extracted from both within and outside the region, including success stories, challenges, and theoretical frameworks. Analyse the key policy levers—at national, regional, and global levels—necessary to achieve healthy East African cities. Craft specific and actionable recommendations for strategic urban health stakeholders.*

Based on this SoT, the UNAS Secretariat next commissioned a literature review of the key existing evidence that would assist the Expert Committee in fulfilling its task. The literature review touched on a broad range of issues and highlighted the most current empirically-supported findings in the field of urban health.

Next, the Expert Committee met for a week-long conference in September 2017 in Kampala, Uganda, to discuss the current state of evidence in the field of urban health in eastern Africa, and to develop preliminary conclusions and recommendations based on the available evidence. Through a series of group discussions and break-out sessions, the Expert Committee generated a series of conclusions that summarized key findings from the available evidence, and recommendations that targeted specific stakeholders with an ability to influence the state of urban health in eastern Africa. Following CDP best

practice (Halcomb et al., 2008), the Expert Committee endeavoured to ensure that conclusions and recommendations remained accessible and useful to both laypeople and professionals.

Following the CDP meeting, the UNAS Secretariat coordinated a six-month period of study draft development and remote feedback with the Expert Committee members. Once a near-final draft of the report was complete, it was distributed to a panel of seven international experts for review. In an attached guidance note, reviewers were asked to respond to the following six questions:

1. Does the study report respond sufficiently to the Statement of Task?
2. Does the study report remain within the scope of the Statement of Task?
3. Are there any crucial areas of evidence missing in the report?
4. Does the report appear balanced and apolitical?
5. Do the conclusions reached by the committee follow logically from the evidence presented?
6. Do the recommendations reached by the committee follow logically from the conclusions?

Once each reviewer comment was addressed in the draft report, it was extended for final sign-off from the study Expert Committee. Consensus on the conclusions and recommendations of the report was reached when no member of the Expert Committee declined in writing their support of the study report. In the event that a committee member could not affirm their support of the final study report, they were given the option to abstain (which would be noted in the final report). Following formal committee sign-off, the report draft was submitted for editing, design, and finally dissemination by all of the participating study partners.

3

What Is A Healthy Eastern African City?

Highlights and Main Points

- Urban health is largely defined by its complex multidimensionality. It is difficult and often counter-productive to address the factors influencing health in urban areas in isolation.

- The unique dynamics of urbanization in the eastern Africa region mean that conventional urban-rural distinctions are often not useful tools of analysis.

- Sweeping policies and programs that focus only on physical health are increasingly under criticism. Despite this widening of the definition of health, spiritual components are frequently neglected.

- A healthy eastern African city, based on the discussion in this report, is one that meaningfully invests in long-term health-promoting infrastructure, takes steps to ameliorate the socio-economic determinants of ill health, and facilitates the flourishing of subjective meaning and personal growth among urban residents.

To craft an aspirational and useful definition of healthy eastern African cities, the study Expert Committee unpacked the concepts of "city" and "health" separately. While it is useful to separate these concepts for analysis, the defining characteristic of urban health issues are their complex multidimensionality (Shannon, 1990). Policymakers seeking to improve the health status of urban populations must consider a wide array of environmental, social, and health factors in their assessment of problems.

Most people would agree that a city is a place where a large number of people live and work in close proximity. How to best define the geographic

boundaries of cities, however, is a topic of continuing debate (UN-Habitat, 2016b). Policymakers and researchers generally take one of three approaches to define a city, although to date there are no standardized international criteria for determining a city's borders. The "city proper method" considers only the official administrative borders of the city; the "urban agglomeration method" considers the extent of the contiguous built-up area; and the "metropolitan method" considers the boundaries of a city in relation to the degree of economic and social interconnectedness with nearby areas (UN-Habitat, 2016b). Each of these methods gives a different picture of the city, and each are useful for their own purposes. In line with UN-Habitat, this report generally follows the urban agglomeration method (see Figure 2 for an example), such as when we discuss the implications of "urban areas" on health (UN-Habitat, 2016b). This method focuses on the aspects of the city that are most consequential for health—changes to the physical environment, and attendant changes to social structures.

The phenomenon of urbanization has been widely studied, especially since the industrial revolution in Europe (Atuoye et al., 2017; Freudenberg, Galea, & Vlahov, 2005; Harpham, 2009). The UN distinguishes between urban and rural areas based on a number of traits, including higher population densities in urban than rural areas, and less land reserved for agricultural work. The UN also takes economic and physical factors into consideration when differentiating urban areas, including the percentage of the economically active population employed in agriculture, the general availability of electricity and piped water in living quarters, and the ease of access to medical care, schools and recreation facilities (UN, 2014). According to these criteria, the majority of the global population was located in urban settlements by 2007 (Harpham, 2009).

Using the above criteria, the UN classifies eastern African populations into either rural or urban categories. According to the most recent estimates from the UNDESA World Urbanization Prospects, 25% of eastern Africa's population (as defined in this study) lived in urban areas in 2015 (calculated from UNDESA, 2018). This ratio was the lowest on the continent, with Central Africa at 48%, West Africa at 45%, North Africa at 51%, and Southern Africa at 62% (UNDESA, 2018). Over the next three decades, however, demographers expect eastern Africa to converge toward the regional average and reach 46% urban population by 2050 (calculated from UNDESA, 2018). See Figure 2 for a chart of projected urban population growth in the region. This convergence will entail a massive build out of new infrastructure for housing, transportation, and basic services. It will also entail a reorganization of social structures, economic relationships, and subjective experiences of identity and meaning. All of these changes imply large impacts on the health and well-

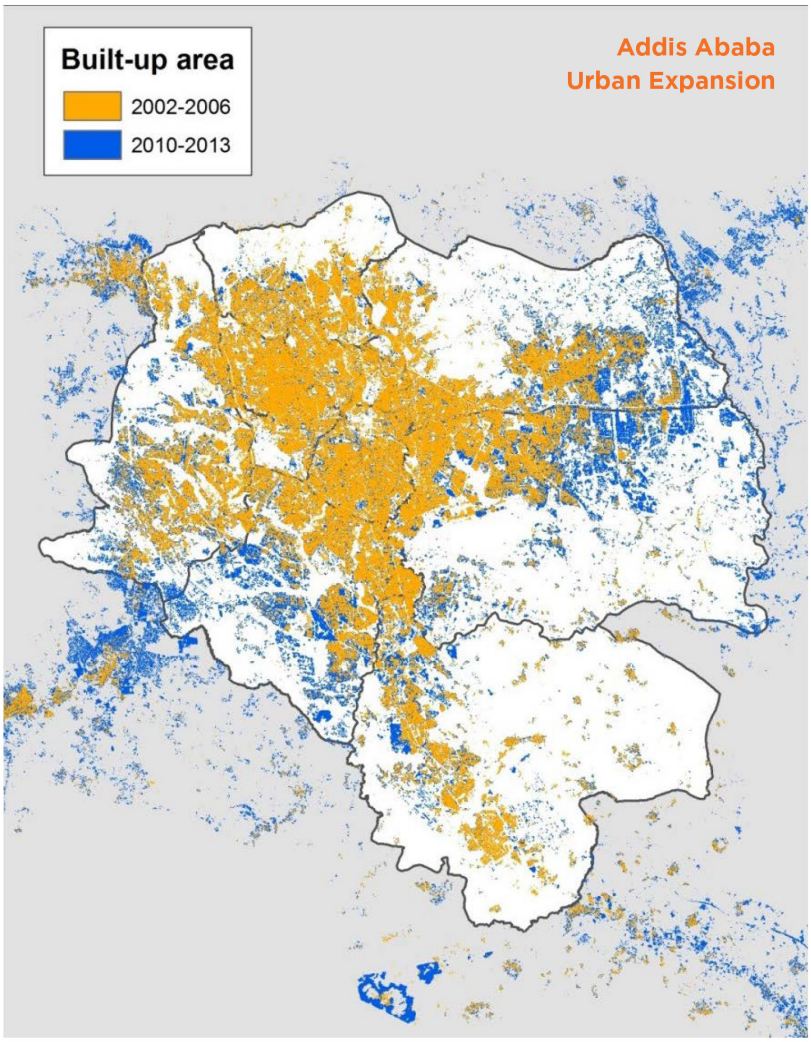

FIGURE 1 The urban agglomeration method used to understand the structure and growth of Addis Ababa, Ethiopia.
SOURCE: World Bank, 2015a.

being of eastern Africans. In sum, all of the available statistics suggest that in the coming decades eastern Africa will experience a massive demographic shift—and an attendant shift in required resources—from rural to urban areas.

Beyond recognizing the growth pattern, it is important for policymakers to understand why urban areas are growing. For many years the common assumption among researchers was that eastern African cities grew primarily because of rural-to-urban migration, driven by both push and pull factors. Push factors include conditions such as continued land conflicts, poverty, and environmental degradation. Pull factors include higher urban wages, easier

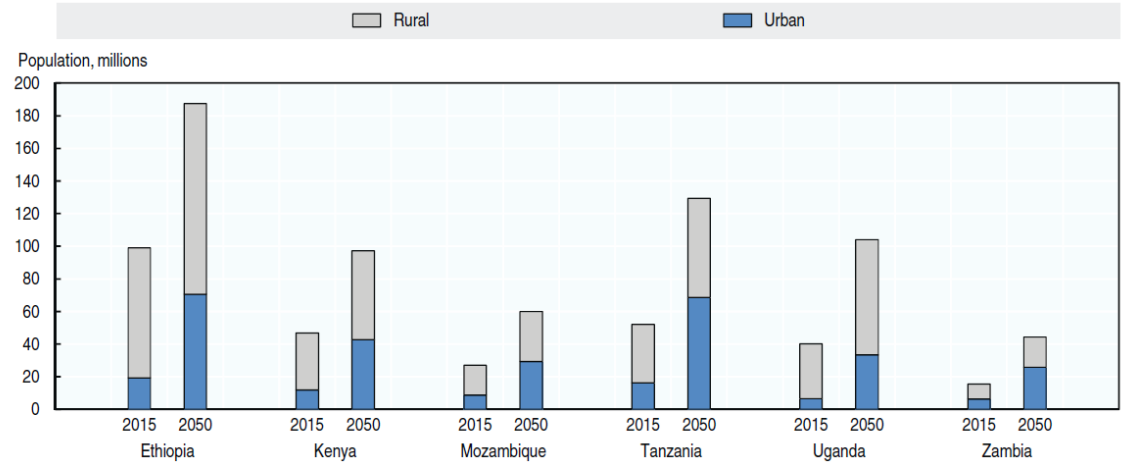

FIGURE 2 Urban and rural populations, 2015 and 2050, for a selection of eastern African Countries.
SOURCE: Ngubula, 2017.

access to basic services, and perceptions of "the good life." However, recent research has identified a more complex pattern with two other major and persistent drivers of urbanization in the eastern African region (Boadi, Kuitunen, Raheem, & Hanninen, 2005).

First is natural population growth. In many cases, natural population growth is in fact the largest contributor to urban expansion, such as in Ethiopia where the World Bank and Cities Alliance estimate that it makes up 40% of total annual urban population growth (World Bank, 2015b, p. 5). Even when total fertility rates (TFR) are falling at the national level, such as in Kenya, those decreases tend to occur primarily in rural areas (Askew, Maggwa, & Obare, 2017). Persistently high birth rates in urban areas are thus a key driver of urban population expansion in eastern Africa.

Second is statistical expansion. As previously rural settlements are upgraded into urban settlements or subsumed into previously existing cities, their populations change classification from rural to urban. The agglomeration of smaller settlements and villages as urban areas expand spatially is thus another key driver of the urbanization trends found in national statistics. As the built environment expands in a horizontal manner, populations that would have previously been counted as rural become included in urban statistics.

To better capture these three dynamics in the discussion, new research looks to understand rural-urban linkages in a more nuanced manner instead of treating them as discrete categories. For instance, food transfers from rural to urban areas play a significant role in the nutrition security of urban dwellers (Crush & Caesar, 2017). Conversely, urban-to-rural cash remittances,

facilitated by the rapid dissemination of mobile money technology, help to secure rural livelihoods (Brown, 2011). In addition, granular country-level research reveals that while some eastern African countries are urbanizing very rapidly, others are better characterized by circular migration due to weak urban economies (Potts, 2013). Individuals come to the city for short-term, cash-earning jobs, but return to their villages at harvest time or when other opportunities arise.

At a macro level of analysis, populations are shifting from rural to urban areas. But at an individual level internal migration is more commonly defined by seasonal movements and circular migration (Kessides, 2006, p. 8). Urban-rural boundaries are largely artificial distinctions to households, which distribute working-age individuals across several economic and spatial activities to diversify income sources and reduce risk (Kessides, 2006). Taking all of these dynamics into account calls for a paradigm shift from the traditional rural-urban conceptual divide to a broader view that encapsulates the various complex linkages, and their impacts on wellbeing, between urban and rural spaces (Lilford, Taiwo, & de Albuquerque, 2018)

In line with the idea of an urban-rural continuum, populations in eastern Africa are also coalescing in mid-size secondary cities and on the outskirts of major urban centres. The challenges for each are quite different. In many eastern African countries, governments face major challenges in ensuring sufficient economic growth and job creation in secondary cities to meet demand (Siba, 2017). Without sufficient employment opportunities, new urban clusters become overcrowded and informal employment rapidly expands (Siba, 2017). In areas afflicted by political instability, refugees and internally displaced persons (IDPs) often settle in periphery of cities where both land and employment are most likely to be available (Güneralp, Lwasa, Masundire, Parnell, & Seto, 2017). Frequently in extremely vulnerable positions, refugees and IDPs settle in areas with the poorest access to urban basic services such as water and sanitation, waste management, mobility, and energy (Güneralp et al. 2017). These fluid demographic and economic changes will all have profound effects on the health and wellbeing of eastern African populations.

The logic behind classifying populations into rural or urban categories ultimately lies in resource allocation. The health needs of rural and urban populations are markedly different, especially when considering the complex interplay of the built environment and social structures on health outcomes. Definitions and statistics such as those produced by the United Nations (UN) thus have a political dimension, as they imply where and how resources should be expended to improve health outcomes. In the eastern African context, a definition of urban areas that looks only at population density, or labour force

composition, or the availability of basic services may not capture the full dynamics of city life.

For instance, despite rapid population growth eastern African cities are remarkably low density (Cirolia & Berrisford, 2017; Güneralp et al., 2017). Especially in secondary cities, urban space in eastern Africa has been expanding horizontally rather than vertically. Secondly, while eastern African cities do employ a large fraction of people in services and industry, urban populations remain intimately connected and dependent on their agricultural hinterlands (Crush & Caesar, 2017). Thirdly, urban residents on average receive better access to basic services—but these averages mask deep inequalities. Especially in the rapidly growing outskirts of eastern African cities, access levels to services such as piped water and electricity are typically similar to rural areas (Karekezi, Kimani, & Onguru, 2008; World Bank, 2011). According to UN definitions, how then could these be considered urban areas?

Beyond attempts at objective criteria, urban areas are perhaps defined most essentially by what has been referred to as "organized complexity (Jacobs, 1961, p. 429)." Problems of organized complexity are placed in opposition to those of simplicity (two related factors) and of disorganized complexity (many related factors that can be understood statistically). A system of organized complexity is one with many related factors that cannot be understood with statistical tools alone. See Figure 3 for a diagram of the relationship between these three concepts. As the mathematician Warren Weaver explained in 1948, problems of organized complexity, "[deal] simultaneously with a sizable number of factors which are interrelated into an organic whole (Weaver, 1948)." The non-random, correlated interactions between the parts of the system create a differentiated structure with emergent properties not dictated or carried by any of its constituent parts.

A city neighbourhood is a perfect example of a system of organized complexity, with the individual residents and their decisions as the constituent parts of the system. Jane Jacobs, a seminal scholar of urban development, used this metaphor to explain that studying only housing, or only health services, is too abstract and is only one factor in the organized complexity of the city (Barnett, 2012). To then understand housing or health service provision statistically leads to overly simplistic conclusions, when it is clear that living conditions and the health of individuals are part of a complicated, constantly changing set of conditions that affect each other (Barnett, 2012). The important point to emphasize from this discussion of organized complexity is that improving health outcomes for those living in urban areas is a multifaceted challenge and requires a deep understanding of the drivers affecting the decisions of individuals.

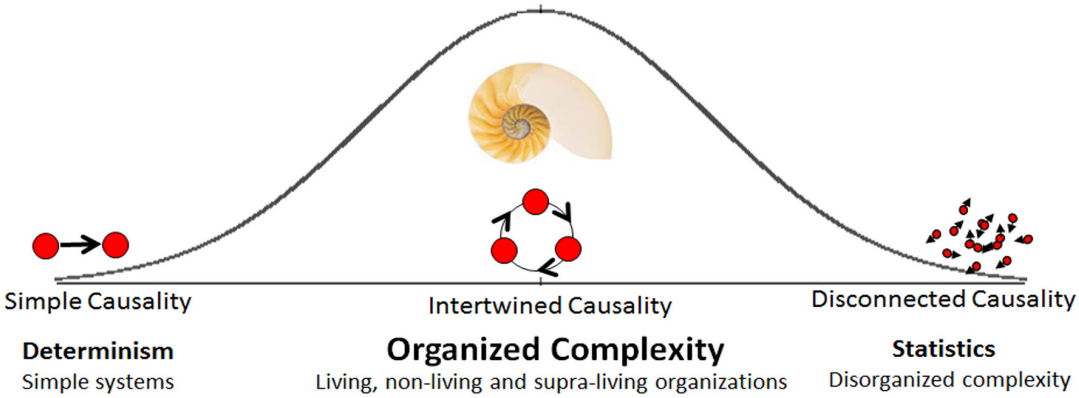

FIGURE 3 A conceptual diagram of the relationship between simple, disorganized, and organized complexity. For a more thorough discussion see Goerner et al., 2015. SOURCE: Goerner, Fiscus, & Fath, 2015.

Like the concept of urbanization, "health" has long been a loaded term that takes a variety of meanings depending on context and circumstance. The World Health Organization (WHO) defines health as a multi-faceted concept: a "state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity (WHO, 2006)."

The WHO thereby moves the emphasis of health away from infirmity, and towards wellbeing. By identifying three important factors of health (physical, mental, and social), this definition further emphasizes the complex multidimensionality of health. As will be discussed at greater length below, this study report accepts the WHO's definition of health, but extends it a step further to incorporate the concept of "spiritual health" into its definition of wellbeing. While physical, mental, and social wellbeing are all crucial ingredients to a full and free life, underlying them must exist a subjective sense of worth and meaningfulness. In the face of suffering and extremely difficult material conditions, individuals can only take measures to secure their physical, mental, and social wellbeing if they feel as if their lives have inherent value and are worth living. This subjective sense is what the Expert Committee identified and defined as spiritual health in eastern Africa. Especially in the context of rapid urbanization, where traditional identities and sources of self-worth are easily undermined, a sense of spiritual wellbeing is a prerequisite to the ability to maintain ones physical, mental, and social health.

Traditionally, health systems have focused primarily on the physical aspects of health. In recent decades, however, that focus has changed dramatically. Sweeping policies and programs that focus only on physical health without taking into account other dimensions of health are increasingly under criticism (Boadi et al., 2005; Kjellstrom & Mercado, 2008; Levira &

Todd, 2017; WHO, 2016b). Tanzania's National Package of Essential Health is one example, as Levira and Todd (2017) explain, "the package continues to promote a curative approach to health in Tanzania: the focus is on treating disease, with minimal effort placed on chang[ing] the (socio-political-economic) environment by which people become unhealthy (Levira & Todd, 2017)." Nations that tackle social determinants of health in general have lower infant mortalities and higher life expectancies (Kjellstrom & Mercado, 2008). Research has shown that studying both the biological and social determinants of health better elucidates health needs in urban areas.

To capture a more holistic conception of health, and to conceptualize the complex influence of urban environments on individual and population well-being, public health experts turn to models that examine what are often referred to as the "social determinants of health" (Freudenberg et al., 2005; Friel et al., 2011; Hunter-Adams et al., 2017; Rydin et al., 2012; WHO, 2017). Freudenberg, Galea, and Vlahov (2005) define social determinants of health in cities as: "the totality of daily experiences that characterize urban life (Freudenberg et al., 2005)." The dimensions of urban living with regard to health are made up of the physical and social environment, social policies and political systems, and health and social service systems. Also included are the demographic characteristics, behaviours, and beliefs of urban individuals. This expansion of health determinants allows for the recognition of the varying levels of health within urban areas.

Access to resources is one crucial factor influencing health that is known to be socially determined (Northridge & Freeman, 2011; Ompad, Galea, Caiaffa, & Vlahov, 2007; UN-Habitat, 2014). For example, it is more difficult for the poor to access proper sanitation facilities due to their socio-economic status and physical location (Boadi et al., 2005). Lilford et al (2017) push forward this concept, and argue that the so-called "neighbourhood effects" of slums call for a geographically-based understanding of health, and that "slum health" should therefore be promoted as a topic of enquiry alongside poverty and urban health more generally (R. J. Lilford et al., 2017).

In the context of eastern Africa, "slum" is a difficult concept to define, largely because slums are not heterogeneous, but present varied social and environmental conditions (R. J. Lilford et al., 2017). Concern has also been expressed that the term is emotive and pejorative, with some suggesting the term "informal settlement" as a substitute (Ezeh et al., 2017). The United Nations, however, continues to refer to slums as the "most deprived and excluded form of informal settlements," making the two terms dissimilar (UN-Habitat, 2015). In general, slums are defined by their inadequate access to a set of conditions such as housing, water, sanitation, and secure tenure (UN-Habitat, 2015). Importantly, however, slums are also spatial constructs,

typically involving a large number of buildings packed densely together (Ezeh et al., 2017). While neither definition is entirely satisfactory, together they create a useful picture of what a slum is in the context of eastern Africa, and why they should be singled out for distinct research and policy focus.

Beyond socio-economic status and living conditions, the components of urban residents' identities also impact their ability to attain higher health statuses. Some examples of identity components include gender, race, ethnicity, class, age, ability level, and educational achievement. Depending on the local context, these identity components either help or hinder access to resources and overall health (Frye, Putnam, & O'Campo, 2008). Addressing urban health challenges, therefore, calls for an examination of the complex web of urban dwellers' living conditions, their geographic location, their identities, and their subjective sense of self-worth and meaning.

Melding the separate discussion of urbanization and health above, we can extract a cohesive and useful definition of urban health. A healthy eastern African city, based on the discussion in this report, is one that meaningfully invests in long-term health-promoting infrastructure, takes steps to ameliorate the socio-economic determinants of ill health, and facilitates the flourishing of subjective meaning and personal growth among urban residents. The complex drivers of urbanization in eastern Africa, along with the differing needs of capital cities, slum environments, regional urban centres, and peri-urban areas, may additionally call for unique strategies to promote this vision. Although much can be learned from best-practice models, there is no silver bullet solution to improving health in human settlements.

The committee concludes: Urban areas are defined primarily by their complexity, which makes addressing health issues within them challenging for the health sector alone.

Therefore, the committee recommends: Governments and ministries of health should seek to work closely with other relevant entities to achieve urban health goals.

4

Alignment with Global and Regional Policy Agendas

Highlights and Main Points

- While tackling health challenges within the organized complexity of an urban environment appears daunting task, it already aligns significantly with several regional and global policy agendas.

- Pursuing implementation of STISA2024, Agenda 2063, the SDGs, the NUA, the Sendai Framework, and 100RC will substantially improve urban health outcomes.

- Pursuing better urban health in eastern Africa thus doesn't require a wealth of new resources—it's primarily a matter of emphasis and focus within existing strategies.

The above considerations help to illustrate the immense complexity of achieving urban health goals in the context of eastern Africa. Not only are the challenges multidimensional, but they also require a high degree of cooperation to succeed, as they frequently cross sectoral jurisdictions and require collaboration between local, national, and supra-national governance structures. Despite these challenges, policy action on urban health issues already aligns with several global and regional policy frameworks and initiatives that the governments of eastern Africa have endorsed. Thus, while tackling urban health issues may initially appear to be a daunting task, many of the recommendations advanced in this report can be achieved under the various frameworks outlined below.

The Science, Technology and Innovation Strategy for Africa (STISA 2024), for example, highlights furthering innovation in traditional medicine, strengthening local health ecosystems, and taking into account socio-cultural

and environmental situations as ways to improve urban health (AU, 2014). The first listed priorities for STISA 2024 are to "Eradicate hunger and ensure food and nutrition security" and to "Prevent and control diseases and ensure well-being (AU, 2014)." STISA 2024 research and innovation focus areas include: agriculture/agronomy, examining the industrial chain of transformation and distribution of food, better understanding of the epidemiology of endemic diseases, maternal and child health, and the role of traditional medicine in modern health systems. All of these priority research areas align with the requirements of establishing healthy eastern African cities.

Beyond STISA 2024, the African Union's (AU) Agenda 2063 calls for cities that are "hubs of cultural and economic activities, with modernized infrastructure, and [where] people have access to affordable and decent housing including housing finance together with all the basic necessities of life such as water, sanitation, energy, public transport and ICT (AU, 2015)." In other words, the AU seeks to leverage rapid urbanization on the continent to stimulate structural transformation and economic growth. Simultaneously, however, Agenda 2063 calls for human settlements that are highly liveable, with all the necessities of a modern life including cultural amenities. Access to basic services and cultural amenities, along with a diversified economy that provides a wealth of economic opportunities to residents, are all essential to achieving the urban health goals set forth in this report. With the right emphasis, pursuing Agenda 2063 will thus also improve urban health outcomes.

The Sustainable Development Goals (SDGs) also contain a significant emphasis on urban-related health concerns. SDG 3, to "Ensure healthy lives and promote well-being for all at all ages," includes a long list of focus areas: reproductive, maternal, new-born, and child health; infectious diseases; non-communicable diseases and mental health; other health risks (traffic injuries and unintentional poisoning); and health systems and funding. SDG 11, "Make cities inclusive, safe, resilient, and sustainable" is intertwined with the third goal, so that SDG 11 will not be achieved without a strong focus on urban health (UN, 2016). And given existing urbanization trends, SDG 3 will also not be achieved without attention to the urban determinants of health and the ways in which cities develop. The International Council for Science has a developed a framework to analyse SDG interactions at the indicator level that includes specific reference to the connections between SDG 3 and SDG 11. For example, improving access to adequate housing will also reduce exposure to hazardous substances currently present in some houses such as polluted air or lead (Capon et al., 2017). Mapping such SDG indicator interactions can help policymakers define priorities for action that will have the greatest developmental return on investment. A mapping of SDG 3 and

SDG 11 interactions might, for example, suggest to policymakers the urgent need to improve the quality of existing housing stock (Capon et al., 2017).

Building on the momentum of the SDGs, the New Urban Agenda (NUA) and the Sendai Framework for Disaster Risk Reduction both pinpoint crucial issues of particular importance to urban health in eastern Africa. The NUA, emerging in 2016 from the Habitat III conference in Quito, Ecuador, refines the goals put forward under SDG 11, and includes a special focus on health in urban areas. For example, leaders committed to foster:

> *...healthy societies by promoting access to adequate, inclusive and quality public services, a clean environment, taking into consideration air quality guidelines, including those elaborated by the World Health Organization, and social infrastructure and facilities, such as health-care services, including universal access to sexual and reproductive health-care services to reduce newborn child and maternal mortality (UN, 2017).*

On top of these explicit commitments to bolster the delivery of health services in urban areas, the NUA goes on to emphasize the critical interconnections between environmental and human health (UN, 2017). Only by facilitating the provision of adequate housing and safeguarding sensitive ecosystems in urban areas can human health goals be achieved.

The Sendai Framework, also an extension and refinement of the SDGs, identifies unplanned and rapid urbanization as a key source of exposure to disaster risk. As elaborated further in this report, climate change-exacerbated disasters such as floods, droughts, landslides, and environmental degradation are expected to have major negative impacts on human health in eastern African urban areas. Without adequate preparation and management, natural disasters in urban areas will undermine the provision of clean drinking water and sanitation services and will accelerate the spread of infectious diseases. The strategies to strengthen disaster risk governance and to increase investment in resilient infrastructure that are contained in the Sendai Framework are all of crucial importance to the vision of healthy eastern African cities set forth in this report (UN, 2015a).

Finally, the 100 Resilient Cities (100RC) initiative pioneered by the Rockefeller Foundation is another global program with a strong focus on urban health. 100RC aims to analyse 100 cities around the world and identify key policy and investment gaps that, if filled, will promote resilience and thereby create higher levels of health and security for their residents. The eastern African cities of Addis Ababa, Nairobi, and Kigali have all joined the initiative to develop municipal "resilience strategies." As a first step, 100RC

identifies each city's vulnerabilities. The specific shocks and stresses that 100RC identified for Addis Ababa, the largest city in Ethiopia and home to 30% of that country's urban population, include disease outbreaks, inadequate public transport, infrastructure failure, lack of affordable housing, rainfall flooding, terrorist attacks, unemployment, and water insecurity (100RC, 2017; UN-Habitat, 2008). According to 100RC (2017), Nairobi faces similar challenges to Addis Ababa, along with other unique stressors. Nairobi is the political and commercial centre of Kenya, operating with aging infrastructure and a large influx of immigrants and refugees from neighbouring Somalia and South Sudan. 100RC leaves transportation and water security off the list of Nairobi's specific challenges but includes severe environmental degradation. The top resilience challenges facing Kigali, the other eastern African city to join 100RC, include: aging infrastructure, energy insecurity, environmental degradation, infrastructure failure, lack of affordable housing, landslides, and rainfall flooding. (100RC, 2017). Thus, while there are many common challenges faced by eastern African cities, peculiarities of local geography and politics often conspire to introduce unique challenges. Initiatives such as 100RC can benefit eastern African cities by allowing them to identify other regions that have faced similar resilience challenges in the past, and the policy solutions they have devised to tackle them. While not always transferable, such lessons can serve to inspire and motivate leaders to take proactive, equity-focused action.

As seen through the above discussion, urban health aligns well with many of the major regional and global policy agendas to which eastern African leaders have already committed. Rather than replacing existing strategic priorities and policy frameworks, pursuing better urban health outcomes is instead a matter of emphasis. All of the agendas above contain reference to the crosscutting issue of human health in urban areas, even if it is not their primary focus. Improving health outcomes in the complex, multidimensional environment of rapidly growing cities therefore calls for further emphasizing all of these references and synthesizing them together across policy agendas into a coherent urban health strategy.

The committee concludes: Urban health goals largely fit within existing regional and global policy frameworks. Achieving the existing frameworks will also help to improve urban health outcomes.

Therefore, the committee recommends: National and municipal policymakers should use global and regional agendas, including the SDGs, the NUA, the Sendai Framework, and Agenda 2063, to provide relevant input for future planning, and to guide trans-sectoral efforts to achieve healthy cities.

5

The Health Landscape in Urban Eastern Africa

The health landscape refers to the patterns and trends in the health statuses of populations that result from specific changes, investments, or interventions. Evaluating the health landscape and determining paths of causality is one of the primary activities of public health professionals. In a resource-constrained region like eastern Africa, aligning desired health outcomes with appropriate investment is a fundamental responsibility of government and regional policymaking bodies. Making decisions on where to invest resources for the greatest health impact requires access to current and comprehensive data. This section therefore summarizes the most important streams of evidence influencing health outcomes in eastern African cities.

Importantly, the health landscape considered in this section extends beyond the conventional territory of communicable and non-communicable diseases. In line with the multidimensional nature of urban health, the landscape analysis takes into account evidence about the impact that living in urban areas has on the mental health of residents, including levels of substance use and violence. To shift towards a concept of health that encapsulates wellness in every dimension, the landscape analysis also includes a discussion of spiritual health in urban eastern Africa. While not commonly included in urban health discussions, the impact that urbanization has on the spiritual health of residents is a crucial determinant of overall well-being in eastern Africa. Understanding the spiritual health status of urban residents is crucially important to improving overall well-being, especially in situations wherethe urbanization process is undermining traditional identities and sources of subjective self-worth and meaning. For less commonly considered issues like mental and spiritual health in eastern Africa, reliable and representative evidence is often lacking in the literature. However, as these issues are of critical importance to urban health, this landscape analysis pulls from a variety of sources, including those from outside of the region, to point to some

of the important patterns that are likely to exist. The section concludes with key findings, and a series of recommendations for stakeholders to improve health outcomes of urban populations in eastern Africa.

5.1 Communicable Diseases

Highlights and Main Points

- Urban populations are at a higher risk of HIV transmission because of more prevalent high-risk behaviour. Social factors like gender norms and power differentials also play into transmission patterns.

- Populations in peri-urban and slum areas are at higher risk of contracting malaria than other urban residents when zoning and environmental regulations are not enforced.

- Children carry a disproportionate CD burden, especially in slum areas. Pneumonia and diarrhoea are common causes of death among children living in slums.

In general, urban healthcare facilities tend to have more personnel and resources compared to rural facilities—and yet they also serve denser populations. Dense urban populations can theoretically provide an advantage to the efficiency of health service delivery. In practice, however, such density often results in the unequal provision of health services. Middle and high-income individuals benefit from the density of urban health services, while resources do not reach those who need them most.

Additionally, the close proximity of people in urban settlements makes them more vulnerable to the spread of communicable diseases (CDs) (Harpham, 2009; WHO, 2016b). One individual can quickly disseminate an infection to the entire community, especially in areas of overcrowding, and poor sanitation and hygiene. Unsurprisingly, urban slums are thus most affected by CDs, as their living conditions are highly amenable to the spread of infectious diseases (Mberu et al., 2015; UN-Habitat, 2016a). In Kenya, this inequality is illustrated well by the fact that, "HIV/AIDS and TB constitute the highest causes of death in the slums (44.2 %), while death related to HIV/AIDS and TB for all Kenya is 30.7 % (Mberu et al., 2015)." In addition to high population densities and poor sanitation, a lack of knowledge and community engagement in prevention also contributes to the spread of CDs in urban areas (UN-Habitat, 2016a; WHO, 2016c).

Higher HIV prevalence correlates with urban living more than rural living (Dodoo, Zulu, & Ezeh, 2007; Mohiddin, Phelps, & Walters, 2012; WHO, 2016b). For example, the Tanzania National Bureau of Statistics (NBS) shows an HIV prevalence of 7.2% in urban areas compared to 4.3% in rural areas (NBS, 2016). The national study also found a gender discrepancy in the prevalence of HIV. In 2012, 8.9% of women in urban spaces were HIV positive, compared to 5.1% in rural areas. For men, 5.2% were HIV positive in urban areas, compared to 3.4% in rural areas (NBS, 2016). Findings by Dodoo et al. (2007) from Nairobi slums help explain this urban-rural disparity: "The urban poor are significantly more likely than their rural counterparts to have an early sexual debut and a greater incidence of multiple sexual partnerships (Dodoo et al., 2007)." In other words, urban living in many cases encourages high-risk behaviours in relation to HIV/AIDS and can expose the most vulnerable residents in particular to transmission (WHO, 2016b, p. 68).

As demonstrated by the Tanzania NBS findings, HIV/AIDS generally affects women more than men. This gender disparity is most like caused by exposure to discrimination that leads to low literacy, sexual violence, domestic abuse, and powerlessness—all strong correlates of greater HIV/AIDS risk (Kjellstrom & Mercado, 2008). Such gender discrimination is especially common in slum areas, where socio-economic factors influence many girls and women to engage in risky sexual behaviour. Boadi et al. (2005) explain that, "…high unemployment and poverty among females often force women to engage in illegal activities, such as prostitution, which expose them to the dangers of infectious diseases (Boadi et al., 2005)." Even when young women are not acting out of desperation, those from poor urban areas end up "going out with outsiders (men who live outside the slums) who have money (Dodoo et al., 2007)." According to a research informant from the above study, some of these men are very promiscuous, and the young women end up contracting HIV (Dodoo et al., 2007). Gender norms and power differentials in urban areas thus often play directly into the spread of communicable diseases.

With poor access to safe and reliable running water, slum populations also suffer high incidences of vector borne diseases. In some studies, cases of malaria among the urban poor are twice as high as other urbanites (Kanaskar, 2016; Warren, Billing, Bendahmane, & Wijeyaratne, 1999). Boadi et al. (2005) highlight the fact that swamps surrounding sprawling urban suburbs and slums, as well as any other stagnant water, offer the vectors for water-borne diseases extensive breeding grounds (Boadi et al., 2005). Peri-urban environments are especially at risk to higher malaria transmission rates, as they sometimes envelop standing water sites on the periphery of the city. Ultimately, however, malaria prevalence in urban areas is highly environment dependent. Well-managed urbanization can limit the spread of the disease as

the built environment covers mosquito breeding grounds. Poorly managed urbanization, however, can increase malaria prevalence if it places people in close proximity to standing bodies of water. Additionally, once infected urban dwellers are more likely to experience "severe" cases of malaria, due to the lower levels of resistance among urban populations (Warren et al., 1999).

Many other preventable diseases can be contracted from drinking unsafe water. UN-Habitat reports that globally, "1.8 million people die every year due to diarrhoea and other diseases related to unclean water, with children mostly under five years of age falling victim (UN-Habitat, 2016a)." Children thereby carry a disproportionate disease burden, especially in slums. Diarrhoea and pneumonia are the leading causes of deaths among slum children in Nairobi (Beguy et al., 2015). Data from two urban slum areas in Nairobi show that children under the age of five years had more than four times the mortality burden of the rest of the population, primarily due to pneumonia and diarrhoeal diseases (Kyobutungi, Ziraba, Ezeh, & Yé, 2008).

To make matters worse, with all of the livelihood difficulties faced by the poor, they can become less focused on their own health or the health of their children (Soura et al., 2015). Ultimately this lack of attention culminates in troubling patterns such as low vaccination rates among slum children, despite theoretically better access to health services than in rural areas (Mutua, Kimani-Murage, & Ettarh, 2011).

The committee concludes: Despite many improvements over the past decades, CDs remain a major cause for concern in eastern African urban areas. Low-income populations in particular continue to be disproportionately affected by CDs in urban areas.

Therefore, the committee recommends: Health authorities should prioritize and target slum areas and other low-income communities for sensitization programmes and for CD eradication programmes.

5.2 Non-communicable Diseases

Highlights and Main Points

- NCDs are a rapidly growing cause of morbidity and mortality in urban eastern Africa.
- Behavioural factors play a part in NCD prevalence. In eastern African cities, however, environmental and social factors like air pollution and stressful lifestyles also play an important role.
- Although nutrition intake is stratified by income, across all income groups less nutritious foods are being consumed.
- Up to half of diabetes cases currently go undiagnosed, and the prevalence of diabetes is expected to increase drastically in the coming years.
- Respiratory diseases caused by poor indoor and outdoor air quality are on the increase in urban eastern Africa, especially among low-income populations.
- All countries in the region have committed to ameliorating NCD risk factors, but implementation remains problematic.

Non-communicable diseases (NCDs) are the leading cause of death in the world, and a rising cause of suffering and death in developing countries (WHO, 2016c). Research findings indicate that the prevalence of NCDs increases with urban population growth and contributes to a large portion of national health costs. NCDs are projected to increase by 27% on the African continent as urbanization continues (Friel et al., 2011; WHO, 2016b). Major NCDs identified by the WHO include heart disease, cancer, respiratory diseases, circulatory diseases, and diabetes. Leading risk factors for the development of NCDs are largely behavioural, and include inactivity, unhealthy diets, smoking and excessive alcohol intake (Haregu et al., 2015; Misganaw, Mariam, Araya, & Ayele, 2012; WHO, 2016b). Importantly, however, behavioural factors do not exist in isolation but are tied closely to both environmental factors and beliefs and attitudes.

Behaviour choices that may lead to greater risk of NCDs among the urban poor closely reflect the conditions under which they live and work. For instance, the stress that accompanies life in a cramped and unhygienic urban slum is itself an NCD risk factor and may also lead residents to behavioural choices such as excessive drinking and substance abuse to cope with the stress

(Siddharthan et al., 2015). Additionally, research has shown that social beliefs and attitudes towards NCD risk factors are highly correlated with behaviour choices (Aira, Wang, Riedel, & Witte, 2013; Ojo et al., 2017). Thus, in contexts where high levels of alcohol consumption or poor nutritional intake are accepted as norms, these behaviours will prove difficult to avoid. In sum, far from being voluntary "lifestyle diseases," in the context of eastern African cities NCD prevalence is highly reflective of the living conditions of urban residents.

Urbanization tends to encourage a sedentary lifestyle among the middle class, and increased consumption of unhealthy snacks, soft drinks, and fast food among both children and adults (Mosha & Fungo, 2010). Urban slum dwellers, while they may be less sedentary than the middle class, are nevertheless exposed to a host of NCD risk factors. These factors include pollution and the easy availability of innutritious foods in urban areas. In eastern Africa, sedentary lifestyles and unhealthy urban food options are both on the rise. All of these changes lie behind the upward trend of urban NCD rates in the region.

Nairobi provides a useful illustration of these changes, for which data is available. The city saw a steady increase in cardiovascular-related deaths, from 2% in 2003 to 8% in 2012, with a peak at 14% in 2005 (WHO, 2016b). In Nairobi slums, Mberu and colleagues (2015) found that mortality related to HIV/AIDS is generally declining among adults, but the proportion of deaths due to tuberculosis, injuries, and cardiovascular diseases is increasing. Essentially, there is a substantial ongoing epidemiological transition in Nairobi slums. See Figure 4 for a simplified model of the epidemiological transition. Deaths linked to communicable diseases declined from 66% in 2003 to 53% in 2012, while deaths due to non-communicable causes experienced a four-fold increase from 5% in 2003 to 21.3% in 2012, together with another two-fold increase in deaths due to external causes (injuries) from 11% in 2003 to 22% in 2012 (Mberu et al., 2015). Misganaw et al. (2012), working with the Addis Ababa Mortality Surveillance Program (AAMSP), found that NCDs caused 51% of total recorded adult deaths in Addis Ababa. Furthermore, frequent alcohol and tobacco consumption, 12% and 7% respectively, were listed as "highly prevalent" among the deceased from the study (Misganaw et al., 2012). In another study among slum dwellers in Nairobi, Haregu et al. (2015) found that nearly 72% of study participants reported having one or more of the above mentioned risk factors for NCDs, and 20% experienced coexistence of at least two risk factors (Haregu et al., 2015).

Urban nutrition is a distinct issue from rural nutrition, in part due to the increased availability of cheap, processed, high-sugar, high-salt, and low nutrient foods in cities (Hunter-Adams et al., 2017; WHO, 2016c). Over

consumption of such foods can lead to both obesity and malnutrition, and may lead to NCDs such as diabetes and hypertension, as well as stunting and obesity in children (Kjellstrom & Mercado, 2008; WHO, 2016c). Some studies in eastern Africa have even documented obese adults and malnourished children within the same household. At an individual level, an adult or child can also be both malnourished and obese at the same time if they do not consume appropriate nutrients and instead rely on unhealthy foods to stave off hunger (Harpham, 2009). Poorer neighbourhoods experience little to no access to fresh, nutritious foods, caused mainly by low household incomes and the high cost of these foods (Northridge & Freeman, 2011; Rydin et al., 2012). While nutrient accessibility is stratified by income, a study by Tschirley et al. found that diets of the urban middle class in eastern and southern Africa include more processed foods (38-50%) than the diet of the poor (31% of diets) (Tschirley, Reardon, Dolislager, & Snyder, 2015). Therefore, while the accessibility of nutritious food varies by income, the actual outcome of food consumption among urban dwellers is similar across all socio-economic classes: less nutritious foods are being consumed.

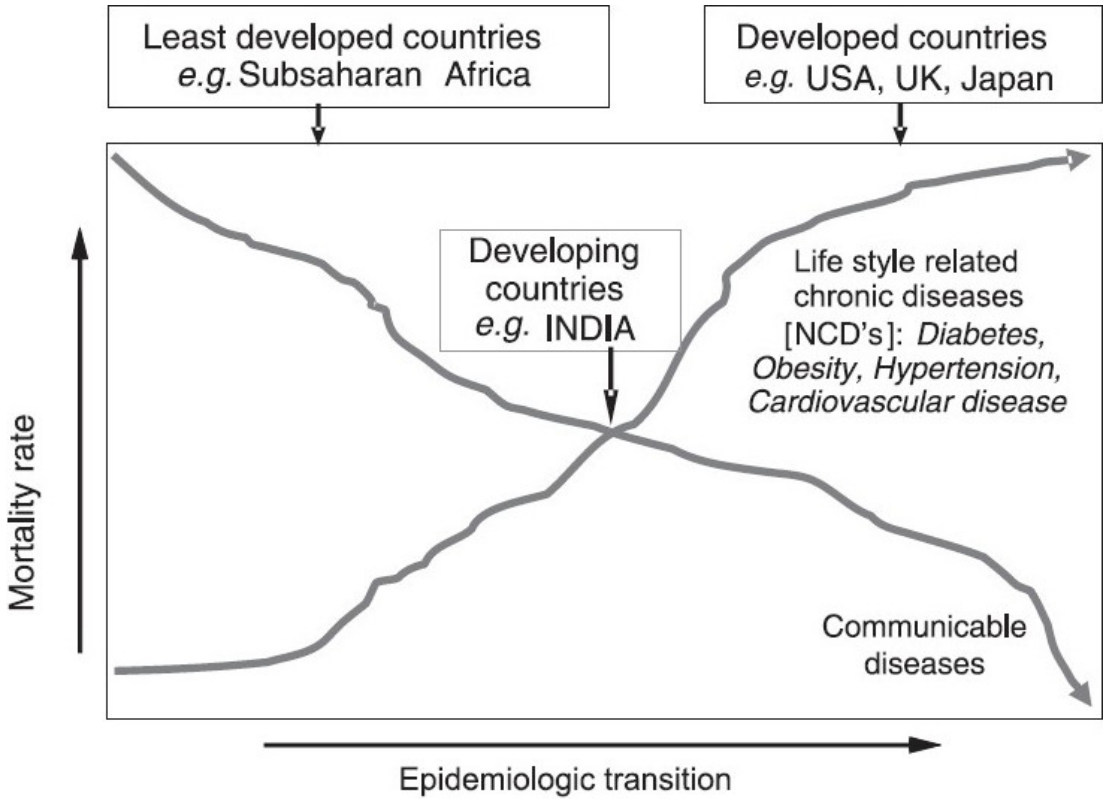

FIGURE 4 A simplified model of the epidemiological transition. As eastern African countries move from the upper left of the chart to the bottom right, they will face a double burden of high CD and NCD prevalence.
SOURCE: Burbach, 2013.

Changes in eastern African diets associated with urbanization contribute to increased weight gain, which in turn makes diabetes more commonplace. Across Kenya, Uganda, Tanzania, and Rwanda, approximately 20% more urban than rural women are considered overweight (body mass index greater than 25)(WHO, 2016a). Comparatively Ethiopia experiences a much lower percentage of overweight women, but nevertheless 12% more urban than rural women are considered overweight (WHO, 2016a). A study on the preponderance of overweight and obese children in Dodoma and Kinondoni municipalities in Tanzania reports that 5.8% of six to nine-year-olds were overweight, while 6.4% were obese. Among children aged 10 to 12 years, 4.9% were overweight and 5.4% were obese (Mosha & Fungo, 2010). These results are similar to those found in a 2010 global report n the American Journal of Clinical Nutrition (de Onis, Blossner, & Borghi, 2010). Across eastern Africa, the global study found 6.7% of zero- to five-year-olds classified as overweight or obese. The average child obesity rate across developing countries was 6.1%, while developed countries on average saw a child obesity rate of 11.7% (de Onis et al., 2010). These data suggest that challenges associated with childhood obesity are likely to increase in the eastern African region as urbanization continues, and diet and habits continue to shift. Furthermore, the data points to the importance of targeting children and adolescents with upstream interventions to reduce their future NCD risk.

Diabetes is an NCD that requires extensive self-care practices to manage, creating another barrier to better health. The prevalence of diabetes in Africa is expected to increase by 110% between 2013 and 2035, while 50.7% of existing diabetes cases already go undiagnosed (Hunter-Adams et al., 2017). In 2017, Tewahido and Berhane completed a study of the self-care practices of diabetes patients living in Addis Ababa. They found that study participants did not commonly adhere to comprehensive self-care practices. The main shortcoming in self-care practice was found to be inconsistent blood sugar monitoring (Tewahido & Berhane, 2017). Diabetes is a lifelong condition, and thus tackling contributing factors such as childhood obesity offers a preventive approach to avoid many of the costs and challenges of managing diabetes later in life.

Respiratory diseases are also on the increase in urban areas, especially among the urban poor (Boadi et al., 2005). Otherwise healthy individuals living in slums develop respiratory illness due to environmental factors at their places of work or homes. In Addis Ababa, for instance, the Ministry of Health recently claimed that air quality is deteriorating rapidly and that more than 800,000 people have been afflicted with respiratory disease in the past year as a result (FBC, 2018). Analysing these results through a gender lens reveals some important insights (Frye et al., 2008). In settlements situated

near hazardous manufacturing and industrial sites, women are often more affected by their living conditions than men. Due to their practical duties of ensuring household water supply, sanitation, and caring for the sick, women remain in close proximity to the hazards of their living conditions for long hours during the day (Boadi et al., 2005; Frye et al., 2008). The indoor use of biomass stoves and kerosene lamps further exacerbates respiratory health challenges (Kanaskar, 2016; Kjellstrom & Mercado, 2008; WHO, 2016c). Such living conditions all correlate to the higher rates of respiratory disease found among poor women compared to men (WHO, 2016b).

Like other developing regions, the use of solid fuel for cooking and heating is the primary source of indoor air pollution (IAP) in eastern Africa (Nandasena, 2013). While rural areas generally rely on wood or crop residues, urban dwellers in eastern Africa largely use charcoal (Njenga et al., 2013). In urban Kenya, for example, charcoal use has risen by 64% over the past two decades (Njenga et al., 2013). When used indoors, charcoal is a significant contributor to IAP. Additionally, urban areas are sites of industrialization and heavy traffic, both of which increase ambient air pollution concentrations (Nandasena, 2013). Urban households close to traffic congested or industrial areas may thus experience elevated levels of harmful air pollutants, even when using improved clean fuels or cooking outdoors (Nandasena, 2013).

As well as poor women, children under five years of age are frequently the most vulnerable to air pollutants (Nandasena, 2013). Although acute respiratory infections (ARIs) are a leading cause of under-five mortality in eastern Africa, their connection to IAP remains relatively under-studied (Sanbata, Asfaw, & Kumie, 2014). One study from Ethiopia found a strong association between household use of biomass fuels and ARIs in children (Sanbata et al., 2014). Additionally, the high prevalence of pneumonia in the region may lead to its over-diagnosis at the cost of under-diagnosing childhood asthma. A study from Mulago Hospital in Kampala, Uganda, for instance, found that the common misdiagnoses of asthma syndrome as pneumonia led to the irrational use of antibiotics (Nantanda, Tumwine, Ndeezi, & Ostergaard, 2013). Such studies indicate that the negative effects of air pollution on children are under-appreciated and not fully understood in the eastern African region.

In response to the growing prioritization of NCD prevention, an alliance of civil society organizations in eastern Africa completed a region-wide survey on policy progress around NCDs. The survey found that all countries appeared committed to managing NCDs, but implementation of the policies, strategies, and legislation around NCDs remained weak (EANCDAI, 2014). The survey report suggests, "this may be in part due to the absence of specific targets and indicators on the NCDs in national development plans (NDPs), as well as donors not aligning aid with country priorities (EANCDAI, 2014)." A report

by Sidderharthan et al. (2015) makes a strong suggestion to keep in mind that there must be a holistic regional understanding of the social determinants of health, as disease-specific impact packages cause "further fragmentation of health resources (Siddharthan et al., 2015)." Poor NCD outcomes, therefore, relate to the often exclusive focus on the healthcare system as implementers of policy for NCD prevention. Given the influence of living conditions on NCD outcomes, effective policy will focus as much on the urban system as on health systems.

The committee concludes: Urban eastern Africa is in the midst of an epidemiological transition, both among low- and high-income population groups.

The committee concludes: Low- and high-income populations are affected by NCDs for difference reasons. Low income populations are primarily affected by poor environmental conditions and poor nutrient access, while high-income populations are primarily affected by unhealthy diets and sedentary lifestyles.

Therefore, the committee recommends: Health authorities should segment interventions to target the different contributors to poor health outcomes for different populations.

5.3 Mental Health in Urban Settlements

Highlights and Main Points

- Global evidence suggests that there is a positive relationship between urban living and mental health challenges. Social fragmentation caused by urbanization is a likely explanatory variable.
- Due to stigma, many eastern Africans do not seek professional assistance for mental health challenges until they have reached a crisis point.
- Suicide appears to be more prevalent in urban areas and affects men disproportionately. Although completed suicides are higher among men, women may in fact experience higher rates of major depressive disorders.
- Elderly urban individuals are often at high risk of mental health challenges, stimulated primarily by loneliness and social isolation. Religious and community associations can play a role in mitigating this risk.
- Traditional healers are a much more accessible form of mental health support than psychiatric practitioners in urban eastern Africa. Research on the positive role that traditional medicine can play in the mental health system is sorely lacking.

Global research has long recognized the link between urban living and increased rates of mental health challenges (Gruebner et al., 2017; Kwon, 2016). Studies on anxiety disorders (including post-traumatic stress disorder, anger, and paranoia) have recorded higher prevalence in urban than rural areas in several Asian and Latin American countries (Prina, Ferri, Guerra, Brayne, & Prince, 2011; Sharifi et al., 2015). The same is true for psychotic disorders (e.g. schizophrenia) in China, Germany, and Denmark (Jacobi et al., 2014; Long et al., 2014; Pedersen & Mortensen, 2001). Likewise, mood and addictive disorders are more common among urban than rural populations in both Germany and France (Achab et al., 2011; Jacobi et al., 2014). Urban living therefore appears to be significantly correlated with a higher risk for major mental health challenges, including anxiety, mood, addiction, and psychotic disorders.

Social fragmentation provides one explanatory factor in this predisposition to mental illness in urban areas. Urban individuals experience a "lack of community and inter-household mechanisms for social security, relative to those in rural areas," and have fewer options to seek help (Harpham, 2009). Being surrounded by one's extended family is less common

in urban than rural areas, often leaving residents feeling lonely or isolated. Moreover, many urban residents endure long commuting times for work, and consequently have less time for child rearing and care. Lack of time is frequently pinpointed as a contributing factor to poor household cohesion and mental health (Harpham, 2009; Smit et al., 2011). Some cities have attempted to ameliorate the prevalence of urban mental illness by increasing clinics or counselling accessibility and developing more green spaces (Smit et al., 2011). However, the fractured social cohesion and family dynamics that seem to play the greatest role in perpetuating poor mental health are difficult to address directly through state or municipal-level policy.

Even in cases where mental health clinics are readily available, individuals may not know how to access them or when to seek help. A study on the mental and sexual health of Ugandan students at Makerere University in Kampala found a prevalent need for increased mental health counselling (Kyagaba, Asamoah, Emmelin, & Agardh, 2014). Furthermore, Okello and Neema (2007) completed a study of patients admitted for depression at Mulago Hospital in Kampala in 2007. They found that patients who sought, or were encouraged by their family to seek, psychiatric care only did so when the patient displayed "socially disruptive behaviour (Okello & Neema, 2007)." Waiting until symptoms have reached such an advanced stage may prove problematic for improving mental health outcomes. As Okello and Neema (2007) explain, "people with less severe and less drastic symptoms, which equally impair social functioning, might never receive the attention of psychiatrists (Okello & Neema, 2007)." Lack of care for individuals with less severe mental health issues may be due to simple lack of awareness around mental health illnesses, how warning signs present themselves, or stigma around seeking help. However, evidence does exist that these attitudes can be successfully combatted. A study by Kutcher et al (2016), for example, found that retraining Tanzanian teachers on mental health literacy "demonstrated significant and substantial improvements in teacher's mental health knowledge and significant and substantial decreases in teacher's stigma (Kutcher et al., 2016)." This retraining led to an increase of teachers, students, and family members referred for professional help (Kutcher et al., 2016).

Suicide is a major cause of premature mortality worldwide, but data on its epidemiology in eastern Africa are limited (Mars, Burrows, Hjelmeland, & Gunnell, 2014). Nevertheless, the available evidence does point to elevated rates of suicide in urban areas—especially slums—suggesting a hidden crisis of unattended depression (Ziraba, Kyobutungi, & Zulu, 2011). Rates of suicide are typically three times higher in men than in women, and the most common methods are hanging and pesticide poisoning (Mars et al., 2014). The sex discrepancy in suicide rates could be partly explained by the tendency of men

to use more lethal methods, such as hanging or firearms, while women are more likely to poison themselves (Mars et al., 2014). Interestingly, research from Ethiopia suggests that while women experience overall lower suicide completion rates, they may actually experience higher rates of major depressive disorders and suicidal behaviour. Whittier et al. (2017) found that women in Addis Ababa had a 63% higher chance of endorsing suicidal behaviour than men, possibly in reaction to more prevalent sexual and physical abuse, a higher reliance on emotional and social support, and more willingness to report symptoms of depression to their physicians (Whittier et al., 2016). The available evidence thus suggests that while completed suicides tend to be higher in men, women may experience more suicidal behaviour and self-harm. Common suicide risk factors identified in the literature include interpersonal problems, mental and physical health problems, socio-economic problems, and substance abuse problems (Mars et al., 2014). But all of these data are very general. Qualitative studies on specific culturally relevant risk factors within the highly heterogeneous eastern African region are sorely lacking.

Elderly individuals in urban areas experience a higher disposition toward loneliness and other mental health issues. Twice as many urban elderly report loneliness compared to the rural elderly (Nzabona, Ntozi, & Rutaremwa, 2016). Often family members have migrated elsewhere in pursuit of employment opportunities, but the urban elderly no longer have this ability (Zulu et al., 2011). For the elderly living in Zambia, their place of residence is one of the strongest indicators of loneliness. In Uganda, with the breakdown of social support, urban elderly populations are at higher risk of stigma, physical and emotional abuse, discrimination, and neglect (Kodzi, Obeng Gyimah, Emina, & Chika Ezeh, 2011; Nzabona et al., 2016). Some investigations have also reported unfortunate discrimination against the elderly on the part of healthcare workers who pass off their suffering as "old age diseases" unworthy of attention (Zulu et al., 2011)." Thus, social dynamics, under intense pressure from the process of urbanization, tend to leave the most vulnerable alone, without the support networks that would have kept them healthy in years past.

Some researchers suggest that age-specific health programs that aim to reduce body pains, enhance cognitive ability, and facilitate mobility for older adults offer some hope of success (Wilunda, Ng, & Williams, 2015). This argument is bolstered by the insight that such interventions may also serve to decrease loneliness through greater human attention and contact (Nzabona et al., 2016). Alternatively, other researchers emphasize that many elderly urban residents use religious community and social organizations as replacements for family interaction and a safeguard against loneliness. One study in two informal areas of Nairobi found that forms of engagement with the community and close friends were positively associated with the health of older and urban

residents (Kodzi et al., 2011). Under this paradigm, focusing interventions on strengthening such community-based associations offer the best alternative to combat the spread of mental illness in this population group.

Mental illness in eastern Africa also presents unique and complex challenges where culture and science overlap, as witchcraft or disharmony with the ancestors is sometimes understood to be the cause of mental distress (Okello & Neema, 2007). In matters of bewitchment and the ancestors, traditional healers are generally viewed as having the primary expertise. Despite the common assumption that traditional beliefs are less common in urban areas, data from South Africa suggests that living in a rural area is not a significant predictor of traditional healer use (Sorsdahl et al., 2009). Furthermore, traditional forms of treatment for mental disorders may be more accessible for many eastern Africans than Western forms of mental health care. However, research on the role that such traditional healers can play in a modern mental healthcare system is extremely limited. Such healers are rarely officially recognized or sanctioned by the authorities. Even without official recognition, however, the advice and treatment offered by traditional healers is sought, believed, and acted upon by community members across the region (Sorsdahl et al., 2009). Given the relatively low number of Western psychiatric practitioners in the region, traditional healers and spiritual advisors may have a valuable role to play in improving mental health care, if their practices have been shown to be safe and effective.

The committee concludes: Poor mental health is likely related to stressors in one's environment, and many urban environments in eastern Africa are not conducive to mental wellbeing.

The committee concludes: Mental health challenges are not recognized as a problem by wider society, and significant stigma persists around issues of mental health.

Therefore, the committee recommends: Respected government, civic, and faith leaders should sensitize populations to mental health issues, with an emphasis on deconstructing stigma.

Therefore, the committee recommends: Researchers and health authorities should explore the role that traditional healers could play in a comprehensive mental health system.

5.4 Alcohol and Substance Use

Highlights and Main Points

- Unhealthy levels of alcohol and illicit substance consumption tend to be higher in urban areas and are major contributing factors to higher CD and NCD risk.
- Alcohol consumption has a long history in eastern Africa and is closely tied to traditional spiritual practices. It continues to play an important social function in the region.
- Aggressive marketing and lobbying practices of the alcohol beverage industry complicate questions about non-commercial alcohol consumption in the region, an issue on which there is extremely limited empirical evidence.
- Levels of illicit substance use in the region are often poorly understood by policymakers. Problematic illicit substance use is often tied to poverty and is a method to cope with challenging material circumstances.
- Coastal cities in Kenya and Tanzania are some of the primary transit points for heroin smuggled from Afghanistan, with the result that local populations are experiencing disproportionately high levels of injection drug use.

Research demonstrates that urbanization can exacerbate unhealthy levels of alcohol and substance use through two main pathways: its negative impact on mental health, and the pervasive alcohol marketing and exposure in cities (Embleton, Atwoli, Ayuku, & Braitstein, 2013; Swahn, Palmier, & Kasirye, 2013; Syvertsen et al., 2016). The dynamics of alcohol and substance use and the availability of illicit drugs in urban areas feature prominently in population-level discussion of urban health, as they are major contributing factors to mental health challenges and also increase the risk of both CDs and NCDs, including HIV transmission and mental health disorders.

Eastern Africa has a young and growing population. Especially in urban areas, much of that population also has increasing levels of disposable income. As a result, eastern Africa is a prime target for market expansion by the alcohol beverage industry (Toesland, 2016). In the continent as a whole, data from 2017 show the African wine and beer market growing at the fastest rate globally (Toesland, 2016). The recent merger of SABMiller and AB InBev, the world's two largest beer producers, is thus expected to have far-reaching health consequences for the region (Hanefeld, Hawkins, Knai,

Hofman, & Petticrew, 2016). In response to large investments and aggressive lobbying tactics from the multinational alcohol beverage industry, researchers have issued public health warnings about the rising burden that alcohol use will have on morbidity, mortality, and health budgets in the region (Babor, Robaina, & Jernigan, 2015; Jernigan & Babor, 2015).

Despite global policy declarations such as the WHO Global Strategy to Reduce the Harmful Use of Alcohol (2010) and the WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases (2013), there seems to have been little concrete action in eastern African countries (Ferreira-Borges, Parry, & Babor, 2017). A number of important factors likely contribute to this lack of action. First among them would be the historical and traditional role that alcohol has played in eastern African society. Even in societies heavily influenced by Christianity and Islam, alcohol has long played a central role in traditional spiritual practices as a medium for communication with ancestors (Adelekan, 2008). Today, an important social value of alcohol consumption is that it serves as a unifying leisure activity across the class spectrum. Especially for the poor in eastern Africa, drinking serves a valuable psycho-social role (Adelekan, 2008). The poor use drinking occasions to vent their frustrations about local, national, and even global issues and the difficulties they face in their day-to-day lives. Drinking peers may offer a sympathetic ear and level of understanding that is frequently unavailable from wider society (Adelekan, 2008). Drinking establishments also serve as important places for people to exchange both vital and mundane information and to build strong community networks (Adelekan, 2008). Further, alcohol continues to serve an important ritual function in the region; it is used to mark friendship pacts, marriages, funerals, and widowhoods (McAllister, 1986). In sum, the consumption of alcohol is deeply woven into the fabric of life in the eastern African region. In spite of the historically close relationship between social life and alcohol, however, several studies from other regions in Africa have documented a shift towards a "public, binge-drinking culture over the weekends (Dumbili, 2013; Ferreira-Borges et al., 2017; Obot, 2006)." This shift has taken place primarily in urban areas and holds important health and wellbeing implications beyond what may have existed in the past.

Another reason for limited government action on problematic alcohol consumption in the region is that a great deal of the alcohol consumed is produced and distributed in the informal market (Adelekan, 2008). Primarily consisting of home-brewed beers, fruit-based alcoholic beverages, and home-distilled drinks, some estimates place consumption of these drinks on par with or higher than consumption of branded alcohol in both rural and urban areas (WHO, 2004). The literature most often refers to such alcohol as "non-commercial" to signify that it is not produced at an industrial or large scale.

It is, however, certainly commoditized, and serves an important income support role for many poor urban households (Adelekan, 2008). Ultimately, it is difficult to make informed policy statements about non-commercial alcohol use in eastern Africa because there is so little available evidence on either use patterns or potential health consequences.

The situation of non-commercial alcohol in eastern Africa is further complicated by the aggressive presence of the multinational commercial beverage industry in the policy space. In the absence of empirical evidence, the industry has argued that non-commercial alcohol poses a grave public health risk, and that the majority of it is contaminated or dangerous (Ferreira-Borges et al., 2017). The industry uses such arguments to push for tax breaks and regulatory approval of inexpensive commercial alternatives to compete with the informal market (Ferreira-Borges et al., 2017). From a historical perspective, this argument has some merit, as the introduction of new raw materials and hitherto unknown but crude distillation technology have led to the production of non-commercial alcohol with a higher ethanol content and a higher risk of impurities than in the past (Ndetei, 2008). Despite this intuitive argument, however, there is currently little-to-no scientific evidence for the claim that most of the non-commercial alcohol in the region is either contaminated or toxic (Lachenmeier & Rehm, 2009). In fact, given the current state of knowledge in the field, researchers suggest that the primary harm from non-commercial beverages may stem from heavy drinking patterns facilitated by the low cost and easy accessibility of alcohol, and not from contamination or toxicity of the beverages (Ferreira-Borges et al., 2017). Inexpensive commercial alternatives would be unlikely to change this primary harm.

Beyond alcohol consumption, the use of illicit substances is a topic of particular concern to urban and public health officials, especially among vulnerable populations. In 2009, Mbatia et al. completed a study on the prevalence of alcohol and drug use in Dar es Salaam, Tanzania. Even though substance use in Tanzania is less common than in wealthier countries, lifetime consumption of substances is significantly higher among poorer populations (Mbatia, Jenkins, Singleton, & White, 2009). Similarly, Swahn et al. (2013) found that among youth who participated in their study in several Kampala slums, 30% reported problem drinking and 32.8% reported drunkenness. Young men were more likely to develop problem drinking, or to admit to current alcohol use than young women, but between both genders 62.1% said they had experienced alcohol marketing exposure. Greater exposure to alcohol marketing is largely due to companies that increasingly targeting urban youth as a growing market (Swahn et al., 2013).

One study of street children in Eldoret, Kenya, described the issue of addiction as multi-layered, with many factors increasing the street children's

likelihood to begin using addictive substances (Embleton et al., 2013). For example, children identified "forgetting their problems, dulling hunger, gaining peer acceptance, feeling warmer, and enduring difficult work," as major considerations pushing them towards substance use. In Syvertsen et al.'s (2016) ethnographic study on injectable drug use in Kisumu, Kenya, they reported a growing illegal drug trade and market. Researchers were also surprised to learn about the unexpected rise and availability of cocaine to urbanites seeking out drugs (Syvertsen et al., 2016). Syvertsen et al. (2016) suggest "a need for expanded drug surveillance, education and programming responsive to local conditions, and further ethnographic inquiry into the social meanings of emergent drug markets in Kenya and across sub-Saharan Africa (Syvertsen et al., 2016)." Illicit drug use is primarily an activity of the young. One study conducted in Kenya's coastal cities of Mombasa, Kilindi, Kilifi, Malindi, Kwale found that over 60% of drug users were below 30 years of age (Weldon, 2013). With growing youth populations in all of eastern Africa, it could be expected that rates of illicit substance use will increase.

Coastal cities in Kenya and Tanzania are particularly affected by growing rates of injectable drug use, as they are increasingly important transit points for Afghan heroin being trafficked onwards to Europe and North America (Bruwer, 2016). Most heroin enters eastern Africa by sea, and maritime law enforcement is much more challenging than land enforcement. With limited resources, authorities have struggled to make an impact in the volumes being imported to the region. In fact, due to conflict and increased law enforcement along traditional smuggling routes to Europe and North America, eastern Africa has seen a surge in the estimated volume of illicit drugs trafficked across its borders. In 2013, it was reported that 22 tonnes of heroin pass through eastern Africa annually—five times the 2009 estimate for the region (Bruwer, 2016). Since that time, larger and more frequent seizures have been made by authorities in the region. Both growing youth populations and the increased availability of illicit substances point to the high likelihood that consumption patterns of illicit substances will spike in the coming years.

The repressive drug policies of eastern African countries also likely do little to decrease the number of drug users in the region. Criminalizing users in need of health treatment rather than helping them fight their health-eroding addictions simply leads to riskier behaviour (Bruwer, 2016). Such punitive policies neglect harm-reduction perspectives, HIV-risk, and patterns of drug supply and demand. Some harm-reduction programmes are emerging in the region, such as Tanzania's recently implemented methadone programme (WHO, 2016d). Kenya is also seeing a slow emergence of similar methadone programmes (Rhodes et al., 2015). Such programmes are currently being studied and emulated by a number of other countries in sub-Saharan

Africa (including Uganda and Ethiopia) (Wanyonyi, 2017). Harm-reduction approaches, such as the provision of methadone, promise to help mitigate the worst effects of increasing levels of trafficking in the region, while authorities focus on building further law enforcement capacity.

The committee concludes: Excessive alcohol consumption is a major and growing concern in urban eastern Africa, although it is rarely understood as a problem by wider society. Many urban individuals consume problematic levels of both branded and home-brewed alcohol.

The committee concludes: The alcohol beverage industry plays a significant role in shaping policies and behaviours around alcohol in the region through lobbying and marketing efforts.

The committee concludes: Eastern African countries are under-resourced to combat the increasing flows of illicit drugs into their countries. Disadvantaged populations are often the most severely affected by an influx of illicit substances, as they offer a way to cope with challenging material circumstances.

Therefore, the committee recommends: Parliaments and other policymakers should seek external and unbiased advice when forming policy that will impact the alcohol beverage industry.

Therefore, the committee recommends: Researchers should establish a base of evidence on the prevalence and risks of non-commercial alcohol consumption in the region.

Therefore, the committee recommends: Governments and health authorities should emphasize harm-reduction approaches in their efforts to manage increasing levels of illict substance use.

5.5 Urban Safety and Security

Highlights and Main Points

- Granular injury surveillance data is limited in eastern Africa, making empirical statements about its prevalence difficult. Available evidence suggests that both intentional and unintentional injury rates in urban areas are well above global averages.

- Violence levels are highly segmented by age and location, pointing to the need for disaggregated data. In general, evidence from slum areas in eastern Africa documents extremely violent environments.

- Although IPV remains prevalent in eastern Africa, some evidence suggests that urbanization may be correlated with a normative shift away from IPV acceptance.

- If broad-based economic growth does not create income-generating opportunities for youth, then patterns of crime and violence in urban areas could be poised to become much worse.

Globally, urban violence remains a common cause of both death and injury (WHO, 2016b). Injuries account for 11% and 8% of the total disease burden in low- and middle-income countries, respectively (Lopez, Mathers, Ezzati, Jamison, & Murray, 2006). Unfortunately, more granular injury surveillance is lacking in many countries, including those in eastern Africa (Ziraba et al., 2011). Available evidence from the region, however, suggests that injury rates remain well above global averages, especially in slum areas. A study carried out in two Nairobi slums, for example, found that injuries accounted for 17.9% of years lost due to premature death. In the same two Nairobi slums, injury is the second most common cause of death, following HIV/AIDS and tuberculosis, among individuals aged five years and above (Kyobutungi et al., 2008).

Available data suggests that intentional injuries may account for up to half of this burden in some cities. A study in Nairobi slums, for example, found that 54% of all injury-related deaths were linked to assaults in 2012 (Mberu et al., 2015). Among homicide deaths, gunshot wounds and blunt force trauma as a result of mob justice are the most common modes of injury (Kyobutungi et al., 2008). Violence-related statistics, however, vary widely between age groups and geographic locations, pointing to the urgent need to disaggregate urban data. For example, in their examination of the Nairobi Urban Health and Demographic Surveillance System, Mberu et al (2015) found that between

2002 and 2012 injury accounted for 69% of deaths among young men aged 15-19, and remained a leading cause of death among men until ages 30-34 (Mberu et al., 2015). Further, the study found that assault-related deaths ranged from 75% of deaths among adolescents aged 15-19 to 40% among those aged 40-44. Globally, young men are more prone to injury than other demographics due to a number of reasons including but not limited to greater risk taking tendencies and a higher liklihood to engage in violent behaviour (Mberu et al., 2015). Available data from Nairobi slums evidence an extremely violent environment, which likely has significant long-term mental and spiritual consequences for those living in such conditions (Ziraba et al., 2011).

The risk factors for intentional injury are complex, context-specific, and frequently tied up with other development outcomes such as education level and employment status. As such, violence as a differentiated problem is infrequently addressed in the global public health literature (Ziraba et al., 2011). In general, the modes of injury found in Nairobi slums reflect the high levels of insecurity and violence in the population. Informal settlements are characterized by a number of societal risk factors for intentional injury, including reduced norms against violence and the creation and sustenance of large gaps between different segments of society (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002). At the community level, social disintegration, high levels of residential mobility, high population densities, social heterogeneity, and low levels of social cohesion all play a role in elevating incidences of violence (Krug et al., 2002). At the individual level, risk factors for intentional injury identified in the literature include being a young male, low socio-economic status, unemployment, and alcohol use (Kyobutungi et al., 2008; Ziraba et al., 2011). In many cases, ineffective law enforcement and poorly equipped emergency services exacerbate the problem. Victims of intentional injury rarely receive appropriate and timely treatment (Ziraba et al., 2011). All of the above factors are generally present in the slums of eastern African cities, and high levels of interpersonal violence are hence unsurprising.

As violence occurs for varied reasons, it can be useful to separate the issue into violence that occurs outside of the home, and violence that occurs within the home. Generally speaking, intentional injury outside of the home is often the result of criminal activity. Intentional injury within the home is usually the result of intimate partner violence (IPV). Gender subsequently plays a large role in determining the type of violence to which an individual is exposed. For example, the high prevalence of violence in Johannesburg, South Africa, has been well documented. Otwombe et al. (2015) explain, “exposure to community and family violence is endemic among adolescents from low socio-economic settings in all ethnic groups in Johannesburg, South Africa (Otwombe et al., 2015).” This study found that while adolescent girls are more

likely to witness and experience violence within their household, adolescent boys witness and experience more violence in the community (Otwombe et al., 2015). In lower socio-economic status areas, violence is often so prevalent that it becomes normalized as a part of everyday life (Harpham, 2009; Kjellstrom & Mercado, 2008).

Globally, IPV will directly affect the lives of one third of partnered women at some point in their lifetimes (Flavahan, 2012). The WHO estimates that 45.6% of African women will experience either IPV or non-partner sexual violence at some point in their lives (García-Moreno et al., 2013). A systematic review of African studies on IPV by Shamu et al. (2011) revealed one of the highest rates of IPV directed at pregnant women in the world. The major risk factors included HIV infection, past history of violence, and alcohol and drug use (Shamu, Abrahams, Temmerman, Musekiwa, & Zarowsky, 2011). Beyond the direct negative effects, the threat of violence may prevent women from accessing necessary sanitation services (Sommer, Ferron, Cavill, & House, 2015). Unable to leave their one-room houses after dark for fear of violence, many women resort to "flying toilets," when plastic bags are filled with human waste and flung into gutters or the street. The use of flying toilets significantly increases the risks of contracting CDs such as cholera and dysentery both for those who use them and for the wider community (Clarke, 2010). Despite scarce data, the available evidence suggests that the threat of violence may provide a major impediment to girls and women accessing sufficient water and sanitation services in eastern African urban areas (Sommer et al., 2015).

Levels of violence against women are highly variable between countries and based on normative cultural values. Across the continent, 51% of women on average admitted that being beaten by their husband is justified if they go out without permission, neglect the children, argue back, refuse to have sex, or burn the food (Christiaensen, 2016). Although evidence shows that acceptance of IPV in Africa has fallen by about 10% over the 2000s, rates are still exceptionally high, and more than double the rate of IPV acceptance in the rest of the developing world (Beegle, Christiaensen, Dabalen, & Gaddis, 2016). However, acceptance rates are not uniform across countries. It seems to be deeply engrained in some societies (77% in Uganda), and only a small minority seem to accept it elsewhere (13% in Malawi) (Beegle et al., 2016). A major determinant of IPV acceptance is education—better-educated women are 31% less likely to tolerate IPV (Beegle et al., 2016). However, better education does not automatically translate into lower incidence of IPV. In fact, women with primary and secondary education are almost 10% more likely to have experienced IPV than uneducated women—a puzzle that deserves further investigation (Christiaensen, 2016).

Evidence from Ethiopia suggests that women living in rural areas are more likely to experience violence than their urban counterparts, although

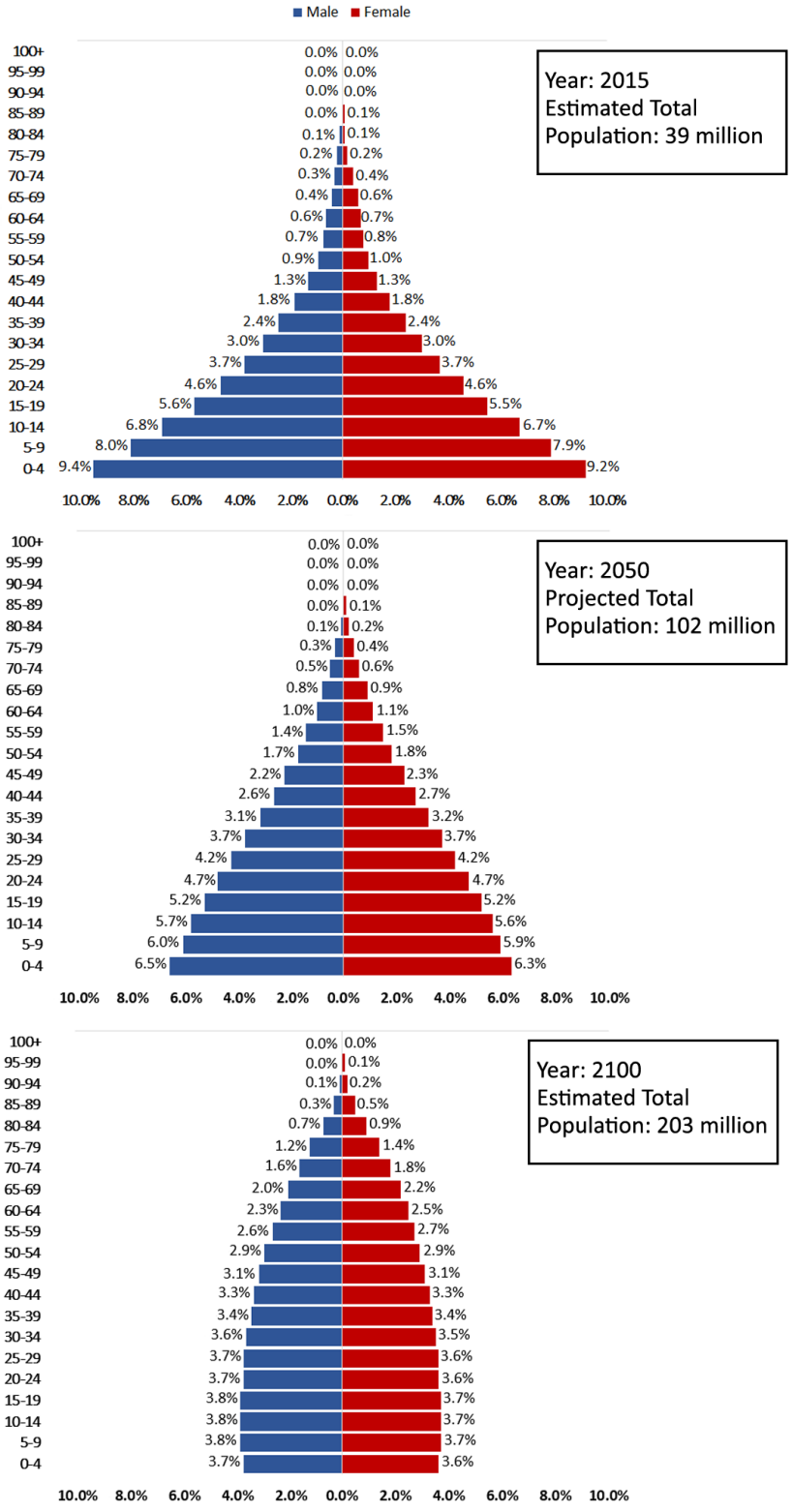

FIGURE 5 A typical illustration of the youth bulge, using data from Uganda. The largest age bracket is currently under 10 years of age. As those children enter working age and the fertility rate falls, the dependency ratio (working to non-working population) also declines. This transition opens opportunities for either rapid economic growth, or crime and unrest if income-generating opportunities for youth are limited

SOURCE: Data from UN, 2015b.

rates of violence are also significantly correlated with literacy (Deyessa et al., 2010). In general, literate and urban women reported holding less accepting attitudes toward IPV (Deyessa et al., 2010). While this evidence seems to call for rural intervention, it also suggests that urban factors may actually help to undermine the prevalence of IPV. Therefore, identifying and enhancing the characteristics of urbanization that undermine the normative foundation of IPV should feature as an important violence prevention strategy. As a way to combat violence in Kampala, Uganda, the SASA! (Start, Awareness, Support, Action!) program was designed and implemented by two NGOs: Raising Voices and the Centre for Domestic Violence Prevention (CEDOVIP). SASA! hopes to reduce domestic violence through outreach projects, as they encourage local residents toward "a re-analysis of the acceptability of violence, greater empathy, improved communication, and better anger management strategies (Kyegombe et al., 2015)." Norms and beliefs determine behaviour, and the success of programs such as SASA! suggest that targeting normative change directly presents an important way to curb IPV in urban areas.

In many eastern African slums, the state fails to provide basic services and security. A variety of informal institutions, including ethnic militias and block-level vigilante groups, have stepped into this vacuum to provide security and enforcement services (LeBas, 2013). Such violent groups linked to local communities are frequently characterized as a security problem that calls for a response from police (Manwaring, 2005). However, a critical analysis of such groups reveals that they are often intricately linked to national-level politics. Violent organizations, for example, gain a foothold and degree of legitimacy by appealing to traditional political loyalties, including ethnicity. Conversely, organizations that successfully appeal to these traditional loyalties become attractive targets for co-option by political elites (LeBas, 2013). Thus, while criminal gangs operating in slums are frequently characterized as a purely law enforcement problem, it is important to acknowledge that many of these informal organizations are involved in highly complex political acts that often reflect ethnic politics at the national level (LeBas, 2013; Manwaring, 2005).

Finally, politicians and researchers often suggest that when a large percentage of the population is young, also known as a "youth bulge," countries may be more susceptible to higher levels of violence (see Figure 5). Youth bulges are argued to create greater opportunities for violence through an abundant supply of youths with very little to lose, and to create greater motives for violence because of institutional over-crowding, in particular unemployment (Urdal, 2006). Although this violence may manifest in many forms, cross-national models give robust support to these theoretical frameworks. Youth bulges are particularly responsible for armed conflict in autocratic regimes, but a similar effect is also found for highly democratic

countries (Urdal, 2006). When fertility decreases sharply, countries are left with a large youth cohort with lower dependency ratios. Studies have shown that such a youth bulge can produce a powerful economic boost for countries. However, the above findings also suggest that without sufficient employment opportunities, youth bulges can also produce high levels of violence and political instability (Urdal, 2006). Therefore, without broad-based economic growth generating opportunities for youths in urban areas, current patterns of violence could be poised to become much worse in the coming years.

The committee concludes: Urban environments in eastern Africa are violent areas, especially slums and other disadvantaged areas.

Therefore, the committee recommends: Governments should emphasize employment and income-generating opportunities that specifically benefit youth.

5.6 Urban Health Services

Highlights and Main Points

- Although health services are generally more concentrated in urban areas multiple barriers to access persist, in particular clinic quality.
- While the great majority of middle- and higher-class women make use of professional birth attendants in delivery facilities, such access for lower-class women remains highly limited. As a result, maternal mortality rates in urban slum areas tend to be higher than in rural areas.
- The dynamics of informal sector employment, including challenging working hours and weak job security, contribute to the lack of health service access experienced by the urban poor.
- The relationship between public and private health service providers is an important determinant of overall service delivery. Effective coordination requires a strong legislative framework and effective enforcement.

Availability, geographical access, appropriateness, affordability, and quality are all important aspects of health services (Harpham, 2009). Sufficiently meeting each of these aspects calls for attention to such details of service provision as distance, open hours, and cultural sensitivity—all of which can greatly impact the health seeking behaviour of individuals, especially the most marginalized. For example, even when health services are close and available, long wait times, negative attitudes of health workers, and supply shortages keep people from taking advantage of them (Harpham, 2009; WHO, 2016b). Thus, clinic quality is often the most important variable in determining how many people access services, rather than clinic quantity. Studies from Senegal show that women chose not to visit clinics at all if they were perceived to be of poor quality (WHO, 2016b).

Another important issue involves the simple lack of funding and resources for health clinics. In Tanzania, Levira and Todd (2017) found that a meagre one-third of urban healthcare facilities had access to a reliable water supply, and only two-thirds included latrines for patients (Levira & Todd, 2017). This finding sheds light on Abera et al.'s (2017) research on patient satisfaction at an Addis Ababa laboratory clinic: lack of easy access, poor comfort, and uncleanliness of the latrines accounted for the majority of complaints about the clinic (Abera, Abota, Legese, & Negesso, 2017).

Maternal and child health clinics represent one of the most poorly served health services in urban eastern Africa, especially for the poor (Harpham,

2009; Kanaskar, 2016). A study involving women in Nigeria and Malawi found that both middle- and high-class urban women made use of skilled birthing attendants. The urban poor, however, did not make use of birthing attendants to the same degree (Atuoye et al., 2017). The results of the study in Tanzania by Levira and Todd (2017) corroborate the results from Nigeria and Malawi. They found that 90% of urban women in the highest social quintile ave birth in healthcare facilities, but only 33% of urban women from the lowest social quintile experienced the same (Levira & Todd, 2017). Furthermore, they reported that the maternal mortality rate in Tanzania is higher in urban than rural areas (Levira & Todd, 2017). This pattern is also true for Kenya, as reported maternal mortality in Nairobi slums is much higher than the national Kenyan average (Beguy et al., 2015). In other words, while urban women on the whole receive greater access to maternal healthcare facilities, use of such facilities is significantly lower for poor urban women (Quentin et al., 2014).

Immunization programs are another essential public health service influenced by urbanization. In many low-income urban areas, children present low vaccination rates despite many years of investment and greater proximity to healthcare facilities. Mutua et al. (2011) explain that significant determinants of children being vaccinated include poverty, place of delivery, and the mother's level of education. The researchers go on to suggest that attention should be focused on making sure personnel distribute timely vaccinations and administer vaccinations in facilities at birth (Mutua et al., 2011). The mother's knowledge about vaccinations is a significant determinant of whether children are vaccinated, a gap that community-level education campaigns can help tackle (Mutua et al., 2011; Soura et al., 2015). Finally, in Nairobi, vaccinations often cost money, and not enough health workers are hired to mobilize and distribute them (Soura et al., 2015).

It is important to note that the urban poor constitute a particularly hard-to-reach population, as most of them live in informal settlements or slums with innate structural barriers to accessing services (Rockefeller, 2015). Relatedly, most of the urban poor living in slums are informal workers and their often-poor employment conditions may mean that it is not always possible to provide services at the workplace, and unfavourable working hours may mean that service outlets are closed by the time they seek services (Rockefeller, 2015). Informal workers are also rarely at home even when home-based services are available to other members of the community (Vlahov et al., 2007). Consequently, the urban poor have a higher opportunity cost for seeking care—which may imply the loss of wages or even jobs—that in turn leads to lower use of preventive services such as immunization, ante-natal care, and screening for chronic diseases, even when they are available and free (Rockefeller, 2015). These dynamics underscore the need for research into

health delivery models and pathways to reduce health inequities and improve health prevention outcomes among the most vulnerable populations. In a study on reaching the urban poor with health interventions in Nairobi slums, Mberu et al. (2016) identify the significant role of non-traditional service delivery models that mediate the service access disadvantages of slum and other specific hard-to-reach sub-groups. The authors go on to recommend that such interventions, which are convenient and adaptable to specific contexts, may hold the promise of bridging service access and utilization deficits among disadvantaged populations throughout the country (Mberu, Elungata, Kabiru, & Ezeh, 2016).

The relationship between public and private healthcare systems is also an important determinant of overall health service delivery in urban areas. In Uganda, for example, the health sector has always been composed of an institutional mix including government-owned, private for-profit, and private non-profit facilities (Birungi, Mugisha, Nsabagasani, Okuonzi, & Jeppsson, 2001; Katusiimeh, 2015). The proliferation of private health care options did not result from any kind of strategic planning or consensus between government and the private sector—rather, it has represented an adaptive response to an overwhelmed public health care system that resulted from years of historical political and economic disruption (Birungi et al., 2001). Over the past decades of peace and stability, a consensus has emerged that the various actors in Uganda's health care sector should complement each other by focusing on their comparative advantages. However, rendering the private health sector complementary to the public requires a strong legislative, regulatory, and policy framework coupled to a system of implementable enforcement (Birungi et al., 2001). In the absence of these requirements, healthcare in Uganda remains relatively uncoordinated and largely under-regulated (EQUINET, 2013).

The committee concludes: Quality health services are not accessible to many who would seek them, and there is not enough focus on preventative medicine.

Therefore, the committee recommends: Provision of healthcare services should take into consideration appropriateness, availability, and affordability, in addition to geographical access to ensure quality care is provided, with a strong focus on the education of caregivers to improve uptake amongst the urban poor.

5.7 Spiritual Health in the City

Highlights and Main Points

- Spirituality, health, and healthcare have been deeply intertwined among all societies since the beginning of recorded history. Yet, the spiritual dimension of health receives little attention in modern discourse.
- Spirituality encourages good health through specific practices, by providing resources for coping with stress, and by encouraging pro-social behaviour.
- In general, spiritual health refers to a subjective sense of connectedness with the universe, and of the meaning and inherent value of one's existence.
- Urbanization is particularly relevant to spiritual health in the way that it fractures traditional structures of identity and personal and communal meaning.

In line with the WHO's tripartite definition of health, the urban health literature tends to focus on the prevention of physical ailments such as CDs and NCDs, mental ailments such as depression and substance abuse, or social ailments such as violence (WHO, 2006). Often missing from this discussion, however, is an acknowledgement of the spiritual dimensions of health and wellbeing. Spirituality, health, and healthcare have been deeply intertwined in all societies since the beginning of recorded history (Christina Maria Puchalski, 2010). Only in relatively recent times have these systems of healing been separated by the development of modern science-based medicine in the West.

It is difficult to find a common definition of "spirituality" in academic literature, as it remains more commonly used as a lay term with different meanings to different people (Egan et al., 2011). Common descriptions of spirituality, as noted in Vachon's (2008) review of definitions, include: beliefs, practices, connections, sacred meaning, transcendence, relationships, meaning, purpose, and values (Vachon, 2008). To others, spirituality is best understood as a technique toward achieving better mental and physical wellbeing (Alexander, 1995). For some individuals spirituality refers to a specific religion, but this need not be the case. Religion, with its specific structures of belief, ritual, and social organization, is best understood as a sub-set of the spiritual impulse (Hill et al., 2000). It is not uncommon for both laypeople and academics studying the issue to differentiate between those who

identify as religious and those who identify as spiritual (Ammerman, 2013). Spirituality, as an invisible multidimensional reality, manifests in people's values, beliefs, attitudes, and practices (Puchalski, Vitillo, Hull, & Reller, 2014). Despite the wide range of definitions, a common theme that emerges from all is the tight connection between spirituality and a holistic conception of wellbeing.

Theoretically, there are a number of mechanisms through which spirituality interacts with physical, mental, and social wellbeing. First, many spiritual practices encourage a set of rules about how to behave in society and how to treat others. Adherence to such rules may decrease the health risks involved with petty crime or risky sexual behaviour (Koenig, 2012). Second, spiritual practice may provide resources for coping with stress, and thereby reduce the likelihood of emotional disorders or substance abuse. Further, spirituality may involve deep belief in a personal transcendental force that gives individuals a subjective sense of agency through prayer, meditation, or ritual (Koenig, 2012). Third, most spiritual practices emphasize the desirability of loving others, expressing compassion, and committing altruistic acts. Such pro-social behaviours strengthen communities by providing a buffer in the face of unexpected ill fortune (Koenig, 2012). All of these interconnections with health are increasingly being understood through the field of psychosomatic medicine (Glaser & Kiecolt-Glaser, 2005; Koenig, 2007). Generally, however, spiritual health points to an extension beyond the concepts of physical or even mental well-being, to an individual's subjective sense that their life has meaning in a rapidly changing world (Koenig, 2012; Rees, Francis, & Robbins, 2006). A sense of spiritual well-being, however it may be achieved, thereby underpins the mental and physical health of individuals.

Such a concept of spiritual health aligns with Amartya Sen's capabilities approach to development—defined as the freedom to live a life that one has reason to value (Friel, 2011). In this sense, the process of development begins within the subjective mindset of the individual and their capability to experience connection to a deeper meaning for their life. Renewal of this subjective experience of connection must therefore begin within an individual's psyche before issues of physical, mental, and social well-being can be fully addressed (Tanner, 2014). Based on this discussion, spiritual health most appropriately refers to a subjective sense of connectedness and meaning that allows an individual to pursue a life they value, and that contributes toward practices and attitudes that reinforce the physical, emotional, and social health of themselves and their communities.

In the case of eastern Africa, traditional modes of understanding have long accepted the spiritual underpinning of all forms of well-being. As Dr.

Jacob Olupona, a leading scholar of African religious traditions at the Harvard Divinity School, asserts:

> *...the word 'religion' is problematic for many Africans, because it suggests that religion is separate from the other aspects of one's culture, society, or environment. But for many Africans, religion can never be separated from all these. It is a way of life, and it can never be separated from the public sphere. Religion informs everything in traditional African society, including political art, marriage, health, diet, dress, economics, and death (cited in Chiorazzi, 2015).*

From this view, spirituality and religion are inseparable from all other aspects of life. Sickness is not only an imbalance in the body, but an imbalance in an individual's social life related to family and community relations. In the case of traditional beliefs illness is most related to one's relationship with their ancestors. Approached from this foundation, many traditional communities understand the process of healing to involve the restoration of a harmonious balance between the physical, emotional, and transcendental dimensions (Dein, 2013). Most often this balance is restored through a ritual of some kind, although the variety and complexity of rituals is hugely diverse between geographies and social groups (Dein, 2013). As the early social anthropologist Victor Turner pointed out from his work with the Ndembu people in modern day Zambia, healing rituals do as much to repair and maintain the social fabric as they do to repair the body, mind, and soul of sufferers (Turner, 1970). Thus, illness is not an individual affliction, but a spiritual concern of the entire community.

The impact of urbanization on spiritual well-being is therefore of particular concern in the way that it fractures and rearranges traditional community structures. Urbanization implies not only a demographic and infrastructural shift, but also a broader shift in social values and community relations. For instance, traditional communities tend to emphasize healthy human relationships as the highest good. Modernity, in contrast, emphasizes growth in material output, utility, and pleasure as the highest good (Nürnberger 2012). Traditional communities are generally characterized by a patriarchal and hierarchical structure in which the roles, responsibilities, and statuses of all members are circumscribed along lines of gender and age. Modern communities, in contrast, allow members to create vast collaborative relationships determined by common interest in which roles, responsibilities and statuses are determined by expertise, efficiency, and access to communication (Nürnberger, 2012). These are of course large generalizations. Nevertheless,

they give some dimensions to the shift experienced by individuals caught in the traditional-to-modern urban transition.

In the case of eastern Africa, where many countries have been experiencing this transition at an unprecedented pace over the last century, these categories are not mutually exclusive. Modern motives and mindsets penetrate the most remote villages, while traditional motives and expectations linger among Westernized urban elites (Nürnberger, 2012). Malidoma Patrice Some, a Burkinabe author and spiritual leader, summarizes this "cultural lag," as sociologists refer to it, in his discussion of Christianity:

> *In Africa, you cannot come into a comfortable material lifestyle without going through Christ. So many Africans say, "I'll take the whole package. That way I'm sure I'll get what I want." ... Those who convert will show up for Sunday Mass as usual, looking devout, but on weekdays they will see the shaman, do their sacrifices and usual rituals (cited in Miller 1995).*

In essence, members of more traditional communities who are thrown rapidly into a modern urban context suffer a crisis of identity. The certainties and structures of traditional life evaporate and many of the metrics to evaluate success, status, or merit no longer apply (Nürnberger, 2012). Respected leaders become informal labourers, and self-worth and self-confidence suffer under a spiritual deprivation. As a result of these sometimes-abrupt shifts, society experiences a widespread collapse of meaning, denial of communal social obligations, and dissolution of family cohesion (Nürnberger, 2012). These effects of the urban transition can have profoundly negative effects for those least equipped to handle them. In sum, the current transition towards a modern urban culture in eastern Africa is producing unprecedented levels of personal freedom, material production, efficiency, international collaboration, wealth, and power—especially for those who have successfully internalized the modern mindset. At the same time, the urban transition undermines traditional identities and a sense of deep spiritual and communal connection among large swathes of the population. The result, in some cases, is social fragmentation, violence, addiction, and further marginalization. Finding ways to bridge these two mindsets and live with a subjective sense of spiritual well-being is one of the primary underlying urban health challenges facing eastern Africa.

Policy, planning, and built environment interventions will by necessity target the physical, mental and social aspects of health. Underlying these aspects, however, should remain an awareness and understanding of the subjective experience of the urbanization phenomenon, and how that may

influence efforts to improve health outcomes. Initiatives to build collective senses of identity, belonging, and spiritual fulfilment will bolster wider attempts to improve health in urban areas.

The committee concludes: Spiritual wellbeing is emerging as an important area of enquiry in urban health.

The committee concludes: Urban social capital networks and trust are disintegrating in many urban areas, reducing socio-cultural health and undermining the ability of individuals to maintain their own well-being.

Therefore, the committee recommends: Global, regional, and national policymakers should take steps to embed spiritual well-being in urban health strategies.

6

Urban Determinants of Health

The previous section briefly outlined the current urban health situation in eastern Africa. Simply knowing what exists, however, is not enough to direct policy action. The following section therefore seeks to draw some tentative causal links, based on the available evidence from the region. By identifying, analysing, and discussing the determinants of urban health in eastern Africa, the report seeks to identify the most accessible entry points for policymakers to improve urban health outcomes. In general, the determinants fall into two categories: either socio-economic or built environment factors.

Socio-economic factors generally refer to the composition of society, and how an individual's position at a certain place in that society has important implications for their health outcomes. Urban areas are defined not only by their concentration of infrastructure, but also by their dynamic social structures. The social order of cities is markedly different from rural areas, and countries in the midst of rapid urbanization are often caught in a turbulent transition period between the two. How and where individuals are able to access health services, or clean water provisions, or solid and liquid waste disposal, are all determined by their social identity and economic status. Unpacking some of the important ways that socio-economic factors act as determinants of health in urban areas is thus an important pre-requisite to developing any useful policy actions.

The built environment refers primarily to the physical infrastructure of urban space—and the policies that influence its creation and destruction—that has a direct impact on the health status of populations. The built environment can refer to housing and public transportation systems, or to a city's network of healthcare delivery facilities. The built environment is developed with investments from the private sector, governments, and civil society, and thus often requires high levels of coordination between all three to operate

effectively. In general, the built environment changes very slowly and takes concerted attention and investment to improve. If constructed wisely, the built environment can therefore have long-term health benefits for future generations. If constructed recklessly it will lock us into a trajectory of poor health for many years to come and will require a great deal of resources to change.

6.1 Socio-economic Determinants

Highlights and Main Points

- In the aggregate the residents of urban areas experience better basic service access compared to their rural counterparts, but these statistics also mask deep intra-urban inequalities.
- Urban slums are a common fixture of eastern African urban areas, and they are often overlooked by official policies and programmes as data on the health dynamics of slums is difficult to come by.
- Peri-urban areas are an increasingly important geographic area of focus in eastern Africa, as they are frequently home to the most marginalized populations with the poorest access to health and other basic services.
- Daily life in dense urban slums and peri-urban areas entails constant exposure to harmful conditions such as inadequate sanitation, dangerous working conditions, and high-stress lifestyles. All of these conditions become interconnected, creating cycles of poverty and powerlessness from which it is difficult to escape.
- Other health determinants such as gender, age, and disability play crucially important roles in determining the health outcomes of individuals. To better understand these complexities, researchers have begun calling for the establishment of "slum health" as a discrete topic of study.

Health professionals have gradually reached the consensus that socio-economic status and demographic factors play a fundamental role in the health of individuals. Often referred to as the "social determinants of health," these factors imply that improving public health is not simply a matter of providing resources or technical assistance (Ompad et al., 2007). Poor health, material deprivation, lack of access to health care, sanitation, and clean water, are all deeply embedded in the larger social context. Therefore, improving health outcomes requires engagement with the underlying socio-economic and

demographic factors shaping health. In the urban context, this engagement becomes doubly important. Urbanization is fundamentally a process of change, and as socio-economic and demographic factors are in flux, the health of populations will also change (Vlahov et al., 2007). Implementing measures to manage the process of urbanization, and the societal changes it entails, is therefore necessary to ensure the long-term health and prosperity of populations.

Compared to their rural counterparts, cities are assumed to be sites of improved access to basic service and greater livelihood opportunities. While true in the aggregate, such assumptions disguise large intra-urban inequities, demonstrating that urban benefits are often distributed unjustly (Vearey, 2017). Unequal health outcomes between low, middle and high-income urban dwellers are some of the greatest and most visible differences between populations within a city (Harpham, 2009; UNFPA, 2007). While inequality limits opportunities and service access for the poor, its effects also permeate throughout society. According to the WHO, inequality "hampers not only development in health, but also in social, economic and human development for the city as a whole, with implications for national and global development (WHO, 2016b)." Inequality and economic instability are related. Those with less access to resources and education are not able to realize their full potential, thus lowering the current and future economic prosperity of the city as a whole. Societies with greater levels of inequality are in addition less likely to make public investments which enhance overall productivity, such as in public transportation, infrastructure, technology, and education (Stiglitz, 2015). If the wealthy and the powerful do not feel that these improvements are necessary, they may never be achieved.

Large disparities exist between the health of slum dwellers and those who live in legal housing within the same city. Densely populated cities can easily mask the internal inequality so familiar to slum dwellers (WHO, 2016b). UN-Habitat defines slum households as those that experience one or more of the following household deprivations: lack of access to an improved source of water, lack of access to improved sanitation facilities, lack of sufficient living area, lack of housing durability, and lack of tenure security (UN-Habitat, 2016a)." Across the world, one out of every three urban dwellers—equal to one-sixth of global population—meet at least one of these conditions, meaning they live in a slum (UNFPA, 2007). Slum dwellers are often referred to as a city's "invisible population," because they are not official legal residents, and have thus historically been overlooked by state policy (WHO, 2016b). In many cities, tense relations have developed between slum communities and the state, further compounding their lack of visibility in the world of policy (O'Keefe, Lüthi, Tumwebaze, & Tobias, 2015). Slums tend to occupy marginal land in

urban space, undesirable for other uses, and they form both on the outskirts of cities, and in the urban core (WHO, 2016b).

Slums are a common fixture of the urban landscape in eastern Africa, with their own unique health needs. Increasingly, however, the most disadvantaged members of urban society in eastern Africa live in what researchers refer to as "peri-urban" areas—those locations that exist at the interface between the rural and urban. Slums have a generally recognized definition and specific characteristics. Peri-urban zones, however, do not have a clear definition accepted by all scholars and organizations. Binns et al. (2003) define the peri-urban as "an interface where there has been a blurring of the rural and urban, and is characterized by mixed land use by a wide range of stakeholders (Binns, Maconachie, & Tanko, 2003)." Peri-urban areas tend to appear when agricultural land is converted rapidly to urban uses, with some blending of both functions in the process (d'Amour et al., 2017). Peri-urban areas are thus largely the result of rapidly urbanizing cities in the context of poorly enforced planning regulations. Understanding the specific dynamics of peri-urban zones is crucial for urban health research, as they promise to play an increasingly prominent role, especially in eastern African cities (Chirisa, 2010). For a variety of reasons, eastern African urban settlements are growing horizontally, rather than vertically (Abdissa & Degefa, 2011). As these relatively low-density urban agglomerations expand at their edges, rapidly consuming what was previously agricultural land, peri-urban zones will feature as an increasingly prominent environment of human occupation.

Peri-urban zones are highly varied; some are characterized by poverty and deprivation, while others present much more like middle-class suburbs. For some, peri-urban areas provide a crucial foothold into the opportunities of the wider city, while allowing them to maintain rural connections (Waldman, 2015). The very poor, however, experience the peri-urban as a zone of extreme vulnerability, with increased presence of diseases and vectors, and limited state services. Basic hygiene and sanitation is often extremely difficult to achieve in peri-urban areas, and once a disease outbreak strikes, isolation of the sick is often impossible (Waldman, 2015). As one high profile example, the 2014 Ebola outbreak in West Africa emerged in a peri-urban setting, and was able to spread through the economic and social networks that connect these areas to the wider city (Waldman, 2015). Additionally, as urban agglomerations expand into previous cropland, they generally ignore administrative and political boundaries. Peri-urban areas are thus struck by a distinct governance challenge requiring large-scale planning and coordination between multiple entities (Chirisa, 2010).

Daily life in a slum means facing an array of hazards and inadequate services, such as overcrowding, poor sanitation, lack of access to safe water,

and increased exposure to pollution and disease (Kjellstrom & Mercado, 2008; Ramin, 2009; UNFPA, 2007; UN-Habitat, 2010, 2014; Zulu et al., 2011). Overcrowding in Nairobi's 200 slum areas prompted the WHO to label them some of the worst in Africa in 2016, with population densities "reaching 26,000/ km^2 in inner-city slums like Pumwani and Maringo (UN-Habitat, 2016a)." Spatial segregation of the poor is common among all cities, but in the case of slums segregation is much more extreme, and often problematic (Chandola, 2012; Northridge & Freeman, 2011). Slums tend to exist in fringe areas of the city where the privileged have little reason to travel. This separation isolates the poor, making it harder for them to access economic opportunities, health services, or public amenities. Such segregation exacerbates the prevailing vulnerability of the poor: "the cycle of powerlessness, poverty and ill-health comes full circle in deprived urban communities (Kjellstrom & Mercado, 2008)." For example, it is more common to contract communicable diseases in slums, which negatively affects a household's ability to generate income, causing them to sink lower into deprivation.

Many slum households work in dangerous conditions, continuing the cycle of powerlessness, poverty, and ill-health (Harpham, 2009; Kjellstrom & Mercado, 2008; UN-Habitat, 2016a). These jobs may include exposure to toxic products, risk of injury, noise, or poorly lit rooms. All affect the health of workers. For example, those that are subjected to high levels of air pollution or toxins in the workplace increase their risk of developing chronic respiratory disease (Ramin, 2009; WHO, 2016c). Like slum housing, these jobs are often informal—existing outside the bounds of regulatory standards. With little state enforcement capacity, employers are free to ignore official standards for the protection of workers' health and safety. As one alternative to the frustration of unenforceable policy, some researchers recommend working directly with local trade unions or informal community organizations to engage them in discussion around workplace safety (Kjellstrom & Mercado, 2008). Despite such difficulties, slum residents repeatedly demonstrate remarkably high adaptive capacity and emergency community support mechanisms. During times of crisis, such as forced moves during flooding or evictions, the resilience of slum communities become especially apparent (Chelleri et al., 2015).

Continuous urban growth alongside poverty creates what Binns et al. (2003) call an "urban crisis (Binns et al., 2003)." This crisis presents a myriad of challenges for policymakers in urban health. The densely populated slums surrounding Nairobi, Kenya, illustrate this kind of crisis—and yet destitute migrants continue moving into these already packed slums on a daily basis (Archambault, de Laat, & Zulu, 2012; WHO, 2016c; Zulu et al., 2011). In Rwanda, an estimated 53.2% of urban dwellers live in slums; 50.7% in Tanzania; and 53.6% in Uganda. While more work opportunities draw migrants

to cities, access to basic services is often lower in slum areas compared to rural living (Friel et al., 2011; WHO, 2016b). The resulting disintegration of living standards takes a serious toll on the health of residents. For example, migrant children in Nairobi experience 39% higher morbidity than their rural counterparts (Soura et al., 2015). There are nevertheless many reasons for households to stay in urban areas, with the better economic opportunities featuring as a major consideration.

In slum populations, gender serves as an especially important social determinant of health (Frye et al., 2008; Kjellstrom & Mercado, 2008). Gender is such an important health determinant in slums that Frye et al. insist "... researchers should conceptualize gender as a structural and ''fundamental'' cause of disease… and evaluate how macro-level, gendered social and physical structures influence micro-level health outcomes (Frye et al., 2008)." Gendered research reveals disparities in heterogeneous slum populations, such as the fact that female-headed households in Nairobi's informal settlements are farthest below the poverty line (Zulu et al., 2011). This gender-based inequality could be caused by any or all of the following imbalances: unfair access to resources, such as education, formal employment, money, health care and preventive measures, as well as unfair distribution of power between genders (WHO, 2016b). Poor, female-headed households must then fight the cycle of vulnerability and poverty to survive, which puts them at greater risk of developing NCDs or contracting a CD.

In bridging gender health gaps, policy attention should shift to address these factors directly. For example, in 2017, Clark et al. presented an intriguing study on the burden of childcare on women. They found that if women from Nairobi slums were provided subsidized childcare, they became 20% more likely to be employed, and earned more than previously. They could also work fewer hours without earning less (Clark, Laszlo, Kabiru, & Muthuri, 2017). Stable employment and less strenuous working conditions are both correlated with better health outcomes for mothers and children. Therefore, taking action to equalize power and resource disparities between the genders seems to make a significant difference in the health of the urban female population.

Many of those living in peri-urban and slum conditions are elderly, and unable to work or secure the support they need. The poor elderly living in cities are often classified as a "hidden group," because so little is known about them in the urban health literature (Harpham, 2009). Despite this lack of evidence, it remains clear that elderly individuals in urban settings face unique health issues. Wilunda et al. (2015) found that elder-headed households in Kenya are more deprived compared to non-elder-headed households. Such deprivation likely occurs because older people in Kenya suffer a higher rate of poverty than the rest of the population, and as they age their employment

options dwindle (Wilunda et al., 2015). In addition, the low-income elderly must work long past retirement age to support themselves and their families because informal settlements are cash-based (Wandera, Kwagala, & Ntozi, 2015; Zulu et al., 2011). The elderly also have a higher risk of developing NCDs (Wandera et al., 2015; Wilunda et al., 2015; Zulu et al., 2011). For example, 43% of Nairobi's elderly slum population reports hypertension (Zulu et al., 2011).

Moving forward, researchers have begun to identify important study designs that can expose the complexities of urban health. Common study designs include urban-rural comparisons, inter-urban and intra-urban analyses (Ompad et al., 2007). One of the most common approaches treats each household as a single unit for ease of analysis (Harpham, 2009). A downside of this technique, however, is that it misses the more granular data on intra-household inequities of health related to gender, age, and disability. In part to address these difficulties, Lilford et al. (2017) and Ezeh et al. (2017) have highlighted the need to recognize slums as a distinct geographical enclave and slum health as distinct from urban health to enhance understanding of slum areas and slum-specific challenges as part of the urban reality. This recent push to examine slum health as a distinct subject that is separate from poverty and health will help in the development of interventions that address the unique challenges to health arising from the shared neighbourhoods of these densely inhabited urban environments (Ezeh et al., 2017; Lilford et al., 2017).

The committee concludes: Urban areas are defined by extreme inequality in health outcomes, largely determined by social factors such as socio-economic status, place of residence, gender, age, and ability level.

Therefore, the committee recommends: Researchers should invest substantially in generating health data on urban populations that is disaggregated by socio-economic status, geographic area, gender, age, and ability level.

Therefore, the committee recommends: Governments and health authorities should focus interventions on the most vulnerable segments of society, as identified by disaggregated data sets.

6.2 Built Environment Determinants

The physical environment in eastern Africa is largely built with private investment—and it is the responsibility of planners to direct that investment to avoid negative externalities. In most eastern African cities, however, implementation and enforcement of planning regulations is largely ineffective. Despite the difficulty of planning implementation, the construction (or preservation) of the physical environment in cities is a fundamental determinant of population health. Transportation systems determine economic efficiency, but also levels of injury and physical activity; housing determines both physical and mental health; water and sanitation infrastructure either contains or augments the spread of infectious diseases; the presence of green spaces determines levels of physical activity and mental well-being; urban farming policies determine nutritional intake. Coordinating diverse investments therefore requires a robust body of evidence on the impact that policies and infrastructure have on population health outcomes. Eastern African urban populations will grow exponentially in the coming years, and infrastructure investment will struggle to keep up. Ensuring the quality and coordination of the physical environment in cities will prove essential to maintain the liveability of urban space in eastern Africa.

6.2.1 Urban Mobility

Highlights and Main Points

- Despite growing numbers of cars, buses, trucks, and motorcycles on roads, the majority of urban eastern Africans do not own vehicles. The less wealthy rely on riskier forms of transport and are at higher risk of injury and death.

- Reckless driving and poor respect for traffic rules is a major cause of death and disability in the region. Some studies have found eastern African streets to be among the most dangerous in the world.

- Investments in public transport and safe, walkable streets are positive developments, but they are a long-term project in eastern Africa. In the interim, policymakers are working to improve enforcement of motor vehicle safety regulations.

As cities grow, the issue of transportation becomes of crucial importance to ensure functional urban areas. Higher populations increase the numbers of

private automobiles, buses, trucks, bicyclists, and pedestrians on the roads. Road conditions and driving practices across Africa make drivers highly vulnerable to injury or death in traffic accidents (Kjellstrom & Mercado, 2008; Zulu et al., 2011). Currently, less than 20% of urban Africans own a private car (UN-Habitat, 2016a). However, it is often the less wealthy, who motor-taxi, bicycle, or walk around the city, that are most vulnerable to injury or death. Research from Kenya finds that the most vulnerable road users are children, pedestrians, two- or three-wheeled vehicle drivers (cyclists), and the elderly (Ogendi, Odero, Mitullah, & Khayesi, 2013).

Box 1
Spotlight Discussion: The Case of the Medellín MetroCable

In 2004, the city administration of Medellín, Colombia, completed an innovative system of cable cars that for the first time connected isolated mountaintop informal settlements to the city's subway system, and thus to the city centre (Drummond, Dizgun, and Keeling, 2012). As a relatively cheap, effective, and highly visible response to urban transportation problems, Medellín's MetroCable has attracted widespread international attention (Dávila and Daste, 2012).

Medellín's "*comuna*" informal settlements developed in the inaccessible north-east of the city, growing to cover a wide area of difficult, steeply sloping terrain broken by deep, smaller valleys carved by numerous streams running down the hillsides (Dávila and Daste, 2012). The population of the north-eastern *comunas* is largely poor and was effectively ignored by city administration for decades while armed violence plagued Colombia. Before the construction of the MetroCable, the *comunas* were essentially cut off from employment opportunities in the city centre (Drummond, Dizgun, and Keeling 2012).

A wide variety of scientific studies have examined the effects of the cable car system, finding that while the project saw only marginal cost and travel time benefits, it effectively doubled the number of economic opportunities that can now be reached by the target population (Bocarejo et al., 2014). Related studies have shown that the cable car system improved mobility while drastically improving air quality relative to other possible urban mobility interventions (Dávila and Daste, 2012). Additionally, the cable car intervention was found to reduce homicides in the effected *comunas* by 66%, and decreased resident reports of violence by 75% (Cerdá et al., 2012).

The cable car system, however, is not without its own constraints. Technical limitations restrict passenger load to about 3,000 per hour, reducing the

systems effectiveness as a large-scale mass transit option (Drummond, Dizgun, and Keeling, 2012). The spatial dynamics of the comunas mean that residents frequently have to walk long distances to the cable cars and wait in line as long as 30 minutes during peak hours. Bulky personal items are also not allowed on the MetroCable, making it a less attractive option for those who sell on the street in the informal economy (Drummond, Dizgun, and Keeling, 2012). Together, these constraints contribute to the finding that formal sector workers are the primary users of the new cable car system, specifically those employed in the construction, manufacturing, or service sectors—and for these users the advantage occurs more in terms of time than in money (Brand, 2013). For informal sector workers and vulnerable populations, including children, housewives, the elderly and the disabled, the MetroCable offers few advantages over the existing bus system (Brand, 2013).

Despite these constraints, MetroCable has had a marked effect on both external and internal perceptions of Medellín. Externally, introducing MetroCable to one of the most marginalized areas of the city contributed to greater recognition of comuna residents by institutional bodies (Blanco and Kobayashi, 2009). Internally, the project created a greater sense of self-recognition among residents. Qualitative studies found significant improvements in the sense of resident inclusion in the urban mainstream, and a strong perception that the *comunas* are progressing (Drummond, Dizgun, and Keeling, 2012).The sense of inclusion created by the project is an important political benefit; the city administration gained in both legitimacy and governability (Brand, 2013).

Importantly, MetroCable was not undertaken in isolation. The project was part of a large-scale and integrated program that saw national and local governments negotiate directly with various gangs and militias occupying the *comunas*. Counsellors, psychologists, and civil society organizations were funded to help residents overcome years of trauma. Police worked in close cooperation with community groups to improve neighbourhood security, and the municipal government dedicated over 30% of its budget to financing and building new schools, parks, libraries, and recreational spaces in the *comunas* (Drummond, Dizgun, and Keeling, 2012). Integrated into this holistic social and infrastructure program, the MetroCable system has contributed to greater economic access and a sense of local pride and participation among a marginalized subset of the population in Medellín.

In Addis Ababa, traffic crashes, especially automobiles hitting pedestrians, are increasing along with urbanization. A recent study by Tulu et al. (2017) found that in Addis Ababa there are more illegal street crossings by pedestrians than in developed country cities, leading to higher injury levels. The researchers also point out that fatal crashes occur more at intersections, especially if there are missing or faulty traffic signals (Tulu, Washington,

Haque, & King, 2017). Studies in Kigali mirror these results, adding that motorcycles are the second most common vehicle involved in crashes after private cars (Patel et al., 2016). Kim et al (2016), working in Kigali, found that in 2016, injuries accounted for 22% of all deaths in the city, with traffic accidents as the prime cause of injuries (Kim et al., 2016). Compared to global estimates, eastern African urban streets are among some of the most dangerous. In a 2015 worldwide city survey, Nairobi was ranked 9th for the number of reported traffic fatalities per 100,000 population. Dar es Salaam was 26th and Addis Ababa 27th (WHO, 2016b). Unfortunately, victims of non-fatal incidents who incur permanent disability through amputations, head injuries, spinal cord injuries and the like are poorly documented in the region (Manyara, 2016, p. 102).

To ameliorate high levels of traffic accidents, cities are now focusing on walkable, bike-able, and public transit developments (Northridge & Freeman, 2011; Rydin et al., 2012; Smit et al., 2011). Such developments aim to decrease the number of traffic injuries and deaths, and could encourage more residents to bike, walk, or take public transit to work (Smit et al., 2011). Eastern Africa continues to experience worsening air pollution, so developing alternative ways for residents to navigate their cities promises to benefit everyone, regardless of wealth inequities (Kjellstrom & Mercado, 2008; UN-Habitat, 2016a; WHO, 2016c).

Pro-active work to realize a better transit reality in Addis Ababa has already been initiated. The city is developing an enhanced transportation system, including constructing a light rail system and building safer roadways (see Figure 6) (Tulu et al., 2017; UN-Habitat, 2014). African cities beyond the eastern African region provide some valuable models for transit development. While a bus-rapid-transit (BRT) system is currently being trialled in Dar es Salaam, similar systems have previously been established in Cape Town and Johannesburg, South Africa, and in Lagos, Nigeria (UN-Habitat, 2014). Durban, South Africa, created bus lanes on major freeways to encourage mass transit, widened roads to improve debilitating traffic jams, and increased the number of overpasses for traffic safety and flow (Thambiran & Diab, 2011).

The development of accessible transportation systems will be a long-term project in eastern Africa, requiring concerted investment and policy attention over a number of decades. In the interim, policymakers can look to improving enforcement of motor vehicle safety regulations as a way to reduce traffic-related mortality and morbidity in their countries. According to data from Kenya, the great majority of road traffic incidents (RTI) (85.5%) are caused by poor driver behaviour (Manyara, 2016, p. 103). Principal among poor driving habits is a total disregard of traffic rules and regulations. Driver inexperience, intoxication, driver fatigue, or just plain recklessness are also

FIGURE 6 A section of the newly-built light rail system in Addis Ababa, Ethiopia. SOURCE: Assefa et al., 2016.

major contributing factors (Manyara, 2016, p. 103). A meta-analysis from Uganda found similar trends, as the most common RTI risk factors included: lack of respect for traffic laws, alcohol and drug impairment, and speeding (Balikuddembe, Ardalan, Khorasani-Zavareh, Nejati, & Munanura, 2017). Some of these factors can be mitigated through effective enforcement of penalties for traffic offences. As noted in the Kenyan research, however, excessively high penalties can have counterproductive outcomes if they are far out of proportion with the lived realities of ordinary citizens. For instance, the penalty for speeding in Kenya can amount to more than ten times what a *boda boda* operator makes on a good day (Manyara, 2016, p. 111). An ordinary citizen convicted of such an offense would thus be completely unable to pay their fine.

At the regional level, eastern African governments are seeking to mitigate RTIs by harmonizing vehicle inspection standards (Xinhua, 2018). Although data from Kenya suggests that just over 5% of RTIs are caused by vehicle defects, addressing this component of the problem could be relatively straightforward and rapid as it does not require a widespread shift in norms towards greater respect for traffic rules and regulations (Manyara, 2016, p. 103). Currently each of the six eastern African Community (EAC) members have different vehicle inspection standards, which causes problems as border controls between the member states lessen and more foreign-owned vehicles ply the roads of each country (Xinhua, 2018). Harmonizing regulations will therefore ensure that best-practice standards are maintained between all of the EAC countries, especially as intra-regional trade in automobiles is expected

to increase in the coming years. Furthermore, enforcement of such regulations promises to have the add-on benefit of improving air quality in eastern African cities.

The committee concludes: An efficient and safe transportation system is crucial to the management of urban space and to the achievement of urban health goals.

Therefore, the committee recommends: Urban authorities across eastern Africa should foster transport policies that create opportunities, that reduce risk, and that encourage physical activity for all, especially marginalized and vulnerable groups.

Therefore, the committee recommends: Urban transportation planning authorities should take emerging urban settings into consideration, in particular patterns of peri-urban growth and informal settlements.

6.2.2 Urban Planning and Housing

Highlights and Main Points

- Urban planning can be an effective tool for improving resource access for the most disadvantaged in urban areas if it follows principles of spatial justice.
- The development of satellite cities is a common strategy in eastern Africa to relieve pressure on central cities. Without taking equity concerns into account satellite cities will only replicate the patterns of urban development seen in central cities.
- Governments in the region have largely retreated from the provision of quality low-income housing, with the informal sector stepping in to fill this gap. As a result, sub-standard housing with poor resilience to natural disasters has proliferated.

Urban planning that takes a spatial justice approach to the design and regulation of cities has the potential to help lessen traffic and improve urban inequality. A spatial justice approach to urban planning, according to Smit et al (2011), "aims to ensure that all residents have more equitable access to the wider benefits of urban life, including livelihood opportunities, recreational facilities (parks, sports fields, community halls, et cetera), human services,

and cultural/educational facilities (Smit et al., 2011)." For instance, in cities where the poorest are forced to the fringes, it can be harder for them to find or commute to work, to sell their goods, or to access public services. A spatial justice approach to urban planning takes as its first priority the evening out of access to livelihood resources across geographies.

Cape Town, for instance, addresses spatial injustice under its Spatial Planning and Land Use Management ACT NO. 16 of 2013, in which zoning schemes are deemed as mechanisms to implement policy (Denoon-Stevens, 2016). Zoning in Cape Town now aims to actualize spatial planning policies and to build more equitable districts. The City of Cape Town Development Management Scheme (CoCT DMS) in the general business zone exemplifies how zoning and a justice-focused spatial planning policy can merge. The CoCT DMS helped ensure that there were provisions regarding the inclusion of micro-enterprises and informal traders in formal retail areas (Denoon-Stevens, 2016). An example of this involves pedestrianizing a street between two shopping centres and building permanent stalls there for informal traders to conduct business (see Figure 7). The CoCT DMS also mandated that all formal developments in the city must include "landscape buffers" between buildings and the street, allowing residents safe walking areas (Denoon-Stevens, 2016). In taking these actions, Cape Town has proven that it is possible to develop policies that require the inclusion of the poor, informal retailers, and microenterprises in business districts.

Eastern African national and municipal governments have enacted many policies over the years to decentralize the demand on capital cities, thereby reducing population density and traffic in those areas. Most recently, in Kenya, Uganda, and Tanzania, satellite cities are now under construction. Tatu City, in Kenya, aims to accommodate 70,000 residents and 30,000 daily visitors in the future. Kalungulu City, near Kampala, is another satellite city, likely to draw wealthy residents as it includes shopping malls, a sports stadium, and gated housing communities (UN-Habitat, 2014). Other examples of new or redeveloped satellite cities include Kigamboni, Dar es Salaam and Mji Mwema, Kimbiji, all in Tanzania. An increase in the amount of opportunities and economic growth at a distance from the capital could help to create more equitable urban development. However, if the planning for these new urban spaces does not specifically target equity with provisions for the inclusion of lower socio-economic groups then such an objective will likely not be achieved. Instead, new satellite cities will reproduce the pattern of urban growth found in their capitals, with informal settlements forming at the fringes to meet the service needs of the new satellite city. Without taking these dynamics into account, planners will simply reproduce existing patterns, with the attendant negative health impacts on the population.

FIGURE 7 An example of how informal trading can be combined with formal shopping centres from Cavendish, Cape Town. This area (left ground-level view, right aerial view) used to be a road running between two shopping centres. The road has been pedestrianized, and permanent stalls built for informal traders, with a clear roof for protection from the elements. Because of its location between two shopping centres, this design places the informal traders right in the centre of pedestrian movement.
SOURCE: Denoon-Stevens, 2016.

For infrastructure improvements to be available and accessible to all residents, policymakers must consider identity components such as gender, age, and ability status. For example, women experience a greater risk violence or sexual assault on public streets or in transit (Frye et al., 2008). As another example, many elderly people can no longer walk or even drive short distances—a concern that can be addressed through urban planning. Disabled urban residents face a highly disproportionate number of challenges than their able-bodied counterparts. Rydin et al. (2012) argues that, "the recognition of disability is an important urban policy and planning issue, and is a matter of social and political priority (Rydin et al., 2012)." Accessibility, transportation, and conditions of public places are all crucial focus areas to develop eastern African cities that are healthy for all (Kjellstrom & Mercado, 2008; Rydin et al., 2012). Additionally, investments in good public infrastructure go underutilized if they are perceived as risky, unsafe, or unusable due to accessibility issues (Northridge & Freeman, 2011).

Box 2
Spotlight Discussion: Open Streets Cape Town

Open Streets Cape Town is a citizen-driven initiative that seeks to shift perceptions about how people use and experience urban streets (OSCT, 2018). Through a blend of Open Streets Days and advocacy campaigns, the initiative strives to foster a sense of connection and freedom in urban communities.

Streets are the primary public space in most sub-Saharan African cities. Streets also hold memories and stories, both individual and collective, that help dictate how future generations will interact. In South Africa, with its history of apartheid, historically streets have been defined by segregation and inaccessibility for many members of society (Casas and Smith, 2016). Although eastern African cities did not experience institutionalized apartheid, the physical design of many urban spaces—far apart residential areas separated by buffer zones—have nevertheless been intended to segregate populations based on race or socio-economic status (UNAS, 2017).

Open Street Days, the flagship programme of Open Streets Cape Town, seeks to both shift perceptions of city streets towards greater inclusion, and to stimulate the possibility of a healthier and more environmentally responsible mobility system (Casas and Smith, 2016). To achieve these goals, Open Streets works with local authorities to ensure that all regulatory requirements are met to designate a section of public roads as car-free on a specific day. Open Streets Cape Town then recruits local community organizations to organize events and recreational activities in the opened space. In the past, community groups have organized music, art, interactive workshops, dancing, yoga, chess, and a variety of sports and games during Open Street Days (OSCT, 2018). Participants are encouraged to bike or walk during Open Street Days to encourage active mobility (Casas and Smith, 2016).

Since 2012, Cape Town has hosted 12 Open Street Days in five different areas of the city. Each Open Street Day has attracted between 3,000 and 15,000 participants (OSCT, 2018). Through this initiative, Open Streets Cape Town helps to push forward a sense of collective ownership over urban spaces that engages both local authorities and communities.

Finally, there is a great deficiency of well-located low-income housing as part of many cities' urban planning strategies. While undergoing rapid urbanization, cities do not have enough time to properly expand housing developments. Even when pro-poor development projects are presented, they are sometimes delayed by interference from the middle and upper classes to keep socio-economic segregation in place (Denoon-Stevens, 2016). The slow

pace of pro-poor housing development leads to the proliferation of substandard, inadequate, and unreliable housing infrastructure that will likely not withstand natural disasters (Boadi et al., 2005). Considering that climate change and natural disasters are on the increase, the slum areas of sub-Saharan Africa will be especially vulnerable in the future (WHO, 2016b). The way slums will interact with climate change remains rather unpredictable, but challenges such as increased disease burdens are likely (Ramin, 2009; WHO, 2003).

The committee concludes: Urban planning systems are currently inadequate, and insufficiently focused on health equity, requiring more holistic evidence on inclusion, along with the alignment of infrastructure with service delivery.

Therefore, the committee recommends: City planning and implementation entities should ensure availability and equitable access to infrastructure, services, utilities, and amenities.

Therefore, the committee recommends: City planning and implementation entities should simplify and contextualize approval processes to reflect emerging health and equity realities, and the priorities of their urban settings.

Therefore, the committee recommends: National governments should align urban planning and health sector development toward the achievement of shared goals.

6.2.3 Water and Sanitation

Highlights and Main Points

- Eastern Africa has seen remarkable improvements in the provision of clean water to urban dwellers over the past two decades. Such improvements, however, often mask inequalities, with slum populations still struggling to access affordable clean water.

- Improved sanitation facilities are still lacking in much of urban eastern Africa, with a large proportion of the population continuing to rely on pit latrines.

- Incoherent policy frameworks and lack of enforcement capacity often undermine the effectiveness of solid waste management systems. The private sector has demonstrated an important role in this sector, but government involvement is still necessary for service to reach the poorest segments of the population.

Clean water, sanitation, and physical infrastructure are all intimately intertwined with the overall health status of urban populations. For example, poor quality water sources facilitate the proliferation of CDs; improved water sources are also associated with improved nutrition (UN-Habitat, 2016a). As a region, Africa has had the greatest improvement in access to urban clean water between both 1990–2004 and 2005–2013 (WHO, 2016b). Between 2004 and 2008, Nairobi led eastern Africa with 78.2% of households enjoying access to piped water. Addis Ababa and Dar es Salaam were not far behind, with 68.8% and 62.1% respectively. At that time, Kampala and Kigali recorded only 26% and 20.5%, respectively, of households receiving clean piped water. (UN-Habitat, 2014). In 2016, the WHO reported a continued increase in access to clean drinking water, with 91% of urban dwellers in Kenya accessing clean water, 76% in Tanzania, 89% in Uganda, and 88% in Rwanda (WHO, 2016a). Such numbers represent what can be achieved with a great deal of political will and strong leadership on the part of African governments.

Like most urban services, however, access to clean water is highly unequal in intra-urban analyses. Many slum dwellers continue to suffer poor access to improved water sources—a deprivation that is concealed by impressive national and even city-level average statistics. In 2010, 40-60% of eastern African slum dwellers still did not have adequate water or sanitation (UN-Habitat, 2010). In the absence of reliable quality water sources, slum dwellers resort to poor quality water from street vendors at high prices. For

one litre of water, slum dwellers pay five to seven times more than the average North American (UN-Habitat, 2010, 2014).

Current research indicates that in eastern African cities much of the population continues to lack safe sanitation infrastructure. The WHO states that in sub-Saharan Africa, only 40% of the urban population has access to sufficient sanitation. In 2000, it was reported that 89% of urban households used pit latrines in the low-income, high-density areas of Nakuru, Kenya (Boadi et al., 2005). Slum dwellers in Nairobi and Kampala (and likely other cities) continue to make use of flying toilets. Due to unsafe or otherwise inaccessible latrines, residents fill plastic bags with their toilet waste, and these bags eventually pile up on the streets (Boadi et al., 2005; Katukiza et al., 2010; UN-Habitat, 2010). Lack of proper sanitation is less of an issue in the smaller cities of eastern Africa, such as Bujumbura and Kigali, perhaps because waste collection systems are better able to keep up with smaller city populations (UN-Habitat, 2010).

The inadequate removal of solid and liquid waste from cities can often be traced back to weak institutional coordination, and a general lack of both human and financial resources (Boadi et al., 2005). Eastern African cities face a jumble of institutional systems and arrangements, without coherent coordination strategies or clearly defined hierarchies in the delivery of sanitation services (O'Keefe, Lüthi, Tumwebaze, & Tobias, 2015). O'Keefe et al. (2015) report that "[t]he patchwork can include government providers, private operators, NGOs or collective, community-driven approaches (O'Keefe et al., 2015)." Without a lead agency with clear authority and sufficient resources, there is no overall logic to the sanitation system, and no enforced regulatory standards. O'Keefe et al. (2015) suggest that engaging communities in their own sustainable sanitation systems could significantly increase the cleanliness of lower socio-economic status areas.

Currently, many cities are experimenting with market-based approaches to solid and liquid waste removal. City managers hope that if waste removal companies can find ways to generate profit, then economic incentives will create efficient and productive systems (O'Keefe et al., 2015). However, for these services to reach traditionally inaccessible slum areas and poorer households there is an urgent need for affordable payment structures. In many cities throughout eastern Africa, the wealthy pay private companies to dispose of their waste, but the poor largely cannot afford the same service (O'Keefe et al., 2015). In Addis Ababa, micro-enterprises took over waste collection from the public sector, and city managers noted a 36% increase in the amount of waste collected between 2002 and 2008 (Tilaye & van Dijk, 2014). Yet these gains were not enough to provide the level of service needed for the city as

Box 3
Spotlight Discussion: Water ATMs in Nairobi Slums

Poor residents in Nairobi slums may soon be able to purchase clean, piped water from their phones. Beginning in 2016, the Nairobi City Water and Sewage Company (NCWSC) rolled out a pilot project of four "water ATMs" in Mathare, one of Nairobi's oldest and largest informal settlements (Wesangula, 2016).

The deployment of water ATMs resulted from a public-private partnership (PPP) between NCSWC and Grundfos, a Danish water engineering firm. Water reaches the ATM through newly laid pipes connected to Nairobi's main water supply, allowing NCSWC to guarantee its quality (Andae, 2016). In Mathare, the ATMs are managed by a "village chairman" along with a committee of residents. Residents load money onto a smartcard, either at the ATM or remotely through their mobile phones, and the system dispenses water when the smartcard is inserted (Wesangula, 2016). On the backend, NCWSC monitors each tap remotely, allowing them to collect granular data on household water demand in the slums (Grundfos, 2015).

The idea of pre-pay water meters is not new; municipal governments and NGOs have deployed similar technology in many different contexts across sub-Saharan Africa. Historically, the major challenge with such systems has been the difficulty of regular maintenance (Fredby and Nilsson, 2013). The advent of digital and mobile technology, however, appears to have improved the reliability self-serve water systems.

Water provision in African cities has always been a balance between two conflicting imperatives: improving cost recovery, and extending coverage to the poor (Schwartz, Tutusaus, and Savelli, 2017). By ensuring that customers pre-pay for water, while at the same time offering substantial price subsidies, this initiative may allow NCSWC to balance these two conflicting forces. Initial evidence from the pilot study in Mathare indicates that the ATMs have about a one-year payback time, after which point they actually generate revenue (Grundfos, 2015). Additionally, the tariff charged at the water ATM is reportedly up to sixty times less than what Mathare residents previously paid to private vendors (Andae, 2016).

Early evidence suggests that local ownership, combined with innovate technology, shows considerable promise to supply slum areas with clean, piped water. NCSWC has already pledged to expand its system of water ATMs to other informal settlements in the area (Wesangula, 2016).

a whole. The private micro-enterprises showed clear bias, tending to collect waste from more accessible and better-off households, while ignoring the truly poor and vulnerable (Tilaye & van Dijk, 2014). Thus, while private interests

can clearly play an important role in making the waste disposal systems more efficient, available evidence suggests that governments should still play an important role to ensure those same services reach the most marginalized (O'Keefe et al., 2015; Tilaye & van Dijk, 2014).

Box 4
Spotlight Discussion: Waste Management and Value Addition in Urban Kenya

TakaTaka Solutions is a Nairobi-based social enterprise that provides affordable end-to-end waste management services to households of all income brackets (TakaTaka, 2018). Due to a lack of financial and technical resources, the public sector is currently only minimally involved in household waste management. For example, Nairobi City Council has just eight waste disposal trucks for a population of 3.5 million people (Paffenholz, 2016). Private waste management companies are often contracted by the government to fill this gap, but because they only collect waste for direct disposal their services are out of the financial reach of the majority of Nairobi households. According to TakaTaka, 2.5 million out of Nairobi's 3.5 million residents cannot afford waste collection services (Paffenholz, 2016).

Additionally, because there is a lack of waste processing facilities in Nairobi, 800 tons of waste is disposed of daily at the Dandora dump site (GCC, 2015). This waste is then informally processed by up to 3000 waste pickers who sift through the garbage for valuable materials (GCC, 2015). As much of the waste that comes from disposal trucks is organic, however, the detritus that arrives at Dondoma is frequently too dirty to be resold.

The result of this situation is a health and environmental disaster. At 43 hectares and constantly growing, Dondoma has become much too vast to be managed effectively. The dumpsite has been contaminating groundwater resources for years, negatively affecting half a million residents who live in the area (not to mention the waste pickers who work daily in the contaminated site with minimal protective gear) (GCC, 2015).

TakaTaka Solutions has addressed these dual service provision and health crisis by developing an innovative business model that offers waste collection, sorting, and disposal services, while generating revenue through waste-to-value products such as compost and recyclables. To begin, TakaTaka trains local youths to collect waste door-to-door, while also sensitizing and equipping residents to separate their own waste (GCC, 2015). Organic waste is then composted, while valuable recyclables are sold to external recycling companies. By composting or recycling up to 93% of collected waste, TakaTaka is able to significantly save on disposal fees, and thus offer lower service charges to their clients. According to the company,

they can offer their waste disposal services for as low as 0.8 USD per household per month (Paffenholz, 2016).

Following an extensive pilot programme, TakaTaka now collects waste from 8,000 households, and processes more than 10 tonnes of waste every day. Taka Taka operates three recycling points, one composting facility, and works with over 350 farmers to improve soil fertility with their high-quality compost (TakaTaka, 2018). By seeing waste disposal as a business opportunity, rather than a public burden, TakaTaka is successfully scaling its services that help resolve some of the pressing health and environmental challenges facing rapidly urbanizing areas in eastern Africa.

Some well-funded and coordinated sanitation interventions in eastern Africa have seen remarkable success. In Kenya, for example, government ministries, the municipal government, civil society organizations (CSOs), and development partners have invested significant resources toward improving sanitation in urban slums. One such initiative was the Kenya Slum Upgrading Program (KENSUP), a partnership between the Ministry of Housing and UN-Habitat, that has constructed public toilets in slum areas across Kenya since 2003 (Mberu, 2013). In part thanks to KENSUP and similar initiatives, between 2000 and 2012 the proportion of slum households using flush toilets increased six-fold from 7.3% to 46.2%, while households using traditional pit latrines decreased from 78.8% to 44%—an almost 50% decrease (WHO, 2016b).

As sanitation technologies continue to develop, overall project sustainability also increases. In Kampala, locals ranked the urine diversion dry toilet (UDDT) as the most sustainable option for slum communities. The success of the UDDT relates to its "construction and repair with locally available materials and small land requirements, no constant water requirement for use, prolonged service life since it can be emptied for reuse, [and] suitability for flood prone areas due to non-mixing of waste streams and odour control that is achieved through proper usage (Katukiza et al., 2010)." New systems such as the UDDT, and the successful reduction of pit latrines in Nairobi, point to ways in which cities are moving forward with sanitation initiatives.

The committee concludes: Water and sanitation services remain insufficient in urban eastern Africa, especially in disadvantaged and low-income areas.

The committee concludes: Extensive coordination between public, private, and non-profit service providers is required to ensure efficiency and that all necessary populations are reached.

Therefore, the committee recommends: National governments should establish service delivery councils in the water, sanitation, and waste management sectors, respectively, the ensure opportunities for dialogue and communication between relevant actors.

6.2.4 Food Systems and Nutrition

Highlights and Main Points

- Urban and peri-urban agriculture plays a crucial role in the nutritional and income security of urban dwellers across eastern Africa. Although widespread such practices are often unacknowledged in official policy.
- UPA may often lead to unsustainable agriculture practices and the contamination of food and water resources.
- Strategies such as including UPA-designated land in official plans, opening public parks to limited farming, terracing new buildings, and constructing rainwater drainage infrastructure can all minimize the negative effects of UPA.
- Construction of roads, highways, and cold-storage facilities will be necessary to ensure the adequate availability of nutritious perishable foods in urban eastern Africa.

Meeting the nutritional needs of urban populations is not strictly a built environment issue. However, the policies that determine where and how a city can expand have important implications for the way that urban residents feed themselves. In general, urban areas are characterized by the easy availability of cheap, processed, high-sugar, high-salt, and low-nutrient foods (Hunter-Adams et al., 2017; WHO, 2016c). Poorer neighbourhoods often have very limited access to fresh, high-nutrient fruits and vegetables, caused primarily by low household incomes and the relatively higher cost of such food (Northridge & Freeman, 2011; Rydin et al., 2012).

One coping strategy that poor households use to enhance food and nutrient security involves urban and peri-urban agriculture (UPA). UPA is usually a small-scale industry undertaken in home gardens, on rooftops, on empty public land, in cellars, or on specially assigned plots by urban residents. UPA makes significant contributions to nutrition, household food security, employment, and the environment in urban settings (Binns et al., 2003; Lee-Smith, 2010; Mohiddin et al., 2012). In eastern Africa, more than a third of

urban dwellers engage in UPA (Lee-Smith & Prain, 2006; Mohiddin et al., 2012). In Kampala, household surveys have determined that UPA is practiced all over the city, even in the downtown core (Lee-Smith, 2010). However, a disconnect appears in many countries between national agricultural, nutritional, and health policies, and the promotion and regulation of UPA at a local level, often complicating the legal status of UPA[3] (Mlozi et al., 2014).

UPA can involve both livestock rearing and gardening. Poultry, dairy cattle, and pigs are the most common livestock found in Kampala. Drinking boiled milk provides many nutrients, especially to young children (Lee-Smith, 2010). A variety of crops are grown across Addis Ababa, either for home consumption, economic gain, or both. In Ethiopia, residents of other cities beyond Addis Ababa rear poultry and pigs, and also consume leafy greens and groundnuts grown within city limits. Important nutrients such as protein, lysine, micronutrients, and calcium are contained in these food products (Lee-Smith, 2010). Mohiddin et al. (2012) write that, "studies in Kampala, Uganda, and Kigali, Rwanda, have shown positive correlations between food production and improved nutrition, owing to higher and more stable access to food virtually throughout the year (Lee-Smith & Prain, 2006; Mohiddin et al., 2012)." Interestingly, the proportion of Kampala residents who farm has not decreased with urban growth, suggesting that UPA remains essential for the livelihood and survival of the urban population (Mohiddin et al., 2012).

Unfortunately, UPA also has a darker side of unsustainable agricultural practices, poor water availability, and contamination risks. Urban farmers often apply large doses of fertilizers, pesticides, and plant growth regulators to UPA plants, causing heavy metal and pesticide accumulation in the food chain. A study in India found that where such practices were common, more than half of the vegetables subsequently sold and consumed in city markets were contaminated with heavy metals (Sharma, Singh, Singh, Naik, & Singh, 2016). The inappropriate use and discharge of wastewater is another threat to city farming. When slum populations practice UPA and cannot access sufficient water, they may turn to waste bi-products and contaminated water as desperate substitutes for clean water. Such practices lead to widespread consumption of contaminated meat, poultry, fruits, or vegetables in eastern African cities (Binns et al., 2003). The peri-urban zone itself is often located on toxic land, which can lead to a build-up of contaminants among both UPA practitioners and the consumers of their products. Finally, insufficient drainage in UPA plots frequently leads to standing water, providing favourable breeding grounds for the malaria vector mosquito *Anophelese*, and thereby contributing to disease transmission and malaria rates that are much higher than would

3 For a more thorough analysis of UPA by-laws in an eastern African city, see the 2017 UNAS publication *Owning our Urban Future: The Case of Kampla City.*

be predicted based on the level of urbanization (De Silva & Marshall, 2012; Kigozi et al., 2015).

Some positive examples from the planning literature demonstrate that with sufficient foresight UPA practices can be integrated into official plans. For example, one of the greatest constraints for the poor in practicing UPA is lack of land availability. Ensuring adequate space for urban agriculture in official planning exercises can help alleviate future drops in healthy food availability under drought or other emergency conditions. Increasing space for UPA can be achieved in unconventional ways such as terracing the roofs of new buildings, or opening space in public parks for residents to create gardens (Rydin et al., 2012). Successful rainwater drainage projects to improve the resilience and minimize the negative effects of UPA have also been demonstrated in the slums of Bissighin, Burkina Fasso (UN-Habitat, 2016a). These rainwater drainage projects include a simple gravel substrate under a layer of soil that helps to filter water. Learning from such initiatives could help eastern African cities to both increase land availability and limit the negative health consequences of widespread UPA.

Food distribution also poses a major nutrition-related challenge to infrastructure and urban planning systems in eastern Africa. The Federal Government of Ethiopia, for example, has worked to reduce undernutrition in children through public education and distribution of nutritional supplements (Degarege, Degarege, & Animut, 2015). The government saw the distribution of nutritional supplements as a necessary step to guarantee the minimum nutritional status of children, as one study of 449 students in Addis Ababa found that 30.9% of them were undernourished (Degarege et al., 2015).

Even when enough nutritious food for everyone exists, inefficient distribution mechanisms can keep people from consuming perishable food before it goes bad (Lee-Smith, 2010). Data on middle-class populations in Eastern and Southern Africa show that 44-55% of their purchased diets is made up of perishable foods (fruits, vegetables, and meat). Population trends indicate that the middle-class is the socio-economic group that will continue to grow in many eastern African cities (Tschirley et al., 2015). Thus, demand for perishable food is likely to continue increasing. In response, Tschirley et al. (2015) argue for "'mainstreaming' the attention to supply chains and productivity of food products 'beyond-grains' in Africa [as well as] greatly increasing attention to and public investment in development of cold chains, logistics and wholesale markets for fresh produce (Tschirley et al., 2015)." Beyond supplements, ensuring the nutritional status of both children and adults in eastern Africa is tightly interwoven with the construction of basic infrastructure such as roads, highways, railroads, and affordable cold storage facilities.

The committee concludes: Urban and peri-urban agriculture is an important source of nutrition and income security for many households in eastern Africa. UPA is often not sufficiently integrated into existing policy frameworks, or existing policies are not sufficiently enforced.

The committee concludes: Eastern African urban populations are transitioning towards unhealthy diets, with excessive consumption of sugars, fats, and salts. Nutritious, fresh perishable food is often more expensive, and thus inaccessible for much of the population.

Therefore, the committee recommends: Regional and national policymakers should develop and implement comprehensive food safety policies, with a focus on improving access to nutritious healthy foods and decreasing consumption of processed foods.

7

Managing The Complexity of Urban Health

Highlights and Main Points

- Addressing urban health challenges requires extensive cross-sectoral coordination between the health system, urban planning authorities, and civil society groups.

- "Health in All Policies" is an approach that the WHO advocates for to improve inter-sectoral coordination, and to ensure that the health dimension of all policy decisions are taken into consideration.

- Retrospective examinations of policy decisions to improve the determinants of health in slum areas demonstrate that community involvement is crucial, along with wide attention to the livelihood and intra-community political considerations of individuals.

- Engaging communities directly can also help health authorities learn about the informal arrangements that residents have devised to safeguard their own health, often in extremely resource-constrained conditions.

As demonstrated through the above discussion, urban health is primarily a problem of organized complexity, with multiple interacting variables contributing to ultimate outcomes (Barnett, 2012). For instance, increased prosperity in urban areas will allow more people to access better health services; but if urban design and planning decisions encourage sedentary lifestyles and unhealthy diets then the long-term health consequences may be highly undesirable. Simultaneously, increasing levels of inequality place poorly-understood stresses on the mental states of both the wealthy and the poor, and rapidly changing social structures undermine traditional sources

of identity and self-worth. Some of these variables may be addressed through the health system, some through comprehensive urban planning, and some through networks of non-profits and faith communities. Managing these diverse levers of potential impact in some coherent manner is the central challenge addressed by this chapter.

As Andrews et al. (2012) have observed in their work on the governance of complex systems, there is a danger that when faced with such complexity organizations will turn to "isomorphic mimicry." Isomorphic mimicry emphasizes looking like a successful organization over the functionality of interventions. Under such a strategy, leaders seek organizational survival and continued budgets by conforming with external standards of legitimacy instead of pursuing novel ideas and solutions. In other words, organizations such as planning departments or ministries of health may prioritize policies that look good on paper to external observers. While there is much to be learned from international case studies and best-practice models, the organized complexity of urban health challenges calls for a high level of organizational flexibility and creativity. Healthy eastern African cities will therefore only achieve their goals by working to overcome sectoral and disciplinary boundaries.

A primary blockage to effectively treating the health challenges of urban areas is the fact that many factors influencing urban health lie outside the health sector. In response to this challenge, the Health in All Policies (HiAP) approach is recommended by the WHO as a means to maintain the focus on health "across all sectors and between levels" of government, without which population health cannot be sustainable and equitably improved (WHO, 2010). According to the WHO, "The interdependence of public policy requires another approach to governance. Governments can coordinate policy-making by developing strategic plans that set out common goals, integrated responses and increased accountability across government departments. This requires a partnership with civil society and the private sector (WHO, 2010)." Underlying these statements is a belief that effective and coordinated governance arrangements are key to addressing the social and environmental determinants of health necessary to improve health outcomes (Boadi et al., 2005; Harpham, 2009; Kjellstrom & Mercado, 2008; Mason, 2007; O'Keefe et al., 2015; Rydin et al., 2012; Tilaye & van Dijk, 2014; WHO, 2016b). Furthermore, collaborative partnerships can generate new ideas, policies, and funding that may not happen with only one section or level of government. More recently, the same HiAP approach has been recommended in a policy brief by Oni et al. (2017) of the ICSU scientific programme on urban health and well-being as a key mechanism for African governments to address urban health challenges (Oni, 2017).

Analysing the consequences of past policy decisions can help to proactively avoid unintended consequences or ineffective programs. Mitra et al. (2017) carried out a case study on the wellbeing of residents who experienced three different "slum upgrading" initiatives in Kibera, Nairobi (Mitra et al., 2017). This study was able to uncover a few consequences of policy decisions, especially with regards to social cohesion. The first initiative studied was the KENSUP pilot project in Kibera. KENSUP successfully reduced flooding risks by introducing multi-storey housing to the largely single-storey settlement. However, the temporary relocation of residents required to complete the project ultimately cut them off from their networks and restricted income-generating opportunities in Kibera. As a result, residents participating in KENSUP actually found themselves with lower resilience in the short- to medium-term (Mitra et al., 2017). Investments in physical infrastructure thus had the desired impact of reducing flood risk but avoiding the social and economic dimensions of the policy ultimately undermined the project's objective of increasing the well-being of slum residents.

The Nairobi Railway Relocation Action Plan (RAP) also constructed multi-storey housing in the settlement, emerging from the need to establish an extended safety corridor for railway operations and maintenance. The railway reserve land in Kibera had been encroached on by large numbers of residents over the years, who set up homes, shops, and places of worship, and used the railway track itself as a pedestrian thoroughfare. The project aimed to remove many of these structures and replace them with improved housing and business units and space for social institutions. In a crucial difference with KENSUP, RAP included stringent but transparent criteria for compensating affected residents, and integrated awareness campaigns, dialogue, consultations, and community meetings throughout the life of the project. Additionally, the decanting site chosen for residents forced to temporarily relocate was much closer to Kibera and allowed them to maintain social networks and income-generating opportunities in the area. Together, these measures helped to mitigate the risks of obstruction and conflict from local residents. Based on this assessment, it is clear that building social cohesion and social capital by balancing the interests of different groups equitably and transparently is an important component of successful slum upgrading projects.

Beyond requiring community involvement, the most promising slum upgrading projects also tackle their objectives in a multi-sectoral and integrated manner. Of the slum upgrading programmes examined, for instance, Mirtra et al. (2017) conclude that the National Youth Service (NYS) has the greatest design for successfully building resilience in local communities. The NYS of the Kibera Slum Upgrade Initiative addressed the largest collection of social determinants of health for the slum residents, including: "livelihood insecurity

among youth, crime and instability, and lack of access to basic services, public health and infrastructure (Mitra et al., 2017)." To address all of these determinants together, under NYS, youth receive a modest weekly stipend through mobile money for work including household rubbish collection, drainage cleaning, road widening, and the construction of sewerage and ablution blocks (Mitra et al., 2017). Participating youth are also mandated by NYS to be part of savings and credit cooperatives (SACCOs), which are owned, managed, and governed by their members. Youths thus save money through the SACCOs, which also make small loans to members wishing to start a business (Mitra et al., 2017). This design simultaneously addresses multiple risks faced by Kibera residents, including livelihood insecurity among youth, crime, and lack of access to basic services and infrastructure. Post-project interviews of Kibera residents conducted by the researchers found that these multi-sectoral aspects were valued the most and had the greatest potential to tangibly build resilience of the local community and residents (Mitra et al., 2017). Based on this evidence, multi-sectoral slum upgrading projects that transparently address different community interest groups are likely to hold the greatest potential to improve urban health outcomes.

Organizing urban health action from existing models can help to consolidate novel approaches. The Healthy Cities Movement (HCM), for instance, offers the following five recommendations for urban health initiatives. First, working groups with a range of different stakeholders should be included, especially between urban planners and public health specialists. Second, pay closer attention to health inequalities, and include higher community representation. Third, take action to maintain urban health advantages (such as the efficiencies gained by serving dense populations). Fourth, conduct a complexity analysis to better understand urban health determinants and outcomes. And fifth, experiment locally, with active dialogue and mutual learning (Rydin et al., 2012). Oni et al. (2016) also stress the idea of highly interdisciplinary public health research to capture the necessary up- and down-stream factors associated with individual urban health risk factors (Oni et al., 2016). A key aspect of the HCM approach is the creation of an inter-sectoral "City Health Plan," the road map to operationalizing identified priorities towards healthier public policies (WHO, 2002a). Central to the successful implementation and evaluation of such a plan is inter-operable data from participating sectors to monitor and evaluate the health impact of interventions in the city (WHO, 2002b).

Local residents and researchers alike often intuitively understand the positive implications of decentralizing policymaking, as the HCM's fifth recommendation encourages (Harpham, 2009; Kjellstrom & Mercado, 2008; Rydin et al., 2012; WHO, 2016c). Harpham (2009) points out that "frontline

workers are the true implementers or filters of any centrally devised health policy (Harpham, 2009)." Furthermore, Kanaskar (2016) states that "… any schemes and programs of urban health will hardly succeed unless they incorporate the component of community participation (Kanaskar, 2016)." Both of these insights recognise the importance of involving low-level workers in the actual process of implementing successful health initiatives once broad strategy has been decided at a higher level. Frumence et al. (2013) studied the process of decentralizing urban health services in the Kongwa district of Dodoma, Tanzania, and found that empowering local residents to decide how

Box 5
Spotlight Discussion: Structuring the Faecal Sludge Management Market in Senegal

Senegal is home to one of the most innovative programs to improve sanitation in Africa. In partnership with the Bill and Melinda Gates Foundation, the National Sanitation Office of Senegal (ONAS) has created the Program for the Structuring of the Faecal Sludge Market (PSFSM). PSFSM has two main objectives: to provide high-quality, inexpensive mechanical emptying services to consumers while also increasing the incomes of professional emptiers (Ndiaye, 2017).

Like many African metropolises, Dakar, Senegal, suffers major sanitation challenges, especially in low-income and informal areas. Eighty-four percent of sub-Saharan African inhabitants make use of off-sewer sanitation facilities (Mbéguéré, 2013). Nairobi, Kenya, is the only city in Africa that has a rate of household sewer connectivity close to 50% (Chowdhry and Kone, 2012). In the neighbourhoods of Pikine and Guediawaye, those targeted by PSFSM, 75% of the population uses on-site sanitation (Mbéguéré, 2013). On-site sanitation encompasses pit latrines and septic tanks, both of which require periodic emptying. In Dakar, the average cost for on-site sanitation is around USD 130 per year per household—mainly due to expensive mechanical pit desludging (Mbéguéré, 2013). In place of mechanical desludging, many households turn to manual emptying, which negatively impacts both public health and the environment (Ndiaye, 2017). Initial results from PSFSM found a 50% reduction in diarrhoea incidence among children in households using mechanical desludging (Mbéguéré, 2013).

The primary barrier to greater use of mechanical desludging in Dakar is its high cost. To increase competition and efficiency in the desludging market, and ultimately drive down prices for residents, a key component of PSFSM is a call centre that creates a direct link between customers and emptiers (Ndiaye, 2017). Customers first call the centre with a specific date, location, and time for emptying. Emptiers then submit quotes by SMS. Once the bidding process is over, the lowest bidder and the customer are connected

directly, and the service is confirmed. This innovative system allows for easy access to desludging services for customers, and lower prices through competition. Professional emptiers in turn receive access to a larger market, and quality control and monitoring provided by the call centre (Ndiaye, 2017). Additionally, PSFSM is in the process of developing a Guarantee Fund to provide credit for professional emptiers to upgrade their trucks and equipment, and to obtain proper licensing and certifications (ONAS, 2014).

The call centre is integrated into a wider project that facilitates the privatization of the faecal sludge treatment plants and a comprehensive community education and communication plan to promote the program. PSFSM also tests innovative business models, like household subscription services and micropayment options to assist low-income households in accessing mechanical sludge removal (Mbéguéré, 2013). Early results from the program appear encouraging. In its first year of operation the call centre provided 4,867 people with at least one emptying service; increased competition has decreased the average cost of an emptying service by 14% in its first year (ONAS, 2014). Senegal's multi-pronged PSFSM therefore offers a promising model for African cities to provide more affordable and efficient sanitation services to slum population, and thereby improve environmental and health outcomes.

they want to use mobilized financial resources for local priority needs increased the accountability of health workers and reduced the amount of bureaucratic procedures. Despite some challenges related to financing, training, and the tracing of money, the investigators nevertheless found their study results to be optimistic (Frumence, Nyamhanga, Mwangu, & Hurtig, 2013).

Local engagement encourages community ownership of health projects (WHO, 2016b, 2016c). This engagement increases local political empowerment, thereby enhancing the "capacity to act" of both individuals and community groups (Friel et al., 2011). Furthermore, requesting community feedback on their needs, when paired with outreach projects, can help improve residents' health immediately. Many residents in informal settlements do not know how to access health facilities, or even what health schemes and programs are intended for them (Kanaskar, 2016; Zulu et al., 2011). Fewer still are aware of the exposures that influence their health, beyond the provision of healthcare services. In Kampala, Uganda, direct outreach methods that bring information and services to the poorest urbanites significantly lowered child mortality rates, and helped to narrow the survival gap (WHO, 2016b). It is also important for public officials to learn about the informal arrangements that have already been initiated by community members. Such arrangements were often created in situations of extreme resource scarcity for community members to survive. Learning about these arrangements can help policymakers strengthen and

complement, rather than displace, existing arrangements of social support (Kjellstrom & Mercado, 2008). A better understanding by communities of the sectors that influence their health can empower those communities to take action in improving their own health, or to pursue advocacy to hold accountable the health and non-health sectors that directly and indirectly impact their health.

The committee concludes: Good governance, strong leadership, and mutual accountability in the urban context is important for addressing the determinants of health.

The committee concludes: Local community engagement in policy formulation is critical for effective and sustainable implementation.

The committee concludes: Increased trans-disciplinary research, including policy evaluation, is essential for proactive health policy development.

Therefore, the committee recommends: National and municipal governments should establish trans-sectoral entities, with the necessary accountability mechanisms, to ensure greater coordination and communication in policy development, implementation, and evaluation.

Therefore, the committee recommends: Municipal authorities should strengthen community engagement through appropriate sociocultural channels or individual projects, and on an on-going basis.

Therefore, the committee recommends: Researchers and civil society should continue to focus on gathering specific evidence from health and non-health sectors on urban health to guide policy, planning, and engagement.

8

Conclusion

This report has taken a three-step process to analyze the urban health opportunities and challenges facing the eastern African region. First, the section on Urban Health Landscapes examined the published evidence on health outcomes in the region's urban areas. Importantly, this section extended beyond the conventionally considered issues of infectious and non-communicable diseases. Issues of mental health, alcohol and substance use, violence and safety, and the spiritual well-being of urban residents are all also of pressing concern to the region. Extending the discussion beyond conventional categories begins to outline some of the organized complexity that defines urban health. Mental hygiene and alcohol use are closely linked, for example—but alcohol use is also deeply engrained in eastern African cultures, and influenced by the alcohol beverage industry's marketing strategies. How can a narrow focus on only mental health, substance use, or commercial activities account for all of these interconnections?

After outlining the basic landscape of health in urban eastern Africa, the report turned to the Urban Determinants of Health. Extending beyond a descriptive exercise, this section sought to draw together some of the causal linkages that are likely to exist between different aspects of the social and built environments, and the health outcomes described above. Economic inequality is often greater in urban than rural areas, and that inequality is much more apparent to all urban residents. Unsurprisingly, the urban health literature shows a strong connection between socio-economic status and overall health outcomes. Although national statistics typically show better health outcomes in urban areas, those data are highly stratified by income group. Health facilities, for instance, are more numerous and closer together in urban than rural areas—but poorer communities still struggle to access them, or to receive adequate care when they do. Urban slums are a fixture of all eastern African cities, and their unique characteristics make it exceptionally challenging for

governments to effectively deliver services to these areas.

As the discussion of slums indicates, the social and physical environments are also closely linked together. Socio-economic status in part determines housing quality, and housing quality in part determines health outcomes, which in turn partly determines socio-economic status. As the Built Environment Determinants section shows, however, this is not a hopeless cycle. Public infrastructural investment, effective regulatory enforcement, and meaningful community participation can all break the cycle and improve the environmental determinants of population health in urban areas.

The third and final section addressed the challenges involved with Managing the Complexity of Urban Health directly. A review of slum upgrading projects in Nairobi demonstrates the crucial importance of community involvement to the success of such projects. The growth and persistence of slums does not occur because of a deficiency in the population, but because of the complex set of incentives to which such populations must respond. Slum environments frequently represent resilient survival strategies on the part of communities faced with extremely limited income-generating opportunities and basic service access. As demonstrated in the review of Nairobi projects, strategies to improve urban living conditions that do not adequately involve local communities will not shift the underlying incentives that led to the formation of slums in the first place.

As the report goes on to note, however, simply involving communities in the development of their own neighbourhoods is insufficient to enable the type of healthy city outcomes envisaged in this report. A primary bottleneck to improving urban health outcomes is the simple fact that so many determinants of urban health lie outside of the health sector. Addressing urban health challenges then becomes rife with jurisdictional disputes and distributional politics. The WHO advocates for a HiAP approach that provides countries with practical tools to coherently incorporate health considerations into all government policies. Such an approach has conventionally been applied at national and supra-national levels, although much potential remains to deploy HiAP at local and regional levels of government. The core of HiAP—whether it is labelled so or not—typically involves cross-sectoral and cross-jurisdictional working groups to bring a health perspective into all government decision-making processes. This report strongly endorses such an approach, and recommends its aggressive extension to more local levels of policymaking.

Woven throughout the report and underlying all of these considerations is the persistent question of Spiritual Health in the City. To realise any positive change in the urban health situation, it is ultimately individuals who must be empowered to engage with their environments and communities. Doing so requires a sense that one's life matters, that one has a place in society and is

valued. This sense can come from external sources, but it can also spring from within. This deep-seated sense of subjective meaning and purpose is what the Expert Committee referred to as spiritual health. Without such a sense, apathy and indifference set in, and the various interventions described throughout this report will fail. The section on Urban Planning & Housing, for instance, repeatedly observes that meaningful community involvement and broad-based participation have been the only ways that slum upgrading and relocation schemes have ever worked. But how can a fractured community, with no sense of belonging or value, meaningfully engage with government entities to improve their own communities? Conversely, how can planning authorities and community leaders take the bold steps necessary and set themselves apart as innovative thinkers and creative problem solvers if their identities are not rooted in a sense of permanence and meaning? Cultivating spiritual health through a sense of meaning and inherent value is what will allow us to leverage the various ideas presented in this report—and ultimately, to Own Our Urban Future.

Academy and Partner Profiles

AFRICAN CENTRE FOR GLOBAL HEALTH AND SOCIAL TRANSFORMATION

The African Centre for Global Health and Social Transformation (ACHEST) is an initiative promoted by a network of African and international leaders in health and development. It is both an independent think tank and a network. There is now abundant evidence to show that past and current efforts at identifying and implementing solutions that are handed down from outside and are not rooted in the history and culture of Africa have faced some difficulties. Ownership of these solutions by African countries and populations has repeatedly failed to take root, and as a result such solutions have not achieved their full potential and, in some cases, they have done more harm than good. At continental and country level, ACHEST aspires to strategically promote and advocate for the use of well-grounded knowledge and evidence to strengthen professionals and build institutional capacity that will provide transformational leadership to African communities, countries, and the world. ACHEST applies constructive and targeted strategic communication at all levels to catalyze the needed behavior changes that will result in stronger ownership and implementation capacity for proven interventions, and better health for Africa's people. To achieve its goals, ACHEST forges strategic alliances and partnerships with individuals and organizations within Africa and around the world.

ETHIOPIAN ACADEMY OF SCIENCES

The Ethiopian Academy of Sciences (EAS) is a merit-based society of prominent scholars who wish to promote the sciences and to bring about development, prosperity and improved health for the people of Ethiopia. The Academy was established on 27 March 2010 by 49 Founding Fellows elected by the scientific community. The Academy aims to advance the development of all the sciences, including the natural sciences, mathematics, the health sciences, agricultural sciences, engineering, the social sciences and humanities, fine arts, and letters. The official launching ceremony of the Academy was held on 10 April 2010 in the presence of H.E. Girma Wolde Giorgis, President of the Federal Democratic Republic of Ethiopia.

ETHIOPIAN YOUNG ACADEMY OF SCIENCES

EtYAS was founded in 2015 with the aim to enhance the contribution of young Ethiopian scientists to national development endeavours by providing

a coordinating platform for their active engagement in innovative problem-solving approaches and activities. EtYAS recognizes that there are many young Ethiopian scientists, in all fields of academic enquiry, who are already making outstanding contributions to national development, and there is a need to coordinate them through an academy for the young. This coordination will provide them the opportunity to be even more heard and recognized in national policy and decision-making processes. Furthermore, through EtYAS they will have a visible international presence as a collective. Given the Ethiopian government's focus on the development of science, technology and innovations reflected in the national plan, EtYAS takes this opportunity to facilitate platforms for young Ethiopian scientists to contribute to the national plan in science and technology.

KENYA NATIONAL ACADEMY OF SCIENCES

The The Kenya National Academy of Sciences (KNAS) is a learned, non-political, non-sectarian and non-profit making body founded on November 2, 1983. Its fundamental aim is to cooperate and collaborate with the government of Kenya, other scientific organizations, and the general public in the mobilization of the entire scientific community in Kenya, and the promotion of the scholarly application of all aspects of science, technology, and innovation for national development.

TANZANIA ACADEMY OF SCIENCES

The Tanzania Academy of Sciences (TAAS) was initiated by a few Tanzanian scientists led by Prof. Peter Msolla, the then Deputy Vice chancellor of Sokoine University of Agriculture and now the Minister of Communication, Science and Technology. It was established on 24th February, 2004 with the cooperation and support of the government of Tanzania and registered as an NGO scientific body on April 13, 2005 with Certificate No. 0796. The primary objective of TAAS is to cooperate and collaborate with the government, other scientific organizations, and the general public in the promotion, advancement, and scholarly application of all aspects of science and technology for the socio-economic development of Tanzania. The Vision of TAAS is: "To be a world class national scientific organization for the advancement and application of scientific and technological learning for socio-economic development."

UGANDA NATIONAL ACADEMY OF SCIENCES

The Uganda National Academy of Sciences (UNAS) is an independent, non-governmental, and non-partisan organization that counts many of Uganda's most distinguished scholars from all disciplines as its members. Its mission is: "To improve the livelihoods, welfare, and prosperity of the people of Uganda

through the development and enhanced application of knowledge in the sciences and humanities." UNAS—in existence since 2000 and designated the National Academy by presidential charter since 2009—acts on its mission by conducting consensus studies that bring together interdisciplinary and multi-sectoral committees of distinguished scholars and stakeholders to provide comprehensive and objective policy recommendations.

UGANDA NATIONAL YOUNG ACADEMY

The Uganda National Young Academy (UNYA) was officially launched on 29 September 2015 at the Makerere University School of Food Technology, Nutrition and Bio-Engineering. UNYA aims to be the voice of early-career scientists at the science and policy interface nationally, regionally and internationally. Our members are not only excellent scientists, they are also active in using their science to address societal challenges. Our members are typically within 3-10 years of obtaining their PhDs, and represent disciplines across the natural and applied sciences, as well as the humanities, social sciences, and the arts. UNYA, therefore, is a platform where these young scholars can come together and promote the use of science in national and international decision-making processes.

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