THE STATE OF ADDIS ABABA
TOWARDS A HEALTHIER CITY
2021

Design and Layout by UN-Habitat

Front cover photo: © Yohannes Minas via Unsplash

How to cite this report: Karadimitriou N., Cheru F., Wondimu A., Yacobi H., Eyob AE., Belay F., Temesgen T. K., Eyana SM., Yoseph S. (2021) 'The State of Addis Ababa 2021: Towards A Healthier City'. Addis Ababa: UN Habitat.

UN⊕HABITAT
FOR A BETTER URBAN FUTURE

THE STATE OF
ADDIS ABABA
2021

TOWARDS A HEALTHIER CITY

FOREWORD

COVID-19 has had a devastating impact on people across the globe, irrespective of their location and status. The impacts on national economies, societies and cities were multifaceted.

The second volume of the State of Addis Ababa report, is of paramount importance not only because it highlights the impact of the pandemic, but also because it identifies how the city could become more resilient to health crises. It assesses how the city's service delivery and its hard and soft infrastructure coped with the sudden shock caused by COVID-19.

The report also looks into the ways that the city administration, the federal government, international organizations, and NGOs, have mobilized in response to the pandemic.

The Addis Ababa City Administration has mobilized a considerable amount of resources to manage the public health emergency as well as to tend to the acute medical and socio-economic needs created by the pandemic.

The entire world has now witnessed that although medicine lies at the heart of the effort to control pandemics, it was the quality of our built environments and the associated infrastructures which allowed societies to remain functional. We were reminded of a simple lesson: suitable urban planning is crucial to improving public health.

Addis Ababa is the engine of Ethiopia's economy and its dynamism is a major force in the country's development effort. With that in mind, it is has become an urgent task to make it more resilient not only in terms of natural phenomena but in terms of public health too.

Mr. Oumar Sylla

Director (a.i), Regional Office for Africa, UN-Habitat

FOREWORD BY UN-HABITAT ETHIOPIA COUNTRY OFFICE

On behalf of UN-Habitat Ethiopia, I would like to welcome the publication of the 'State of Addis Vol II - Towards a Healthier City'. It is a timely and resourceful publication, paving the way for a better Addis Ababa.

The State of Addis Ababa reports are periodical publications focusing on the assessment of the existing condition of Addis Ababa through the looking glass of multiple interdisciplinary issues. The first critically praised volume has come out in 2017. It was titled 'The State of Addis Ababa- the city we want'. The second volume explores the situation of the COVID-19 pandemic in the city, and is aptly titled: The State of Addis Ababa - towards a Healthier City.

Addis Ababa has been the epicenter of urbanization in Ethiopia. It has been attracting people ever since it was founded, making it the heart of Ethiopia and one of the most important urban centres in Africa. It is therefore of paramount importance to have a healthier Addis Ababa.

The second State of Addis Ababa report not only highlights the impact of the pandemic, but also identifies how cities could become more resilient. It analyzes the impact the pandemic had on the city and on the livelihood of its residents. It assesses how the city's hard and soft infrastructure coped with the shock caused by COVID-19.

The report also investigates the way that the city administration, the federal government, international organizations, and NGOs, have mobilized in response to the pandemic. It therefore offers insights which could make Addis more resilient.

To recap, it became quite clear in the recent past, that cities are the engine of a country's economy and that the dynamism of urban societies is a major force in every country's effort to shape its future. With that in mind, it has become an urgent task to make our cities more resilient and healthier.

Ms. Haregewoin Bekele
Country Program Manager (a.i)

ACKNOWLEDGMENTS

Contents

List of Tables

List of Figures

Introduction

Aerial view of Addis
© Hilena Tafesse

Ethiopia has been home to great civilizations that stretch back thousands of years. It currently has one of the fastest growing economies in the world. Despite that, Ethiopia is still one of the poorest and least urbanized countries. The country has been severely affected by the spread of the COVID-19 pandemic and its impact is acutely felt in urban centers, particularly, in Addis Ababa. Given the magnitude of economic and health crises brought about by the pandemic, the second[1] 'State of Addis Ababa' (SoA) report focuses on 'Planning a Healthy City in the Post-Pandemic Period'. The ultimate aim of the report is to outline a post-COVID-19 agenda for transforming Addis Ababa into a "healthier and more productive city" through urban planning, institutional reform and infrastructure development. Such interventions are important for improving the well-being of the city's residents during the ongoing pandemic, and in the future, should disease outbreaks occur.

The city of Addis Ababa has been the epicenter of the COVID-19 pandemic in Ethiopia. On average, Addis Ababa registered close to 70 percent of total confirmed cases in Ethiopia as of February 2021. Given the magnitude of challenges posed by the pandemic, the Ethiopian Federal Government declared a 'State of Emergency' on 10 April 2020. The Federal Government of Ethiopia (GoE) adopted a series of measures including additional funding to the health system, financial support for businesses to protect livelihoods and avoid employee lay-offs, support for low-income groups, etc.

[1] The UN-Habitat published the first 'State of Addis Ababa' report in 2017.

The aim of this report is to outline a post COVID-19 recovery plan for Addis Ababa that simultaneously addresses the health dimension and its linkages to the economic effects of the pandemic. The report's approach is aligned with the concept of social determinants of health which encompass the circumstances in which people are born, grow, live, work and age, and the established health care systems. Such a strategy must aim at building the foundations for a healthier, economically productive, socially inclusive and an environmentally sustainable capital city through institutional reform and infrastructural development. Urban planning has a key role to play in that process.

This report sets out to: (a) assess the economic, social and health impacts of the COVID-19 pandemic; (b) find out how urban form and function may be linked to the spread of the pandemic, and (c) explore what types of built environment, infrastructure and institutional interventions might be needed in Addis Ababa in order to address the current pandemic and prevent future outbreaks. Accordingly, the following questions are explored:

- What are the major socio-economic and health effects of the pandemic on Addis Ababa? Which economic sectors have been mostly affected?
- How are urban form, urban land use and functions as well as connections between people and places linked to the spread of COVID-19 in Addis Ababa?
- How can urban planning help strike a balance between density, agglomeration, connectedness and well-being in Addis

Ababa? What types of built environment intervention and infrastructure would be required to help Addis Ababa become more resilient in the face of the current and future pandemics?

The study employs both primary and secondary data sources to measure the impact of the pandemic on health, employment, business, and social services. A data-driven quantitative assessment was carried out as appropriate. In addition, several interviews were carried out and published reports and data were utilized and tailored to the context of Addis Ababa. The analysis conducted demonstrates that the impact of COVID-19 on businesses and especially on the tourism and hospitality sector was devastating. This resulted in higher unemployment and business closures. As often is the case, the poor were disproportionately affected having faced the highest disruption in their livelihoods and in informal welfare support systems because of social distancing measures and the general slow-down in economic activity. Actions taken by the GoE, the Addis Ababa City Administration (AACA), grass root and international organizations managed to avert a humanitarian disaster. However, the macroeconomic picture of the GoE and the AACA has significantly deteriorated. Furthermore, the opportunity cost of resources directed to addressing the impacts of the pandemic was significant, especially for a low-income country like Ethiopia.

Insofar as the links between urban form and function and the spread of COVID-19 are concerned, the findings of this report pave

the way for further research on healthy cities. The pandemic started to spread from inner-city parts with a high proportion of slums and densely populated areas. Subsequently, the caseload increased in an outer, better planned and more affluent area of the city called Bole. It is a matter for further research whether this reflects the way that testing is run and the type of data collected. In that sense, data collection could be adjusted to improve the ability of policy makers to monitor the spatial and temporal evolution of the current and future pandemics, and to allocate resources more efficiently and more effectively.

Unity Park
© Zebad Alemayehu

Report Outline

Chapter 1 introduces the concept of a 'healthy city' and why planning a healthy city matters in the context of a global pandemic. The 'healthy city' is a concept borrowed from the World Health Organization's (WHO) Healthy Cities Initiative which is widely applied in many countries around the world. This approach considers not only physical health, but also mental, social, economic, political, and spiritual aspects. Accordingly, developing policies to achieve a healthy city should rely on a cross-sectoral approach.

There is mounting scientific evidence which highlights the significant role of the built environment in shaping health outcomes and inequalities. Increasingly, practitioners seek new tools and guidance to understand how their policies and decisions can support the creation of healthier cities. Public health and urban planning should therefore be understood as complementary to each other because they focus on the policies, practices and processes that influence the well-being of urban dwellers.

Chapter 2 presents a detailed mapping of the state of health, urban infrastructure and social services in Addis Ababa. An infrastructure mapping by sub-city and Woreda could convey an important message on the association between hot spots where COVID-19 took hold, utility deficits and land use patterns. The analysis focuses on the following potential channels of pandemic transmission: transport; water and sanitation; housing (with respect to adequacy and crowd-

ing); social infrastructure (places of worship, educational establishments, hospitals, care homes etc.); Leisure spaces and amenities (parks, sports facilities etc.) The mapping also takes a closer look into the distribution and extent of areas with unplanned patterns, slums, street markets and clusters of micro and small enterprises (MSEs) by sub-city, with geographic information system (GIS) support. The goal of this analysis is to understand the association between urban informality patterns and the spread of COVID-19 in the city of Addis Ababa. Selling produce in open markets, engaging in informal sector activities and employment in MSEs are key livelihood strategies in Addis Ababa but they pose a high risk of viral transmission as they require frequent physical contact between persons.

Chapter 3 presents a detailed analysis of the economic, social, and health impact of the pandemic on the city of Addis Ababa. The economic impact of COVID-19 could be measured in lost jobs, closed small and medium enterprises, lost revenues, drops in productivity due to ill health, lost output due to lock down and the opportunity cost of the total expenditure made by the government to contain the pandemic. The effect of the pandemic has been clearly visible in the tourism and hospitality sector where thousands of jobs were lost and supply chains got disrupted. Tourism is analyzed in greater depth because the economic impact is more pronounced in this sector due to the halt in travel of international tourists and business travelers to Ethiopia. Moreover, Addis Ababa plays a significant role in tourism and hos-

pitality business activities and is central in the tourism value chain of the country. Apart from international tourists, business travelers and even transit passengers spend time in the city.

An assessment of the social impact of the pandemic covers such issues as the rise in domestic violence and assault incidents; psychological effects, particularly on children; growing food insecurity challenges; and the increase in the number of households that depend on welfare. With respect to the health impact of the pandemic, we have been able to gather accurate data by sub-city on the number of deaths caused by the pandemic. On the contrary, there is limited organized data in the city that shows the increase in the fatality rate through other diseases a result in the shift in attention towards COVID-19. It has been widely reported in local media that due to the focus on COVID-19 patients, hospitals stopped elective surgery and pregnant women were forced to give birth at poorly equipped Kebele-level clinics[2] (Qian, 2020).

Chapter 4 documents the institutional aspects to the pandemic response in which all governance levels engaged including, the GoE, the AACA, local community networks, non-governmental organizations (NGOs) and international partners. The response included measures like social distancing in public transport and partial lock down as well as expanded hand-washing facilities in public places, shelter provision for street children, food distribution etc. Sub-cities were at the forefront of service delivery.

The study also examines the types of institutional adaptation and innovation that was observed at the sub-city and Woreda[3] levels in response to the crisis. The chapter takes a closer look into institutional structures and gaps; capacity in human and financial resources and support structures, and finally, community engagement and action. Civic associations, grassroots organizations and NGOs were actively mobilized. Two new offices were formed in each sub-city: the Office of Youth and Voluntary Mobilization and the Village-Centered Office. Coordination was undertaken through a Command Post at sub-city and Woreda level while Distribution Committees managed resource distribution at sub-city level. This was a herculean task. Without the capacity in the city and the community to mobilize the population in response to the emergency, more lives would have been lost from COVID-19 and more livelihoods would have been destroyed.

Chapter 5 assesses how patterns of urban form and structure shape the features of Addis Ababa, its efficiency and vulnerability to diseases. GIS and mapping tools were utilized extensively to understand the association between infrastructure deficits, land use patterns (urban form) and hot spots where COVID-19 took hold. The GIS analysis in this chapter covers urban form and function: the nature of planned/unplanned pattern of the settlement area, availability of infrastructure and utilities, water and sewerage systems, open space and greenery, land use and urban functions etc. The purpose of this analysis is to establish a link between pandemic hot spots and urban form and function. The

---

[2] Kebele is the smallest level of administration unit in Addis Ababa

[3] Woreda is the second smallest administration unit of Addis Ababa

analysis revealed several vulnerabilities in the way Addis Ababa is developing and pointed out that data collection on pandemics should take into account the spatiality of disease if it is to support policies and programmes aimed at efficiently containing it with targeted lock downs and vaccinations but also with urban planning interventions and public health initiatives.

Chapter 6 provides conclusions and policy recommendations for the way forward. The task of developing a planning framework to support the transformation of Addis Ababa into a 'healthy, economically productive, and sustainable city' through urban plan-

ning will be a major undertaking. Achieving urban health improvements involves a variety of inter-sectoral determinants and policies including physical, social, economic and political environments. This task should be based on the understanding that urban health should start with the improvement of infrastructure and service provision. Indeed, exposure to environmental hazards or lack of adequate utilities are not neutral facts but rather a result of changeable policy and planning. Physical transformation of urban space is not enough without accompanying political and institutional change. The response to the pandemic demonstrated that such action

Public transport workers sanitizing passengers
© Mulugeta Ayene

Aerial view of Addis
© Gift Habeshaw via Unsplash

CHAPTER 1

Why '*Planning for a Healthy City*' matters to a city like Addis Ababa

1.1 Introduction

The COVID-19 pandemic has been a major shock for the global economy. The most dramatic effect of the pandemic other than its health impact, is on people's livelihoods. When the global economy went into lock down due the COVID-19 pandemic, investment, trade and production declined across countries and regions. In the case of Ethiopia, the closure of micro, small and medium enterprises, and the disruption to Ethiopia's external trade led to a shrinkage in manufacturing and services employment. Specifically, the tourism and hospitality sectors have been severely hit by the pandemic and the effects are more pronounced in Addis Ababa. According to the Addis Ababa Hotel Owners Association (AHA), 88% of hotels in the city partially or fully closed during the early months of the pandemic (AHA, 2020). To put this into context, the Job Creation Commission (JCC) estimates that close to 1.4 million jobs are under threat and approximately 1.9 million people in vulnerable employment will lose their income due to the economic shock of COVID-19 (Addis Standard, 2020). As a result, extreme poverty is again on the rise along with an increased incidence of hunger and malnutrition. The spread of the pandemic has also put the Ethiopian health care system under strain.

Currently, there is mounting scientific evidence which highlights the significant role of built environments in shaping our health and well-being. There is a growing awareness among city leaders and policymakers of the impact of the urban environment on health outcomes and inequalities. Increasingly, practitioners in built environment city departments such as housing, planning, transport and regeneration, seek new tools and guidance to understand how their policies and decisions can support the creation of healthy cities (Grant et al., 2017). The COVID-19 pandemic crisis has brought to the fore the urgent need to make cities more sustainable and economically productive through innovative urban planning and management. A key challenge for the future will be to develop planning frameworks which advance a public health agenda in a spatial policy context which is frequently driven by market forces.

As mentioned, this report focuses on the role of urban planning in transforming Addis Ababa into a 'Healthy, sustainable and productive City' in the post COVID-19 pandemic period. One of the key features of the Healthy Cities approach is the importance it attributes to the interaction between individuals and their environments (Hancock, 1993). Furthermore, the concept of healthy cities is an attempt to reconnect planning to its public health and social justice roots. It highlights the links between planning and health equity, and hints at new political processes that could address the social determinants of health.

1.2 What is a healthy city?

Historically, many major urban planning reforms emerged from public health concerns. In countries of the global south, the frequent outbreaks of cholera, tuberculosis, typhoid and other communicable diseases in large cities due to poor sanitation and crowded living conditions, have prompted many governments to institute changes in urban planning and management. Such actions were often short-lived due to lack of political commitment and the absence of a tradition of proactive long-term planning (Rydin et al., 2012). Today, with the rapid pace of urbanization, urban health is affected by multiple factors such as air and noise pollution, low housing standards, poor transportation networks, inadequate provision of water supplies, sanitation, the lack of proper waste collection systems, and the absence of green spaces, among others.

In developing countries, most urban dwellers live in informal settlements and slums that lack access to basic services and public amenities (Lim et. al, 2016). The poor are exposed to greater health risks (WHO, 2010b) and are disproportionately impacted by COVID-19, thus making health inequality apparent in cities. While rich countries have the financial means and the technological know-how to experiment with innovative interventions to mitigate many of the factors that make cities unsustainable (Grant, 2015), developing countries like Ethiopia lack the resources, the institutional structures and the know-how to replicate practices from more developed countries.

The concept of 'healthy cities' emerged thirty years ago with the birth of the healthy cities movement. The World Health Organization (WHO) has been central to the development of the concept and to its promotion across the world (WHO, 2010a). According to Hancock and Duhl (1988),

'*A healthy city is one that is continually creating and improving those physical and social environments and expanding those community resources which enable people to mutually support each other in performing all the functions of life and developing their maximum potential*'

To be specific, the concept of a healthy city includes physical as well as mental health. Over the years, the literature on healthy cities has evolved from an approach to public health to an integrated approach to urban planning and management which has broader long-term impact on health (Kenzer, 1999). There is a consensus that delivering better health outcomes in cities depends on reshaping the physical fabric and infrastructure of urban areas through urban planning and management (Jackson et al., 2013). This approach is clearly echoed in the New Urban Agenda principles (United Nations, 2017). These principles call for the provision of basic services to all citizens, the promotion of measures that support cleaner environments, more resilient cities to reduce the risk and the impact of disasters, improvements in

connectivity, and safe, accessible and green public spaces.

Consequently, we argue that progress in health depends not only on the performance of health systems, but also on shaping healthier environments. According to Rydin et al. (2012), Northridge et al. (2003) and Hancock (1996), the key ingredients that can deliver better health outcomes through built environment interventions include:

- A supply of clean potable water and good sanitation infrastructure for sewage treatment and disposal.
- Good air quality
- Clean land: decontamination of polluted land and facilities for safe waste disposal.
- Affordable and safe housing that provides protection from the weather and a safe indoor environment.
- Safe and secure neighborhoods that offer security and a sense of mutually supportive community.
- Reliable, affordable and accessible public transport and provision for safe walking and cycling to support mobility and exercise.
- Green and blue spaces: an infrastructure of greenery and water features for exercise, local climate control, flood prevention and mental well-being.
- An accessible, equitable and functioning system of health care facilities.
- A productive and innovative city economy.
- A high degree of public participation.
- An accountable, responsive, and inclusive municipal governance system.

Cities are complex systems made up of multiple factors that interact with each other. Changes in one part of a city may produce unforeseen consequences in another. Understanding how this complex system works in general, and integrating the inter-related domains of physical, social, economic, and political factors in a holistic way is critical for transforming cities to become healthy, economically productive and sustainable (Hancock and Duhl, 1988). Urban health can improve significantly when individuals interact more with their natural, built, and social environments (Glouberman et al. ,2006).

Addis Ababa would require major improvements in its institutional capacity and in its physical fabric and infrastructure for the city to forge a healthy and sustainable future. Its residents, particularly in informal settlements, have limited access to water and sanitation both of which are "integral components of the realization of all human rights" (United Nations General Assembly, 2016). The lack of proper storm-water management often leads to flooding in the city. Transportation and mobility services are overcrowded, and this has been found to contribute to the spread of communicable diseases.

Other than poor urban infrastructure and basic services, urban planning and management capacity in Addis Ababa is weak, too sectoral, and with little effort to integrate interrelated domains so as to achieve better health outcomes. Administrative departments frequently operate in silos and thus it is difficult for the AACA to plan and act in an

Typical road construction scene
© Aman Alemayehu

integrated way. Even when integrated strategies are drafted, their implementation is often weak. The COVID-19 pandemic has demonstrated the importance of urban planning and management in improving urban resilience and in delivering healthier cities. In the pages which follow, we see what literature has to say about the links between urban form and COVID-19. Urban planning could indeed help to re-shape the physical fabric and Addis Ababa's infrastructure provision. This could bring better health outcomes and would improve the overall environment for economic productivity, job creation and the livelihoods of the population. However, in a city where more than half of the built-up area has an unplanned pattern (see Figure 1.2), this process may take time, and requires strategic actions and resources.

1.3 Urban form, structure and function and their role in the spread of COVID-19: The literature

There is a growing body of literature which shows that high density in planned urban areas, with adequate water, sanitation and hygiene (WASH) infrastructure, is not a factor contributing to the spread of COVID-19 in Spain (Menendez and Higueras-Garcia, 2021) and the US (Hamidi et. al., 2020). On the contrary it is inversely related to mortality, at least in the US (ibid.). Adverse socio-economic factors appear to be closely related to the spread of the pandemic in Madrid (Menendez and Higuer

as-Garcia, 2021) and, actually, several slum areas in the global south have the highest case densities (Sahasranaman and Jensen, 2020). In the case of slum areas, this may be due to severely inadequate WASH infrastructure (which is unequally distributed even within and between slum areas), overcrowded housing conditions and poor health provision standards. The lock down and social distancing measures have a severe impact on the livelihoods of slum residents who find it nearly impossible to adhere to strict social distancing measures.

At the early stages of the pandemic, the risk of importation from China to sub-Saharan Africa through air traffic flows was deemed to be highest for South Africa, Ethiopia and Nigeria but Ethiopia and Nigeria were considered to be more vulnerable to a pandemic (Gilbert et. al., 2020). Ethiopia, together with other 12 countries including Nigeria, South Africa and Kenya, was placed in the WHO top priority countries as early as January 2020 WHO; (2020a, 2020b). Indicatively, Ethiopian Airlines continued its regular flight operations to China throughout 2020.

Although South Africa became the epicenter of the pandemic in sub-Saharan Africa, followed at some distance by Ethiopia, Kenya, Nigeria and Ghana (Lukman et. al. 2020; WHO, 2020b) the reported morbidity of COVID-19 in Africa is low overall and the speed with which the infection spreads was slower in comparison to the rest of the world (Ghosh et. al 2020; Rutayisire et. al 2020), even after taking limited testing and relatively ineffective lock down measures into account (Obgolosingha

and Singh, 2020). Rwanda, in particular, has been successful in deploying technological solutions in all aspects of the management of the disease, from test and tracing to patient management, information campaigns and hospital disinfection (Musanabaganwa et. al., 2020) and perhaps for that reason had one of the lowest fatality rates globally.

The links between urban form and function and the spread of COVID-19

There is a growing body of evidence which shows that the built urban form is not directly related to the spread of the pandemic. The main mechanism of transmission of the disease is through the respiratory droplets exhaled by an infected person, or secondarily when a person touches his or her face with contaminated hands (Heneghan and Howard, 2020).

The emerging consensus is that one-to-one human contact is contagious, but the disease can be contained with testing and contact tracing when the virus has not spread widely to the community. What is magnifying the risk of spreading the disease are gatherings of people which take place in enclosed spaces for long periods of time (CDC, 2020).

Therefore, based on this understanding of the disease's transmission mechanism, current hypotheses about the role of the built environment in containing or propagating the spread of the disease have to do with: a) the ventilation and lighting conditions of private and public spaces; b) overcrowding in public spaces and even more so in private places;

Crowded street in Sitges, Spain during the Pandemic
© Xavi Cabrera via Unsplash

and c) lack of WASH facilities. For that reason, measures to curb the spread of the disease have focused on testing and tracing and on reducing direct human contact.

Consequently, non-essential retail shops, educational facilities, places of worship and leisure and entertainment venues have been temporarily shut in several countries as a measure to contain the spread of the disease. In this context the people who remain most exposed to the disease are those who cannot avoid contact with others by virtue of their working or living conditions as well as people who do not have access to adequate washing and sanitation facilities. The most exposed groups include: medical staff and security services, factory workers, street market vendors, employees who are in contact with the public such as public transport drivers and finally, people living in overcrowded housing and in urban quarters where running water and sanitation facilities are under provided.

The residents of informal or unplanned settlements in Africa's sprawling urban centers are not only more exposed but also more vulnerable to the disease as they have limited means to tackle the illness if they get sick (Corburn et. al., 2020). The lack of public spaces and green infrastructure in such settlements also means that the impact of lock down on mental health may be comparatively higher there, at a time when the already poor level of service offered for mental illness by the health system is dropping further, as evidenced by case studies in Kenya, Nigeria, Pakistan and Bangladesh (Ahmed et. al., 2020).

Densely built, planned urban quarters where dwellings have proper WASH facilities and people don't live in overcrowded conditions, do not seem to be exposing their residents to higher risks of infection. In their cross-sectional analysis of US metropolitan counties, Hamidi et. al. (2020) discovered that density is not linked to rates of COVID-19 infection and is inversely related to mortal-

ity, probably due to better access to higher quality health care in urban centers. Hamidi et. al. (2020) however, uncover that connectivity in both dense and less dense areas, is very significant in explaining the spread and lethality of COVID-19. Therefore, they point future research at developing more sophisticated measures of internal urban connectivity. In an examination of Madrid, Menendez and Higueras-Garcia (2021), also show that the areas most affected by COVID-19 were not the denser areas with older demographics but the lower income areas with a lower proportion of green spaces and lower urban complexity (in terms of use and functions at the micro-scale).

Several authors agree that the residents of informal or unplanned settlements and slums of the global south were hard hit by the pandemic. Even though the reported immediate health impact on Africa has been lower than anticipated, the predictions of dire socio-economic impact have unfortunately been more accurate. What is more, a comparison of Mumbai, Cape Town, Rio de Janeiro, Dhaka, Lagos and Manila by Sahasranaman and Jensen (2020) showed that

"A small number of the most densely populated neighbourhoods contain a significant proportion of total caseload across all cities… Neighbourhoods with the highest case densities contain the largest slums in these cities, and that consequently the urban poor in slums are at the highest risk in an epidemic".

In a review of relevant literature, Sharifi and Khavarian-Garmsir (2020) concur that vulnerable populations like the urban poor have suffered the most during the pandemic. Wasdani and Prasad (2020) have observed first-hand how social distancing rules are impossible to observe and enforce in a slum in Bangalore, India, due to overcrowding, lack of WASH infrastructure and the disastrous effects lock downs have had on people's livelihoods. They propose direct cash transfers, accessible information campaigns and hygiene kit distribution as feasible measures, alongside social distancing, to curb the spread of COVID-19 in slums.

Kihato and Landau (2020) confirm that people living in slums in sub-Saharan Africa face a similar situation to their Indian counterparts when it comes to dealing with social distancing rules. They identify the same set of reasons that Wasdani and Prasad (2020) identified, such as overcrowding, lack of WASH infrastructure, limited access to quality healthcare and the threat which social distancing and 'stay home' measures pose on their livelihoods. These points are repeated by Chirisa et. al. (2020) in her analysis of Cape Town, Nairobi, Lagos and Harare. Auerbach and Thatchil (2020) also note that the availability of WASH infrastructure, which is not uniformly (UN)available in slums, is a key factor affecting the capacity of slum residents to uphold social distancing rules. Flinn and Kobayashi (2020) go one step further. They highlight the risks of social fracturing that may materialize if the pandemic gives rise to ideologies which victimize the urban

poor instead of trying to deal with the factors which contributed to their poverty in the first place.

Finally, in terms of managing the impacts, Corburn et. al. (2020) identify the challenges which the residents of slums in the global south are facing during the pandemic. They point to the approach which governments should follow to successfully manage the pandemic in the slums, for the benefit of the entire urban population's health. The response they propose is based on emergency planning committees which should be networked locally. They advocate for an immediate moratorium on evictions, direct payments to the poor, community health workers to be deployed locally, 'Sphere Humanitarian' WASH provision standards to be met as a top priority, food assistance to be provided, solid waste collection and recycling to be enhanced and finally, for achieving mobility for the purpose of accessing healthcare. Some of these proposals are not a far cry from what was implemented in Addis Ababa, as Chapter 3 will discuss in detail.

1.4 Urban planning and urban form in Addis Ababa

There has been a century of planning practice in Addis Ababa since the time of Emperor Menelik II and the 'Taitu Plan'. The city has had several official plans since then, each of them reflecting the prevailing political situation in the country and in the city at the time. However, Addis Ababa's urban development history also has an unplanned informal dimension, the imprint of which on the urban fabric is persistent in spite of the century-long formal planning attempts.

The current Structure Plan of Addis Ababa (AAPCO, 2017) is the 10th ratified plan of the city covering the period 2017-2027. The goal of this plan is

"to ensure that the city contributes its share in order to bring the national economy to the level of middle-income countries; and in the process, improve the living standard of the city's residents…make the capital internationally competitive at this age of globalization and bring about overall socio-economic transformation"

The plan prescribes high density development in the city center and outlines mass transit corridors. The four land use planning principles it outlines are: Intensive Use on Selected High-Density Areas, Polycentric Urban Development and Decentralization, Mixed Use, and Foresight and Practicality.

Figure 1.1: Urban structure concept and current land use according to Addis Ababa's 10th structure plan
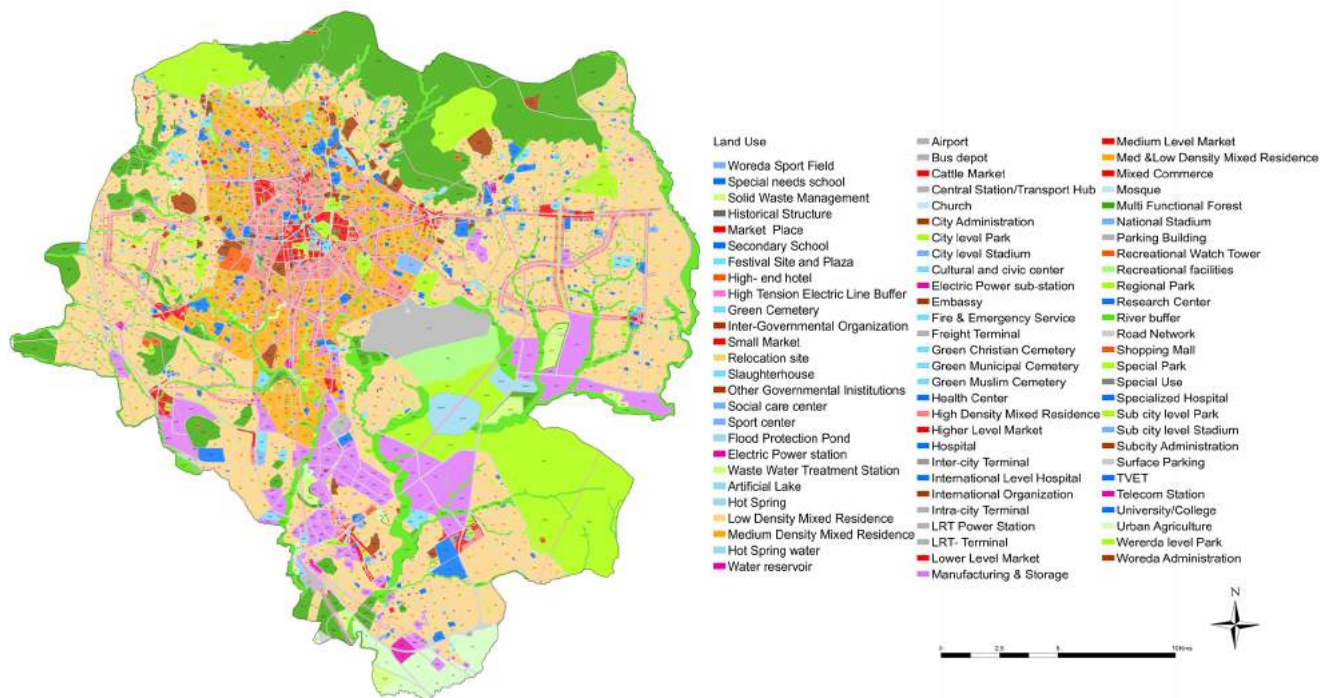
Source: AACPO, 2017

The most common land use foreseen in the structure plan is Mixed Residential (accounting for 42% of the total city area), followed by Environmental uses (green spaces, buffers, water bodies, etc.) at 30.5% (see Table 1.1).

Table 1.1: Land use distribution in Addis Ababa, as foreseen in the 10th Structure Plan

No	Major Category	Area in km²	Percentage of total urban area
1	Administration	5.6	1.07
2	Commerce and Business	7.7	1.47
3	Environment	158.6	30.47
4	Historical Buildings and Sites	0.2	0.04
5	Manufacturing and Storage	30.6	5.87
6	Mixed Residential	219.1	42.11
7	Municipal Services	6.2	1.18
8	Religious Institutions	3.7	0.71
9	Social Services	14.6	2.80
10	Special Projects	7.5	1.44
11	Special Uses	3.3	0.64
12	Sports Fields	0.2	0.04
13	Street Network	36.3	6.98
14	Transport	11.5	2.22
15	Urban Agriculture	9.2	1.78
16	Utility and Infrastructure	6.2	1.19
17	Municipal Services	6.2	1.18

Source: AACPO, 2017

1.5 Urban spatial pattern and informality in Addis Ababa

Urban form is the spatial imprint of the physical and social organization of the city accumulated over time. It affects the efficiency and future development of the city as well as the health of its residents. This section will deal with the relationship between urban form and COVID-19 with the aim to support policies that will make Addis Ababa more resilient to pandemics and diseases. The analysis will focus on the following three major parameters: urban spatial pattern and informality, urban density and functional mix, centrality and markets. It aims to analyze COVID-19 prevalence, its spatial distribution in Addis Ababa and the correlation with urban form parameters. The analysis will draw lessons on how urban planning should respond to the goals of a healthy city.

Classification of urban patterns

Addis Ababa's urban spatial pattern has been transformed recently due to redevelopment and massive residential expansions. This transformation is affected by formal and informal processes. For the purposes of this report, the city's urban pattern has been classified into the following four categories: planned pattern, unplanned pattern, condominium complexes and undeveloped and green areas.

Planned pattern: includes urban areas with regular road patterns and housing where plots have adequate size and formal development. These areas have better spatial conditions and infrastructure. Usually, social conditions are comparatively better as well.

Condominium complexes: areas of mass government-sponsored housing developments. This category could be considered under 'planned pattern' but its peculiar collective nature warrants special treatment.

Undeveloped and green areas: this category includes forests, vacant land, agricultural land and large-size green areas.

Unplanned pattern: includes areas with irregular road patterns and informal settlements. It is mostly characterized by poor infrastructure and social conditions. The term "unplanned pattern" is used in order to avoid the use of "informal settlement" which is conceptually distinct as discussed below.

The concept of "informal settlement" and its local application

UN-Habitat (United Nations General Assembly, 2016) defines informal settlements as residential areas where:

A. Inhabitants have no security of tenure vis-à-vis the land or dwellings they inhabit, with modalities ranging from squatting to informal rental housing,

B. the neighborhoods usually lack, or are cut off from, basic services and city infrastructure and

C. The housing may not comply with current planning and building regulations, and is often situated in geographically and environmentally hazardous areas.

This definition covers settlements built on illegally obtained land, clusters of housing built without permit or breaching permit conditions; hazardous sites; clusters of temporary shelters and areas with inadequate or absent infrastructure. This means that in cities of the global south, and definitely in Addis Ababa, the majority of urban areas are in effect informal settlements. This may not reflect the local definition of informality. The term "informal settlement" is also often used interchangeably with other terms such as slum, bidonville, shanty town as well as illegal and squatter settlements, although all such settlements have their own specific spatial, environmental and socioeconomic particularities.

In Ethiopia, the term "informal settlement" is not explicitly used in law and differs from UN-Habitat's and other international definitions. Though several urban quarters in Addis Ababa are qualified by many authors as "informal", there is no legal definition of "informal settlement" in Ethiopian law. The current "lease proclamation" 207/2011-Article 6(4) uses the phrase "possessions held without the authorization of the appropriate body" to describe such areas. The law refers to land occupation and does not refer to the type and standard of housing. This is where a major conceptual difference exists between the Ethiopian definition of informality and its international equivalents. International definitions refer both to the land tenure and the conditions of habitation, while Ethiopian law refers only to the land's legal ownership status. Therefore, a substandard house built on a hazardous and under-serviced plot but with a legal title deed is "formal" in the eyes of Ethiopian law. However, such areas are called "slums" in local and international practice.

Addis Ababa's current social pattern

The spatial pattern analysis of Addis Ababa has been carried out on the basis of the classification outlined above, using Maxar satellite images of 1 January 2020 supported, where necessary, by expert knowledge and verifications on the ground (Figure 1.2).

The unplanned spatial pattern dominates Addis Ababa. It accounts for about 40% of the total administrative area or 56% of the developed part of the city (see Table 1.2). The majority of Addis Ababa's dwelling stock has historically been considered as a slum but the planned development post-2000 has brought some improvement in terms of urban pattern and living conditions.

Figure 1.2: Urban spatial pattern classification map of Addis Ababa
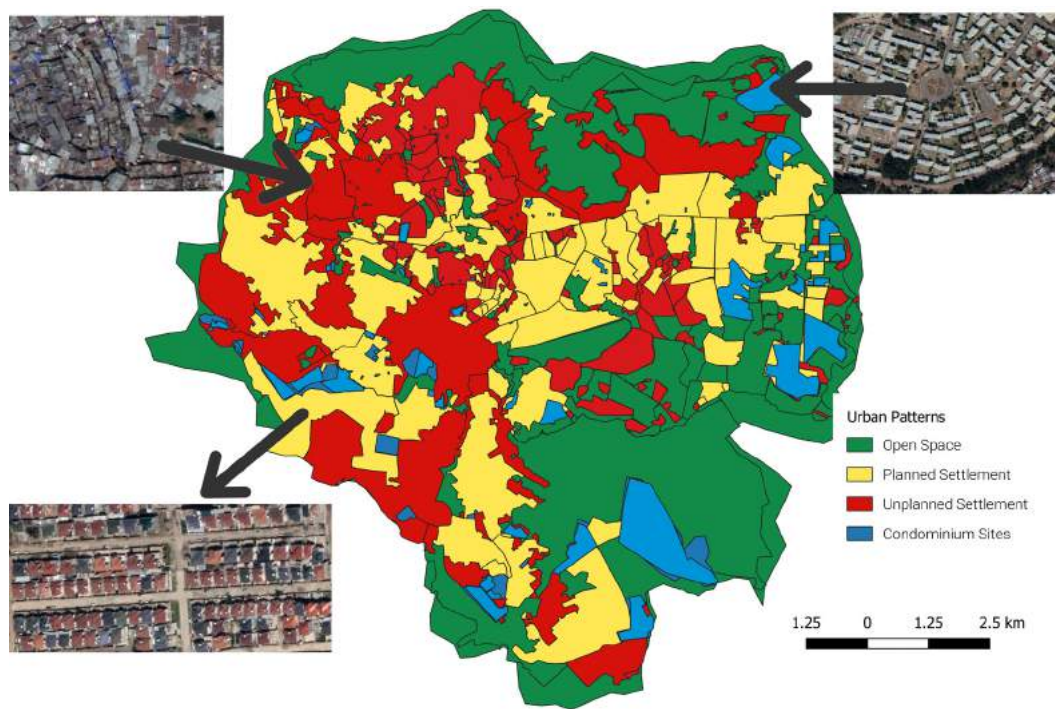
Source: Maxar Satellite Images. 1 January 2020; Authors

Table 1.2: Urban spatial pattern distribution of Addis Ababa in 2020

No	Pattern	Area in km²	Percentage of total urban area
1	Planned spatial pattern	28.9%	Regular shape of blocks, adequate road size, formal development, better spatial and social conditions
2	Unplanned spatial pattern	40.6%	Irregular urban fabric, poor infrastructure and social conditions, low density in the urban periphery and high density in the inner-city slum areas
3	Condominium complexes	2.6%	Planned, communal, high density
4	Undeveloped and green: Forest/green /vacant/	27.9%	Green areas, forest, vacant, open spaces
	Total	100 %	

Source: Authors

The significant proportion of unplanned settlements with slum conditions, particularly in the core of the city have a direct impact on the health status of residents due to the combination of high room occupancy and poor provision of WASH infrastructure. The inner sub-cities (Addis Ketema, Arada, Lideta and Kirkos) have the highest percentages of areas with unplanned urban spatial pattern. Addis Ketema sub-city tops the list as its urban fabric is 86% unplanned, with slum characteristics such as low incomes, dilapidated housing, very bad roads and inadequate access to water and sanitation. On the contrary, Bole sub-city's planned urban pattern accounts for 81% of its surface because it is where the city has expanded more recently and in a more organized manner (see Table 1.3).

Addis Ketema and Bole were selected for more detailed analysis of the relationship between urban pattern and COVID-19 as they are almost polar opposites in terms of their urban pattern composition (planned versus unplanned). However, prior to this comparison (see Chapter 5) and to be able to better understand the impact of the pandemic, let us take a closer look at the state of Addis Ababa city's key infrastructure just before the pandemic occurred.

Table 1.3: Urban spatial pattern in the 10 sub-cities of Addis Ababa

No	Sub-city	Spatial pattern distribution in percentage				Total percentage
		Planned pattern	Unplanned pattern	Condominium complex	Condominium complex	
1	Bole	81.1	14.0	0.3	4.6	100
2	Kirkos	42.3	49.8	0.4	7.5	100
3	Lideta	34.9	56.7	1.0	7.3	100
4	Arada	34.3	55.3	1.5	8.9	100
5	Kolfe Keranyo	31.8	25.0	1.7	41.5	100
6	Nifas Silk Lafto	20.1	46.5	5.6	27.8	100
7	Akaki Kaliti	13.8	19.6	10.9	55.7	100
8	Yeka	12.3	26.7	4.3	56.7	100
9	Addis Ketema	10.7	86.2	0.0	3.0	100
10	Gulele	8.2	26.1	0.1	65.6	100
	City Average	28.9	40.6	2.58	27.9	100

Source: Authors

Entoto Park
© Moti Abebe via Unsplash

CHAPTER 2

The State of Health, Urban Infrastructure and Social Services In Addis Ababa

Urban infrastructure and social services are the backbone of city development and are fundamental determinants of health. Deficiencies in infrastructure and services hamper the proper functioning of Addis Ababa and the health of its residents. Addis Ababa is expanding and densifying fast and the demand for services is increasing rapidly. This puts pressure on the already strained urban services. Demand for those services rose significantly when the COVID-19 pandemic broke out, particularly with respect to health, water, electricity, mobility, telecommunications and recreational services.

Aerial view of CBD
© Hilena Tafesse

2.1 The state of health in Ethiopia and in Addis Ababa at the eve of the pandemic

Over the past 20 years, Ethiopia has made tremendous achievements in the economic, political and social spheres. Health care depends on an organized health system supported by community-based service delivery for the provision of primary care services to the population. This strategy has led to an increase in life expectancy at birth to 66.2 years in 2018 from as low as 47.1 years in 1990 (UNDP, 2020). According to Misgana (2017) the rate of HIV infection among 15-24 year-olds has dropped significantly from 12.4% in 2001 to 1.7% in 2014. Ethiopia has reduced its under-five mortality rate from 140.3 deaths per 1,000 live births in 2000 to 50.7 per 1,000 live births in 2019. There is great improvement in maternal mortality rate between 2000 and 2017 with a reduction from 1030 deaths per 100,000 live births in 2000 to 401 per 100,000 live births in 2017 (World Bank, 2019).

The Ethiopian health system consists of three levels of service. The first level is called primary level health care which consists of health centers, health posts and a primary hospital for every 40,000 people (approximately). The second level of health care comprises general hospitals that serve about 1.5 million people each and the third level consists of regional scale specialized hospitals that are supposed to serve between 3.5 to 5 million people each. Altogeth-er, there are 24,000 state run health facilities in the nation. According to a study conducted by the Ethiopian Public Health Institute (EPHI) in 2018, there were 32 hospitals, 22 health centers and 23 clinics in Addis Ababa. The clinics are usually smaller health posts closer to the community. Their main function is to distribute basic health information, and provide other essential primary health services like the prevention and treatment of infectious and water-borne diseases, prevention and treatment of HIV/AIDS, etc. Demand for health services is also covered by private health facilities and NGOs. The private health care system has been growing rapidly in recent years and these facilities are mostly found in urban areas (Defar et.al.,2020).

Health service provision in Addis Ababa has been improving over the past decade (Mullan, 2016). The current health coverage in the capital has increased to 85 percent (up from 62% in 2015, when the national coverage stood at 34.3%), the average distance traveled to find a health facility is less than 2 kilometers and vaccination coverage is 95 percent. However, these figures are lower than other comparable cities in Africa. Given the comparatively low rate of health coverage nationally, it is doubtful that Ethiopia will be able meet the Sustainable Development Goals (SDG) target of 80% universal health care cover by 2030 (Eregata et.al., 2019). The recent outbreak of COVID-19 pandemic has further complicated Ethiopia's ability to adequately meet the health care needs of its population. A post COVID-19 recovery plan will have to prioritize improvements in the general health condition of the country.

The country's health profile should be seen in connection to the fact that despite progress in human development, Ethiopia ranks 173 out of 189 on the 2020 UN Development Programme Human Poverty Index (UNDP 2020). Three-quarters of the population lack access to clean water and four persons out of five live without proper sanitation. More than half of the households in the country are not connected to the electricity grid and power cuts are frequent, even in Addis Ababa. The patchy and unreliable electricity provision not only affects running water supply but also creates problems in storing sensitive medication which needs refrigeration like vaccines, etc. Ethiopia is therefore, no stranger to the outbreak of cholera, measles and other communicable diseases, particularly in major urban centers.

The health status of the country's population indicates that about 80% of illnesses are attributable to preventable conditions related to infectious diseases, malnutrition, and personal and environmental hygiene. Non-communicable diseases and the related risk factors are also on the rise in the country and high morbidity and mortality rates are prevalent. Mental health is another major issue in Ethiopia as there is a dearth of treatment facilities and access to specialist medication is scarce. Overall, the comparatively limited number of health institutions, inefficiencies in the distribution of medical supplies and disparity between rural and urban areas due to under-funding, make access to health-care services difficult for a significant number of people.

The focus of Ethiopian authorities when dealing with urban health problems thus far, has been on diseases that afflict vulnerable communities. These otherwise important interventions tend to be narrow in scope and disregard the significant influence of the social and spatial determinants of health[4] on human health and healthy living. Research on Addis Ababa has highlighted the links between air pollution and diseases such as pulmonary, cardiac and other chronic illnesses (Makoni, 2020). There is solid evidence (WHO, 2016) that built environment interventions, for example in the form of blue-green infrastructure, access to high quality housing or improvements in urban ventilation and sunlight, can deliver significant direct and indirect health outcomes. The pandemic has demonstrated how important such built environment provisions are.

2.2 The state of housing in Addis Ababa

Due to rapid urbanization and unprecedented population growth, affordable housing is scarce in Addis Ababa. According to Larsen et.al. (2019) residential density between 2006 and 2016 has decreased from 109 people/ha to 98 people/ha and informal housing has decreased from 57% to 38%. This is mainly attributed to the Integrated Housing Development Program (IHDP) scheme and the proliferation of private residential developments. However, recently the government stated that 16.8% of the population in Addis Ababa live below

[4] Expressed for instance in the physical fabric and the infrastructure of urban areas

the poverty line (Larsen et.al, 2019). Most of those people reside in informal housing that lacks sanitation, access to clean water and is overcrowded in most cases.

Through the IHDP, the government has tried to increase home ownership for low and middle-income populations. Despite the numerous problems IHDP encountered, it has produced 175,000 finished units so far and 132,000 units were under construction in 2019 (Larsen et.al.,2019). Not all the intended beneficiaries have benefited and the IHDP contributed to the loss of urban open and green spaces. By 2015 nearly 4% of the city's area had been built-up as a result of the IHDP (Eyob, 2015), these areas were often classified as open spaces beforehand. Between 2009 and 2017, there was also a large-scale inner-city slum re-development operation which relocated many households to the periphery of the city (Weldeghebrael, 2020), often to the detriment of their livelihoods. In any case, informal settlements, poor living conditions and unaffordable rents are still the norm in the city.

For renters in Addis Ababa, there are two options: private landlords or local government rental housing (called 'Kebele housing', comprising properties confiscated by the Derg regime). While Kebele housing is difficult for recent urban migrants to gain access to, rent is significantly lower compared to private rental housing. However, the Kebele housing stock is in poor state and no new units are added. Other than the IHDP, there are no affordable housing policies or programs. For residents who are looking to

become homeowners, there are different options such as saving money into the lottery system of the IHDP scheme, private housing cooperatives and buying from a private owner or developer. All require a substantial amount of money which is out of reach for most.

Poor housing conditions exacerbate health risks and evidently facilitate the spread of COVID-19 in informal settlements. In addition, there is evidence that the COVID-19 pandemic and the measures taken across the city to attenuate the spread of the disease, have hit the livelihoods of the poor particularly hard. This is expected to have knock-on effects on their living conditions.
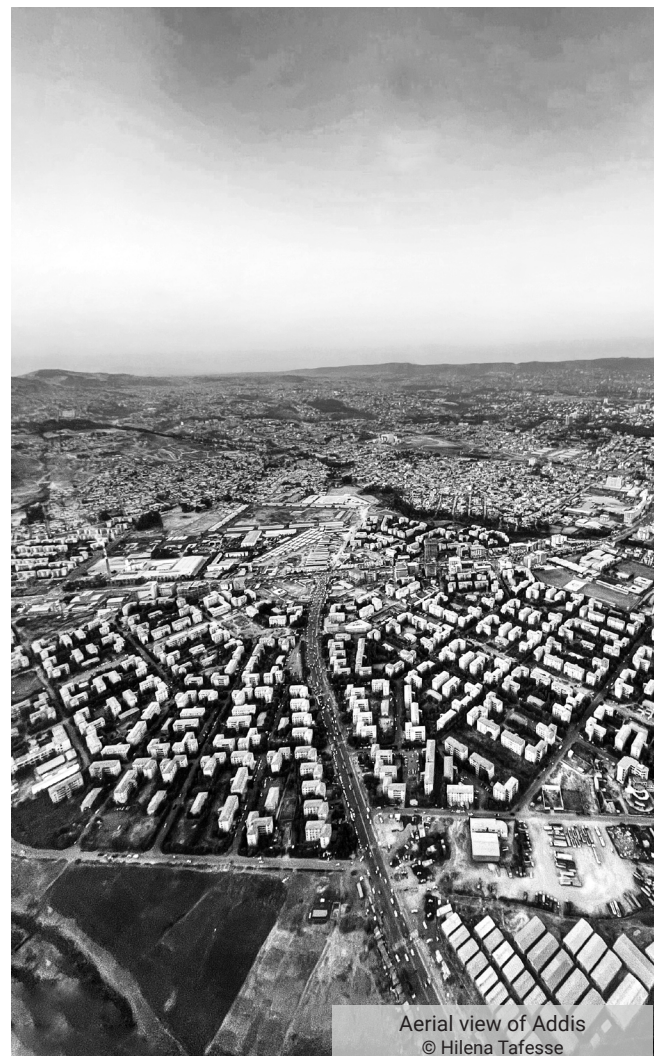
Aerial view of Addis
© Hilena Tafesse

2.3 The state of utility and service provision in Addis Ababa

Water supply

Piped water supply was introduced in Addis Ababa in 1894, the year the city was founded (Wondimu and Alfakih, 1998). However, the city's water supply has faced serious shortcomings since the 1980s due to the mismatch between population growth and the capacity of city authorities to increase supply in an adequate manner. Currently, only 47% of demand is met; about 544,000 m3/day for an estimated population of about 4.36 million (see Table 2.1). This gives a gross estimated average per capita consumption of 12.5 l/day (10 times less than the international standard) and is the reason behind the shift-based supply system particularly in the areas where the city has recently expanded. The actual per capita supply may be even lower if losses are taken into account or if the actual population is higher than the estimate. The importance of the upcoming census is vital in understanding the current situation and future demand.

Table 2.1: Current and projected water demand and supply in Addis Ababa, 2019-2029

No	Projections	2019	2020	2025	2029
1	Population projection (3% p.a.)	4,235,773	4,362,846	5,057,734	5,692,525
2	Total average domestic demand (m³/d)	4,235,773	4,362,846	5,057,734	5,692,525
3	Total average non domestic demand (m³/d)	347,863	223,205	276,356	319,798
4	Net average daily demand (m³/d)	811,680	719,870	981,200	1,223,893
5	Net average per capita demand (domestic & non domestic) (lt/cap/day)	158	165	194	215
6	NRW (%)	36	42.01	34.93	27.84
7	NRW (m³/day)	292,205	302,417	342,684	340,732
8	Real loss (%)		28.31	21.66	16.33
9	Real loss (m³/d)	219,154	85,614	74,225	55,641
10	Gross average daily demand (m³/day)	1,103,885	1,022,287	1,323,885	1,564,625
11	Gross base supply (m³/day)	599,000	544,000	823,700	1,222,900
12	Total production (existing & planned) (m³/day)	599,000	644,000	830,700	1,762,900
13	Demand surplus or deficit (m³/day)	-504,885	-378,287	-493,185	198,275

Source: AAWSA, November 2020

The main cause for the supply deficit in Addis Ababa, other than the condition of the network, is the reliance on groundwater. The groundwater-focused supply approach has not been able to bring substantial change in the water supply of the city. Between 2016-2019 this source has added 74,000 m3/day to total supply but on the other hand, the capacity of existing ground water sources dropped by 129,000 m3/day with a negative growth balance. Moreover, the groundwater supply

According to its 10-year plan, (AAWSA, 2020a) AAWSA plans to shift its investment to surface water in the coming years with the development of the Gerbi dam (65700 m3/day), the Seblu dam (385000 m3/day) and the Aleltu Robi Jeda dam (540000 m3/day). If this plan materializes, then the Addis Ababa city's water deficit should be resolved by 2029 again if, the city's population does not exceed the projected 5.7 million inhabitants by then (see Table 2.2). Water has been found

Table 2.2: Evolution of water supply 2017-2020

	Amount of water produced in (m³)		
	2017/2018	2018/2019	2019/2020
Total volume of water produced (m³/p.a)	167,940,000	177,650,000	180,220,000
Leakage rate (%)	36	36	36
Physical loss %	27	27	27
Commercial loss %	9	9	9
Commercial loss %	9	9	9
Total volume of water supplied (m³)	107,481,600	113,696,000	115,340,800
Annual growth		6%	7%

Source: AAWSA, November 2020

system relies on foreign currency availability (for fuel and spare parts), which made this type of water production very challenging financially (AAWSA[5] , 2020). Consequently, the yearly growth of the city water production is 6-7% (see Table 2.2) which can barely keep up with the annual population growth and fails to address the existing backlog.

to be at the center of addressing urban health challenges and therefore the implementation of such projects is critical if urban health is to improve significantly in Addis Ababa.

Contaminated water (often due to poor sanitation) causes the transmission of diseases such as cholera, dysentery, hepatitis A and typhoid. A recent article (Wolde et al, 2020) indicates that water sources in the

[5] AAWSA: Addis Ababa Water and Sewerage Authority

city are contaminated and urges authorities to protect public health from bacteriological and parasitological contaminants. Moreover, a recent study (Eriksson and Sigvant, 2019) shows that Addis Ababa's residents use the contaminated and polluted water from the Bantyketu and Kebena rivers for irrigation as well as for washing purposes. This study also indicates that residents of Addis Ababa are aware of the bad river water quality, "but there is small to no knowledge about the risk of consuming vegetables grown with this water".

Indeed, poor quality and limited availability of water for hand washing on a regular basis has a direct effect on the transmission of different diseases. This issue is even more urgent given the need to wash hands and improve personal hygiene to slow the spread of COVID-19. Public services and business establishments have often installed public hand-washing facilities for visitors to their premises, but this is no substitute for proper home sanitation facilities.

In March 2020, AAWSA prepared an emergency plan for COVID-19 which mainly focuses on increasing the efficiency of the system, on ensuring continuity of service, immediate intervention on loss, and capacity enhancement (AAWSA, 2020b). AAWSA is therefore trying to tackle the problem of water loss through better system network management and by digging more boreholes. Yet, boreholes rely on electricity for their operation which means that power cuts have a direct effect on tap water availability.

In spite of on-going efforts so far, water supply is one of the city services which requires substantial improvement in termsof water production and supply system maintenance to foster sustainable economic development and promote urban health in Addis Ababa. The plans already in place offer some hope and will be a major step in addressing shortages so long as they are implemented.

Solid and liquid waste management in Addis Ababa

Liquid waste management

Sanitation provision in Addis Ababa is deficient. It is estimated that only 41.2% of the residents of the capital have access to sanitation of acceptable standards while few slum dwellers have access to basic toilet facilities. Pit latrines are widely used in slums. Consequently, large amounts of household and industrial liquid waste are discharged into storm drains, rivers and streams without adequate treatment (Beyene et.al, 2015). According to the Cities Alliance annual report of 2015 (Cities Alliance, 2015), the sewerage system in Addis Ababa does not have the capacity to take on additional household and business waste. This has a major impact on infectious disease transmission and on the quality of life.

Solid waste management

Solid waste management practices around the world have been challenged by the pandemic, because of the way that COVID-19 spreads. Waste collection, separation, storage, transportation, recycling and disposal practices had to be revisited and often rethought to protect the health of people working in the sector as well as the wider public.

The collection and sorting of solid waste in Addis Ababa is also quite limited (Cities Alliance, 2015). According to the Addis Ababa Solid Waste Management Agency AASWMA (2020b) most of the waste produced per household is food waste, making it high risk for the transmission of COVID-19. In practice, waste collection, transport, disposal and treatment are highly hand contact-reliant as they are labor intensive and are prone to manual intervention hence making cross-contamination probable. Additionally, there is no waste separation. Medical waste and food waste are discarded without proper precautions. Recycling is limited and it entails hand collection, separation and treatment. Finally, it should be noted that despite the rapidly increasing population, the total solid waste collected and transported has declined by 20% in the past two years (AASWMA Annual Report, 2019). This is a very worrying trend as it hints at households using alternative means to dispose solid waste. Medical waste and food waste are discarded without proper precautions. Recycling is limited and it entails hand collection, separation and treatment.

Household waste is collected by Small and Micro Enterprises (SMEs), whereas private organizations, industries and institutions utilize private companies for collection. Waste from the street is collected by government workers. Overall, waste in the formal sector is collected by workers who are very poorly paid. Additionally, a large but unknown number of people engage in informal recyclable waste collection such as plastic and scrap metal recycling.

After collection, waste is transferred to way stations before final transportation to the landfill. The collection and transportation cycle varies depending on the type of waste – it is under 24 hours for organic waste and more hours for recyclable waste (plastic water bottle and scrap metal). The landfill serving Addis Ababa is locally known as Qoshe and lies in an urban area. It has been in operation since 1963 and is operating far beyond its capacity. It is prone to collapses which are often lethal. One such collapse in March 2016 killed an estimated 115 persons who resided in the nearby area. A sanitary landfill was constructed in Sendafa around 27 kilometres out of Addis Ababa but was only operational for a few months in 2016 before it was shut down amidst controversy and rigorous local community opposition. Within 2019/2020 fiscal year, a total of 786,907 tons of waste has been transported. The share of transport shows that 66.7% was transported by government trucks, nearly 20% by private vehicles and 13.5% by outsourcing (AASWMA, 2019). Pick up takes place twice a week and this has been successful in 96.3% cases. The expected weight to be transported was 195,520 tonnes but 203,114 tonnes were transported instead. Currently, the agency has 9,961 employees with 289 at Agency level, 646 at the sub-cities and 9,026 at Woreda level (AASWMA, 2020a).

Street sweepers
© Bisrat Tsegaye

Table 2.3: Waste transported per year in Addis Ababa

Year	Transported solid waste in tons	Success rate
2015	839,978	102%
2016	874,803	105%
2017	1,062,167	116%
2018	977,154	93%
2019	786,907	96%

Source: AASWMA, 2020

COVID-19 planning in solid waste management

In its annual report for the fiscal year 2019, AASWMA (2020a) reported the following:

- In Lideta sub-city the performance had dropped significantly.
- Multiple complaints were received about collection such as associations not picking up
- Frequently, not adhering to schedule, requests to bring the waste to storage or car and illegal dumping. Most complaints were received in Kolfe and Nifas Silk areas of the city.
- Bole is the sub-city where most transportation was completed as scheduled and Lideta and Addis Ketema have the lowest completion rates.

- Awareness creation: by training staff members, public mobilization for mass cleaning by on weekends,
- Community outreach and Internal staff care programs: by providing support in kind or goods for low-income groups and staff protection,
- Intensified cleaning: increase from monthly to weekly public mass cleaning and the start of road and landfill vehicle disinfection,
- Separation of waste collection from quarantine centers and preparation of a special manual for waste collection from quarantine centers,
- Establishment of special committee for waste collection from Jan Meda[6] and market relocation of Atikilt Tera[7].

Finally, the long-term plan of the Agency foresees that future investment will be channelled towards:

- Modernizing waste collection, transport and disposal,
- Intervention at source, reduction and separation,
- Strengthening at end (way stations, recy-

Table 2.4: Solid waste transportation completion rates

Sub City	Bole	Gulele	Yeka	Nifas Silk	Kolfe Keranio	Akaki	Kirkos	Arada	Addis Ketema	Lideta
Completion %	96.45	94.48	94.28	93.0	92.54	91.72	91.61	88.96	88.20	88.15

Source: AASWMA, 2020

In June 2020, AASWMA reported that it has taken measures to deal with the pandemic. These measures focused on several aspects of solid waste management and included:

cling centers and landfills): reduction and separation,
- Infectious and hazardous waste management,

- Disposal site improvements and waste to energy management improvement

Electricity supply

Ethiopia generates electric power from hydro, wind, geothermal and diesel sources. Almost 88% of the electricity generated in the country comes from hydro power. Over the past 25 years, the GoE has constructed a series of dams to generate electricity as the country strives to become a major manufacturing hub in East Africa. Only 12.7% of the population had access to the electricity grid in 2000. By 2020, this had reached 44.8% (World Bank, 2020) despite this noticeable

Night light structures in addis
© Hilena Tafesse
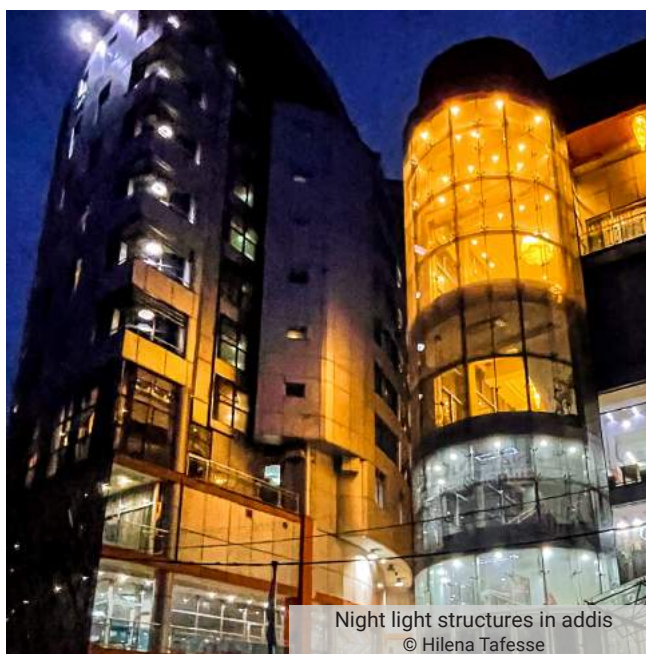
improvement, however, the gap between supply and demand remains huge. This is particularly true in Addis Ababa, the economic hub of the country.

It is estimated that 98% of Addis Ababa residents have access to electricity services if informal settlements are excluded. However, demand for electricity is increasing as incomes rise and more people can afford to buy and use electrical appliances. Due to the rapidly growing demand from households and businesses, current supply remains inadequate making power cuts an almost daily occurrence. According to 2015 LSMS dataset[8] , 92% of customers reported power disruptions at least once a week (Cardenas and Whittington, 2019).

Importantly, lack of electricity is particularly detrimental to the health of chronic patients who receive regular medications but are unable to store them in proper conditions. The same applies to the storage of vaccines which need to be continuously refrigerated before use. Electricity is essential for the treatment of respiratory diseases (Misganaw et.al, 2017), for instance, electric oxygen generators are cheap and efficient replacements for expensive oxygen tanks. BiPAP[9] machines which regulate air pressure in patients' lungs do not have a non-electric alternative and their absence causes frequent hospitalizations, deterioration in health and death.

Telecommunications

Telecommunications in Ethiopia has been operated by a state-owned monopoly provider since 1894. Ethiotelecom, as the company is currently named, is under privatization. The Internet was introduced in the country in 1997 and was soon followed by mobile phone service in 1999. Broadband service was launched in 2004 and the 3G network was introduced in 2007. Finally, 4G

[8] Living Standards Measurement Study
[9] BiPAP/BPAP is a Bilevel positive airway pressure, it is a type of ventilator—a device that helps with breathing.

was introduced in Addis Ababa in 2017 and LTE in 2020.

Ethiotelecom's 2019/2020 annual business performance summary report (Ethio telecom, 2020), shows that the company turnover was 47.7 Billion ETB (105.1% of the target), 31.4% up from the previous year. The company had a profit of 147.7 million USD, an increase of 50% compared to the year before.

During 2019/2020, mobile voice subscribers reached 44.5 million, data and internet subscribers were 23.8 million, fixed services customers were 0.98 million and fixed broadband subscribers reached 0.21 million (up 135% from the previous year). In the first half of 2020/2021 (1 July to 31 Dec 2020), mobile voice subscribers reached 48.9 million, mobile data and internet subscribers were 23.5 million, fixed services customers were 0.98 million and fixed broadband subscribers reached 0.31 million. Telecommunication density has therefore reached approximately 50% (Ethiotelecom, 2021).

Unfortunately, it was not possible to obtain from Ethiotelecom any customer data for Addis Ababa. However, it is worth pointing out that new services are always introduced in Addis Ababa first and it can be safely assumed that this will happen when 5G arrives in the country. The telecommunication density in the city is almost certainly higher than 50%. The difference between the number of mobile customers and the number of land line customers is striking, and reflects a pattern which is familiar throughout Africa. Although the mobile network is affected by the frequent

power cuts, it is more reliable than the fixed network and more feasible to expand and upgrade rapidly. Mobile telephony is of crucial importance to improving the city's resilience. It supports the introduction of innovative services and economic activities and it provided an important means of communication during the pandemic. It is highly probable that future efforts to tackle pandemics (facilitate track and tracing, vaccinations, travel, teleworking, retail bankingetc.) will rely on mobile phone applications even more than what the case was during the current pandemic.

2.4 The state of green areas and sports facilities

Urban vegetation and green spaces can improve quality of life by improving the quality of air we breathe and other environmental benefits like cooling (Cavan et.al, 2014).The urban ecosystem offers a habitat for biodiversity, primary productivity, storm water absorption and retention, air pollution removal and heat mitigation (Bolund and Hunhammar 1999). Since the early 2000s, however, Addis Ababa has lost a significant proportion of its green and open areas including riversides. This is a result of the massive population growth of the city which paved the way for a construction boom, and intense competition for land, which in Ethiopia is almost exclusively state-owned (UN-Habitat, 2017). Between 1999 and 2020, the built-up area of the city increased from

134 to 380 km2. Consequently, open and under-developed land quickly disappeared, often contrary to zoning or land use regulations. Rivers, streams and wetlands which should have been protected, were also frequently converted into developments, sometimes illegally.

The loss of green spaces aggravates air pollution, which has increased by 62% between 1974 and 2018 (Makoni, 2020). The biggest contributor of CO2 emissions is the transport sector: 50% of vehicles produce about 90% of the hydro-carbon and carbon monoxide emissions (UN-Habitat, 2017). Air quality in Addis Ababa is also affected by widespread use of charcoal and wood for cooking purposes.

Green areas

Green areas are vital facilities for a healthy city as they provide space for ecology, recreation and interaction. Addis Ababa's open spaces and green coverage have been affected by inadequate plan provisions, implementation and enforcement. Currently, the city has 25 city-level parks with a total surface of about 148ha which accounts only for 0.28% of the total city area (see Table 2.5).

Table 2.5: City-level parks in Addis Ababa in 2020

No	Park name	Area in ha
1	Yeka	2.21
2	Ferensaye	5.42
3	Kaleb	0.50
4	Beher-Tsige	14.28
5	Kentiba Wolde-Tsadik	29.46
6	Golla	0.96
7	Tekle-Haimanot	0.44
8	Ethio-Cuba	2.73
9	Lideta renewal	1.22
10	Ambassador	0.94
11	Ras Mekonnen	0.40
12	Korea Veterans Park	3.02
13	Hamle 19	6.42
14	Gulele	3.45
15	Gulele Meles Memorial	1.42
16	Kolfe Park	0.73
17	Holland	6.86
18	Africa Park	4.57
19	ECA Park	5.24
20	Akaki Park	6.25
21	Addis Ketema	0.28
22	Lion's Cage	data not available
23	Peacock Park	0.36
24	Friendship Park	51.00
25	Entoto Park	data not available

Source: Addis Ababa River Basin and Green Areas Administration; Wondimu, 2007

As shown in Table 2.6, there is on average 1.2m2 of green areas per resident, which is 8 times lower than the 9m2 recommended by WHO (UN Habitat, 2017). This low coverage is the result of poor planning and implementation. Areas designated for parks in the city's plans are not always converted to parks due to lack of funds and at times are used for other purposes all together. In September 2020, there were about 450 registered green areas in 8 sub-cities. Data for Akaki Kaliti and Addis Ketema is not available (AARBGADA, 2020).

Table 2.6: Green area coverage in 3 selected Sub-cities of Addis Ababa

Sub-city	Park and green spaces in ha	Area in ha	Population	m²/capita	% area
Kirkos (Central)	14.05	1626	291,001	0.48	0.9%
Gulele (Old with limited with limited expansion)	59.99	3273	351,935	1.70	1.8%
Kolfe Keranio (Old + expansion)	81.4	12093	564,007	1.4	0.7%
Average				1.2	1.1%

Source: Computed based on data obtained from AARBGADAA, December 2020* ; CSA, 2013**

Green areas and parks proposed in Addis Ababa city's structural plan are as shown in Figure 2.1. The proposed areas amount to a total of 2730ha recreational parks to be developed in Addis Ababa at the city, sub-city and Woreda levels.These are not equally distributed throughout the city as there are concentrations in the north and west of Addis Ababa. However, if implemented this would offer a significant improvement in green area availability. Local level planning must be significantly strengthened and plan provisions have to be properly enforced for these plans to materialize.

Figure 2.1: Planned green and environmentally significant areas according to the Addis Ababa Structure Plan
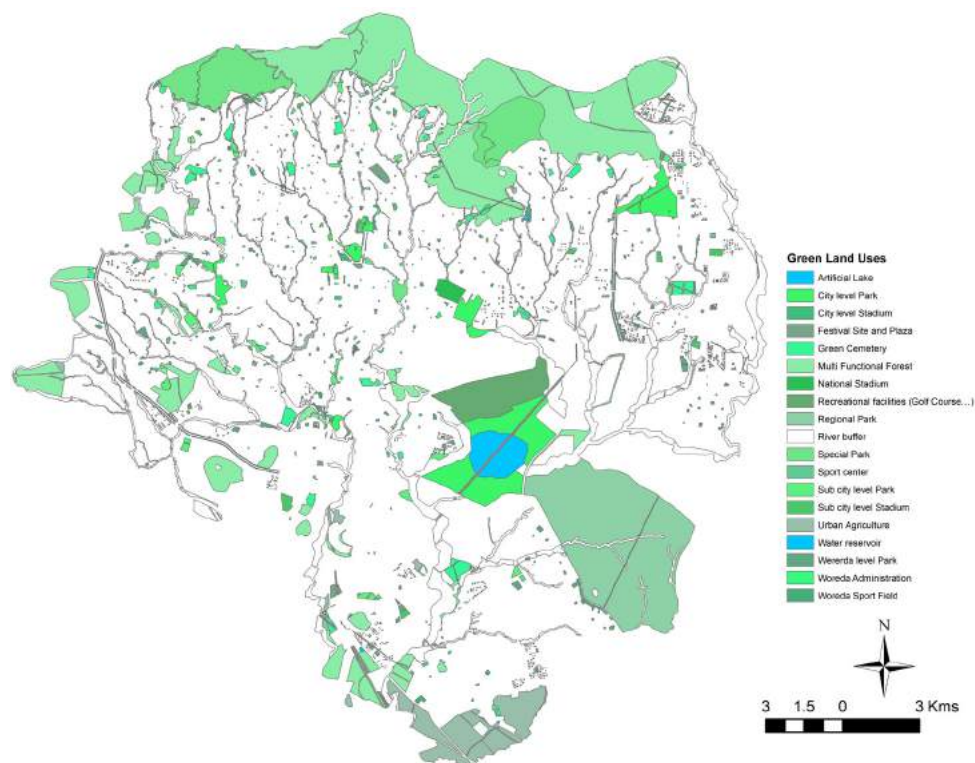
Source: AACPPO, 2017

The recent city-center greening initiatives like the Sheger Riverside Beautification project are important for city resilience, urban tourism and as recreational facilities of the city and should be replicated in other parts of Addis Ababa, while respecting the rights and livelihoods of people who may have to be relocated for such purposes.

The greening of the city is also expected to benefit from the recent tree-planting initiatives which were launched at national level. A total of about 6 million seedlings were reportedly planted in Addis Ababa from July to August 2020 (see Table 2.7). In addition to seedlings from the previous year, these trees will provide an important green asset to the city.

Table 2.7: Summary of the seedlings planted by sub-city in Addis Ababa in 2020

Sub-city	Number of seedlings planted in July −August 2020		
	By Organizations	By the Community	Total
Kolfe Keranio	316,094	625,205	941,299
Akaki Kaliti	482,784	841,582	1,324,366
Kirkos	196,547	208,516	405,063
Gulele	301,000	630,255	931,255
Addis Ketema	99,715	232,667	332,382
Lafto	365,482	730,199	1,095,681
Yeka	215,097	93,267	308,364
Bole	125,201	206,972	332,173
Lideta	48,779	219,723	268,502
Arada	34,780	44,762	79,542
Total	2,185,479	3,833,148	6,018,627

Source: AARBGADA, 2020

Football in Addis
© Lan Yao from Pexels

than during the pandemic when lock downs limit people's social interaction and physical activity. The lack of accessible green spaces near slums in Addis Ababa structurally reinforces that impact.

Sports facilities

Sport is a vital activity in urban areas in terms of health. Organized sport in particular is a key form of recreation. One of the challenges in Addis Ababa is the low coverage, the limited accessibility and the unaffordability of sports facilities.

Sports facilities can be categorized into formal/regular and informal. The formal/regular facilities include physical exercise centers managed by private, public or other institutions. The informal sports areas are neighborhood open spaces (areas of 1000-2000 m2 located within 120 meters from every household in the neighbourhood) and playgrounds (areas of 3,000-4,200 m2 located within 400 meters from every household in the neighbourhood) (FSC, 2000).

The available formal sport facilities in Addis Ababa are summarized in Tables 2.8 and 2.9. Most of these sports facilities are not open to the general public. In fact, only 21% of them can be used by the general public ranging from 5% in the case of volleyball facilities and 100% in the case of gymnasia (see table 2.8).

As Figure 2.1 shows, people living in slums in Addis Ababa city center have limited access to green spaces. The unequal distribution of open spaces, green spaces and recreational facilities follows the general pattern on inequalities in the city. Safe, easily accessible green spaces are important for the well-being of urban dwellers. The opportunity to walk, exercise and enjoy high quality open spaces contributes to physical and mental health and it has never been more crucial

Table 2.8: Sport facilities in Addis Ababa by ownership status

No	Type	Total	Youth and sports sector	In public schools	In private schools	Universities & vocational colleges	Military	Government offices and NGOs
1	Football pitches	265	72	105	36	18	3	30
2	3 sports in 1 facility	228	54	121	31	10	2	11
3	2 sports in 1 facility	228	54	121	31	10	2	11
4	Volleyball	176	32	68	53	7	2	14
5	Tennis courts	79	4	43	24	3	-	5
6	Swimming pools	57	4	1	-	4	5	26
7	Gymnasiums	16	2	-	-	1	-	13
8	Athletics	7	-	1	1	3	-	5
9	Handball	7	-	1	1	3	-	5
10	Basketball	15	-	-	1	1	-	1
	Total	856	185	340	146	48	13	107

Source: Addis Ababa Youth and Sport Commission, June 2018

As per the situational assessment report of Addis Ababa Youth and Sport Commission (AAYSC, 2018), there are 185 sports facilities accessible by city residents while an important share of the available facilities are not functional (See Table 2.9). These facilities are not equitably distributed, some Woredas do not have a single facility. The sports facilities in schools, if and when they exist, are generally of low quality and below standard, and are only accessible to pupils.

Table 2.9: Number of sports facilities in Addis Ababa by operational status

No	Type	Total	Functional	Not functional	Under construction	Facilities that require maintenance	Under maintenance	Future plan
1	Football	265	213	29	11	119	2	51
2	3 sports in 1	228	16	70	19	61	7	96
3	2 sports in 1	176	120	25	11	61	1	37
4	Volleyball	79	70	7	2	29	-	11
5	Tennis courts	57	46	4	4	18	1	7
6	Swimming pools	16	10	5	2	5	-	2
7	Gymnasiums	7	5	2	1	2	1	-
8	Athletics	15	11	3	1	7	-	-
9	Handball	3	3	-	-	1	-	-
10	Basketball	10	10	-	-	7	-	-
11	Total	856	604	145	51	310	12	204

Source: Addis Ababa Youth and Sport Commission, June 2018

In a similar fashion to what happens with green spaces, neighborhood-level playgrounds are allocated to other functions and most of the children in the city are obliged to play on the road which makes them exposed to traffic and to the hard road surface. As shown in Table 2.9, sports facilities in Addis Ababa face several challenges which emanate from planning and implementation issues. Planned open spaces are not always implemented due to occupation by other uses. In addition, maintenance is a major issue and sports facilities in condominiums are not getting enough attention from residents.

fiscal year, there were approximately 1.2 million vehicles registered in Ethiopia. Around 50% of these were registered in Addis Ababa, (Abiy, 2020)

Public transport is over-crowded, infrequent, and service delivery is fragmented. Due to poor route design and limited inter-operability, very often, several transfers are needed in order to reach a destination. The average single journey for a minibus taxi is 6.9 km and for a bus is 14.5 km. The average waiting period until the special COVID-19 measures were introduced was around 60

Dynamic shot of traffic
© Biniyam Bewketu

2.5 Transport and mobility

It is estimated that around 4 million trips are generated in the city daily (Asgedom, 2013). Of those trips, 54% are estimated to be non-motorized movements and 46% are motorized movements (31% public transport users and 15% of private vehicle users). By the end of July 2020, which is the end of the

minutes (AACPSO, 2021). The average waiting time on the Light Rail Transit (LRT) is 12 minutes on the green (E-W) line and 15 minutes on the blue line (N-S) (AATA 2016).

The lack of efficient transport services has a huge impact on productivity due to the time lost to get from point A to point B. The over-crowded buses, taxis and light rail are also major potential sources of COVID-19 transmission since it is not possible to apply social distancing measures.

Existing situation assessment

In Addis Ababa, at present, the predominantly available modes of public transportation are Light Rail Transit (LRT), city bus, taxi (mini-bus), taxi (saloon type), and midi buses. The following table shows the different modes of public transportation in the city with passenger carrying capacity.

The Addis Ababa City Bus is the main public mass transport system in the city and is run by a public enterprise. It has a fleet of 534 buses, operates on 93 routes and is used by about 640,000 passengers a day. On average, a city bus covers about 138 km per day, serves 16,471 passenger-trips and is used by low income groups.

Table 2.10: Modes of public transportation in Addis Ababa, with total vehicles, passenger -carrying capacity, average trips/day .

No	Modality	Total vehicles	Passenger-carrying capacity	Average no. of trips per day	Average waiting time/min
1	Anbessa bus	723	100 (30 sitting & 70 standing)	10	86
2	Sheger bus	131	80 persons	8	24
3	Higer bus	393	41 persons	12	20
4	Kitkit bus	291	41 persons	10	UNK
5	Code -1 taxi	4,830	12 persons	16	UNK
6	Code -3 minibus	6,646	12 persons	16	14
7	Alliance bus	25	80 persons	7	UNK
8	Light rail	41	286 persons	17	UNK
9	Hailing cabs	UNK	4 persons	UNK	UNK

Source: Addis Ababa Transport Authority, March 2017

LRT line covers the north to south section (from Piassa to Akaki) and east to west section (Tor Hayloch to Ayat) of the city. This network spans over 57.7km and was designed to carry 60,000 passengers per day (C40, 2016). Back in 2015 when it began operations, the LRT had 41 carriages however, in 2020, this number stood at 17. The blue line (N-S, 22 stations) is serviced by 9 carriages and the Green Line (E-W, 27 stations) is serviced by 8 carriages.

About 10,000 mini-bus taxis operate in the city of Addis Ababa. Each has a seating capacity of 12 passengers. These mini-bus taxis operate on 105 routes and carry more than 2,000,000 passengers per day. On average, a mini-bus taxi covers about 138 km daily and makes 15 trips. Most of the passengers belong to low- and medium-income groups.

Addis Ababa LRT
© Hilena Tafesse

Pandemic-related measures in transportation

In the early stages of the pandemic, measures were taken to curb the spread of the disease. These included the reduction of the carrying capacity of public transport and private cars by half, restrictions in the movement of private vehicles according to the last digit of their plate number (odd-even) and mandatory mask-wearing by passengers boarding public transport. The directive to restrict the movement of private vehicles

Disinfecting a bus
© Michael Tewelde

did not last long. In contrast, public transport has to carry passengers up to the legal capacity (seat capacity) and passengers still have to wear a mask while on-board.

The dedicated bus lane corridors have been expanded from one to four to improve bus frequency so as to compensate for capacity restrictions. According to the Director of Addis Ababa Transport Bureau, initially mini-bus or taxi fares doubled but no tariff change was made on government-operated services. Later on, the mini-bus taxi tariff was reset to its initial price. To address the dramatic drop in capacity, the city administration leased an additional 560 buses and there is an ongoing procurement process to buy new vehicles. Staggered work times for AACA employees and for GoE civil servants were introduced to ease the traffic situation and facilitate smoother public transport operations.

Following the introduction of those measures, public bus waiting times declined from an average of 60 minutes to 12 minutes and daily passenger carrying capacity increased by 108,000 people (AACPSO, 2021). Strict enforcement was shown to be effective. The 5,000 ETB penalty for not wearing a mask on public transport proved to be an effective deterrent when combined with adequate enforcement.

2.6 Social services

Social infrastructure is defined as the total number of entities, services and social relationships which enable people to co-exist and to participate in society (Engbersen and Leun, 2001). Wellbeing has a normative dimension expressed in the idea of equitability and a policy dimension expressed in the field of employment, housing, health, education, social participation, culture, mobility and leisure time (Koning, 2001).

The level of an individual's social, mental and physical wellbeing as well as a community's cultural and social wellbeing can be an indicator of a socially sustainable built environment. Therefore, socially sustainable cities focus on addressing questions of equitability and of improved public health for future generations (IMCLC, 2020). Bacon et.al. (2012, p. 9) argue that social sustainability

"Combines design of the physical environment with a focus on how the people who live in and use a space relate to each other and function as a community. It is enhanced by development which provides the right infrastructure to support a strong social and cultural life, opportunities for people to get involved, and scope for the place and the community to evolve".

Integrating social determinants of health in city planning also means taking action to improve the conditions of daily life in which people live and socialize, resulting into healthier cities (WHO, 2012; a,b). Housing, educational institutions, working environments, religious places, health facilities, transport hubs, recreational areas, etc, are the main socio-spatial infrastructure where the social determinants of health materialize. A careful consideration in planning a balanced spatial distribution of such social infrastructure in urban areas will likely result in achieving a more socially sustainable and healthier city. This infrastructure will enable people to use the Addis Ababa city's resources safely and effectively while enhancing social cohesion and equity (WHO, 2012).

During the COVID-19 outbreak in Addis Ababa, educational/academic and religious institutions played a significant role in providing a quick response to the urgent need for spaces to set up special facilities and for social solidarity. In a country where a majority of the population is young, the pandemic made people aware that urban planning should consider various adaptable strategies in designing social spaces. Re-casting Addis

Ababa city's structure in a way that a diverse range of communities would be able to use the city, requires inputs from a wide range of groups and individuals. According to WSP, urban design should challenge the codes and planning policies that we use by involving end users in the process (WSP, 2020).

During the partial lock down in Addis Ababa, many pupils and their families used parking areas, open green areas and playgrounds in their neighborhoods for recreation and other activities. For instance, temporary open-air markets were established to sell goods, young pupils displayed their artistic talents in open air exhibitions for their neighborhood communities and group sports and physical activities were carried out. Similarly, places of worship provided not only much needed spiritual support, but also served as places for socialization.

Communities used spaces designated for a single function in multiple ways and as a result, created social spaces in an organic way. This promoted a sense of ownership and strengthened social bonds between neighbors. The pandemic has revealed the potential of social infrastructure and highlighted the need to carefully consider it when designing and planning healthy cities. The adaptive reuse of facilities (Sam, 2020) and their strategic geographical location (Temesgen, 2011) is crucial in times of health emergencies and social crises. Thus, policy guiding urban development in Ethiopia should aim at providing social infrastructure in a strategic manner to create more resilient cities.

Educational establishments

Education is one of the main social determinants of health and educational attainment has a strong social gradient that significantly correlates to health (WHO, 2012). During the early stages of the COVID-19 pandemic, pre-primary, primary and secondary schools throughout the country closed down. School closures and the stay-at-home policies impacted students' learning, created greater risks for hunger and deprived children of safe and secure environments by potentially exposing them to abuse and violence for more hours per day. Moreover, the situation disengaged young people from regular day-to-day student activities and suddenly left them with nothing to do, no place to socialize and no income (if pupils were working in the informal sector).

In Ethiopia, most schools and universities are not well-integrated with the surrounding urban areas or the city (Temesgen, 2011). Although poor urban integration is an undesirable planning and design outcome, the pandemic showed that this isolation can be an asset.

During the outbreak of COVID-19, several educational establishments were converted into places for quarantine as the number of suspected cases rose and people coming from abroad were required to quarantine in dedicated isolation centers which quickly overflowed. Most public higher education institutions were transformed into isolation and treatment centers (AAHB, 2020)

The pandemic has also revealed some other key characteristics of educational establishments including the following:

- They lack basic infrastructure and are unable to easily accommodate the requirements for continuous cleaning and ventilation as witnessed during the COVID-19 pandemic.
- Learning spaces/classrooms and playgrounds in new private schools that are mostly located in leased residences are quite compact. This made it difficult to re-open schools as they could not meet the requirements for social and physical distancing.
- The distribution of educational establishments between the inner and outer areas of the city is unbalanced: Lideta, Addis Ketema, Gulele and Akaki are severely under-provided (See Figure 2.3).

EiABC Campus of Addis Ababa University
© Miruts Gebremariam

Figure 2.3: Proportion of educational establishments (normalized by population size) in Addis Ababa, by sub-city
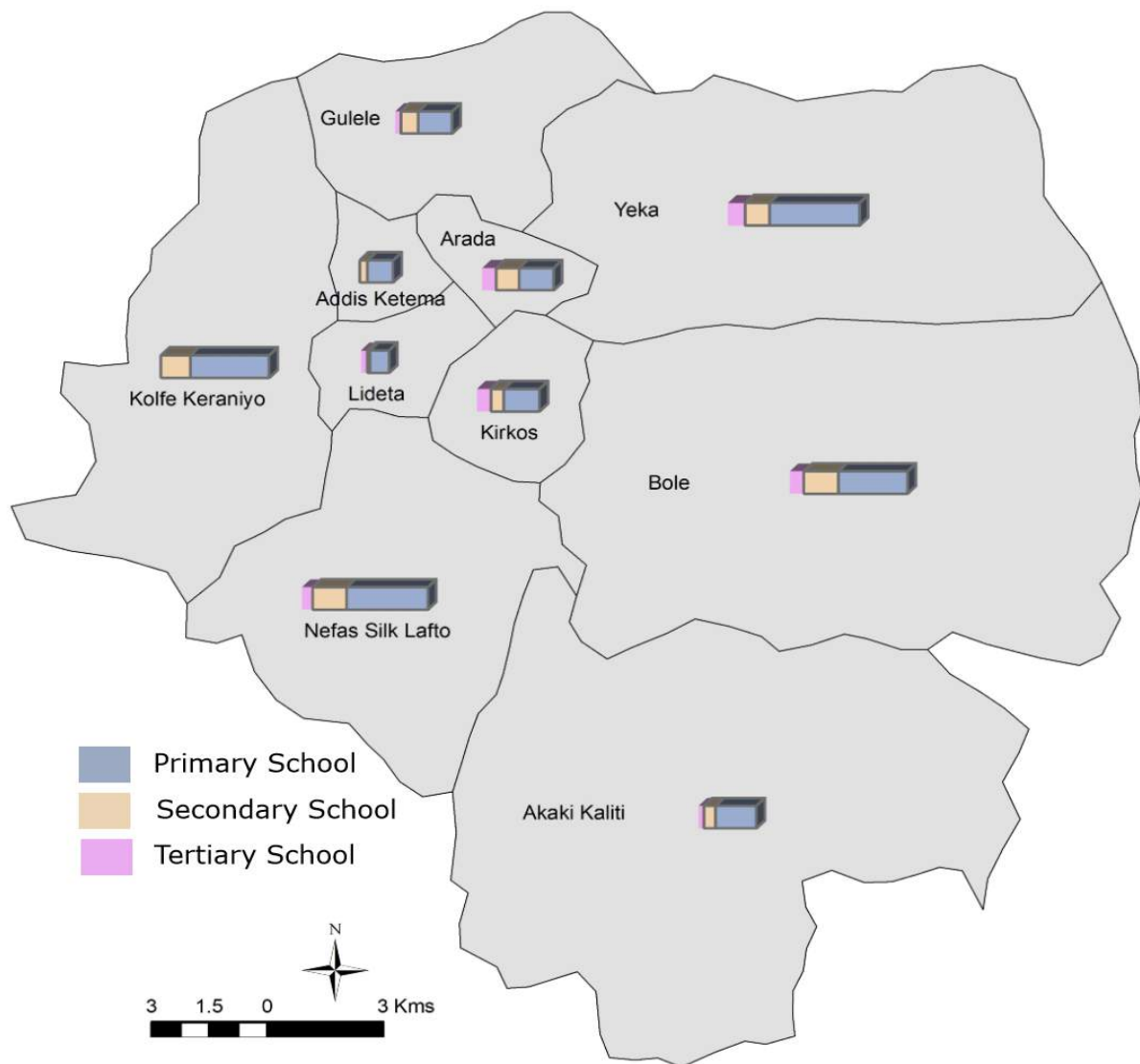
Source: AAPCO, 2017; AACA, 2015

According to AACA (2020), during the pandemic period:

- 59 toilets were restored in different schools in collaboration with Addis Ababa Water and Sanitation agency (AAWSA).
- New clinics were set up in 513 government schools in collaboration with the Health Bureau and the Education Bureau. 2,225 health professionals were hired and trained on COVID-19 together with cooks

and individuals who would serve food to pupils and students. Teachers, pupils, students and health professionals were offered training on COVID-19.

- A follow up and support checklist was developed to identify gaps and responses to cleaning and disinfection in collaboration with partner organizations.

Religious institutions and places of worship

In Ethiopia, the social capital built in the various religious affiliation groups is a key factor of social cohesion. Places of worship and public spaces where religious ceremonies are undertaken are therefore, seen as a main social infrastructure. Religious institutions in Ethiopia provide considerable social services which tackle political, ethnic, social and economic problems. They are at the forefront when there is a need to respond to social and economic crises.

The urban areas which have unplanned patterns have high population density and inadequate basic infrastructure. Communities living in such areas, usually of low income, are perceived to have strong social ties and high cohesion. Close proximity to the inner city is crucial for their livelihoods as a lot of the major economic activities take place in the inner city.

Due to the importance of religion for social life as well as for the livelihoods of the most vulnerable, places of worship tend to be built close to settlements. The high density of worship places in unplanned areas and the fact that they have survived several rounds of inner-city redevelopment projects, shows their importance not only for social and spiritual life, but also to the country's socio-economic support system. In addition, the socio-economic support delivered through places of worship, enhances solidarity within the community and promotes a sense of ownership of the area by its residents. This leads to safer spaces to live and work. Therefore, even if some religious places are initially built without legal ownership of the land, they are usually legalized and integrated in the formal land use plan in due time, unless they have critical functional incompatibility within the existing land use.

Pedal operated washing at Bole Medhanialem Church
© Abel Estifanos

During the COVID-19 outbreak, the often spacious compounds of places of worship were also effectively used as meeting places even when there were no religious rituals. Their courtyards served as a replacement for open public spaces, which the city lacks. Places of worship in Addis Ababa were the only establishments that were allowed to 're-open' and to provide their services during the state of emergency. The pandemic has revealed the importance of the ancient design principles of such places which can be useful design examples in cities that want to enhance resilience during a pandemic.

Place of worship
© Gift Habeshaw via Unsplash

Chapter 3

The Socio-Economic and Health Impact of the COVID-19 Pandemic

3.1 The Economic impact of COVID-19 in Addis Ababa

Addis Ababa constitutes close to 30 percent of the country's urban population and more than 11 percent of the total urban Gross Domestic Product (GDP) is produced here. Addis Ababa's GDP is growing at an average rate of about 12 percent per year, which is higher than the national average of close to 10 percent over the last decade (AABoFED, 2020).

Per capita GDP is approximately USD 1922, which is much higher than the national average of approximately USD 900 (AABoFED, 2015). Even so, unemployment and poverty remain huge concerns for the capital. The city's unemployment rate currently is about 19% and the poverty rate is about 17%.

Figure 3.1: Employment by sector in Addis Ababa in 2014 and 2018
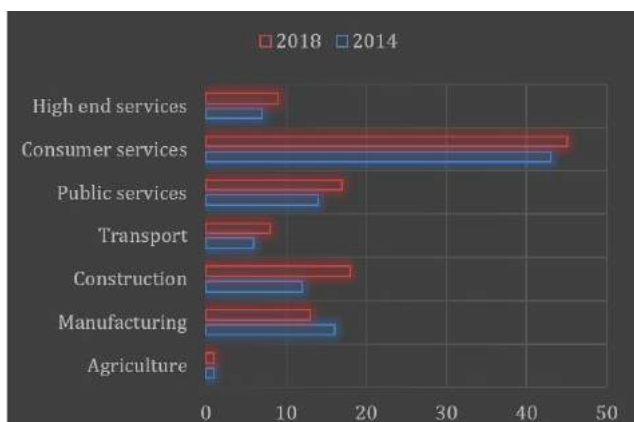
Source: ILO, 2020

Addis Ababa's employment largely relies on consumer services followed by construction and public services. The manufacturing sector is the fourth largest employer. High-end services such as Information Communication Technology (ICT) and digital technologies constitute less than 10 percent of the employment share. Dependence on consumer services is an indication of lack of competitiveness. It shows there is a dearth of businesses able to export high-tech services and an economy which does not rely on high-tech products for most of its labor demands.

The revenue structure of Addis Ababa reveals that the city relies heavily on tax revenue followed by municipal revenue and non-tax revenue. This trend has remained consistent throughout the period in question, as the following figure illustrates.

Figure 3.2: Revenue structure trends 2014-2019

Source: AABoFED, 2020

Unlike many other cities, Addis Ababa has a right to raise its own taxes and utilize the receipts without remitting to the GoE. It has a full jurisdiction on revenue and expenditure in the city. The GoE has allocated more than 1 billion ETB for pandemic emergency measures. This amount would otherwise have

been invested on other productive activities. In spite of that support by the GoE, the city expects to run a budget deficit for the first time in many years.

The pandemic has also been affecting Ethiopian cities through its effect on production and consumption of goods and services.

Vacancy announcement
© Hilena Tafesse

Economic impact of COVID-19

Overall, the impact of COVID-19 is much more pronounced in cities than in other locations and Addis is no exception. The pandemic hampered agglomeration benefits and the boost in urban productivity which cities enjoy. Social or physical distancing reduces agglomeration benefits as people reduce their contact. Accordingly, measures taken to control the spread of COVID-19 directly affect urban productivity. Given that cities are engines of economic growth, structural transformation in Ethiopia would face another hurdle if these measures where to stay in place for long.

Drops in demand for goods and services in urban areas mean lower revenue for industrial firms thereby leading to massive layoffs, especially of casual workers. Supply chains in Ethiopia have been disrupted due to the closure of manufacturing industries and the ban on transport services connecting the capital with the regions. Daily laborers are severely hit by that disruption as their income relies on daily employment. Such a vicious cycle of reduced production and income lead to further deterioration of the urban economy as well as the ability of cities to manage the pandemic. The following figure illustrates the causes of business closures by industry in Addis Ababa.
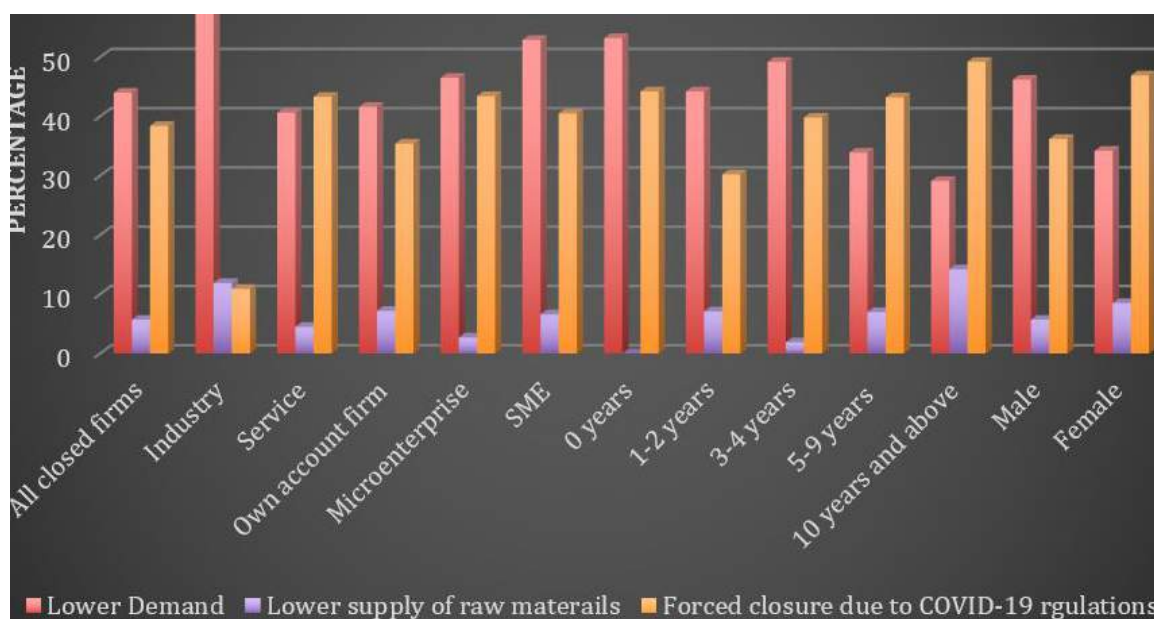
Source: World Bank, 2020

According to the World Bank (2020), decline in demand and forced closures account for 82 percent of closures. For the industry sector, closures were largely due to lack of demand (63%) while in the service sector closures were mainly due to COVID-19 related restrictions (43%). Larger firms attribute their closure to lack of demand more than smaller firms. Older firms (10 years and above) seem to have been affected by closure restrictions more than by lack of demand, but lower supply of raw materials also affected these firms. Moreover, data shows that female-owned enterprises were more likely to be affected by the restrictions than male-owned firms.

Overall economic impact by sector

According to the World Bank's high frequency phone survey report (Abebe et al., 2020) close to 90% of surveyed firms were affected directly or indirectly and about 40% of the MSMEs[10] have stopped operation over the last six months. Household revenue has decreased by 20% and poverty incidence has increased by 7% due to the pandemic. Most of the low-skilled and low-wage jobs are in the service sector, which is disproportionately affected not only by the general economic slow-down but also due to measures against the pandemic such as movement restrictions and lockdowns. Some estimates put the figure of informal employment to be around 40% of the Ethiopian workforce (ILO 2020) - implying that sustained economic slow-down and restrictions could put a significant proportion of the population into serious economic distress. There are variations in the overall impact of the pandemic. Figure 3.4 illustrates the drop in sales among the different sectors.

[10] Micro, Small and Medium Enterprises
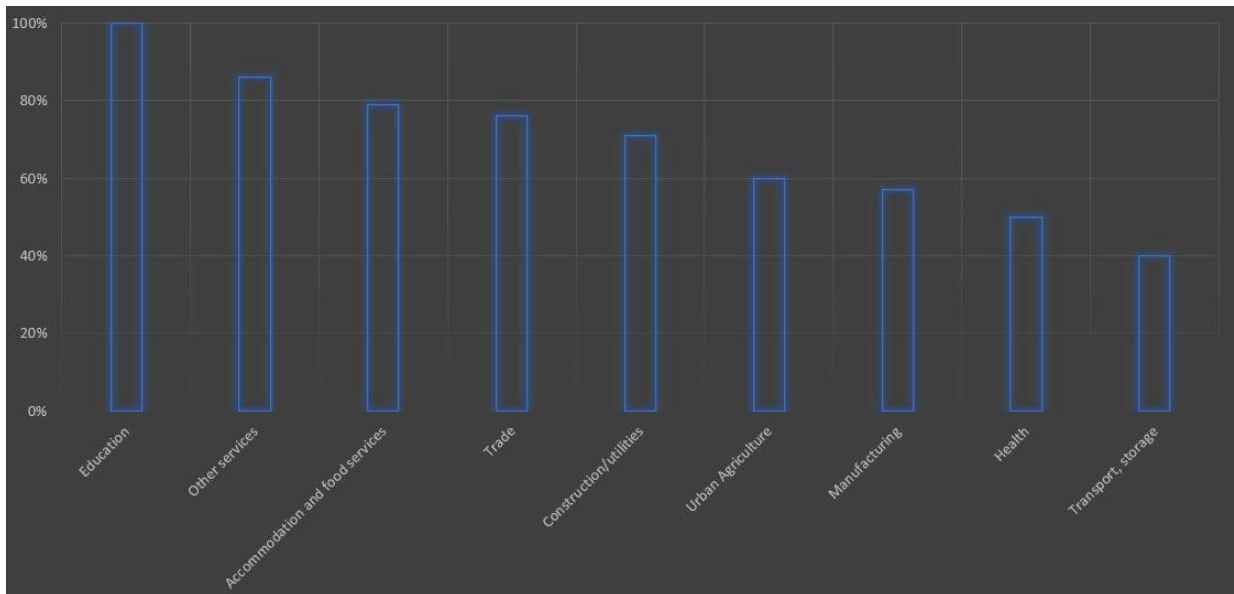
Source: ILO, 2020

The education sector and the hospitality sector have been hit the hardest, showing that restrictions have affected the service sector more than the manufacturing sector. The construction sector has been a major driver of the rapid economic growth in Addis Ababa over the past several years. It has been a source of employment for a very large proportion of the semi-skilled and unskilled labor force. It also provided much needed residential and commercial floorspace to accommodate the rapidly growing population. The sector has seen a 30 percent slow-down in Addis during the six months after the onset of the pandemic, largely due to the general economic slowdown in the country, and the reduction of public capital expenditure. Moreover, the contraction of the construction sector meant that thousands of young people lost their jobs and saw a fall in incomes leading to rising poverty incidence.

Economic impact on households and on individuals

Residents in informal settlements and slums of Addis Ababa, live on precarious incomes with little or no connection to running water and poor sanitation. In addition, overcrowded living conditions have made it difficult to uphold the two-meter separation rule in slums and informal settlements which makes it difficult to contain the pandemic.

Households in informal settlements and slums strongly rely on social networks and personal ties/connections as part of livelihood strategies. It is through these social networks that residents get information about jobs, access social security through group savings and obtain funeral services. With COVID-19 and the resultant precautions, such institutions were put in jeopardy,

putting informal settlers in unprecedented social insecurity. There is thus a clear need to strengthen social safety nets that would safeguard the poor in times of such crises.

What is more concerning about the pandemic is that its impact is not equal across the various social groups. Low skilled persons are more affected than the skilled and

Face mask sold by street vendors
© Hilina Nebeyu

A sustained provision of water and sanitation services as well as soap, masks and hand-sanitizers can help contain the spread of the pandemic in Addis Ababa's slums.

the formally employed. The following figure illustrates COVID-19's impact on the low skilled workforce by sector.

Figure 3.5: Change in the mean monthly wage of low-skilled employees, by sector (Feb-Aug 2020)
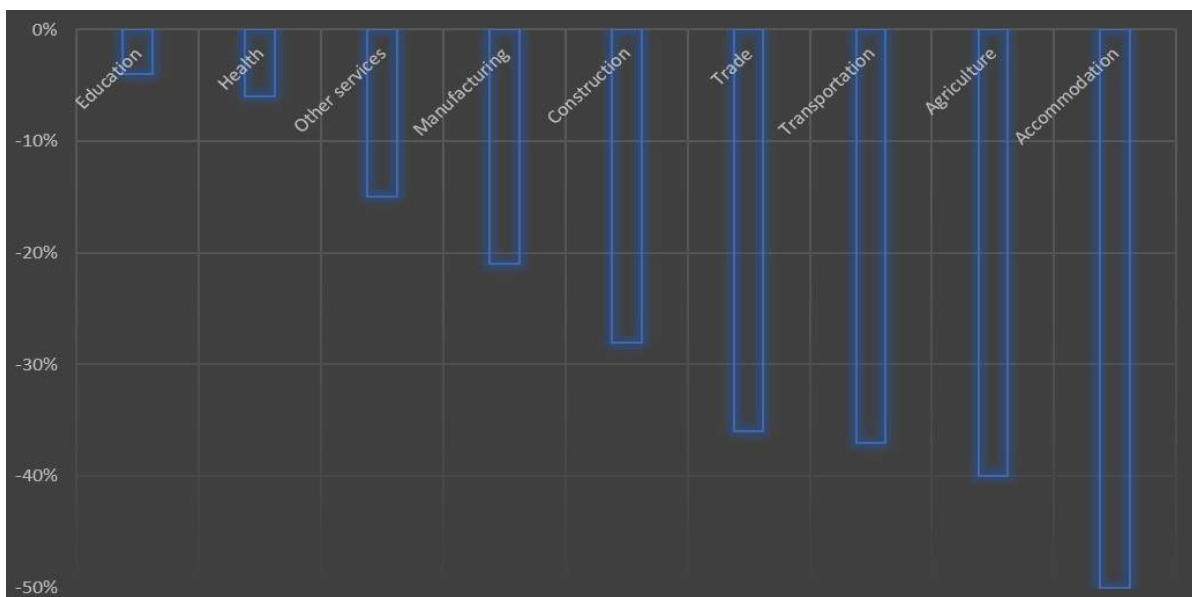
Source: ILO, 2020

In general, the wages of low skilled workers have dropped by about 50% over the second half of 2020. Low skilled workers have found it difficult to stockpile food items and necessities as their income dropped significantly. Change in labor income by employment status has also been an important determinant in understanding the differences in the impact of the pandemic. Informally employed workers have seen their incomes falling sharply as compared to formally employed workers. The following figure illustrates evidence from the International Labor Organization (ILO, 2020).

Figure 3.6: Change in average monthly incomes (Feb-Aug 2020)
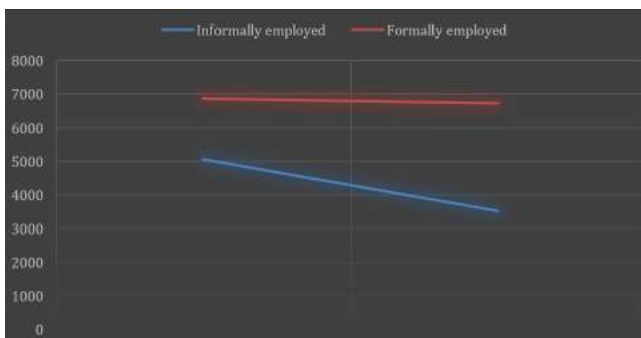
Source: ILO, 2020

The sharp fall in income for the informally employed as compared to the formally employed could signal that income inequality might have increased over the pandemic period. Formally employed workers have seen little change in their income, some may even have been compensated when not working. Informally employed workers however, do not have such a privilege. They are paid only when they work. Informally employed workers are therefore, more vulnerable to the pandemic as they are required to be physically

present to sustain their income.

The urban poor are affected not only due to loss of their precarious incomes but also due to the likelihood of rising prices of necessities such as food. They do not have enough financial reserves to fall back on at a time when their income streams are thinner or cut off for a sustained period of time. Meanwhile, the precarity of the economic situation of the poor and the vulnerable also complicates the process of controlling the pandemic, the poor and those who do not have sufficient resources to survive, may risk infecting themselves and others by not adhering to official restrictions when their earnings are at risk.

3.2 COVID-19 impact on the tourism and hospitality sector in Addis Ababa

This section presents the impacts of the pandemic on tourism and the hospitality sector in Addis Ababa[11]. It starts by demonstrating its contribution to the national economy and employment. Subsequently, the severe effects of the pandemic and the measures taken to mitigate the impact are presented. The section concludes with suggestions for the way forward.

The Contribution of the tourism and hospitality sector to the Ethiopian economy[12]

[11] The secondary sources include official documents from federal and city organizations and agencies (e.g. MoCT, Tourism Ethiopia, Addis Ababa Culture and Tourism Bureau, National Planning and Development Commission), the Addis Ababa Hotel Owners and Trade Sectoral Association (AHA), the Catering and Tourism Training Centre (CTTC) as well as reports from international organizations such as the World Travel and Tourism Council (WTTC) and United Nations World Tourism organization (UNWTO).

[12] The MoCT records tourism data at a country level and disaggregated data by region are unavailable, perhaps for lack of a Tourism Satellite Account (TSA) for Ethiopia. Some tourism data for Addis Ababa (e.g. number of tourists in the city, economic contribution or GDP share in the city) could not be found.

The tourism and hospitality sector has become one of the engines for economic development in many developing countries, including Ethiopia. The sector proved to be a major source of foreign exchange earnings, creating employment and investment opportunities. In 2019, the sector's direct contribution to the total economy was approximately USD 3.6 billion which represented 6.7% of Ethiopia's GDP and 49.5% of total exports. The total contribution of the sector to the national economy was approximately USD 6 billion and represented 8.3% of total GDP (WTTC, 2020b). The sector created a total of 2,149,500 jobs of which, 1,957,500 (i.e. 91.1%) were direct contributions to employment and the remaining 8.9% were indirect contributions to employment in 2019 (WTTC, 2020b). The sector's direct employment contribution was 7.0% and accounted for 8.3% of the total employment in 2019 (WTTC, 2020b).

COVID-19 impacts on tourism and hospitality in Addis Ababa

The COVID-19 pandemic has brought an unprecedented challenge to the tourism and hospitality sector globally. The restrictions on movement and border closures in many countries has eventually impacted the behavior of travelers. For instance, 90% of the global population have adjusted their lifestyle to live under travel restrictions or stay at home orders in fear of the virus itself (WTTC, 2020c). It is inevitable that such a lifestyle change has had an impact on the number of international tourists traveling to Ethiopia. Table 3.1 below compares the number of travelers to Ethiopia for the first five months of 2019 and 2020.

Addis nights
© Gift Habeshaw via Unsplash

Table 3.1: Trends in tourist arrivals to Ethiopia: A comparison between 2019 and 2020

Month	2019	2020	Difference	% change year on year
January	86,686	86,857	171	0.20
February	81,164	72,743	-8,421	-11.58
March	77,002	23,885	-53,117	-222.39
April	86,903	1,531	-85,372	-5576.22
May	78,738	2,550	-76,188	-2987.76

Source: MoCT, 2020a

There was a small difference between January 2019 and January 2020 in the number of visitors to Ethiopia. The World Health Organization (WHO) declared COVID-19 as a pandemic on 30 January 2020 (WHO, 2020 c). Subsequently, arrivals to the country declined by 11.58% in February 2020. The decline doubled in March 2020. In Ethiopia, a State of Emergency was declared for five months on 11 April 2020. Unable to find travelers to Ethiopia and due to flight restrictions by many countries, Ethiopian Airlines shifted towards cargo transport to more than 70 destinations (Africa News, 2020). Consequently, the number of tourists drastically declined in subsequent months. For instance, compared to 86,903 visitors in April 2019, the number of visitors in April 2020 was only 1,531 (MoCT 2020a), a decline of 5576.22%. As a result, Ethiopian Airlines lost over USD 550 million between January and April 2020 (Alemayehu, 2020).

Nonetheless, there is limited available data regarding the actual impacts of COVID-19 on tourism and hospitality businesses in the city. An official letter written by the Addis Ababa Arts, Culture and Tourism Bureau to MoCT on 14 May 2020, summarizes the financial losses following the outbreak of COVID-19. The Bureau reported an estimated loss of 1,124,508,400 ETB, for the month of April 2020, in tourism-related businesses in the city (AACGCATB, 2020). If this figure is extrapolated up to the re-opening of the tourism sector on 1 October 2020, tourism-related businesses in the city might have lost around 6.6 billion ETB. This is obviously a very rough estimate.

Impacts on the hotel industry

The pandemic brought an unprecedented crisis to the hotel industry and this effect is more noticeable in Addis Ababa. The main customers of the star rated hotels in Addis Ababa have been business travellers and international tourists. Addis Ababa used to host several international conferences. MICE[13] tourism, which accounts for 50% of hotel customers and generates large amounts of revenue, is the most affected business segment, as interviewee R01 remarked. The AHA[14] reported that 88% of the hotels in Addis Ababa were either fully (56%) or partially (32%) closed in April 2020. The

[13] Meetings, Incentives, Conferences and Exhibitions
[14] Addis Ababa Hotel Owners Association

remaining 12% of hotels were used for quarantine purposes. The decline in occupancy rate for three months in 2020 (March, April and May) as compared with the same months in 2019, was 60.0%. This figure was higher (i.e. 71.5%) for five star hotels. The reduction in revenues from accommodation and food and beverages was 65.86% and 61.71% in these months (CTTI, 2020).

The other sources of revenue for hotels also declined, for example, non-accommodation and food revenues dropped by 62.78%, revenues from events, meetings and conferences went down by 66.77%. Additionally, income tax and value added tax (VAT) collected by hoteliers were down by 24.10% and 65.44% respectively (CTTI, 2020). This reduction in revenues had a knock-on effect on employment, investment and related supply chains including supply of food items such as vegetables, fruits, meat and dairy products. The financial sectors such as banks and insurance companies were also affected due to reduction in foreign exchange earned from the city's hotels.

Impacts on tour operators and travel businesses

Tour operators and travel agencies play a crucial role in the tourism sector. They play an intermediary role by linking tourism customers (i.e. visitors) and suppliers that provide services such as accommodation and transportation in local destinations. There were 467 tour operator firms registered by MoCT in Ethiopia as of 29 November 2020 (MoCT, 2020b). Almost all were headquartered in Addis Ababa.

Tour operators were forced to either cancel or postpone previous bookings which had been made prior to the pandemic. They were unable to refund finalized payments due to shortage of foreign exchange in banks which also affected the reliability of tour operators as interviewee R02 indicated by saying, "we found ourselves in a difficult situation on how to explain this to our customers". Only one key interviewee, R06, attested that the impact was less felt in 2020 since the pandemic happened after the winter peak season (end of 2019) was over.

Impacts on the MICE industry

Tourism activities related to meetings, incentives, conferences and events, are often referred to as MICE tourism and are an important segment in Addis Ababa. The city hosts regular meetings of regional organizations (e.g. African Union), conferences of sectoral offices and NGOs, trade fairs and festivals. This segment, which has also been creating jobs for many young people pre COVID-19, has completely ceased functioning due to restrictions in flights and cancellations or rescheduling of events, conferences and meetings. For instance, interviewee R03 had organized 108 events in 2018/19, but none face-to-face since April 2020 albeit a few virtual events were organized. This segment has been contributing over half of hotel customers, as interviewee R02 emphasized.

Impacts on other related businesses

The tourism sector is interconnected with several other businesses and activities. For

instance, hotels rely on local suppliers to get agricultural products. A farmer from the Oromia region who supplies dairy products, for instance, is directly affected when demand from the hotel industry in Addis Ababa diminishes. Local suppliers of sanitation items have also been affected. Tour guides, drivers and cooks at camp sites, all of whom are involved in the tourism value chain, are all affected as interviewee R02 remarked. Among the SMEs in the city, souvenir and gift shops are also affected since their customers are tourists and business travelers.

Measures taken to address COVID-19 impacts

The GoE has taken action to not only tackle the pandemic but also to minimize the pandemic's socio-economic impacts. The Ministry of Culture and Tourism (MoCT) prepared a strategy document in April 2020 that outlined three phases of implementation (i.e. response, recovery and resilience) to mitigate COVID-19 impacts on the tourism sector (MoCT, 2020c, 2020d). The Ethiopian Planning and Development Commission (PDC) also prepared a similar document in mid-May 2020 (PDC, 2020). This document assessed the pandemic's impact on the tourism sector and outlined the response options. In sum, the government has introduced fiscal and monetary measures to mitigate the impact of COVID-19 on the tourism sector.

The GoE injected 3.3 billion ETB (about USD 98 million) in early May 2020 into tourism and hotel business sectors to mitigate COVID-19 hardship (New Business Ethiopia, 2020a).

This was the first sector which received specific financial support from the Government. The Government's fiscal measures were also supported by international and regional institutions, such as the African Development Bank (AfDB) and the International Monetary Fund (IMF). For instance, on 03 July 2020, the AfDB approved a grant of USD 165.08 million to support Ethiopia's response to the health and economic impacts of the pandemic (AfDB, 2020). This grant includes financial support to ease fiscal pressure on the economy and to off-set unplanned government expenditures, protect small businesses and preserve 26,000 jobs, address macro-fiscal imbalances and to strengthen the private sector. Tourism and hospitality is one of the sectors included in this grant package (AfDB, 2020). Similarly, the IMF approved USD 411 million in emergency assistance to Ethiopia to address the COVID-19 pandemic on 30 April 2020 (IMF, 2020).

Taxi
© Oana Baloi

The Government's monetary measures included the provision of 15 billion ETB (about USD 445 million) to private banks in order to increase liquidity, to help their customers with loan repayments and to make additional capital available for loans (New Business Ethiopia, 2020b). Some interviewees argued that these measures have not had great impact on the tourism sector. The respondent tour operators understood that 11% of the funds (i.e. about 300 million ETB) would be available to tour companies as additional working capital. However, anecdotal evidence indicates that not all tour companies in the city benefited.

This grant was supposed to be channeled through commercial banks. An interviewee from the hotel sector (R04) shared the tour operators' view by saying "the brand hotels in Addis Ababa… might have benefited but not all hotels". R01 also indicated that the bureaucratic procedures and the short return period (i.e. six months) discouraged many hoteliers from using the Government's fiscal and monetary measures. He added that, *"banks were expected to reclaim from the National Bank the money they loaned to the hotel sector, including a 5% interest rate. Their administrative cost was not covered by this scheme…Thus, the commercial banks were reluctant to extend additional loans".*

The Government issued a decree which prohibited "laying off employees and cancellation of contracts" during the COVID-19 period. To help businesses keep their employees, the Ministry of Revenue also announced incentives which included tax reductions, the extension of the tax collection period and the use of value added tax to cover employees' salaries (New Business Ethiopia, 2020).

All key informants indicated that there has been no change in their tax payment modalities. The officials at Addis Ababa's revenue bureau were either unaware or not fully informed about the pledged tax reductions. Given these circumstances, the hoteliers never pursued this pledge. They have sustained their employees, however. One interviewee (R04) said that this is because hoteliers have "invested on them [employees) by providing training to them and will be unable to get them back once things improve". Interviewee R05 linked this to "sharing burdens together as it is morally unfair to lay off employees in such a difficult time". A positive response pertaining to incentives from the revenue bureau has come from interviewee R06. His import of a duty-free car, an option available to tour operators prior to the pandemic, has been easily facilitated. The other two interviewees (R02 and R05) indicated that the request for tour companies to use their duty-free cars for local transportation, which should otherwise only be used for tourism activity, had yet to be approved after 6 months of deliberations. A conclusion from the key informants' responses is that the Government's mitigation measures cannot always reach their intended target groups at least in the tourism and hospitality sector in Addis Ababa. Hence, it is recommended that the Government revisits the implementation of its mitigation measures.

The future of tourism in post COVID-19 Addis Ababa

The MoCT announced the re-opening of the tourism sector on 1 October 2020, after six months of interruption (Misikir, 2020). The Ministry put in place a National Safe Travel Protocol (NSTP), which tourism businesses should strictly observe so as to protect the health and safety of their employers and guests (MoCT 2020d). Interviewee R03 indicated that conferences and meetings have commenced virtually but that event organizers have been receiving demands from clients to organize some physical meetings. She is optimistic that business tourism will get back to normal in late 2021. The hotel sector has shifted to domestic customers by cutting prices up to 75% to attract clients as interviewee R01 indicated. In his view, this approach has encouraged government clients and NGOs to hold meetings and conferences in the city's hotels.

The interviewed tour operators hold the view that there has been an increasing demand for their services after the re-opening was announced, as it coincided with a peak season in tourism activities. However, the ongoing conflict in northern Ethiopia and the pandemic have discouraged international visitors. One tour operator (R05) identified safety and security as the primary factor affecting demand at the moment. Another tour operator (R02) linked the decline in demand with the second wave of COVID-19 in Europe and the required quarantine. Tourists are reluctant to incur additional costs for the quarantine period as R02 indicated. He

is of the opinion that if a speedy COVID-19 testing is put in place and the quarantine requirement is lifted for travellers with a negative PCR certificate, international arrivals will increase eventually. An interviewee from the hotel sector (R01) supported this view by saying, "potential tourists have been under restrictions for a long period and if there is an ease of restrictions to travel, they will come to Ethiopia and Africa in general since the COVID-19 cases reported are relatively low as compared to other regions[15] ."

Although the reported positivity rates have increased dramatically after Christmas 2020, tourism business owners are optimistic their businesses will get back to 2019 levels in the second or third quarter of 2021. This will be achievable if there is a coordinated effort amongst all stakeholders in the sector. The WTTC[16] recommended a strong public-private collaboration to recover tourism (WTTC, 2020c). Many travellers are also concerned about the implications of the pandemic on their travel insurance (WTTC, 2020c). To tackle that, Ethiopian Airlines announced that it would cover the health insurance of travellers between 01 October 2020 and 31 March 2021 (Ethiopian Airlines, 2020).

The owners of tourism enterprises have observed the Government's COVID-19 rules, among which was the prohibition of employee lay-offs. However, if the current situation continues, several businesses may not be able to pay salaries in the near future. It is therefore recommended that the Government should support the sector further.

---

[15] This was the case at the time of the interview. However, the number of cases and the positivity rate have dramatically increased in Ethiopia since then.
[16] World Travel & Tourism Council

Ethiopian Airlines
© Edward Johnson via WFP

Tour operators should be allowed to use previously imported duty-free cars for other purposes such as provision of local transportation, so that they can generate enough revenue to pay salaries. Hoteliers should also be allowed to use previously collected VAT to pay salaries. Event organizers rely on the Government to encourage international and regional organizations to commence regular physical meetings in Addis Ababa. Finally, the WTTC has recommended for quarantine requirements to be lifted for international tourists. The MoCT should strive to obtain the WTTC's safe travel stamp in order to encourage travels to Ethiopia. It should also coordinate with the authorities in the European Union, the US and other major markets to facilitate easier travel arrangements for tourists who are vaccinated or have recently recovered from COVID-19 and wish to travel to Ethiopia.

3.3 Health Impact

The first reported case in Ethiopia was recorded on 14 March 2020, and the entry point was Addis Ababa. Ethiopia took drastic measures in light of this, with the first actions being educational facilities closures and a ban on large gatherings.

Travel restrictions, border closures for ground transportation, mandatory quarantine for travellers and ban on religious gatherings soon followed. In early April, a State of Emergency was declared (Council of Ministers Regulation no 466/2020) which lasted until the beginning of October.

Figure 3.7: Ethiopia COVID-19 response time line and events

December 31, 2019 — China alerts WHO about several pneumonia cases of unknown causative agent

January 21, 2020 — a).WHO confirms human-to-human transmission of the virus; b).EPHI/PHEM alert all stakeholders the risk of spread of the outbreak

January 27, 2020 — EPHI's PHEOC activated for 2019-nCOV preparedness and IM assigned

January 30, 2020 — WHO declares the outbreak a PHEIC

February 7, 2020 — Ethiopia starts laboratory test for COVID-19

February 11, 2020 — WHO names the novel corona virus: COVID-19

February 14, 2020 — Egypt confirms Africa's first case

March 11, 2020 — WHO declares the COVID-19 outbreak a pandemic

March 13, 2020 — Ethiopia reports the first COVID-19 case

March 15, 2020 — 8335 toll free hotline upgraded to digital call center

March 16, 2020 — Prime Minister of Ethiopia declared closure of schools and mass gatherings

March 20, 2020 — Ethiopian Airlines suspends flight to around 30 countries

March 23, 2020 — 14-days mandatory quarantine for all passengers arriving to Ethiopia started

March 24, 2020 — IMS structure revised and the newly appointed EPHI DDG assumed the IM position

March 25, 2020 — PM of Ethiopia launched national COVID-19 resource mobilization committee

March 28, 2020 — The first recovered patient reported in Ethiopia

April 1, 2020 — COVID-19 laboratory testing started in AHRI and NAHDIC

April 5, 2020 — The first death reported in Ethiopia

April 8, 2020 — Ethiopia declares state of emergency to fight COVID-19

Source: EPHI, 2020 b

After October 2020, the state of emergency was not extended but the Ministry of Health and other government offices still urge people to wear masks, wash their hands regularly and keep physical distance between them. Gatherings of more than 50 persons are not allowed. Persons deliberately violating COVID-19 restrictions in public can face a penalty of up to 2 years in jail.

Even though COVID-19 has touched nearly every corner of the world, there is still much that we do not know about it. Thus far (March 2021), Ethiopia has tested around 1.5% of the population. The daily positivity rate at the beginning of December 2020 was around 6-7% but this jumped to the 16% range by the end of February 2021 following Christmas and Epiphany (Timket) celebrations. In March 2021, the daily positivity rate was steadily over 20%. This is well above the 4% WHO threshold, but this is partly due to how the arguably limited testing is targeted. There is no mandatory testing in Ethiopia and therefore only suspected cases are tested. The positivity rate comes from tests targeting suspected cases and from persons identified through contact tracing. Addis Ababa amounted to 50.41% of the total tests and 62% of positivity cases in the country at the end of February 2021.

Throughout the pandemic, the Ethiopian Public Health Institute (EPHI) and Ministry of Health have been mobilizing resources at the national as well as the regional levels and a Public Health Emergency Operations Center (PHEOC) has been activated (EPHI, 2020).

In Addis Ababa there are 43 treatment, isolation and testing centers, that were part of the COVID-19 treatment process. Hospitals, health centers, event arenas and schools were used as treatment centers at the time. In December 2020, just before the January spike however, 19 centers had been closed, 1,463 beds were no longer in use in treatment centers and 51 beds were not needed in isolation centers. According to the MoH (2020), in Addis Ababa all hospitals should operate an agreed rotation system and especially hospitals with more expertise and experience should deploy the necessary number and mix of physicians to the designated treatment center.

Nevertheless, Ethiopia still has the highest number of confirmed cases in East Africa.

As of 28 February 2021, 2,134,587 tests had been conducted in the nation and 159,072 confirmed cases were found resulting in 2,365 deaths. During the same time, the city of Addis Ababa had conducted 1,053,381 tests and had 95,081 confirmed cases. According to the available data, (AAHB, 2021) in Addis Ababa, 10.2% of the reported and confirmed cases are in critical condition, 26.7% are in severe condition, 24.6% in mild condition, 18.5% in moderate condition and 20% are asymptomatic. Importantly, 26.7% of the cases are undocumented – a situation that is typical of many cities in the Global South, especially in informal areas. Most documented deaths are of men (70%) while the documented deaths in the majority of cases (23.9%) are people aged between 65-74 and 21.5% are aged between 55-64.

Temperature check on a child
© Michael Tewelde via Getty Images

Spatially speaking, some sub-cities (such as Bole, Kolfe Keranio and Gullele) have higher density, lower socio-economic profile and poor service provision. These areas had more confirmed COVID-19 cases logged in the Home-Based Isolation Centers (HBIC) at least in the early stages of the pandemic. Later, a growing number of cases appear in less dense sub-cities (see Chapter 5 for a more detailed discussion). Literature confirms that low-income neighborhoods appear to have higher COVID-19 death rates associated with air pollution, poor housing quality, and household overcrowding (Chen and Krieger, 2020). Ketema (2020) confirms that it is impossible for the poor to abide by the lock down regulations.

Daily rush at Merkato
© Nahom Atakilt

The situation is even worse in cases of vulnerable groups such as in Internally Displaced Persons (IDP) camps. In Addis Ababa, there are six such camps and many of their inhabitants were working as daily laborers, petty traders or beggars. According to a recent report, "many of them have not been able to work due to movement restrictions and the high cost of transportation" (Harris et al., 2020). As discussed in Chapter 2, major road corridors in Addis Ababa are congested, and it seems that restricting travel is almost impossible as basic services are not within walking distance for the vast majority of the population. Furthermore, due to poor digital infrastructure, it is proving difficult for people to work from home (Abubaker, 2020).

The main challenges facing the management of the pandemic

The Ethiopian Public Health Institute (EPHI) has identified five main challenges namely, shortage of case management facilities for critical cases, increasing number of COVID-19 cases in congregated settings, increasing number of cases being detected in the community, super-spreading events (mass gatherings with limited physical distancing and face mask use which exacerbate the spread of COVID-19) and low stock of personal protective equipment (EPHI, 2020). Indeed, as noted by a health extension worker mobilized to fight COVID-19 (interviewee R08)

"We know people have the information and understand how to prevent COVID-19. However, there are problems with implementing safe practices, that is why we routinely remind them".

As Mohammed et.al (2020) highlight, Ethiopia took effective measures to manage and control COVID-19. Yet, it is suggested that more efforts are necessary to increase testing capacity and bring about behavioral change in the community. However, in line with looking at the social and spatial determinants of health in Addis Ababa, in this section the report argues that the health impact of COVID-19 is linked to already existing conditions in the city as pointed out in chapters 1 and 2. With low health coverage, lack of sufficient urban services such as water, open

spaces and housing conditions, the pandemic has releveled how fragile urban services in Addis Ababa are:

"Even if my school has water and sanitation facilities, it would have been difficult to control the virus because we are many and sit very close to each other. This makes it difficult to maintain the required physical distance. We also touch and pass school materials to each other very frequently". (Interviewee R09)

In other words, the health impact on Addis Ababa is a telling example of a *syndemic.* While a pandemic is indeed the manifestation of an epidemic that occurs over a wide region, crossing international boundaries, and affecting a large population (Porta, 2014), a syndemic is the assemblage of several health conditions within a particular context. It is the "interaction of those conditions via biological, social, or psychological pathways; and involvement of social, political, economic, or ecological drivers" (Mendenhall and Singer, 2019). Moreover, in relation to COVID-19, Horton (2020) argues that a syndemic

"Provides a very different orientation to clinical medicine and public health by showing how an integrated approach to understanding and treating diseases can be far more successful than simply controlling epidemic disease or treating individual patients".

Indeed, what we can see in the last few months is that the effect of COVID-19 varies depending on the strength of the provision of health services, education and housing.

Overall, the current response seems to have been effective in reducing the infection rate and managing confirmed COVID-19 cases until December 2020, but the situation took a turn for the worse thereafter. Testing and monitoring seem to be biased toward the more formally developed areas of the city (see Section 5). Institutions such as AAWSA came up with emergency plans to guarantee access to water for the city's population. Most actions taken were accelerated through the directives issued for the prevention and control of the COVID-19 pandemic.

Addis hotels
© Hilena Tafesse

3.4 Social impact

Social capital in Ethiopian society

In Ethiopian society, social ties come from the collective enactment of day-to-day cultural values that are embedded in the way of life as well as in the workplace. Socio-cultural values, deeply affected by religion, are therefore expressed in rituals like greeting habits involving physical contact or communal eating, but also norms like voluntary work and support. A strong social support system within the community which caters for basic human needs as food, shelter and clothing reflects these social norms too.

Family-based care of parents, children and close relatives, and domestic workers living with a family that they work for are key examples of 'informal' community social support mechanisms which benefit vulnerable people in urban areas as well as rural migrants. Moreover, grassroot associations play a major role in people's social life. Traditional community associations mostly known as iddir, mahiber, senbete have familial, religious, ethnic, neighborhood, political or other bases for their formation. They are usually formed for social support and welfare in times of emergency. For instance, an iddir is formed by a group of people in a neighborhood. It provides financial and technical assistance to the community during weddings, funerals and other social occasions.

Religious associations also bring about a strong social tie by reinforcing a feeling of unity. Religious leadership plays a significant role in creating social cohesion. They do this by demonstrating shared understanding, mutual support and reciprocity in relationships (WFP, 2020). The Inter-Religious Council of Ethiopia (IRCE) comprising all faiths and religions was established to address issues of social exclusion and development in the country.

Mesqel Celeberation
© Bisrat Tsegaye

The dynamics of social life in Addis Ababa are however, challenged by deep-rooted inequalities and acute urban poverty, especially during the current outbreak of COVID-19. Addis Ababa has high levels of urban poverty, unemployment and social vulnerability. It is estimated that 22% of the population lives below the poverty line and 29% of households have an unemployed adult (Doyle et.al, 2020). It is estimated that between 70% and 80% of housing in Addis Ababa is of low quality (World Bank, 2020).

Social impact of the pandemic and of the measures taken to control it

Life in Addis Ababa was challenged by the sudden outbreak of the COVID-19 pandemic. Preventing social and physical contact in close-knit communities was one of the main challenges in Addis Ababa. The daily socio-cultural practices which involve close physical contact and communal eating made it hard to respect social and physical distancing.

COVID-19 has not only tested the degree of solidarity and mutual support of the community but also the capacity of Addis' social support system in times of health emergencies. The social impact of COVID-19 in Addis Ababa was not only caused by the disease itself but also by the measures taken to tackle the spread of the disease. Although the overall magnitude of the social impact is hard to estimate, the following key examples provide a glimpse into the effects which the pandemic had on the social fabric of Addis Ababa.

Impact from the closure of schools - approximately 560,000 primary school pupils no longer received their meals from the school meal program. School closures put pupil wellbeing at risk as they aggravated socio-psychological distress from loneliness (UN Ethiopia, 2020).

Homeless shelters – the number of homeless in Addis Ababa is estimated at 52,000; Women, Children and Youth (WCY) make up the majority (UNOCHA, 2020). More than 4,000 children live on the streets (Bornstein, 2019). Their level of poverty, food and shelter insecurity and lack of protection materials made them vulnerable to the pandemic but also potential vectors of rapid spread. Thus, the Ministry of Women Children and Youth (MoWCY) identified 10,000 homeless persons and placed them in 2 new shelters. The Ministry managed to provide food, clothing and sanitation to approximately 1,000 persons (MoWCY, 2020). More support was provided by AACA (AACA, 2020) and for a few months in spring 2020, the number of children and homeless people roaming the streets of Addis Ababa had visibly dropped. Thereafter, probably due to lack of resources, the situation reverted to pre-pandemic conditions.

Migrant women returnees- around 2,700 Ethiopian irregular migrants were deported from the Kingdom of Saudi Arabia and 2,000 from Djibouti, Kenya, and Somalia (UNOCHA, 2020) MoWCY provided 2,757 such persons including 454 women and 11 children with the necessary protective equipment (MoWCY, 2020).

Limited access or closure of leisure and retail activities - Closures of cafés, street markets, entertainment areas, shops, street vendors of tea and coffee 'nu bunna tetu' contributed to high unemployment. This mostly impacted women as they make up 65% of the informal workforce (UN, 2020).

Transport and mobility restrictions - mainly impacted vulnerable communities. The limitations imposed on public transport initially made it hard and more expensive to tend to family, work and health emergencies (Qian, 2020). Mobility restrictions impacted formal/informal markets and food supply chains resulting into food insecurity, malnutrition and higher food prices (UNOCHA, 2020). The World Food Programme (WFP) was asked by the EPHI to support 102,200 patients infected with COVID-19 for 3 months (WFP, 2020).

Increased crime, violence and abuse - at home, in the streets and in private or public buildings due to partial lock down as well as restrictions on transportation. More women, girls and children were exposed to domestic violence and abuse (MoWCY, 2020; EWLA, 2020). Even though the Addis Ababa Police Commission has not explicitly listed the type of crimes that were directly or indirectly related to COVID-19, they are aware that COVID-19 had an impact on the rise of various types of crimes and documented this separately. From the crimes that they identified to be related to or aggravated by COVID-19, 154,374 suspects were found guilty, 128,484 were punished and about 13,000 people were detained in jail (AACA, 2020).

Compromised access to health care: lower-level facilities became primary health care providers as hospitals focused on COVID-19 treatments (Qian, 2020). This had a knock-on effect on the effectiveness of the health care system and there is anecdotal evidence that people avoided seeking support from those facilities (Qian, 2020).

Uncongested Roads
© Hilena Tafesse

Closure of social infrastructure establishments

The additional domestic work and childcare duties due to school closures also affected women the most due to traditional roles expected of women in Ethiopian society.

The closure of schools and universities in Addis Ababa brought significant negative social impacts on children and women. Cases of domestic violence, child abuse and socio-psychological distress shot up. For this reason, MoWCY requested the GoE to re-open all schools as soon as possible because they were considered to be safe environments for children, and especially for girls. Moreover, the Ministry set up a new task force to work on violence and abuse issues. The task force comprises representatives from MoWCY, the Attorney General's Office, the Federal Court, the Police Commission, the Ministry of Health, the Women and Children Affairs Bureaus from all regions (MoWCY, 2020).

LRT off peak hours
© Biniyam Bewketu

Transport and mobility restrictions

Mobility, public and private transportation restrictions mainly affected vulnerable communities. Local, regional and international mobility restrictions impacted formal and informal markets and food supply chains resulting in food insecurity, malnutrition and higher food prices (UNOCHA, 2020). According to UN Office for the Coordination of Humanitarian Affairs' (UNOCHA) food poverty index (UNOCHA, 2020), it was estimated that 15.2% of the urban population would be at risk of food insecurity. It was also estimated that because of the pandemic, 10.9 million Ethiopians will need support in order to get enough food and 36 % of these additional cases are people in urban areas (UNOCHA, 2020).

There were 42,959 registered police cases related to transport violations (including carrying more people than allowed in a vehicle and increasing tariffs on passengers above the stipulated limit) (AACA, 2020). As the hours and availability of public transportation were limited, peoples' movement and visits to public places were limited, areas such as work, retail stores, school, entertainment areas and streets emptied. Thus, crime rates increased in commercial areas, neighborhoods and roads, as street life and informal economies were discouraged. It was also hard to easily reach places during family, work and health emergencies (Qian, 2020).

Closed businesses
© Miruts Gebremariam

Security and safety

Crime and the fear of crime is also linked to cities' urban spatial form (WHO, 2012b). In Addis Ababa, the partial lock down that was implemented to slow the spread of COVID-19, has resulted in an increase of crime rates and exacerbated food security issues. The number of assault incidents increased while households dependent on welfare faced food security challenges. Assault incidents increased while households dependent on welfare faced food security challenges. Moreover, many children were exposed to domestic violence and abuse during the prolonged time of school closures. According to the Ethiopian Women Lawyers Association (EWLA, 2020) and MoWCY (2020), although the figures on the domestic violence could not be separately registered, the number of female victims during the state of emergency increased, "for instance, we usually record 10 -15 assaults on a daily basis, during COVID-19 it went up to 20" (interviewee R07). The Addis Ababa Police Commission also reported and documented separately the number of crime cases and punishments that were presumed to be related to the outbreak of COVID-19.

In addition to unemployment and poverty, Addis Ababa's slum areas have narrow streets, poor lighting and low municipal service levels. These also have a negative effect on safety and security. Although their spatial characteristics make them highly vulnerable to street crime and domestic violence, these areas are also known to have strong social ties which play a dampening role on crime and its impact. Law enforcement agencies could also play a key role in enforcing public health measures to contain pandemics and in preventing criminal activities arising due to unsafe urban design (Interpol, 2020). However, on its own, the increased presence of the police will not solve safety and security issues in slum areas. Law enforcement should be carefully combined with a well-planned revitalization programme.

Elevated view of old CBD
© Oana Baloi

Chapter 4

City-level Responses to the Public Health Emergency: The Institutional Dimension

4.1 Introduction

There is an important link between urban institutions and resilience in cities. Improving public health in general and during a crisis in particular, should be understood within the framework of policies, practices and processes that influence the well-being of urban populations. Public health responses occur through formal governmental institutions as well as informal institutions. Health is a "resource for everyday life, not the objective of living… (it) is a positive concept emphasizing social and personal resources as well as physical capacities" (Corburn, 2009)

This section will look at institutional and policy responses to the pandemic which applied to the territorial unit of Addis Ababa. It will examine responses from the AACA as well by the residents of the city (grassroots, voluntary action) in addition to federal-level and international organization responses.

The section will examine specific measures taken to:

1. Tackle the COVID-19 pandemic through public health measures in the form of regulations and contingency plans, emergency infrastructure investment (utilities/WASH), housing provision, hospitals and other care facilities as well as social infrastructure.

2. Mitigate negative effects on the well-being of the population from the pandemic itself and of efforts to control it.

The analysis in this section will take a closer look into the way institutional structures as well as policies evolved from the period just prior to the pandemic and up to the present day[17]. It will therefore identify how the governance system of the country responded to the emergency and whether any gaps or overlaps existed or continue to exist, and why. These responses included cross-sectoral contingency strategies and sectoral level policies and plans as well as regulations, rules, physical intervention, restrictions, economic measures, etc.

The analysis covers 4 governance levels including international, federal, local and grassroots in an effort to address the following key questions:

- Which are the main organizations involved (at all governance levels) in tackling the pandemic and in addressing the effects of public health measures put in place?
- Are there new institutions and organizations created for those purposes in response to the pandemic (ministerial committees, task forces, new organizations, etc.)?
- Which are the key policies, strategies and programs put in place?
- What are the budgets and other resources (people, etc.) allocated to the above mentioned programs or to other initiatives?
- Are there any gaps in competencies and/or any overlaps?

....
[17] Methodologically this section is based on the study of policy and strategy documents, regulations, interviews with representatives from key institutions and observation of special initiatives and support structures.

4.2 Federal and City Administration responses to the pandemic

Key institutional responses

According to the WHO (2012b), a well-structured "governance process" in planning healthy cities is critical in order to achieve equity:

"The governance of the city is the process by which decisions are made and are implemented or not implemented. It includes all the processes through which public and private institutions, formal and informal interest groups and individuals identify priorities and resolve problems"

Based on our findings, the response to the pandemic was a systematic approach involving all governance levels, from international to neighborhood settings. Sub-cities were at the forefront of service delivery. The key organizations that are involved in tackling the pandemic in Addis Ababa are articulated in six governance levels: International, Federal, Regional (i.e. Addis Ababa city), Sub-City/Woreda and Kebele.

The Ministry of Health (MoH) and the Ethiopian Public Health Institute (EPHI) were central in the effort to tackle the pandemic. The National Disaster Prevention and Preparedness Committee's Emergency Coordination Center was greatly supported by WHO's efforts to bring together different international agencies and programs (WFP, UNOCHA, WHO, UNICEF, IOM, UNDP, various NGOs etc.) In a coordinated manner and served a key coordination and focal point purpose between international and national stakeholders (Figure 4.1). WHO's Health Emergency Operations Center was at the heart of the efforts to manage the pandemic's public health aspects.

Figure 4.1: Agencies involved in managing the public health emergency
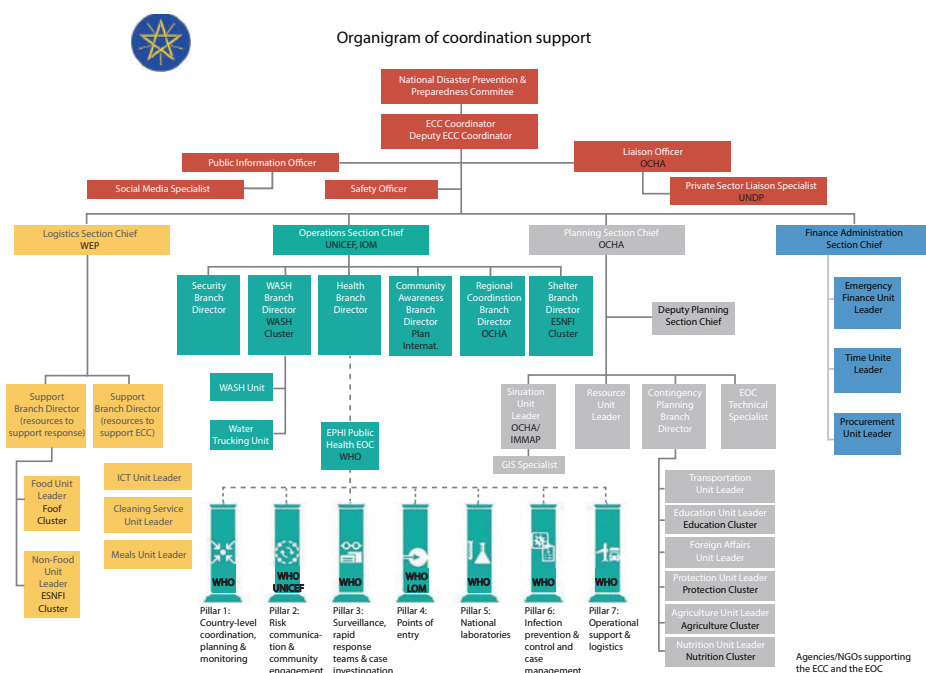
Source: WHO, 2020d

These key actors shared strategic priorities. The core strategic goal of the EPHI, as stated repeatedly in the EPHI weekly bulletins (EPHI, 2020), was to reduce community transmission of COVID-19. The main legislation which enacted these priorities was "Proclamation 3/2020 - A State of Emergency Proclamation Enacted to Counter and Control the Spread of COVID-19 and Mitigate Its Impact" which took effect on 11 April 2020.

Fiscal and other support programs at the international and federal level

International support as well as swift national-level fiscal and monetary actions were key in buffering the economic shock. The responses to tackle the pandemic in the health and urban domains were multi-faceted. At the macro-economic level, fiscal policy measures taken by the GoE to shield the economy from the shock (see Section 2) were complemented by federal level budget disbursements. According to interviewee R08, the GoE disbursed funds through the Ministry of Finance using a standard procedure called "Channel 1". In cases of emergency, the GoE can activate "Channel 2" to disburse direct sectoral funding for health, education, social services and any other service it wants to urgently support. The MoH received 48m ETB through "Channel 2" as emergency funding for the COVID-19 pandemic response. These funds were allocated to actions and programs throughout Ethiopia, including Addis Ababa. In addition, during the state of emergency the GoE declared that donations should be channeled through government agencies. Ethiopia received significant support from international organizations either in the form of grants (AfDB) and emergency assistance (IMF) or in the form of aid programs (UN agencies, ICRC etc). The text box below summarizes the various federal fiscal and monetary measures adopted from international and federal-level organizations to support the country's economy.

Figure 4.2 International and federal-level responses to the pandemic's impacts on the economy

Federal Government fiscal measures
5bn ETB (around USD 150 million) preliminary stimulus package
Faster value-added tax refunds for businesses
International and regional organization support
African Development Bank: USD 165.08m grant
International Monetary Fund (IMF): USD 411m in Emergency Assistance
Monetary Policy measures by the National Bank of Ethiopia
15 bn ETB to private banks to facilitate debt restructuring and prevent bankruptcies
21bn ETB (USD 630 million) support for banks to make working capital available for sectors impacted by the COVID-19 pandemic
Federal government employment-related measures
Employee lay-offs and termination of contracts were prohibited during the pandemic period

Other than macro-level measures, several federal ministries were involved in tackling the socio-economic impacts of the pandemic and measures taken to control it, such as lock downs, etc. Prominent among them was MoWCY – it's initiatives will be covered in greater length later in this chapter.

The AACA structure and its response to the pandemic

Addis Ababa city is subdivided into 10 sub-cities, with varying area and population sizes, which are further subdivided into 118 Woredas. Addis Ababa has a dual mandate as the federal capital and as a municipality. The municipal functions are the remit of the AACA. AACA's responsibilities include delivery of services such as education, transportation, health and solid waste management as well as social and physical infrastructure (parks, roads, WASH, etc.) (UN Habitat, 2017).

AACA's budget in response to COVID-19 amounted to 1bn ETB and was drawn from the city administration's contingency fund. The money was split as follows: the Addis Ababa Health Bureau received 600 million ETB, all bureaus of the city administration received funds in order to procure face masks and sanitizers for their employees (360 million ETB) and finally, 77 million ETB was allocated as a lump sum to the 10 sub-cities (7.7 million ETB per sub-city).

Interviewee R09 confirmed that the main responsibility of the Addis Ababa Health Bureau (and its equivalents at lower governance levels) was contact tracing, screening and monitoring infected people. Interviewee R10 confirmed that reducing economic impact and especially supporting and protecting vulnerable populations both economically and health-wise, were at the heart of AACA's strategy.

LRT disinfection
© Michael Tewelde via AFP

At the city level, the Social Affairs Bureau Task Force collaborated with more than 10 NGOs mobilized to respond to the pandemic. The task force comprised of several institutions including the Addis Ababa Iddirs Association, the Social Affairs Bureau, the Addis Ababa Health Bureau, the ICRC and NGOs such as CCRDA[18] . The aim was to reach 2/3 of the city's population, around 3 million inhabitants.

Contributions by NGOs, international organizations, individuals and private sector donors are hard to estimate overall but, anecdotally, include:

- 12 million ETB donated by the ICRC to support 1,200 people in need in 3 sub-cities (Akaki, Gulele and Nifas Silk Lafto). The support amounted to 6,000 ETB in cash for each recipient and was deposited in the recipients' bank accounts.
- Budget contributions by the Global Fund, GABI, CDC and UNICEF of 8.7 million ETB to AACA Mayor's Office for income support and food distribution programs
- Special programs managed by federal or AACA authorities and sometimes delivered by third parties (NGOs, etc.) supported vulnerable groups at city level including Urban Productive Safety Net Program (managed by BoFED[19]), Temporary Direct Support (FSDSNA), Homeless support (MoWCY), Legal aid (EWLA), psychological support (VSO) etc.
- The WFP provided 8 million ETB which supported 5,100 recipients under the Temporary Direct Support program.
- UN Women offered 200,000 ETB worth of food, clothing and hygiene items donated to the Tikuret Women and Children Association.
- UNILEVER offered 3,500 soap bars
- UNICEF offered 210,000 soap bars in coordination with AACA- JCFSA[20].

At the sub-city level, two new offices (departments) were formed and were tasked to deal with COVID-19 namely, the Office of Youth and Voluntary Mobilization and the Village-Centered Office. A Task Force (Command Post) was also formed in the sub-cities as well as in all Woredas to co-ordinate different institutions including, the Culture, Art and Tourism Office, the Peace and Security Office, the Food and Medicine Control Authority, the Trade Office, the Health Office and the Police Department. A Distribution Committee under the Command Post was formed to mobilize and distribute resources at sub-city level. The work undertaken by this task force was reported on a weekly basis – Woredas reported to sub-Cities and these in turn reported to the AACA Mayor's Office.

The sub-city level public health response was coordinated by the Health Secretary of each sub-city. For example, in Bole sub-city, the Public Health Emergency Operation Center (PHEOC) was formed to respond to the pandemic and comprised 18-25 staff at the central office and 12-15 staff in each district, who were grouped into 3 teams.
- Team 1: The case management team, focused on identifying and confirming COVID-19 cases.

- Team 2: The contact tracing and follow up team, focused on identifying infected persons through confirmed patients and made decisions on whether a patient could stay at home or would need to be hospitalized.
- Team 3: The rapid response team, focused on assessing areas with COVID-19 suspected cases based on reports from iddirs and neighbourhood associations ("rumour reporting" via social networks).

This initiative was supported by the sub-city budget (for the period March-June 2020) including the AACA disbursement of 7.7 million ETB per sub-city. Overall, in the 10 sub-cities, 134 teams were formed. each team comprised 2 health officers, one volunteer (mostly teachers) and a police officer.

Finally, grassroot level actions were supported by the Social Affairs Bureau through iddirs. This included organizations which normally focused on other health-related issues but found themselves dealing with COVID-19 related challenges. An example of that is the People Living with HIV (PLHIV) association which supported 66 people who were living with HIV and faced challenges due to COVID-19 (financial support provided by Save the Children).

4.3 Examples of community-level social support

Support initiatives during the state of emergency in Addis Ababa

Addressing equity and inclusiveness issues leads to improved well-being and healthier cities (WHO, 2012a; WHO, 2012b):

"The people living, working or passing through the city are the center of concern as both the beneficiaries and creators of better health. Not only the people whose health appears to be most at risk but also the whole local community need to be considered".

Vulnerability can vary depending on the issue that is tackled, and the criteria set. Vulnerability means being at risk of poverty or social exclusion because of physical disabilities, age factors, ethnic origins and/or lack of housing. Vulnerable groups are also those who have traditionally been victims of violence and consequently require special protection (IHRC, 2020).

Neighborhood playground
© Oana Baloi

As identified by the 2020 Humanitarian Needs Overview (UNOCHA, 2020), vulnerable social groups that are at a greater risk from the pandemic are women, children, persons with disabilities, older persons, internally displaced people (IDPs), returnees and refugees. However, the degree of vulnerability of the groups varies when it comes to health and social factors. People with low income are more likely to live in built environments without basic services and this contributes to poor health. Children and older people are especially vulnerable not only because of biological vulnerability but because of their income status as well (WHO, 2012a).

During the pandemic, governance bodies at all levels were mobilized to tackle the social crisis. As mentioned, the central and local governments set up temporary task forces with tasks to manage money, material and human resources to undertake social support activities. Federal ministers as well as the deputy mayors of Addis Ababa were fully engaged. These task forces were involved in awareness creation, identification of and support to vulnerable communities, organizing youth volunteers and identification of areas where there was high density of vulnerability in order to target priority assistance.

The groups targeted for support through various initiatives included the homeless and street children, female victims in rehabilitation centers, female students in boarding schools, women immigrant returnees from Middle Eastern and neighboring countries, low-income parents, women with disabilities, security and police forces, poor women/girls who are victims of sexual and gender-based violence as well as children who are victims of violence (MoWCY, 2020; AACA, 2020; BSC, 2020; Interviewee R10).

The examples listed below, were selected to show the mechanisms used and the main vulnerable group support activities carried out especially for groups that were more vulnerable to the pandemic. The examples give a broad general overview on the ability, capacity and potential of the governance system during a health emergency. For indicative purposes, we investigated the following:

Federal level: The Ministry of Women Children and Youth (MoWCY) – during the start of COVID-19 pandemic, this Ministry was mandated by the GoE to give special attention to volunteering activities and homeless people (MoWCY, 2020).

Regional Level: The Addis Ababa City Administration (AACA) – its sectoral offices played a key role in the effort to support vulnerable groups in Addis Ababa during the pandemic.

City Level: Bole sub-city – an administrative unit whose remit covers an area with diverse urban functions, pandemic hot spots, mostly planned and some unplanned areas.

Local level: Bole Woreda 03 - a sub-unit of Bole sub-city.

Mobilization of existing institutions (including NGOs and grassroots organizations) was complemented by newly set-up institutions (task forces, etc.) which were critical for

Table 4.1: Special organizational units and allocated budgets

Organizations	Budget	Special units set up during the pandemic
MoWCY	155,720,872 ETB plus 57,116,380 ETB for materials, of which 1 million ETB was direct support to AACA, funding for 2 homeless centers, 18,848,009 for materials in Addis Ababa and 200,000 ETB to women rehabilitation centers.	Task force: WoWCY, Attorney General, Federal Court, Police Commission, Ministry of Health, Women and Children Affairs Bureaus.
AACA	1 billion ETB	Committee on reopening of schools 6 main committees and 6 technical committees - formed to evaluate 30 health facilities owned by the private sector City cleaning and disinfection committee
Bole sub-city	7.7 million ETB	Command post: Culture, Art and Tourism Office; Peace and Security Office; Food and Medicine Control Authority; Trade Office; Health Office; Police Department; 134 teams formed to visit households; 2 health officers; 1 volunteer (mostly teachers) and 1 police officer; Public Health Emergency Operation Center (PHEOC) comprised 18-25 staff, 3 teams: case management team, contact tracing and follow up team and a rapid response team; two new offices: Office of Youth and Voluntary Mobilization; Village-centered Office Resource Distribution Committee
Woreda 03 - Bole sub-city	Not specified	PHEOC team - comprised of 12-15 staff

Source: MoWCY, 2020; AACA,2020; BSC, 2020; Interviewee R07

mitigating the crisis. Coordination through a Command Post at sub-city and Woreda level was key in ensuring efficient distribution of critical life-saving food and other materials to the most vulnerable groups. Special units set up in the sample cases to tackle the pandemic as well as budgets initially allocated are shown in table 4.1 above.

Sub-cities and Woredas were at the forefront of service delivery. Civic engagement was facilitated through the formation of the Youth and Voluntary Mobilization Office. The public health response as well as emergency assistance to vulnerable groups were coordinated at sub-city and Woreda level in order to track, trace and manage cases and to manage the distribution of resources. Active mobilization at local level yielded significant benefits in terms of resources gathered per capita and in absolute terms. To illustrate this, Table 4.2 shows the amounts of resources raised from other sources (donors, etc.) for the case studies at hand, in addition to the budgets allocated from federal and local sources shown in Table 4.1.

Table 4.2: Resource mobilization and distribution during COVID-19 by selected organizations and institutions

Resources mobilization and distribution	Organizations/ institutions			
	MoWYC (Data until 08/2020)	AACA (Data until 11/2020)	Bole sub-city (Data until 08/2020)	Bole woreda 03 (Data until 08/2020)
		Addis Ababa population = 3,568,626 Total area = 53998 ha	Bole sub-city population = 406,425 Total area = 12093 ha	Woreda 03 population = 31,679 Total area = 408 ha
Own budget/resource provided to support vulnerable communities/centers	1 million ETB for Addis Ababa	1 billion ETB	7.7 million	Not available
Mobilized resource for Covid19 - (cash + food + material) Total in birr	19,728,009 ETB	991,669,023 ETB (distributed 124,731,655 ETB) 8,066,560 (Addis Ababa Social Trust fund)	10,278,800 ETB	11,165,505 ETB
Beneficiaries	4.8 million people reached in AA	2,378,039 people	17,547 people	4957 people Rent waving for 2,565 commercial spaces and residential houses
Support centers receiving support	54 support centers	11 support centers	Police force	17 health centers
Mobilized volunteeres (all types)	30,815	453,945	4,741	
Households visited		42,182,726 visits	279,000 visits	
Donors - local, international, NGOs, private sector, associations, civic organizations	UN-Women; Voluntary Service Overseas International El Shaddai Relief and Development Association; Abadir Schools Development	Global Fund; GABI; CDC; UNICEF; Save the Children; 2,565 associations and individual donors; 106 private companies		
Details of the supported communities in Addis Ababa	MoWCY (2020) = The state collected 155,720,872 ETB in cash to support low-income groups and an estimated 57,116,380 ETB has been raised in materials. MoWCY (2020) = supported 31,106,751 people in Ethiopia •7 women rehabilitation centers in Addis Ababa (200,000 women); 2.4 million ETB was donated to women rehabilitation centers by ACCA Women and Children Bureau and the Dire Dawa City Administration Women and Children Bureau, • 2 homeless centers in AA, • 35 orphanages (2057 children) in Addis Ababa, • 10 women and child care centers (1,152 women and children) in Addis Ababa, • Kality Elders Center; Zewditu Hospital treatment center and Millenium Hall; "Born Again" mental health patients support center in Addis Ababa by AACA.			

Source: MoWCY, 2020; AACA,2020; BSC,2020; Interviewee R10, 2020; CSA, 2013; AACA integrated land information center; Addis Ababa City Atlas, 2015; AACA integrated land information center – Bole sub- city Atlas, 2014

Table 4.2 shows that very often, more resources per capita were mobilized at the Woreda level. This may indicate strength in the social bond at a smaller scale compared to the sub-city, city or national scale. Overall, the additional resources raised at sub-city level (Table 4.3) were significantly more than those allocated through federal and regional sources. These resources were allocated to beneficiaries in the form of clothing, food and protection equipment and significantly contributed to alleviating need for the most vulnerable.

Table 4.3: Resources raised by each sub-city in Addis Ababa

Sub-city	Resources estimated in ETB					
	Population	Unplanned pattern (%)	Clothing	Sanitation and hygiene materials	Food items	Total
Addis Ketema	333,795	86.2	118,055	1,044,409	10,519,842	11,682,306
Akaki Kaliti	238,355	19.6	633,160	3,148,777	24,364,833	27,631,665
Arada	278,194	55.3	428,500	1,090,449	9,905,752	11,424,701
Bole	406,425	14.0	523,920	2,427,741	35,298,049	38,249,711
Gulele	351,935	26.1	1,266,000	6,616,047	34,248,037	42,130,084
Kirkos	291,001	49.8	342,000	757,966	7,166,746	8,266,712
Kolfe Keranio	564,007	25.0	278,635	953,104	14,037,118	15,266,857
Lideta	265,286	56.7	N/A	1,027,853	6,060,325	7,088,178
Nifas SIlk Lafto	416,624	46.5	69,000	288,205	16,468,465	16,825,670
Yeka	421,624	26.7	86,250	2,683,908	11,926,720	14,696,878
Addis Ababa	3,568,626	40.6	3,841,020	20,038,460	169,995,888	193,875,368

Source: AACA, 2020; AACA integrated land information center; Addis Ababa City Atlas, 2015; CSA, 2013.

The main food items included flour, rice, dates, teff, cooking oil, flour, chicken, eggs, sheep, and cattle. Sanitation materials included alcohol for sanitizer manufacturers, glass and water tanks, sanitary items and hygiene kits. Clothing items included clothes, mattresses, bed linen, masks, gloves, safety gowns and blankets. Finally, basic services such as water and electricity were provided as the need arose (MoWCY, 2020; AACA, 2020; Bole sub-city, 2020; Interviewee R10).

All in all, the pandemic has indeed challenged solidarity and mutual support structures as well as the Government's social support system. However, various innovative support systems emerged to deal with the social crisis. Some of the more significant volunteering initiatives were driven by MoWCY. These included street and multimedia awareness creation, hand washing, soft enforcement of social/physical distancing measures, financial support mobilization, collection and distribution of hygiene kits, cleaning contaminated areas, blood donation cleaning and disinfecting services, distribution of food items to vulnerable groups and the police during public holidays and youth training on psychological health. Media outlets also developed a media spot on the need to reduce the risk of exposure of women, children, youth and people with disabilities

Income support for vulnerable groups in Addis Ababa

The Urban Productive Safety Net Program (UPSNP) is the main social welfare benefits program that the Ethiopian federal state operates. It amounts to USD 450 million annually of which, USD 350 million is funded by the World Bank. It supports low-income families and vulnerable people in 11 major cities including Addis Ababa and had 8 million beneficiaries for the period 2016 to 2021 (Bornstein, 2019). The UPSNP and its sub-components (Temporary Direct Support-TDS and Public Works) are social protection programs designed to enhance inclusive growth and development in urban areas by reducing poverty and vulnerability among the urban poor living below the poverty line (AABoFED, 2020).

These programs target the urban vulnerable community ("the poorest of the poor"), who are in vulnerable employment or urban poor households with no employed members or no regular income sources; households headed by elderly, chronically ill or disabled persons, households relying on informal income sources, street dwellers including children, homeless, and beggars (WFP, 2020).

During the pandemic, the UPSNP received more financial support from private, public and international organizations such as UNICEF and WFP. Thus, UPSNP gave out money in addition to the permanent support that it provided to the community. Table 4.2 below shows the support offered before and after COVID-19.

Table 4.4: Urban Productive Safety Net Program (UPSNP) support before and after COVID-19

Sub-city	Population	TDS no. of people	UPSNP no. of households	UPSNP support before and after COVID-19 (in ETB)	
				Before COVID-19 (360 ETB/HH/month)	After COVID-19 Additional 360 ETB/HH/month, for 9 months (donation from UNICEF + WFP)
Arada	278,194	230	2,930	1,054,800	2,109,600
Yeka	421,624	751	3,939	1,418,040	2,836,080
Addis Ketema	335,795	264	4,296	1,546,560	3,093,120
Kirkos	291,001	261	3,218	1,158,480	2,316,960
Nifas Silk Lafto	416,004	697	3,575	1,287,000	2,574,000
Bole	406,425	423	2,251	810,360	1,620,720
Akaki Kaliti	238,355	64	2,670	961,200	1,922,400
Kolfe Keranio	564,007	905	3,583	1,289,880	2,579,760
Gulele	315,935	357	3,584	1,290,240	2,580,480
Lideta	265,286	441	3,709	1,335,240	2,670,480
Addis Ababa	3,568,626	4,593	33,755	12,151,800	24,303,600

Source: MoWCY, 2020; AACA, 2020; Bole Sub-City, 2020; Interviewee R10

In addition, several beneficiaries who were not classified as vulnerable groups but were likely to be affected by the adverse socio-economic impacts of the pandemic, also received direct or indirect income support. Indicatively, the Addis Ababa Job Creation Agency (AAJCA) facilitated bank loans and land provision for production to SMEs, the Mastercard Foundation supported 24,000 enterprises and the GIZ[21] supported 30 agro-industry companies. Addis Ababa City Administration supported the construction of new clinics within the compounds of 513 schools, and 2,225 health professionals were hired in order to equip the schools for emergencies and to support necessary precautions to slow down the spread of COVID-19. The existing health providers had to be complemented by temporary treatment centers and isolation centers. These temporary centers could be integrated as part of a future health system development strategy.

Inside LRT Addis Ababa
© Blen Beyene

---

[21] Deutsche Gesellschaft für Internationale Zusammenarbeit

Chapter 5

Urban Form, Infrastructure and COVID-19

Urban form and infrastructure are major features of cities and affect urban productivity and health. Urban form reflects and structures the socio-economic organization of cities and consequently matters for resilience. Urban infrastructure is the backbone of city development, and its deficiencies hamper the function of the city. Addis Ababa's population is growing very fast, the city is expanding and densifying. Therefore, demand for infrastructure is increasing rapidly.

Aerial view of Addis
© Hilena Tafesse

Public health was one of the main factors contributing to the birth of urban planning at the end of the 19th century. It was often with public health in mind that urban infrastructures such as water, sanitation, green areas, transport, etc. were developed. This chapter will address questions on how the city's urban form is linked to the spread of the pandemic and how urban infrastructure and service provision have responded to the challenges of COVID-19. It will look at the city's form and density in relation to how the pandemic spread across the city and will present mitigation measures that have been implemented or could be adopted by the authorities

5.1 Urban density and urban mix

Population Density

Density and mix are key factors behind the efficiency of cities and their agglomeration economies. Higher population densities in a planned context can boost productivity, bring efficient and better access to services and reduce the need to travel. If they are not properly planned, dense urban environments can amplify congestion, offer low environmental amenity and quality of life, and may help disease to spread (Duranton and Puga, 2020).

Addis Ababa has seen considerable changes in mix of uses and density throughout its history. By conservative estimates, the current average nominal population density of Addis Ababa is estimated to be 77 inhabitants/ha, ranging from 27 inhabitants/ha in Akaki Kaliti to 409 inhabitants/ha in Addis Ketema (see Table 5.1).

Table 5.1: Nominal density of Addis Ababa in 2020

| Sub-city	Area (ha)	Population 2020* (a)	Population 2020** (b)	Nominal population density (a) (inhabitant/ha)	Nominal population density (a) (inhabitant/ha)
Addis Ketema	898	335,795	367,550	373.94	409
Arada	1,156	278,194	286,050	240.65	247
Lideta	1,240	265,286	276,350	213.94	223
Kirkos	1,626	291,001	299,700	178.97	184
Gulele	3,273	351,935	381,500	107.53	117
Kolfe Keranio	6,510	564,007	629,650	86.64	97
Nifas Silk Lafto	6,359	416,004	505,450	65.42	79
Yeka	8,230	421,624	546,300	51.23	66
Bole	12,093	406,425	507,400	33.61	42
Akaki Kaliti	12,093	238,355	336,000	18.90	27
Addis Ababa	53,478	3,568,626	4,135,950	66.09	77

Sources: *CSA, 2013; **UN-Habitat estimate based on Addis Ababa master plan projections

In actual terms, Addis Ketema (409 persons/hectare) has one of the highest population densities in the world. It is the most built-up sub-city in Addis Ababa where green and open spaces account for only 3% of the total area.

during business hours for work, shopping, etc. There can hardly be a better example of an area where local planning is desperately needed in order to implement healthy city principles.

Figure 5.1: Population density map of Addis Ababa based on CSA 2013
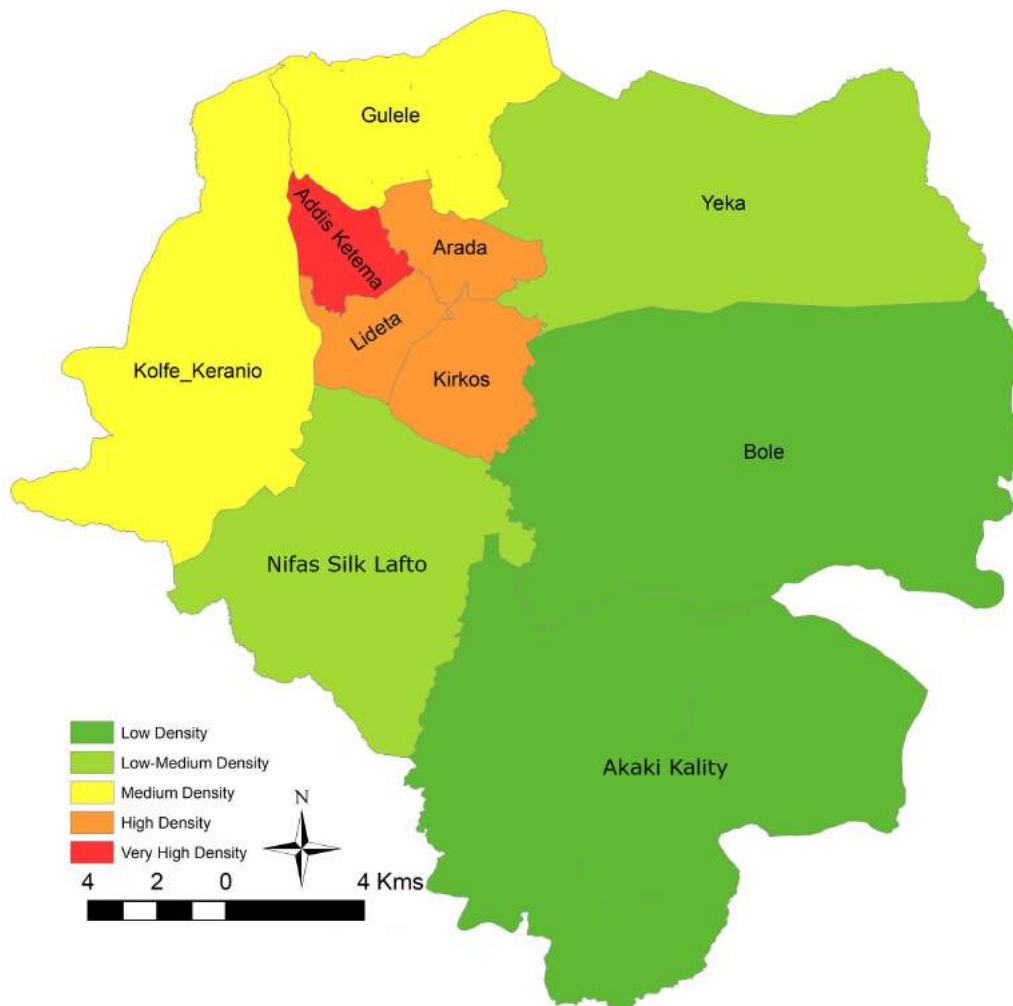
Source: Authors

total area. It also has the highest percentage of unplanned urban fabric in the city, which accounts for approximately 86% of its area (see Table 1.3). Currently in Addis Ketema, business buildings are going up on a plot-by-plot basis, which may not necessarily increase the resident population but is already affecting the built form and will definitely increase the number of people using the area

The least dense sub-cities are Akaki Kality and Bole though some of the Woredas of these sub-cities have high densities especially in the areas closer to Addis Ababa's city center or around secondary centers. Addis Ketema and Bole will be used as case studies in order to explore if urban form and COVID-19 prevalence are somehow correlated in Addis Ababa.

Mix

Addis Ababa had been known for its socio-spatial mix. However, due to urban re-development and massive residential expansion, the city is losing its neighbourhood-level variety of uses. Business activities cluster in the center, and residential neighborhoods mushroom in the outer suburbs. This type of land-use segregation generates traffic and leads to disconnected spaces. The IHDP condominium complexes often are one of the segregating elements. They are located mostly in the outskirts of the city (see Figure 5.2) and have high density and poor connectedness (World Bank, 2020). The poor connectedness, low mix and high density of these condominium sites favor long trips, high traffic generation and social segregation. The eastern part of Addis Ababa is particularly affected.

Figure 5.2: Location of condominium neighbourhoods in Addis Ababa in 2015
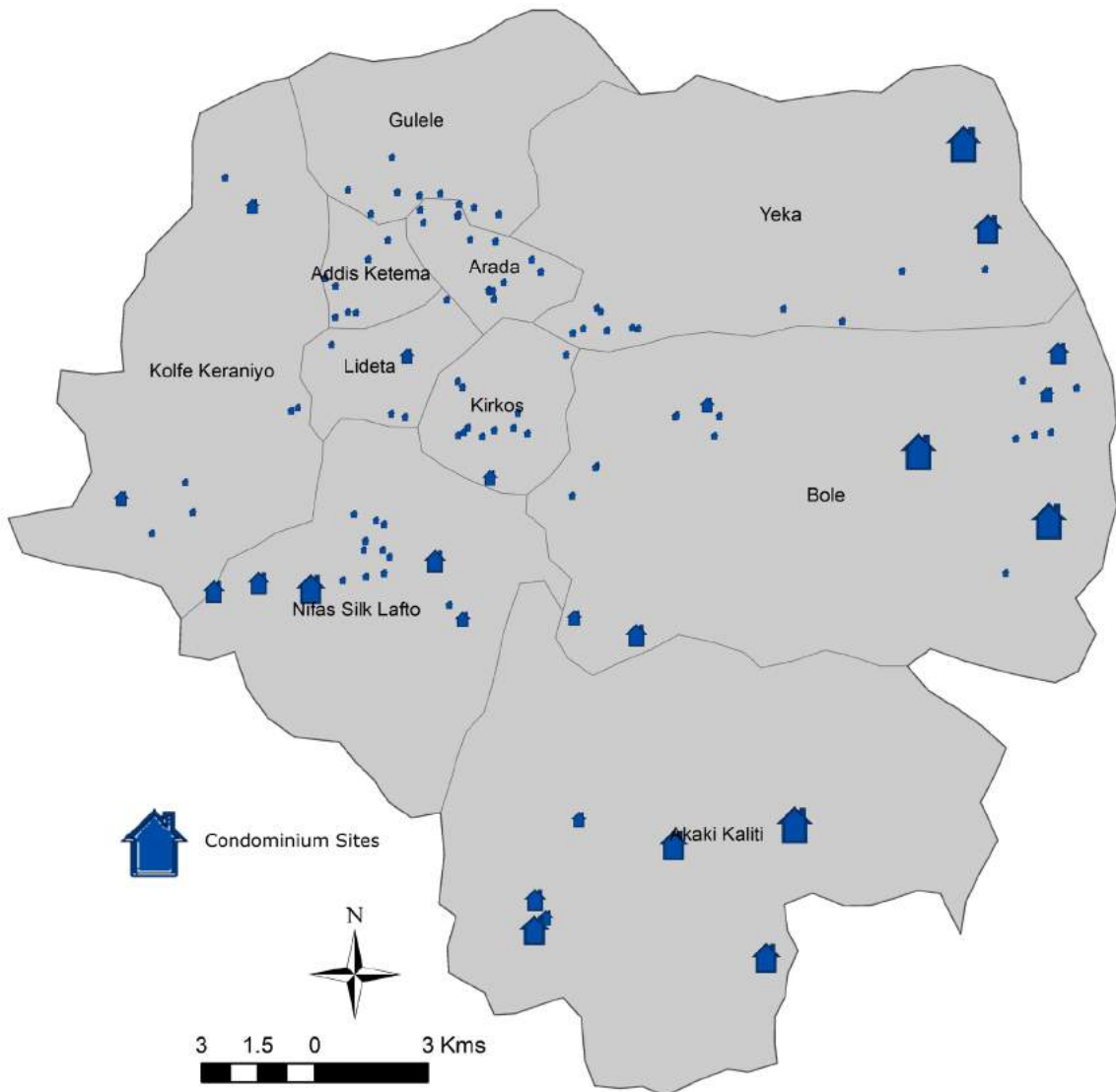
Source: Authors

5.2 Marketplaces and Centrality

Marketplaces are historically known as hot spots of disease transmission in cities. Marketplaces cause large gatherings of people in one location thus facilitating the propagation of disease—COVID-19's alleged patient zero was a market salesperson in Wuhan, China.

Addis Ababa's population heavily relies on open-air markets for sustenance as they are accessible, and cheaper for retail as well as wholesale trade. Additionally, sales are done by small scale private producers who offer little standardization and therefore the quality of goods varies significantly between sellers. Physical presence and personal inspection are customary before buying items.

Due to the tropical and sub-tropical climate of the country and the lack of reliable refrigeration chains, most products perish quickly. Market vendors and retail customers alike, do not buy in bulk with intention to store the goods but travel frequently and engage in face-to-face shopping. Payment for goods is done in cash and the goods are bagged only after physical inspection and selection. All these practices exacerbate the risks of spreading COVID-19 and make contact tracing impossible through conventional means.

Existing marketplace situation assessment

Markets are disproportionately located close to the urban core of Addis (see Figure 5.3). Addis Ababa's marketplaces have narrow circulation corridors, poor infrastructure, and lack solid as well as liquid waste management facilities. The Addis Structure Plan (2017) mentions that loose enforcement of traffic regulations in the areas around marketplaces has resulted in low compliance in terms of parking and accessibility of people with special needs.

Mercato
© Abel Estifanos

Figure 5.3: Marketplace size, distribution and population density in Addis Ababa
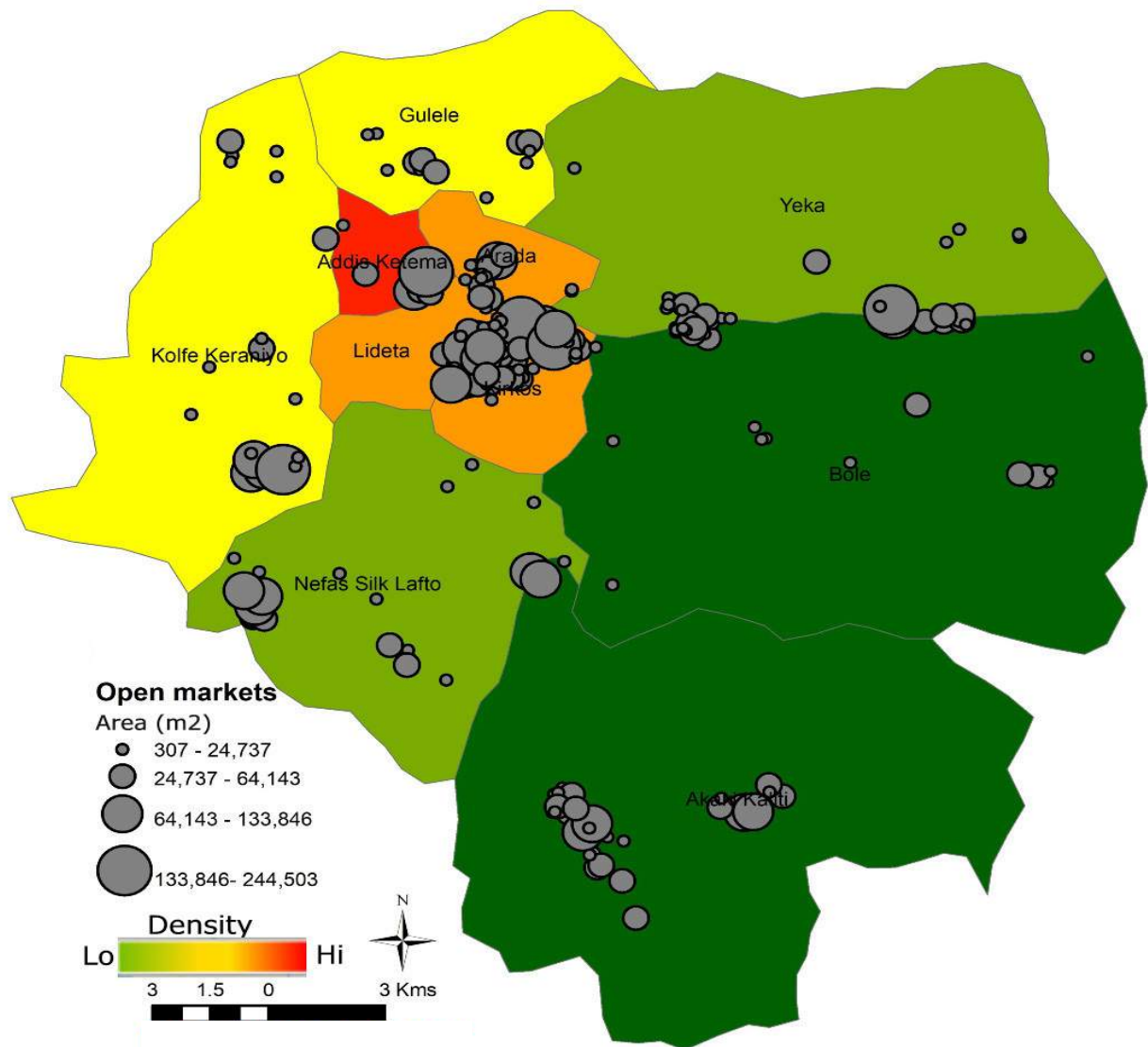
Source: AAPCO, 2017; Authors

The 2017 Structure Plan aims to solve these issues by introducing new sub-centers in addition to pre-existing major centers, to serve the eastern, western and southern parts of the city (AAPCO, 2017). Furthermore, the plan foresees new secondary centers (Eastern, Southern and South-west Centers) to be complemented by tertiary and Woreda centers.

Measures to contain COVID-19 in the marketplaces of Addis Ababa

Restrictions on any type of marketplace were unthinkable in Ethiopia prior to the pandemic. Not only do markets increase food security but most vendors rely on the daily operation of markets for their survival. At the onset of the pandemic however, swift action was taken to relocate Atikilt Tera (the largest fruit and vegetable market in the city) to a large open space called Jan Meda. The relocation was done on 7 April 2020 when the

Figure 5.4: Aerial view of Atikilt Tera in January and November 2020

Source: Image © 2021 Maxar Technologies Google Earth

total reported case load in the country was just under 50 persons.

In addition, most open-air markets have started to operate queue lines and to use barriers in order to enforce social distancing between shoppers and vendors. Hand-washing stations have been placed in streets at the entrance of large semi-formalized and formalized markets. Malls and supermarkets do thermometer checks, apply mandatory hand disinfection and face-mask cover, and support social distancing through ground markings.

Figure 5.5: Aerial view of Jan Meda in March and April 2020

Source: Image © 2021 Maxar Technologies Google Earth

Although markets were expected to be one of the major propagation centers of COVID-19, no special testing has been undertaken on vendors or customers and therefore, the extent of the spread of COVID-19 due to markets is unknown. However, in the case of Atikilt Tera, the area of the market has grown from 6,000 Sq. meters to 30,000 Sq. meters, significantly relieving congestion. Additionally, the market is now further out to the west which might have a re-balancing effect on the pressures that the infrastructure of the city center is facing. However, in Jan Meda, the Addis Ababa Trade Office knew and had

prepared for 600 "legal" operators, but 1,800 traders showed up on the day of parcel allocation. This number does not include the ancillary professions that make a living in the market by offering support services to vendors and customers.

The example of the Atikilt Tera relocation shows that in order to support efforts to manage the pandemic, unplanned markets should be formalized and/or merged with formal markets, waste management infrastructure should be provided and sanitation stations should be installed on site.

mains unknown. Understanding a pandemic is not only about understanding the characteristics of the virus from the perspective of virology. Assessment and action of spread patterns, containment and mitigation should take socio-economic and living patterns into account thus making urban planning and spatial analysis useful instruments for the analysis and mitigation of pandemics.

In this section, the report will analyze the patterns of the pandemic in time and space. We will use GIS to assess patterns in relation to parameters like population, area size, den-

Street vending
© Abel Estifanos

5.3 Measuring the spread of COVID-19

Although research on the COVID-19 pandemic is attracting a lot of research attention worldwide, a lot re-

sity and socio-economic characteristics. Even though the findings are in some ways inconclusive, they clearly highlight the need for any mitigation action to be informed by a solid understanding of the spatiality of the pandemic. This solid understanding translates into accurate spatial-demographic statistics about the existing population, critical infrastructure

mapping, spatialized understanding of social need and resource mobilization as well as testing, containment and vaccination.

With that in mind, the pandemic will be analyzed across time to identify peaks and their causes (holidays, mass gatherings and so forth). Subsequently, the pandemic's progression pattern in space and time and in relation to sub-city population size, built-up area, available infrastructure (medical centers etc.) will be examined. Next, a comparative analysis of two Woredas will be carried out in relation to the number of COVID-19 cases as well as to their urban morphology. Finally, GIS will be used to verify the auto-correlation of data and the spatial characteristics of the pandemic across the city (hot spot analysis).

Data available from the Addis Ababa Health Bureau (AAHB, 2021) shows the aggregate number of daily cases by sub-city and by Woreda. During the early stages of the pandemic, the cases increased nearly six-fold within one month. They doubled again between June and July 2020. Then they increased three-fold in August 2020.

The spike in August shows the link between the number of tests and the number of cases identified. August was set as a campaign month by the Prime Minister's Office and the Ministry of Health. As soon as the campaign was over in September, the number of cases went down by nearly 50%. Cases dropped again in October and rose slightly in November. Case numbers continued to grow slowly until January, but in February there was another sharp peak.

The pandemics progression in time

Figure 5.6: Monthly COVID-19 cases May 2020 to February 2021 (positive test results)

Source: AAHB, 2021

However, because testing numbers fluctuate, in order to make any claims about the course of the pandemic, it is important to refer to the positivity rate (% of positive tests) and to bear in mind the biases inherent in the testing.

Table 5.2 Monthly Tests and Positivity rate

Month	Monthly tests	Monthly positive	Positivity rate
May 2020	–	531	–
June 2020	–	3,046	–
August 2020	163,433	20,228	12.4
September 2020	108,732	9,527	8.8
October 2020	94,100	8,400	8.9
November 2020	95,756	9,612	10.0
December 2020	113,520	10,610	9.3
January 2021	123,228	11,421	9.3
February 2021	126,522	16,168	12.8

Source: Addis Ababa Health Bureau

The table shows that the positivity rate has gone up steadily although the spike in August can be attributed to the testing campaign. In November, the number of tests remained more or less at the same level as in October but total positive cases went up. The same can also be witnessed between January and February 2021. The number of tests differs by approximately 2.5% but the positivity rate was up by almost 38%. Given this, it is safe to assume that either the testing is becoming more effective in identifying cases or it is more likely that the pandemic spread at an alarming rate following Christmas and Epiphany (Timket) celebrations.

5.4 The Spatial Distribution of COVID-19

The administrative boundaries of the ten sub-cities are based on natural features such as rivers, as well as major roads. As a result, sub-cities are very dissimilar in population size, area and available resources.

Cumulative COVID-19 cases per sub-city

At the onset of COVID-19, there were 15 times more cases in Lideta sub-city which had the highest caseload, compared to Akaki Kaliti sub-city which had the lowest caseload. The second-highest caseload was in Addis Ketema which has the highest population density and also has a very high percentage of unplanned areas (see Table 1.3).

By June 2020, COVID-19 cases were more evenly spread across the city. It was Bole which had the highest case numbers, five times as many infected people as in Akaki Kaliti, which had the smallest number of cases. Kolfe Keranio, with the second highest caseload, had 3 times more cases than Akaki Kaliti.

In July the ratio of highest caseload (Bole) to the smallest caseload (Akaki) had dropped to 2.7. The same trend continued in August – Bole had 2.3 times more cases than Akaki and 1.5 more cases than the second highest caseload (Kolfe Keranio). Not much changed until November 2020 when Bole had 2.6 times the number of cases of Akaki, and 1.5 times

In December, Lideta became the sub-city with the lowest case numbers. In December 2020 and January 2021, Bole's caseload was 3 times that of Lideta. However, in February, the distance between the highest and lowest i.e. Bole and Lideta, increased. There were 4 times as many cases in Bole compared to Lideta. In December 2020, January and February 2021, the gap between the first, Bole and the second, Kolfe Keranio, was also slowly growing.

Bole has consistently had the highest number of cases from June 2020 onwards and Akaki Kaliti has consistently had the smallest numbers through most of the period under examination, except for De-

Figure 5.7: Spatio-temporal evolution of COVID-19 cases
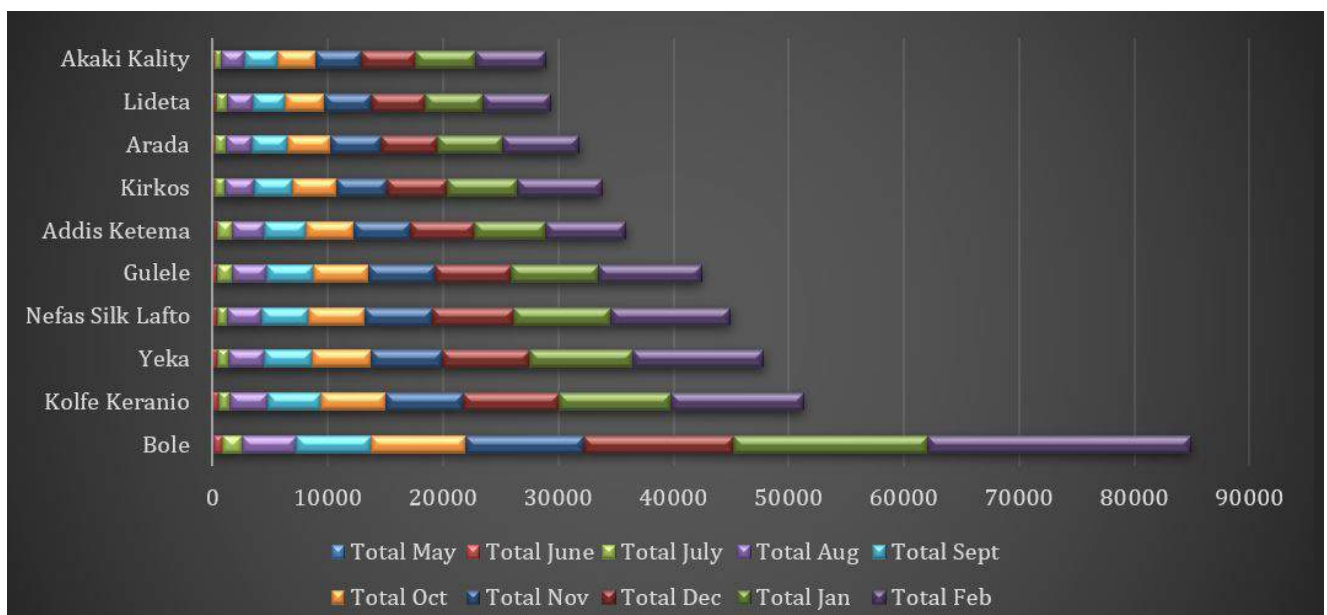
Source: AAHB, 2021

more cases than Kolfe Keranio which had the second highest number of cases.

cember 2020 to February 2021. Kolfe Keranio had the second highest recorded number of cases throughout the period of analysis.

Monthly cases by sub-City

The ranking of sub-cities according to COVID-19 caseload has stayed the same though Bole remains at the top of the list, Akaki does not appear to be at the bottom of the list any more due to its small population. However, Kolfe Keranio, Which has the

Table 5.3: Monthly number of cases by sub-city (green= lowest, red=highest)

Sub-city	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Bole	62	731	859	3103	1692	1790	2070	2694	3857	5880
Kolfe Keranio	47	475	354	2428	1370	895	1175	1644	1234	1909
Yeka	26	400	475	2268	976	934	1125	1379	1309	2474
Nifas Silk Lafto	29	357	445	2190	1028	851	945	1261	1241	2059
Gulele	44	309	955	1672	1057	837	814	997	858	1362
Addis Ketema	138	103	1088	1481	796	565	676	722	577	874
Kirkos	19	220	616	1673	757	526	591	851	785	1296
Arada	23	209	691	1350	730	754	616	591	646	1058
Lideta	133	85	665	1362	592	568	645	599	393	777
Akaki Kaliti	10	157	447	1390	806	541	622	707	508	908

Source: AAHB, 2021

throughout the period under examination except in May and July 2020 where the first and last remained the same but the other sub-cities changed in ranking.

Furthermore, the comparison of Sub-cities according to monthly cases per 100,000 people reveals an interesting pattern. Even

second highest number of COVID-19 cases, seems to have relatively low cases per 100,000 population during half of the months surveyed. In the last four months (November 2020 to February 2021), Addis Ketema and Lideta have been ranked as the least hit relative to their population.

Table 5.4: Spatio-temporal COVID-19 distribution per 100,000 people

Sub-city	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Bole	1.5	18.0	21.1	76.3	41.6	44.0	50.9	66.3	94.9	144.7
Kolfe Keranio	0.8	8.4	6.3	43.0	24.3	15.9	20.8	29.1	21.9	33.8
Yeka	0.6	9.5	11.3	53.8	23.1	22.2	26.7	32.7	31.0	58.7
Nefas Silk Lafto	0.7	8.6	10.7	52.6	24.7	20.5	22.7	30.3	29.8	49.7
Gulele	1.3	8.8	27.1	47.5	30.0	23.8	23.1	28.3	24.4	38.7
Addis Ketema	4.1	3.1	32.4	44.1	23.7	16.8	20.1	21.5	17.2	26.0
Kirkos	0.7	7.6	21.2	57.5	26.0	18.1	20.3	29.2	27.0	44.5
Arada	0.8	7.5	24.8	48.5	26.2	27.1	22.1	21.2	23.2	38.0
Lideta	5.0	3.2	25.1	51.3	22.3	21.4	24.3	22.6	14.8	29.3
Akaki Kaliti	0.4	6.6	18.8	58.3	33.8	22.7	26.1	29.7	21.3	38.1

Source: AAHB, 2021

Table 5.5 shows that except for Bole, there seems to be a 1-to-1 correspondence be- estimated). The sub-city area size seems to be unrelated to the total number of cases.

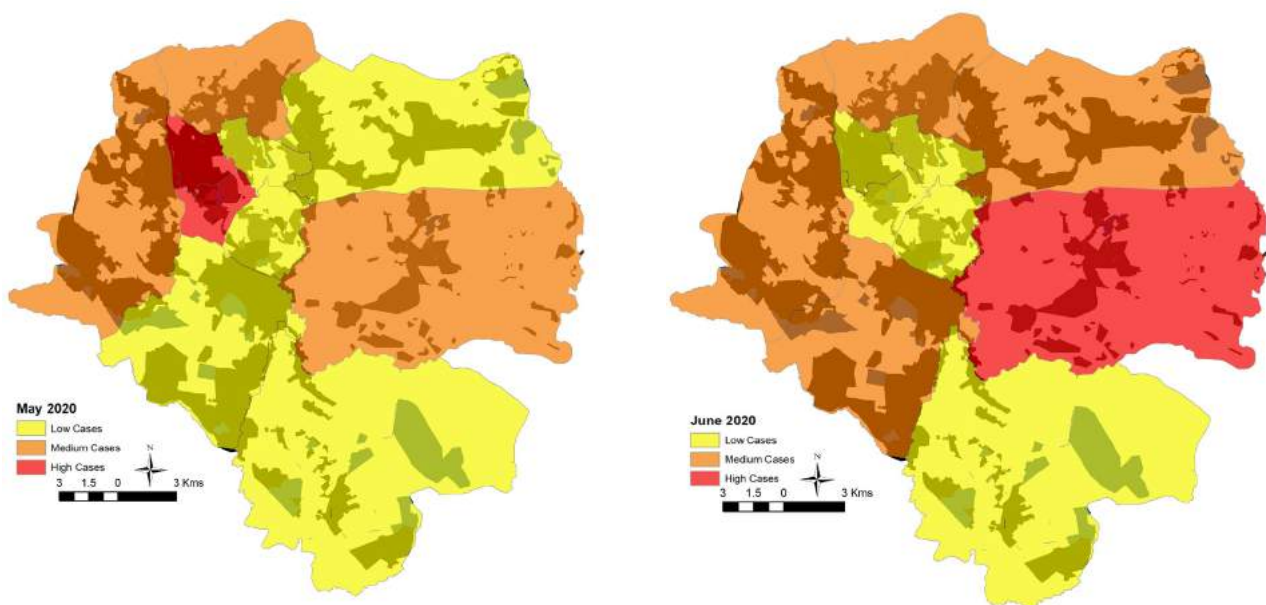Table 5.5: COVID-19 comparison matrix as of 28 February 2021

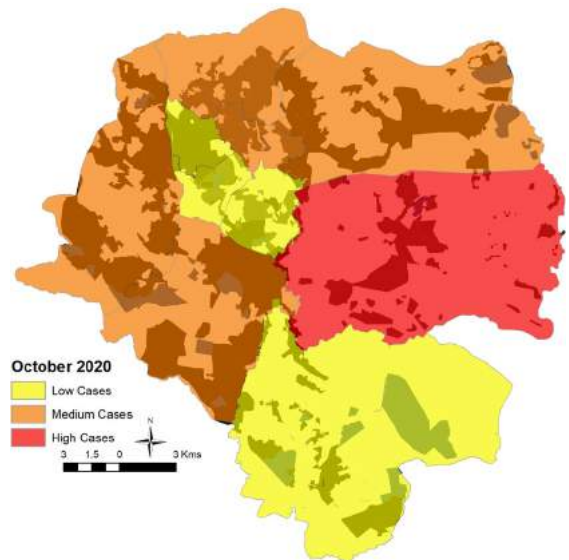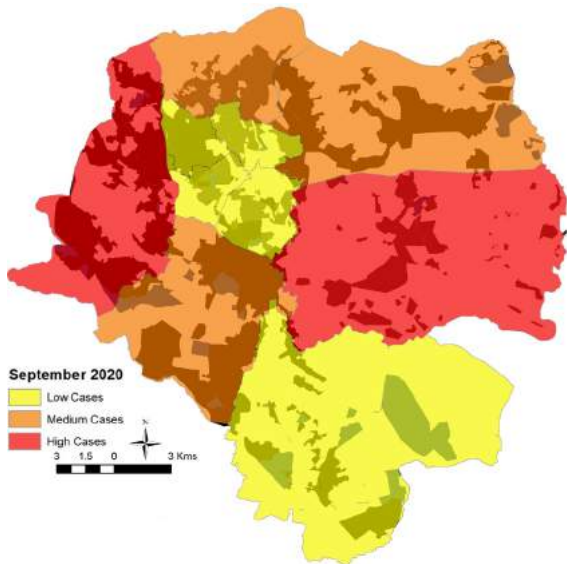| Sub-city	Total cases	COVID -19 rank	Population	Pop. Rank	Area	Area Rank	Density	Density Rank
Bole	22,738	1	406,425	4	12,093	2	34	9
Kolfe Keranio	11,531	2	564,007	1	6,510	4	87	6
Yeka	11,366	3	421,624	2	8,230	3	51	8
Nefas Silk	10,416	4	416,004	3	6,359	5	65	7
Gulele	8,905	5	351,935	5	3,273	6	108	5
Addis Ketema	7,020	6	335,795	6	898	10	374	1
Kirkos	7,334	7	291,001	7	1,626	7	179	4
Arada	6,668	8	278,194	8	1,156	9	241	2
Lideta	5,819	9	265,286	9	1,240	8	214	3
Akaki Kaliti	6,096	10	238,355	10	12,613	1	19	10

Source: AAHB, 2021; Authors

tween population size and caseload. It remains unknown why this is the case but, it may have to do with the ability of the population to afford testing or withhow Bole's population grew since the last census (i.e. Bole may be much more populous than currently

The map sequence below (Figure 5.8) shows how the pandemic started off from the urban core and quickly moved to the periphery of the city, mainly affecting Bole.

Figure 5.8: Addis Ababa COVID-19 Prevalence Progression (May 2020-Feb 2021)

July 2020
- Low Cases
- Medium Cases
- High Cases

3   1.5   0   3 Kms

August 2020
- Low Cases
- Medium Cases
- High Cases

3   1.5   0   3 Kms

September 2020
- Low Cases
- Medium Cases
- High Cases

3   1.5   0   3 Kms

October 2020
- Low Cases
- Medium Cases
- High Cases

3   1.5   0   3 Kms

November 2020
- Low Cases
- Medium Cases
- High Cases

3   1.5   0   3 Kms

December 2020
- Low Cases
- Medium Cases
- High Cases

3   1.5   0   3 Kms

January 2021
Low Cases
Medium Cases
High Cases
3 1.5 0   3 Kms

February 2021
Low Cases
Medium Cases
High Cases
3 1.5 0   3 Kms

The peculiarities of the infection data available

According to the Ethiopian Public Health Institute (EPHI), the federal government agency in charge of all the testing in the country, a comprehensive testing strategy is in place which is updated regularly to reflect the developing situation. Testing is directed based on the following parameters:

- Suspected Case: People exhibiting various symptoms of the infection.
- Contact Tracing: People associated with suspected and confirmed cases.
- People in Confinement: People subject to stationary lifestyle, this refers to people in prison, correction facilities and geriatric patients.
- Health Professionals: Health professionals whose work exposes them to above average number of patients.
- Community Testing: These are in the form of campaigns to test the general public but also focus on the vulnerable workforce such as construction workers.

It should be noted that general caseload statistics by sub-city or Woreda do not necessarily show where the real hot spots are, as the number of cases found depends on the number of tests done per sub-city and Woreda. Assuming that age and other demographic characteristics are equally distributed throughout the city, there would be need to weigh caseloads according to the size of the population of the spatial unit, in order to understand the relative importance of cases recorded per spatial unit.

In order to take these factors into account, attempts were made to obtain weekly testing data by sub-city or by Woreda. This type of data is however not available. Indirect approaches, such as an assessment of death rates was also not possible due to lack of relevant data. Therefore, the caseload maps show the absolute number of cases found in each spatial unit of analysis, but do not reflect the relative severity of the pandemic. Furthermore, the testing database only registers residential addresses of tested persons.

Table 5.6: Number of positive cases with unknown address

No	Subcity	No. of Woredas	Unknown address	Unknown residence as % of Positive Cases
1	Addis Ketema	9	673	14%
2	Lideta	10	1,182	26%
3	Akaki	11	324	8.1%
4	Arada	10	567	12.6%
5	Bole	14	2,371	22.5%
6	Gullele	10	717	12%
7	Kirkos	11	754	18.6%
8	Kolfe	15	1,031	15%
9	Nifas Silk	12	984	16.6%
10	Yeka	13	1,021	6.84%
	Total	115	9,624	17%

Source: AAHB, 2021; Authors

Accordingly, workplace hot spots will not appear at all when the spatial pattern of cases is mapped.

There are several cases where the Woreda of residence has been recorded as unknown. These are a constant occurrence across the 10 sub-cities, as shown above.

Lideta and Bole stand out, as nearly a quarter of all cases in these sub-cities is of unknown Woredas. This lack of information may be due to several reasons as listed below:

- Poor database management, either during transcription or during encoding.
- People do not know their Woredas because they are new to the city.
- People do not have an address, as is the case with residents of informal settlements.
- People are temporary residents (tourists, etc.).

Figure 5.9: Distribution of COVID-19 cases with unknown Woreda, by sub-city from March 2020 to February 2021
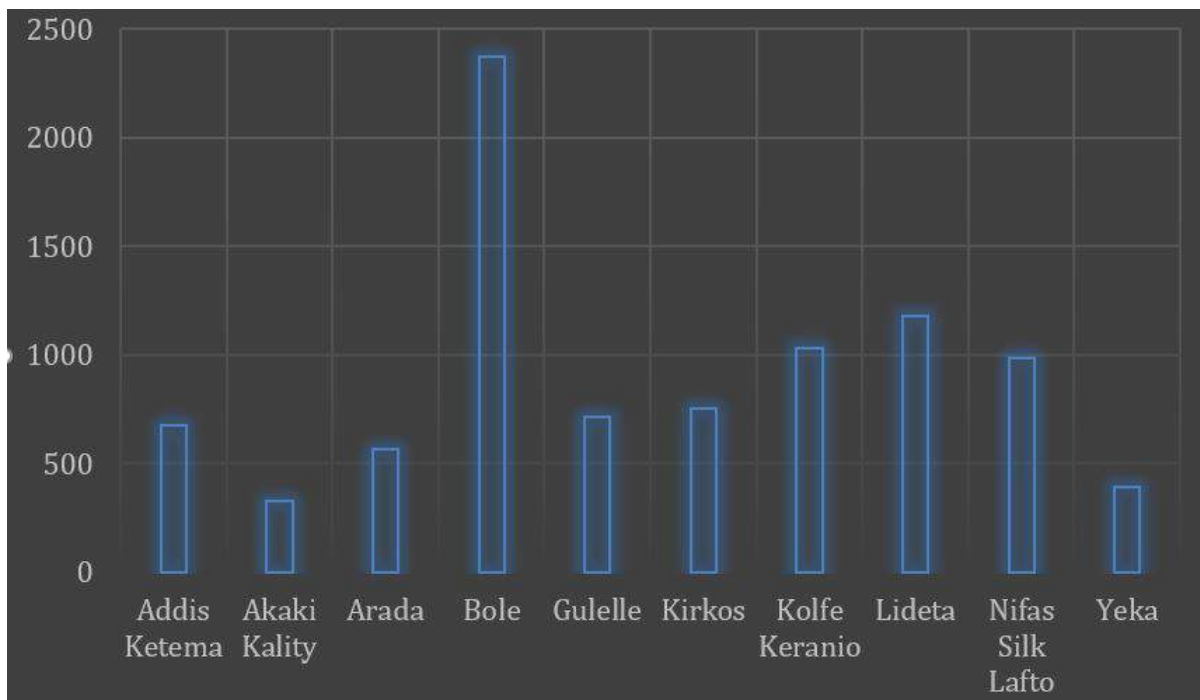
Source: AAHB, 2021

To corroborate findings, attempts were made to get numbers of testing done per sub-city. These were not successful however, the Home-Based Isolation Care (HBIC) Database also shows that Bole has the highest number of cases followed by Kolfe Keranio and Yeka; while the smallest caseloads are in Lideta.

Figure 5.10 Home Based Isolation Center records of people tested positive by sub-city from March 2020 to February 2021

Source: AAHB, 2021

In summary, these findings can be further interpreted as:

Explanation / Hypothesis 1: Testing bias. Bole sub city houses high income groups that are more likely and willing to get tested and can afford to stay in quarantine in their home. Inner-city slum dwellers do not get tested as frequently and cannot afford to self-isolate at home. Ease of accessing testing centers draws more people to Bole.

Explanation/Hypothesis 2: No testing bias. Bole and Akaki have the highest infection rates. They may register a lot of cases because big numbers of formal economy employees live there but work elsewhere in the city.

5.5 Urban form and COVID-19 impact

The analysis at sub-city level did not yield conclusive results and hence, this section goes further into a Woreda-level assessment of COVID-19 and the urban pattern and form.

COVID-19 analysis at Woreda level

Topologically, the Woreda distribution of COVID-19 is also inconclusive insofar as pointing out a few main sources of COVID-19 propagation.

Figure 5.11: COVID-19 Prevalence by Woreda from March 2020 to February 2021
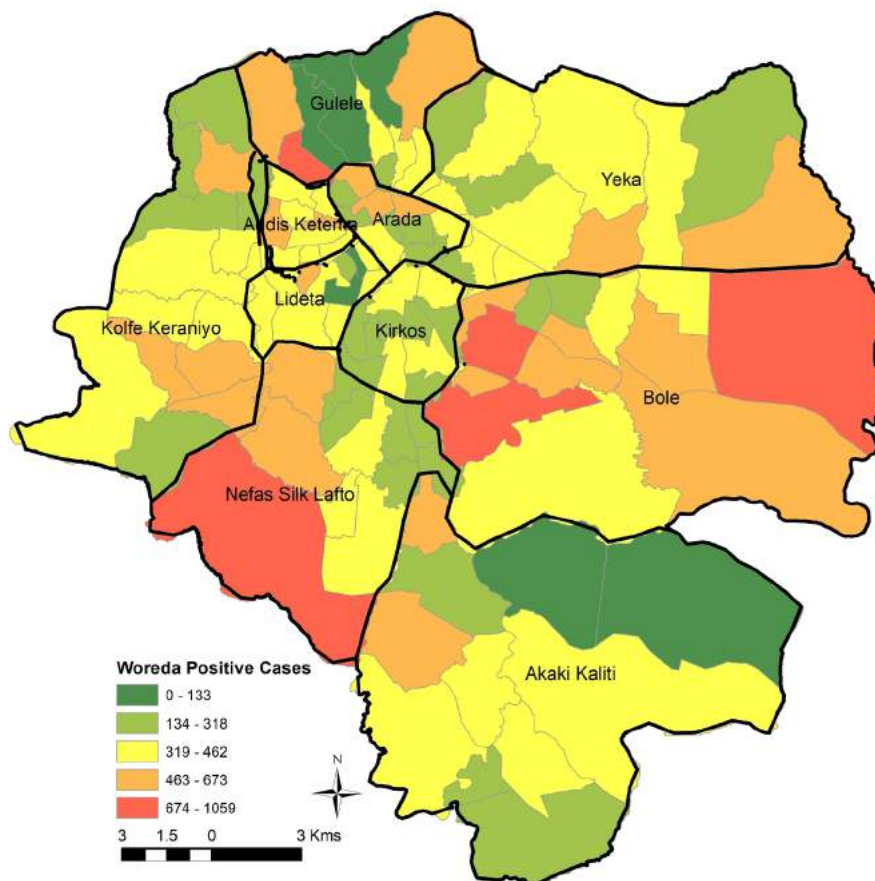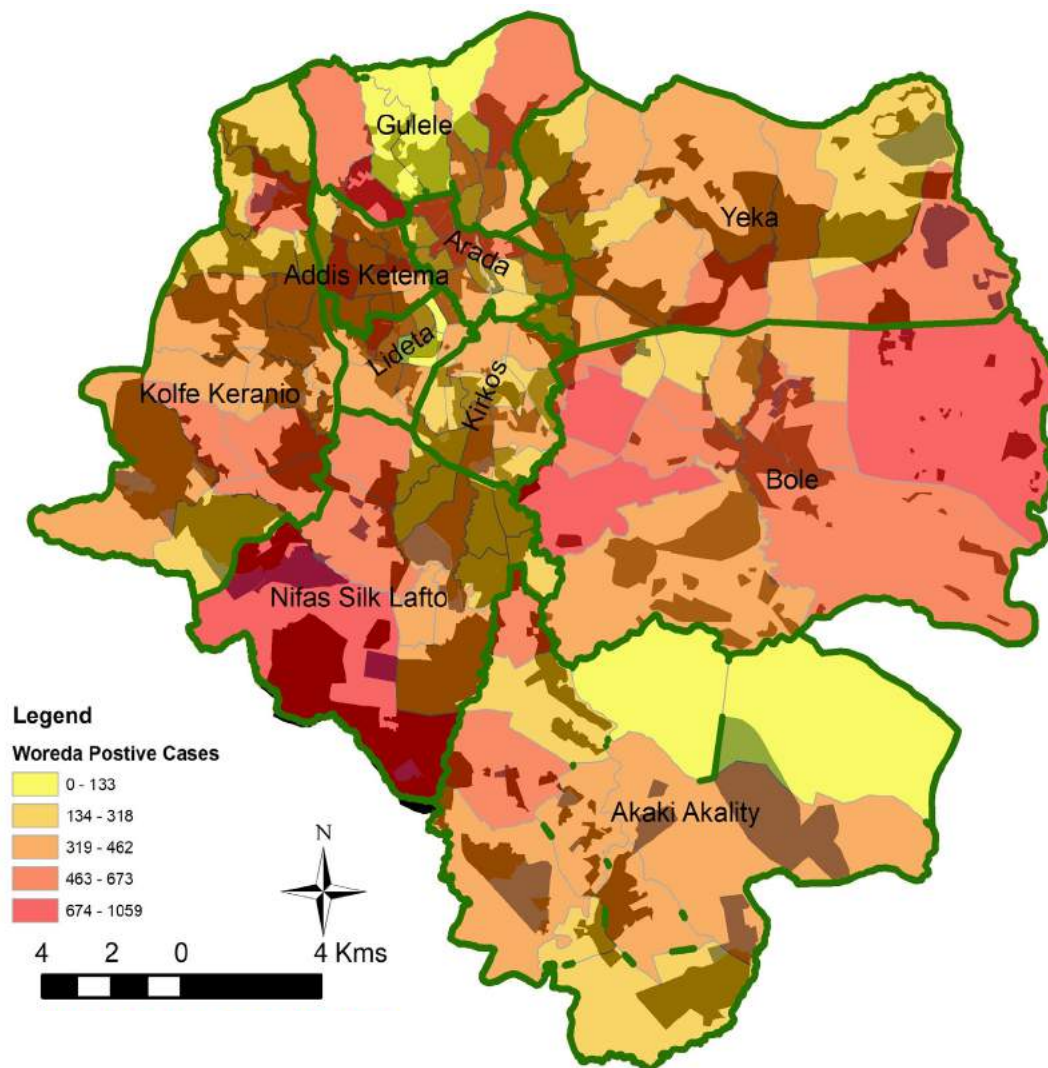

Source:AAHB, 2021; Authors

Urban form and functions were compared to Woreda caseload but this comparison did not yield any useful findings (see Figure 5.12) because people who live in a particular Woreda may have been tested in another Woreda and registered there.

sub-city, it became clear that the inner-city slums and the planned well-off part of the city have the most cases of people who tested positive, but listed Woredas as unknown. This means that all the possible explanations previously mentioned in this section

Figure 5.12 Urban Form and COVID-19 prevalence by Woreda from March 2020 to February 2021

Source:AAHB, 2021; Authors

In Table 5.1 we discussed the significant percentage of people who tested positive but did not provide their Woreda. When the "unknown Woreda" cases were aggregated by

might be correct (i.e. people who do not have a Woreda are either homeless/live in informal settlements; could be new to the city or could be transient residents and tourists).

It should be also noted here that the difference in cases between the most affected and least affected Woredas is smaller in absolute terms and as a percentage in the case of inner-city Addis Ketema compared to the case in Bole.

sis showed a positive Moran's I value which means that the distribution of cases in urban space is not random.

Several explanations may be offered, as below:

Figure 5.13: Spatial Auto-correlation Report from March 2020 to February 2021
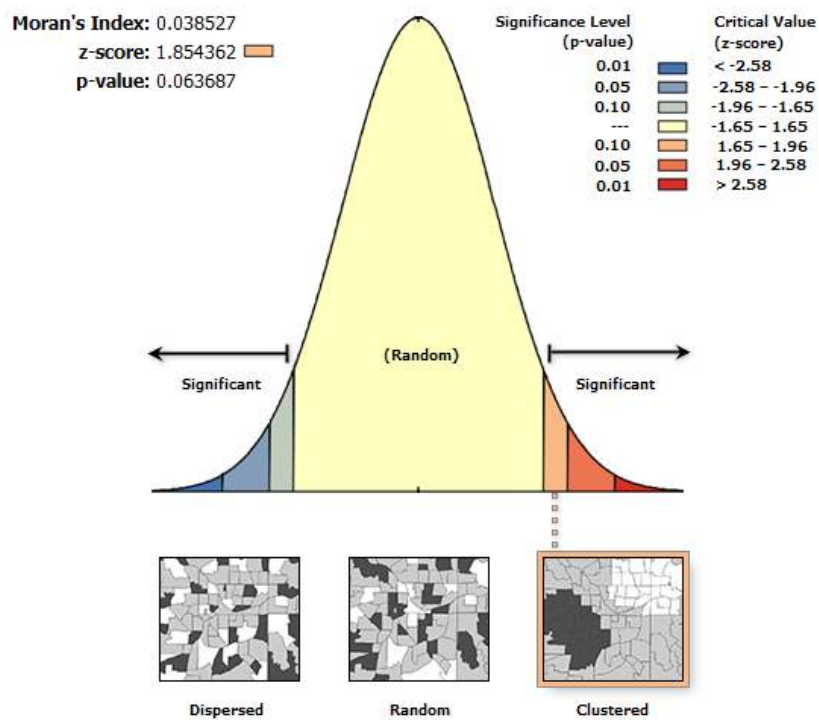
Given the z-score of 1.85436203556, there is a less than 10% likelihood that this clustered pattern could be the result of random chance.

Testing for spatial auto-correlation

As most of the findings of the report are highly reliant on secondary data, two spatial analyses were carried out at Woreda level in order to confirm whether the spatial distribution of cases is random or not.

Moran's I

The Moran's I auto-correlation analysis is used to test whether the geographical spread of the infection is random or not. The analy-

- The test results captured specific outbreaks in specific urban areas (but may have missed other hot spots or more diffuse cases altogether).
- The spread of the infection is geographically related; there is transmission from Woreda to Woreda.
- There is a clustering of high and low numbers which might be interpreted as localization of high and low positivity and infection rate.

However, Moran's I fails to inform on where the high and low case density clusters are located. For that reason, a hot spot analysis was conducted.

Hot spot analysis of COVID-19 cases[22]

The hotspot analysis is to identify spatial relations and their causes in addition to assisting with resource allocation problems.

The hot spot analysis singled-out 14 Woredas. 7 are classified as cold spots and 7 as hot spots. The remaining 101 Woredas were deemed "not significant". Bole has 5 of its Woredas pegged as hot spots and these are, Woredas 07, 10,11, 13, 14; Nifas Silk has one hot spot (Woreda 1) and Yeka's Woreda 13 is the other remaining hot spot. It is of interest to note that most of these Woredas include large scale condominiums and/or Industrial parks.

The seven cold spots are clustered around the geographical center of the city. Kirkos sub-city has 5 of them (Woredas 01, 02, 05, 06 and 11). Nifas Silk Lafto's Woreda 05 and Yeka's Woreda 06 are the two remaining cold spots. It is noteworthy that Nifas Silk Lafto and Yeka have one hot spot and one cold spot each while Bole (periphery) has the majority of hot spots and Kirkos (urban core) has the majority of cold spots (see Figure 5.14).

Figure 5.14: Hotspots and cold spots in Addis Ababa from March 2020 to February 2021
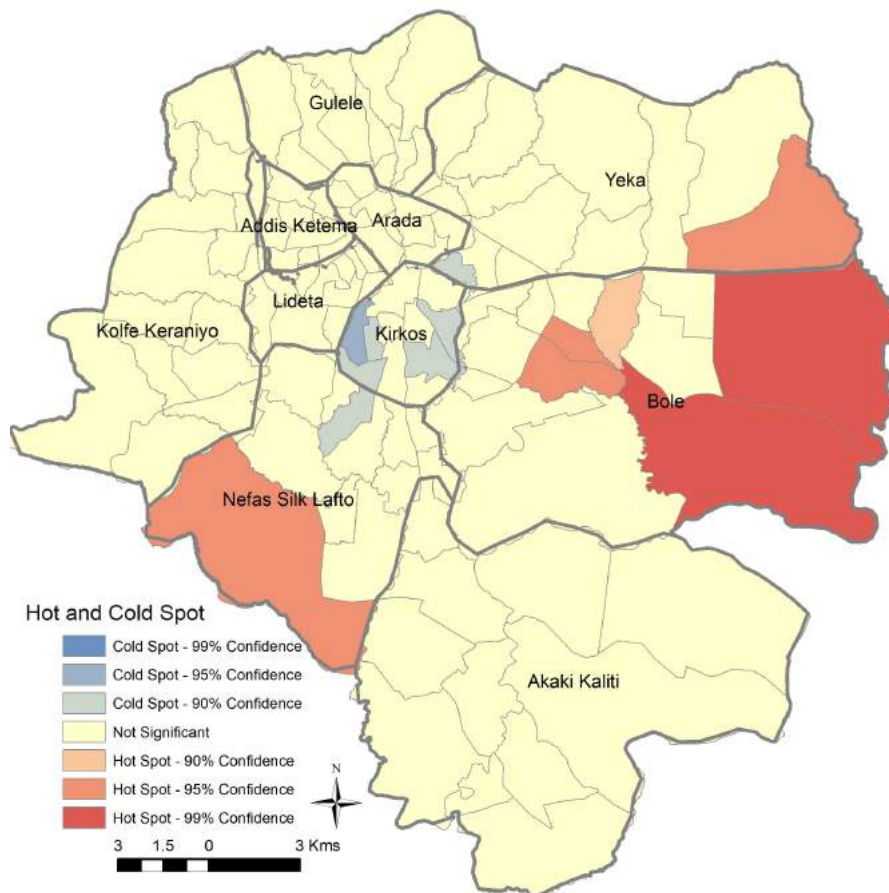
Source: Authors

──

[22] Given a set of weighted features, hotspot analysis identifies statistically significant hot spots and cold spots using the Getis-Ord Gi* Statistics. It is a test for randomness which identifies significant clusters of high and low values.

5.6 Spatial distribution of facilities used for social and health support

The analysis so far in this chapter showed that there is indeed a non-random clustering of disease hot spots in peripheral Bole and a cluster of cold spots in inner city Kirkos. This section will look into how social infrastructure facilities are allocated in urban space with an aim to understand the equitability implications of this spatial pattern.

Many elements of the urban realm affect our ability to flourish. Health is about relationships within the urban context. The social determinants of health include sustainable spatial planning and design, access to and fair distribution of social infrastructure throughout the city. Social infrastructure includes private and public open spaces, housing, academic and religious institutions, transport mobility and connectedness. When these are properly planned, they bring about social cohesion, safer environments and spatial equity.

The danger of community transmission appears larger in urban areas like Addis Ababa which have deep-rooted inequalities. The pandemic increased social vulnerability as it limited equitable access to public services such as health facilities, transportation, jobs and education (UN, 2020). Urban vulnerable residents faced severe challenges as they live in locations and settings far from basic infrastructure in the periphery or in the inner-city slum areas that are less conducive to good health.

Due to COVID-19 infections, hospitals and health centers faced increased pressure (Qian, 2020). To respond to the scarcity of isolation and treatment centers, public and private buildings such as schools, hotels, apartments and halls were used as isolation/quarantine centers to respond to the need. Figures 5.15 and 5.16 show the spatial distribution of the main health infrastructure in

Figure 5.15: Spatial distribution of Hospitals and Health centers by sub-city
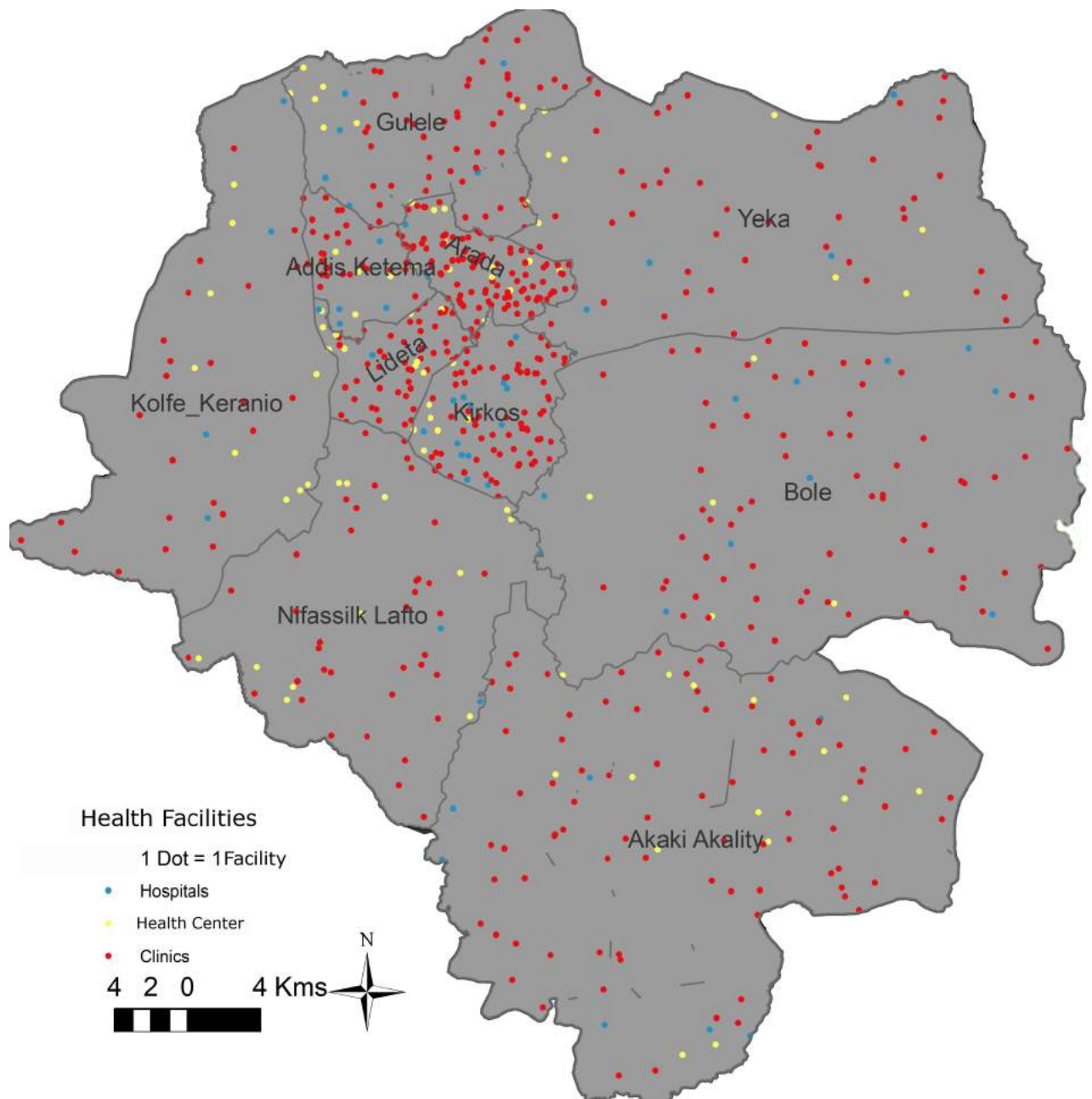
Source: AACA integrated land information center, 2015 - Addis Ababa City Atlas.

It can be seen from Figure 5.15 that health facilities especially hospitals in Addis Ababa are not distributedin a spatially balanced manner throughout the city but are clustered in the city center.

Figure 5.16: Number and spatial distribution of hospitals, health centers and facilities used as treatment centers for COVID-19, by sub-city
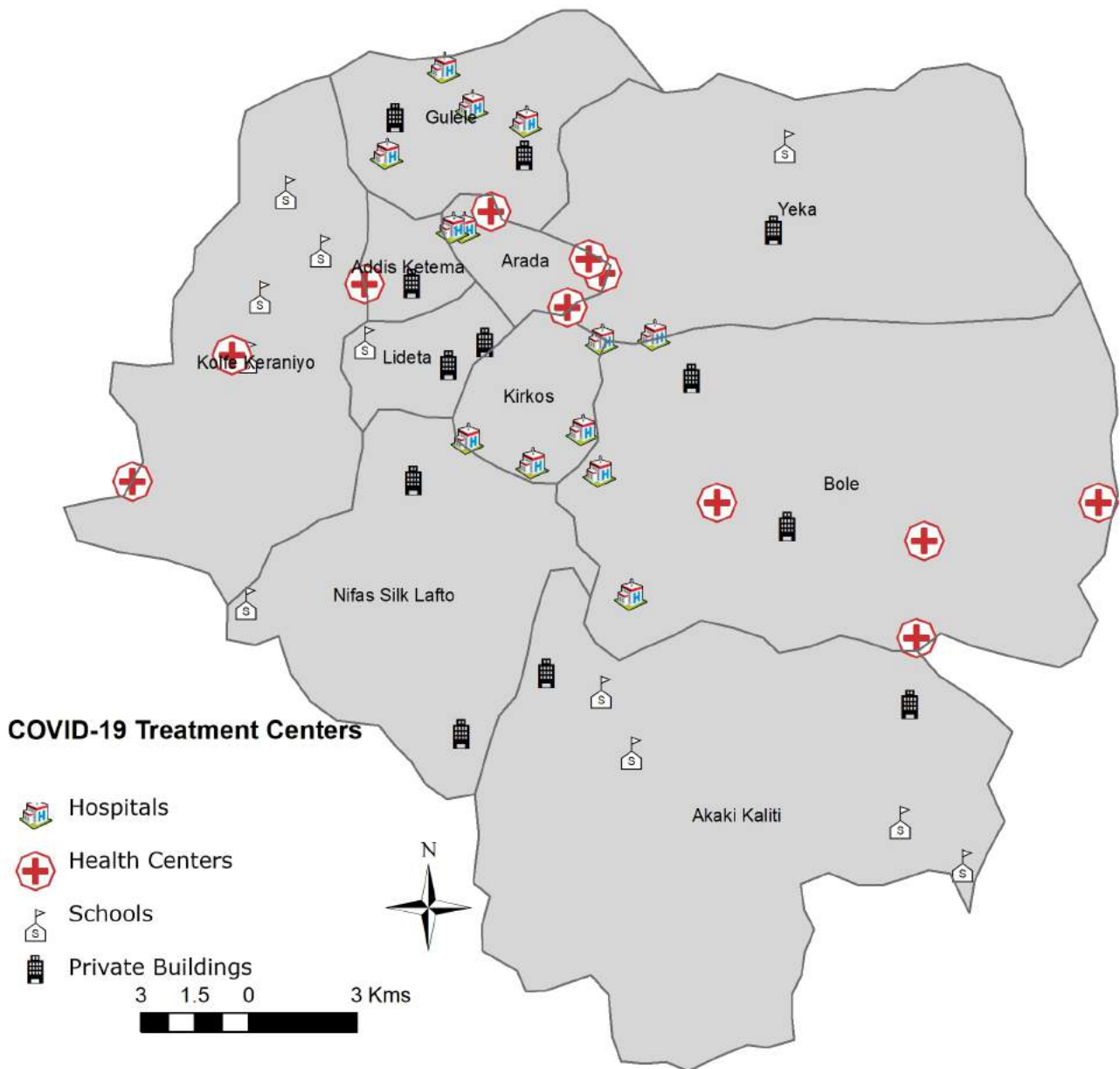
Source: Addis Ababa Health Bureau, 2020; Authors

Figure 5.16 shows the number and spatial distribution of hospitals, health centers and different institutions used as isolation centers for COVID-19. Unplanned areas in the city center appear to be better served than areas in the outskirts (especially in Nifas Silk Lafto, Akaki Kaliti and Kolfe Keranio). This imbalance which reflects the clustering shown in Figure 5.15, should be addressed in future rounds of infrastructure investment.

Chapter 6

A post-Pandemic Agenda for Addis Ababa

Skylight Hotel Addis
© Kaleab via Unsplash

6.1 Prerequisites for a healthy city

The health of urban dwellers is becoming a central concern in the rapidly urbanizing countries of the global south, especially since social gaps are growing between cities and regions and within cities. This is an urgent issue in cities where a large part of the population lives in slums. Poor housing conditions, lack of infrastructure, limited food supply and unemployment are among the causes of high mortality rates, high infant mortality rates, and a short life expectancy.

The links between health and planning should be understood within a wider context where mobility, access to public services as well as a clean environment are among the more obvious rights that are linked to planning. In other words, the way planning policy and practice shape cities affect the rights of urban dwellers in fundamental ways. This is the basis for developing the social determinants of health approach, defined by the World Health Organization (WHO) as the approach which looks into the "causes of causes" behind population health (Corbrun, 2009). These determinants include, but are not limited to, education, types of employment, terms of employment, access to food, housing, transportation, income level, social exclusion and health services.

Figure 6.1: Social determinants of health

Source: WHO, 2012b

This approach addresses a variety of reasons and contexts that shape everyday life in the city, emphasizing the role of planning as a significant factor affecting population health (Brown et al, 2016). Moreover, the pursuit of a healthy city is directly linked to health justice. The rights-based view of urban health suggests a pro-active, interventionist approach, rather than a purely market-driven approach. The healthy city, therefore, is not just a space that provides physical infrastructure such as sewage, electricity and water, or hiking trails and bike paths that allow city residents to exercise. A healthy city has a governance system which sees public health as a contributor to human wellbeing and urban justice and is ready to deploy adequate resources in order to improve urban health.

Importantly, the healthy city more often than not, requires political and institutional change. This type of change could bring to the fore actors and policies which would shape the city with reference to a broad set of health-promoting physical and social

features. In order to effect this change, a governance system is required which maintains participatory and democratic decision-making as part of a more egalitarian urban planning approach of the kind reflected for example, in "The New Urban Agenda" (United Nations, 2017). The New Urban Agenda calls for the provision of basic services to all city residents and for equal opportunities. It emphasizes measures which must be promoted in order to support better environments and improved urban resilience.

The shift in understanding what constitutes a healthy city is also linked to the mission of the field of public health and its historical connection to urban planning. In this report, it was not possible to describe this historical connection in detail but it is important to mention that the link between public health and urban planning goes back to the 19th century when cities like Vienna, London and Paris became centers of immigration, industry and capital accumulation as well as poverty, extreme inequality and segregation. These conditions led to high mortality and morbidity rates that affected immigrants and workers living in impoverished neighbourhoods, among others. They caused epidemics that swept through the city - such as cholera in London - crossed class hierarchies and affected the more affluent population. Suitable housing, planning regulations and the provision of infrastructure have eventually led to the decline in mortality and morbidity. At that point, a significant turnaround in the role of urban planning occurred. The diagnosis that there is a causal link between poor environmental conditions in the

industrial city and the outbreak of epidemics led urban planners to regulate the form and function of space with reference to aspects of sanitation and hygiene.

The turn in the study of urban health also implies a methodological shift, namely, mainstreaming health into the urban realm. In other words, instead of looking at health exclusively from a biomedical perspective and as a set of data, it is important to establish how health outcomes are linked to specific spatial and urban components. As illustrated in Figure 6.1, this should include an examination of a wide range of social and spatial determinants of health including among others: housing, open spaces, transportation, infrastructure, employment, health facilities, safety and education.

In Addis Ababa, planning for a healthier city would call for substantial improvement in the urban form, infrastructure and services of the city. Public health and urban planning should therefore be understood as complementary elements which could drive Addis Ababa's transformation. They both focus on the policies, practices and processes which influence the well-being of urban dwellers and effect not only physical changes but, also institutional reforms which promote urban justice. The approach taken in order to tackle the COVID-19 pandemic in Addis Ababa was a glimpse into how such a strategic approach towards urban health might be like.

The social determinants of health include access and fair spatial distribution of social infrastructure throughout the city. Wellbeing

of 'the People' as a community comes from building strong social cohesion, mutual support and social welfare systems that are equitable and inclusive of the vulnerable. The role of a 'Place' in building social capital and a safe living environment for a community should not be forgotten when planning and designing socially sustainable and resilient healthy cities. Local, regional and national governments need to embed community participation in the 'process' of policy making and during the implementation of infrastructure projects. If the process respects the socio-cultural values that influence the behavior as well as the thoughts and feelings of the community, it will result in having equitable and inclusive healthy cities that are resilient in times of crisis.

Social sustainability and human wellbeing are linked to high levels of social capital (Koning, 2001) and social innovation (MacCallum et.al, 2009). They embrace social equity, inclusiveness and quality of life. These dimensions can be measured using indicators like the level of access to information, education, connectedness, physical and psychological health, access to life-sustaining activities (nutrition, housing, employment, access to land and resources), safety and security in and out of home (Koning, 2001). Koning (2001) also added that the wellbeing of society, social cohesion, participation, solidarity between and within societies, and a decent livelihood are dimensions of social sustainability.

Inequities may arise due to socio-spatial variations which result from 'formal' or 'informal' human settlement, and the unbalanced resource distribution across an urban area: which bring huge divergence in health outcomes. Better access to amenities and public health infrastructure can make high-density areas less vulnerable to pandemics (Eltarabily and Elghezanwhy, 2020). Resilient cities provide equal and fair access to basic services to their residents, including extremely poor and vulnerable groups (Doyle et.al, 2020).

Local government and local communities usually play a major role in planning and delivering many of the services that are crucial in addressing the social determinants of health. Local authorities are often in a strong position to mobilize local actors and communities (WHO, 2012b). Therefore, local authorities should take the responsibility for the health and wellbeing of residents while addressing social, economic and environmental sustainability. Integrating in to spatial development frameworks the social determinants of health, socio-cultural norms and the concept of safety and security, through participatory planning, should result in a more inclusive, sustainable and resilient, healthier city.

COVID-19 caused unprecedented social and economic crises around the world. Not only from the disease itself, but from the indirect impacts of lock down, social isolation and the disrupted formal and informal economic activities. People with fewer resources

continue to suffer the most, both in the global south and the global north. Consequently, as urban authorities try to respond to the ever-changing needs of society, urban planning cultures across the globe should take into consideration the social determinants of health.

6.2 The way forward for Addis Ababa: Important pointers

Even before the outbreak of the COVID-19 pandemic in February 2020, the state of health services and basic urban infrastructure in the city of Addis Ababa had been hard pressed to keep up with the growing size of the urban population. Sanitation and water management, electricity supply, solid waste collection, housing and building standards, air quality, transportation, mobility, green space and recreational facilities were inadequate.

The rapid development of the city continues, hence straining the already creaking infrastructure. Land use, building codes, circulars and other regulations are frequently ignored or are poorly communicated to interested parties. It is not always transparent how land and development rights allocation decisions are taken while enforcement capacity is weak. Urban plan implementation and infrastructure project delivery are affected by frequent civil service staff turnover, overlapping agency competencies and

by permit-granting procedures which could be further streamlined. Poor governance, vested interests and weak institutions have been key causes behind the unsustainable development trajectory of Addis Ababa and its detrimental impact on people's health and wellbeing.

In other words, the state of urban health in Addis Ababa is a telling example of a syndemic. While a pandemic is the manifestation of an epidemic that occurs over a wide region, crossing international boundaries and affecting a large population, a syndemic is the assemblage of several health conditions within a particular (local) context. It is the "interaction of those conditions via biological, social, or psychological pathways; and involvement of social, political, economic, or ecological drivers" (Mendenhall and Singer, 2019). Moreover, in relation to COVID-19, Horton (2020) argues that the syndemic concept

"Provides a very different orientation to clinical medicine and public health by showing how an integrated approach to understanding and treating diseases can be far more successful than simply controlling epidemic disease or treating individual patients."

It will take a long time to alter the spatial structure of Addis Ababa. An incremental, step-by-step, neighborhood-by-neighborhood approach might be desirable in combination with strategic city-wide frameworks where necessary. The city administration could promote experimentation through diverse projects such as river rehabilitation

and slum upgrading to improve urban health outcomes at neighborhood and sub-city level. Urban planners need to be actively looking for windows of opportunity to promote such projects, and to learn from these projects. What is needed in Lideta sub-city will be different from what is needed in Bole sub-city. By experimenting with diverse projects that consider local contexts, it will be possible to increase understanding on how best to improve urban health outcomes in the entire city. The lessons from these projects could inform local plans, the drafting and implementation of which should be a top priority.

The task of transforming Addis Ababa to a 'healthy, economically productive, and sustainable city' with the aid of urban planning will be a major undertaking. Achieving urban health improvements involves a variety of inter-sectoral policies. The task of turning the city around should be based on the understanding that improvements in urban health should start with the improvement of infrastructure including, access to water, sanitation and electricity, solid waste management, green infrastructure, etc. Proximity to environmental hazards or lack of adequate utility provision are not neutral facts but rather a result of policy and planning, which could be changed.

Physical transformation of urban space is not enough without accompanying political and institutional change. Overlooking politics and policy will ultimately fail to improve the health of urban populations. A healthier Addis Ababa requires improvements in how well institutions function in order to recon-nect urban planning and public health and to promote better health equity (Corburn, 2009).

Based on lessons learned from healthy cities projects in other parts of the world, the process of policy formulation and strategic planning is as important as the actual merits of individual projects. The first principle is the need to build a political commitment and a common vision locally. In this regard, city governance and leadership at both city and neighborhood level matter. The second principle is the need to involve a wide range of stakeholders to build city-wide and local political alliances for urban health. Strong community representation in the area of policy making and planning is critical. The third principle involves strategy development in the form of an integrated city-wide strategic health plan which emphasizes inter-sectoral-partnerships and stakeholder engagement. In this regard, urban planners, economists, housing and transport specialists, and those responsible for public health should be communicating and collaborating with each other. The aim is to integrate health into a range of other urban policy and planning documents and to streamline the planning process from strategy to implementation.

The COVID-19 public health emergency has highlighted the importance of strong, functioning and well-resourced institutions as well as the value of coordination between governance levels, and the importance of international support and grassroots mobilization in a city where the majority of the population lives in unplanned settlements with deficient WASH infrastructure. The GoE and

AACA in particular, appear to have followed the key guidelines and advice offered by experts in the field in terms of tackling the pandemic and in addressing its impacts. As a result the governance system as a whole was able to rise up to the challenge, at least in the early stages of the pandemic. One of the most impressive outcomes of the early efforts to tackle the pandemic was the emergency food and shelter support provided to vulnerable groups and especially, the homeless and street children. For a few months during Spring 2020, Addis Ababa managed to take vulnerable groups off the streets and to provide them with basic necessities. A broader humanitarian crisis was largely averted due to the safety net which extended to several vulnerable groups through emergency, as well as existing programmes, mostly funded by international organizations.

Ethiopia's long tradition of government administration, grassroots organization and mobilization offered a stable foundation on which the initiatives to tackle the emergency could build upon. The utilization of old and new coordination mechanisms at all levels with new institutions wherever necessary (mainly at sub-city level) seems to have provided effective coordination of international support with national initiatives and grassroots action. The end result appears to have been a rather effective management of the pandemic in a low-income country which was placed in the WHO's top priority list. So much so that complacency seems to have taken hold, followed by a flare-up of the pandemic after Christmas 2020.

Based on lessons learned from healthy cities projects in other parts of the world, the process of policy formulation and strategic planning is as important as the actual merits of individual projects. The first principle is the need to build a political commitment and a common vision locally. In this regard, city governance and leadership at both city and neighborhood level matter. The second principle is the need to involve a wide range of stakeholders to build city-wide and local political alliances for urban health. Strong community representation in the area of policy making and planning is critical. The third principle involves strategy development in the form of an integrated city-wide strategic health plan which emphasizes inter-sectoral- partnerships and stakeholder engagement. In this regard, urban planners, economists, housing and transport specialists, and those responsible for public health should be communicating and collaborating with each other. The aim is to integrate health into a range of other urban policy and planning documents and to streamline the planning process from strategy to implementation.

In order to have effective and equitable implementation of basic social infrastructure, new institutional set-ups need to be taken into consideration and integrated into the Addis Ababa city's future spatial development planning. In this report, the responses to various social impacts of COVID-19 could be viewed as triggers for recommendations to achieve a better planned, healthier city. For instance, government bodies in each sector should ratify rules, regulations, laws

and measures that will guide the response in times of health crises by taking into consideration the local culture and traditions.

The response by religious, grassroots and civic associations and community-level organizations in mitigating the COVID-19 social crisis, also calls for establishing formal partnership systems for social support which would take this experience into account. Such would be systems which are neutral from any of their constituents' formation ideologies. This will result in having a pre-structured system ready to mobilize support and to distribute resources in a fair and inclusive manner to vulnerable communities at times of emergency. If such great results can be achieved for a few months then why not strive to make the protection of the vulnerable a permanent characteristic of this city?

Formalizing the newly formed institutions and task forces at all levels of governance could be a crucial step towards a healthier and more resilient city. Institutionalizing the temporary set ups that were implemented in response to COVID-19 could reinforce the social welfare system and lead to a more reliable provision of support in the long term. New institutions could also be set up in partnership with the private sector, NGO's or international organizations in order to generate/mobilize resources and ensure long term sustainability of any initiatives.

Law enforcement agencies, in particular, should support the spatial implementation of public health measures and prevent criminal activities from increasing due to the effect of such measures to the safety of urban places. Therefore, minimizing the effects of crime through place-based prevention strategies is essential to consider in the urban planning and spatial design of cities. In the urban planning and spatial design of cities.

All in all, equity and access to basic social services in urban areas should be seen from a rights-based approach. Enhanced access will influence people's livelihoods and their mental and physiological well-being, which in turn will improve development activities of the community and the urban area that they are living and working in. Therefore, future urban redevelopment strategies need to equally provide infrastructures to areas which lack it, as well as to the expansion areas of Addis Ababa. Furthermore, due to limited resources, adaptive reuse of spaces should be a top priority. The use of schools and places of worship during this pandemic could serve as good examples of how this could be done.

The governance system's response to the pandemic showed that given the readily available international support, strategic plans which yield tangible outcomes can be successfully implemented if the political will exists. This does not mean that things can change overnight in Addis Ababa but that 'every journey starts with a first step'. Lack of resources or complex administrative processes should not be used as excuses for delaying what must surely be a top priority if Addis Ababa envisions to become a metropolis which respects and enhances the well-being of its residents and of its visitors.

6.3 Investing in infrastructure for a healthier Addis Ababa

Forward-looking spatial planning can support a city to become more enterprising, connected, sustainable and inclusive. Effective land use policy facilitates and coordinates efficient infrastructure, enterprise, civic and community development and underpins a city's ability to operate smoothly. The manner in which land use policy is applied has a direct impact upon a city's competitiveness. Critically, land use policy plays a key role in determining the levels of mobility within cities and the costs of residential and commercial properties.

Building capacity in urban planning and land development in Addis Ababa is crucial, particularly at the lower tier of local government. Land development and management remain inefficient and complicated due to the proliferation of laws and regulations, lack of transparency and clarity, and occasionally disrespect for the rule of law by executives. Better plan implementation and enforcement could support cities to become more prosperous and productive. There is, therefore, a need for planning in an integrated manner with due consideration for intra-urban and urban–rural linkages to support the agglomeration of competitive industries in city-regions around a particular resource, i.e. leather, agro-processing, etc. Improving urban governance by putting in place a simpler and clearer framework of laws, regulations and institutions is crucial in that respect.

Addis Ababa's neighborhoods are becoming mono-functional. This causes high traffic generation and disconnected spaces. The city has very high density in its Central Business District (above 400 person/ha) and at the same time it is losing the mixed use fabric that used to be so typical of its urban quarters. Uncontrolled densification and segregated land use are signs of an unsustainable and unhealthy city. Corrective planning interventions are therefore urgently required with a view to preserving and restoring mixed land use both in the CBD and in the periphery. For example, balanced market centers at city and sub-city level as well as activation of smaller market centers in the outskirts of the city need to be implemented. These market centers should be easily accessible on foot and through public transport, and must be inclusive. Market form and function should also be given due attention. The city's markets should be designed to accommodate sufficient circulation, adequate sanitation and solid waste management, and they must be easy to move to nearby open spaces during crises.

To achieve this, a shift in planning culture is required. Emphasis should be on strategic planning for major infrastructure (mobility, telecoms, WASH, energy) and urban development combined with drafting, implementing and enforcing local plans, promoting mixed use, density management and neighborhood-level urban design to foster healthy city development.

Provide the necessary infrastructure

Water: This service requires substantial improvement in the water production and supply systems to foster sustainable economic development and better urban health. The city is in high water stress, which was accentuated due to the COVID-19 pandemic. An urgent shift to surface water, as currently planned, would be a critical means to improve the water supply system of the city and address the water deficit and future development needs. The existing water supply network should be significantly renewed to reduce loss and contamination. The existing and the future sewage and water supply networks should be mapped and such maps should be readily accessible for urban development purposes. These investments will dramatically improve the living standards of Addis Ababa's residents and will enable the city to attract more investment.

Electricity: The provision of reliable electricity supply is a cornerstone of a healthy city. It facilitates the proper functioning of WASH infrastructure and underpins the smooth operation of medical infrastructure (from vaccination storage to specialist Intensive Care Unit instruments), allows the population to take full advantage of telecommunications infrastructure and improves food security. The existing and the future electricity supply networks should be mapped and such maps should be readily accessible for urban development purposes. Provision of affordable and reliable electricity supply from renewable sources would bolster investment across several sectors. Local, carbon neutral and sustainable electricity production and distribution should be at the heart of any agenda to create a healthier city as well as an economically competitive one.

Telecommunications: Telecommunications, and especially 4G mobile networks and Internet access played a key role in the efforts to manage the COVID-19 pandemic and to keep economies running under lock down conditions across the globe. In Addis Ababa, interventions which would improve the capacity and the stability of the mobile phone network, like a reliable electricity supply, would be of paramount importance in increasing the resilience of the mobile phone network during a future pandemic. The arrival of 5G promises a world of difference when it comes to the urban economy and to the types of services that could be offered. The necessary institutional reforms to the planning system, the permit system, personal data protection, Intellectual Property Rights and so on, should be a top priority in order to make the much anticipated 5G implementation smoother without compromising personal freedom. Having said that, the rapidly changing urban landscape (esp. new tall buildings) poses a challenge to the design of the urban mobile phone network and therefore better coordination between Ethio telecom and the AACA would be necessary in that respect.

Mobility: Clean mass transit transport modes (BRT[23] and NMT[24]) are critically required in Addis Ababa to decongest its road network and make the city operation more efficient in combination with suitable strategic land use planning. Providing extra transportation ca-

---

[23] Bus Rapid Transit
[24] Non-Motorized Transport

pacity or making alternative strategies/systems available that can substitute or reduce the need for movement (eg. efficient and affordable e-systems, which in turn would benefit from 5G networks) would address many of the needs of Addis Ababa's residents. Incentives for employees or service providers to promote teleworking are crucial and the capacity of the telecommunications infrastructure to support such modalities should be enhanced.

E-commerce would help reduce the burden on transport infrastructure and should be facilitated. Additionally, the logistics and cold storage capacity of the marketplaces in the city need to significantly improve not only to reduce wastage, but also because it will further cut trip generation by vendors as well as shoppers. Such logistics infrastructure is however tied to the reliability and price of electricity supply. Improvements in the quality of existing walkways and pavements combined with investment in city-wide walkway networks would make the dominant mode of transport in the city safer, more pleasant and more efficient. Street markets (usually occupying pavements) are crucial for the livelihoods of vendors and for the provision of goods at affordable prices. However, they can be very disruptive to pedestrian and vehicle circulation and therefore need to be appropriately located where minimal disruption would be caused and where massive congestion would be avoided i.e., on side streets, etc.

Minibuses or taxis, saloon taxis as well as private vehicles are major contributors to air pollution but also play a crucial role in providing mobility. Notwithstanding the recent initiatives in this direction, incentives to regularly renew the taxi fleet combined with stricter car emissions regulations, so as to pollute less and to improve energy efficiency per passenger/km, should be a top priority. Using the more modern fleets of vehicles owned by tourism businesses to offer mobility services to the public should also be considered not only as a measure to support the tourism sector but as a way to provide more comfortable and less polluting transportation. The private vehicle tax regime should be re-thought with a view to reducing the average age of the fleet and to promote less polluting vehicles without necessarily promoting widespread car ownership. The pandemic showed that the governance system has the capacity to plan and implement ambitious agendas, for example when it came to adequately resourcing the city's bus fleet.

Blue-green infrastructure, sports and leisure facilities:

The city has seen urban renewal and massive urban expansion for the last 15 years but the provision of green areas has declined dramatically. Even more so, the riversides are occupied by slums and the streams are used as open sewers and solid waste dumping sites. The provision of green and open spaces as part of local initiatives as well as riverside rehabilitation and urban renewal projects should be treated as opportunities to implement an equitable, city-wide, blue-green infrastructure strategy. The recent riverside rehabilitation project (aka the Sheger project) is an initiative which provided the city cen-

ter with a much-needed green space. Urban renewal and infill site development should provide adequate green spaces and should use resettlement plans which respect international standards. Emphasis should be given to local and community-level open sports facilities, preferably linked to schools. City planners should develop tailored approaches towards green and open space development for condominiums, cooperatives, old neighborhoods, etc. instead of an 'one size fits all' approach.

UN-Habitat's riverside design guidance (UN-HABITAT 2020) provides a useful "how to" manual.

6.4 Ideas for spatializing the management of the pandemic

Cities are complex systems and their effective management requires knowledge and information in order to pursue evidence-based policy making. At present, however, the empirical knowledge on urbanization trends and on the economic functions of cities are inadequate or partial in most African cities. Given the cross-cutting nature of the urbanization phenomenon, data collection, research and analysis should have a cross-sectoral emphasis and should promote stronger inter-ministerial coordination at the highest level of government. This is of paramount importance in the context of a pandemic.

This research showed that there are skills, funding and technology available locally to assess and manage the COVID-19 pandemic and to set course for a healthier city. The first batch of vaccines as part of the COVAX initiative, has recently arrived in Addis Ababa and the vaccination programme has started. Ultimately, it was the design and management of (spatial) database systems which made it difficult to have an accurate picture of the spatial distribution of COVID-19 and that may be the Achilles' heel of any efforts to manage the pandemic in a targeted manner. In order to get a more accurate picture of the spatial patterns of the pandemic, it is highly recommended to focus on:

• Rigorous database management.
• A seriously expanded testing effort covering a larger and more representative sample of the population through a suitable range of testing methods, free to the end user where feasible.

  • Exhaustive data collection on testing to include more accurate information about identity, residence and place of work.
  • Complete records of death rates and post-mortem examination results.
  • Check and balance system for data accuracy.
  • Continued support for transparent data-sharing with the public.

A detailed plan for vaccine distribution and administration could benefit from such a database: Other than specialist human resourc-

es, vaccination requires logistics know-how. Geographic Information Systems are a central element for such logistics. Creating and managing a spatial database that is regularly and reliably updated should be the cornerstone of any effort to manage the pandemic at the local level and to adjust the vaccination strategy accordingly.

Although vaccines with less demanding cold storage requirements will be extensively used in the global south, it is imperative to properly organize a storage, distribution and administration system which is efficient and equitable (i.e. easily accessible to all). This can be particularly challenging in a city with a peculiar street layout, which is facing space, electricity supply, transport, telecommunications, and population literacy constraints. Ultimately, location, technology/know-how and coordination will be the key parameters determining the organizational success of this effort. The mapping of potential facilities for vaccination in terms of capacity, location and accessibility, is the first step to ensure adequate and equitable delivery.

Finally, communication with the public is of paramount importance. The EPHI and AAHB, especially the latter, have been making commendable efforts to update the public on how the pandemic is developing in the country. This undertaking should be strengthened further in order to inform the public about beneficial safety of vaccines, the spatial dimensions of the pandemic, and to guide authorities in their response without compromising the confidential nature of health-care service provision. Such an approach should

not only assist in the more effective management of the COVID-19 pandemic but may also support the efforts of the country to revive tourism.

References

- AABoFED (2020). Report on Urban Safety Net Program and Temporary Direct Support (November 2020). Addis Ababa, Ethiopia: AABoFED.

- AACA (2014) Integrated Land Information Center: Bole Sub City Atlas (1st Ed). Addis Ababa, Ethiopia: AACA.

- AACA (2015). Integrated Land Information Center: Addis Ababa City Atlas (1st Ed). Addis Ababa, Ethiopia: AACA.

- AACA (2020). Health and Coronavirus quarterly report, November 2020. Addis Ababa, Ethiopia: AACA.

- AACPSO (2021). Addis Ababa City Administration public transport bus support extension. Addis Ababa, Ethiopia: AACPSO. Retrieved from https://www.facebook.com/Addisinfo.Official/posts/3006985346191701

- AAHB (2020). Report on Status of Isolation and treatment centers in Addis Ababa (November 2020). Addis Ababa, Ethiopia: AAHB. Retrieved from https://www.grid.ac/institutes/grid.463056.2

- AAHB (2021). Daily Bulletin of COVID-19 Cases in Addis Ababa. Retrieved from https://www.facebook.com/www.aahb.gov.et

- AAPCO (2017). Addis Ababa City Structure Plan: 2017-2027. Addis Ababa, Ethiopia: AAPCO.

- AARBGADA (2020) First Quarter Report 2013 EC. Addis Ababa, Ethiopia: AARBGADA.

- AASWMA (2019). Annual Report 2019. Addis Ababa, Ethiopia: AASWMA

- AASWMA (2020a). Annual Report 2020. Addis Ababa, Ethiopia: AASWMA

- AASWMA (2020b). Current Situation of Addis Ababa Solid Waste Management and Expectations. Addis Ababa, Ethiopia: AASWMA

- AATA (2016). Public transport demand and supply integration assessment study. Addis Ababa, Ethiopia.

- AATA (2017). Waiting Time to get Public Transportation service at Public Transport Terminals and Survey to Identify related problems, Addis Ababa, Ethiopia.

- AAWSA (2020a) 10 Years Strategic Plan (2020-2030EC). Addis Ababa, Ethiopia: AAWSA (in Amharic).

- AAWSA (2020b) COVID-19 Emergency Exit Plan. Addis Ababa, Ethiopia: AAWSA (in Amharic).

- AAYSC (2018) Situational assessment of sport facilities in Addis Ababa. Addis Ababa, Ethiopia: AAYSC (in Amharic).

- Abebe, G., Bundervoet, T., &Wieser, C. (2020). Monitoring COVID-19 Impacts on Firms in Ethiopia. Report No. 2 : Results from a High-Frequency Phone Survey of Firms. Washington DC, USA: World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/33766

- Abiy, Y. (2020). Registered vehicles in Ethiopia reach 1.2 mln. The Reporter Ethiopia English. Retrieved from https://www.thereporterethiopia.com/article/registered-vehicle-ethiopia-reaches-12-mln

- Abubaker, I. (2020). Addis Ababa Is Fighting to Avoid the Worst of COVID-19 But Transport Challenges Are Hampering Containment Efforts. The City Fix, 8 June 2020. Retrieved from https://thecityfix.com/blog/addis-ababa-fighting-avoid-worst-COVID-19-19-transport-challenges-hampering-containment-efforts-iman-abubaker/

- Addis Standard (2020). As COVID-19 slows manufacturing demand a US$6.5 m fund launched to help protect textile industry jobs in Ethiopia. Addis Standard (29 October 2020). Retrieved from https://addisstandard.com/news-as-covid-19-slows-manufacturing-demand-a-us6-5-m-fund-launched-to-help-protect-textile-industry-jobs-in-ethiopia/

- AfDB (2020). Ethiopia: African Development Fund approves $165 million grant for national COVID-19 emergency response. Abidjan, Ivory Coast: African Development Bank. [press release]. Retrieved from https://www.afdb.org/en/news-and-events/press-releases/ethiopia-african-development-fund-approves-165-million-grant-national-COVID-19-emergency-response-36713

- Africa News (2020, September 29). How Ethiopian Airlines rode out the coronavirus pandemic. Africa News. Retrieved from https://www.africanews.com/2020/09/29/how-ethiopian-airlines-rode-out-the-coronavirus-pandemic//

- AHA (2020). The Impact of COVID-19 on the Addis Ababa Hotel Market. Addis Ababa, Ethiopia: AHA.

- Ahmed, S.A.K., Ajisola, M., Azeem, K., Bakibinga, B., Chen, Y.F., Choudhury, N.Y., & Yusuf, R. (2020). Impact of the societal response to COVID-19 on access to healthcare for non-COVID-19 health issues in slum communities of Bangladesh, Kenya, Nigeria and Pakistan: results of pre-COVID-19 and COVID-19 lockdown stakeholder engagements. BMJ Global Health, 5(8). https://doi:10.1136/bmjgh-2020-003042

- Alemayehou, M. (2020). Ethiopia Battles the Pandemic and Its Economic Consequences. Center for Strategic & International Studies, Critical Questions.

Retrieved from https://www.csis.org/analysis/ethiopia-battles-pandemic-and-its-economic-consequences

• Asgedom, T. (2013). Promoting Sustainable Transport Solutions in Ethiopia; (Presented in the Berlin High-level Dialogue on Implementing Rio+20 Decisions on Sustainable Cities and Transport).

• Auerbach, A., & Thatchil, T. (2020). How does COVID-19 affect urban slums? Evidence from settlement leaders in India. World Development, 140. https://doi.org/10.1016/j.worlddev.2020.105304

• Bacon, N., Cochrane, D., & Woodcraft, S. (2012). Creating Strong communities. The Berkley Group: London

• Beyene, A., Hailu, T., Faris, K., & Kloos, H. (2015). Current state and trends of access to sanitation in Ethiopia and the need to revise indicators to monitor progress in the Post-2015 era. BMC Public Health, 15(1), 1-8.

• Bolund, P., & Hunhammar, S. (1999). Ecosystem services in urban areas. Ecological Economics, 29(2), 293-301.

• Bornstein, A. (2019). Draft Outcomes Based Approaches To Supporting Children On The Streets Of Addis Ababa. London, UK: Social Finance Limited.

• BSC (2020). COVID-19 Short Report, September. Addis Ababa, Ethiopia: Bole Sub-City Office of Youth and Voluntary Mobilization.

• C40 (2016). Addis Ababa improves mass transit options with new express bus service. C40. Retrieved from https://www.c40.org/blog_posts/addis-ababa-improves-mass-transit-options-with-new-express-bus-service

• Cardenas, H., & Whittington, D. (2019). The consequences of increasing block tariffs on the distribution of residential electricity subsidies in Addis Ababa, Ethiopia. Energy policy, 128, 783-795.

• Cavan, G., Lindley, S., Jalayer, F., Yeshitela, K., Pauleit, S., Renner, F., & Shemdoe, R. (2014). Urban morphological determinants of temperature regulating ecosystem services in two African cities. Ecological Indicators, 42, 43-57.

• CDC (2020, December). Considerations for Events and Gatherings. Centers for Disease Control and Preventions (CDC). Retrieved from https://www.cdc.gov/coronavirus/2019-ncov/community/large-events/considerations-for-events-gatherings.html

• Chen, J. T., & Krieger, N. (2020). Revealing the unequal burden of COVID-19 by income, race/ethnicity, and household crowding: US county versus zip code analyses. Journal of Public Health Management and Practice, 27(1), 43-56.

• Chirisa, I., Mutambisi. T., Chivenge, M., Mabaso, E., Matamanda, A. R., & Ncube, R. (2020). The urban penalty of COVID-19 lockdowns across the globe: manifestations and lessons for Anglophone

sub-Saharan Africa. GeoJournal. https://doi.org/10.1007/s10708-020-10281-6

- Cities Alliance (2015). Annual Report 2015. Washington D.C., USA: World Bank Group.

- Corburn, J. (2009). Toward the healthy city: people, places, and the politics of urban planning. MIT Press.

- Corburn, J., Vlahov, D., Mberu, B., Riley, L., Caiaffa, W.T., Rashid, S.F., & Ayad, H. (2020). Slum Health: Arresting COVID-19 and Improving Well-Being in Urban Informal Settlements. Journal of Urban Health, 97, 348-357. https://doi.org/10.1007/s11524-020-00438-6

- CREC (2016) China Railway Engineering Corporation retrieved from: http://2j.crec.cn/Default.aspx?alias=2j.crec.cn/en

- CTTI (2020). The Effect of COVID-19 on Ethiopian Tourism and Hospitality Sector. Addis Ababa, Ethiopia: CTTI

- Defar, A., Getachew, T., Taye, G., Tadele, T., Getnet, M., Shumet, T., & Bekele, A. (2020). Quality antenatal care services delivery at health facilities of Ethiopia, assessment of the structure/input of care setting. BMC Health Services Research, 20, 1-9.

- Doyle, A., Hynes, W., & Purcell, S. M. (2020). Enhancing Urban Resilience: The Role of Online Decision Support Models. In Silva, C. N. (Ed.), Citizen-Responsive Urban E-Planning: Recent Developments and Critical Perspectives (pp. 282-304). IGI Global. http://doi:10.4018/978-1-7998-4018-3.ch11

- Duranton, G., & Puga, D. (2020). The Economics of Urban Density. Journal of Economic Perspectives, 34(3), 3–26. https://doi.org/10.1257/jep.34.3.3

- Eltarabily, S., & Elghezanwy, D. (2020). Post-Pandemic Cities - The Impact of COVID-19 on Cities and Urban Design. Architecture Research, 10(3): 75–84. https://doi:10.5923/j.arch.20201003.02,

- Engbersen, G., & van der Leun, J. (2001) The Social Construction of Illegality and Criminality. European Journal on Criminal Policy and Research, 9, 51-70

- EPDC (2020). COVID-19 Impact on Ethiopian Tourism Sector & Recommended Measures. Addis Ababa, Ethiopia: EPDC.

- EPHI (2018). Services Availability and Readiness Assessment (SARA) Final Report. 119. Addis Ababa, Ethiopia: EPHI. Retrieved from http://www.ephi.gov.et/index.php/2014-04-10-07-22-18/download

- EPHI (2020a). A Directive Issued for The Prevention and Control Of COVID-19 Pandemic, Directive No 30/2020. Addis Ababa, Ethiopia: EPHI

- EPHI (2020b, December 16). Weekly Bulletin (16 December 2020). Addis Ababa, Ethiopia: EPHI. Retrieved from https://www.ephi.gov.et/

- Eregata, G. T., Hailu, A., Memirie, S. T., & Norheim, O. F. (2019). Measuring progress towards universal health coverage: national and subnational analysis in Ethiopia. BMJ Global Health, 4(6).

- Eregata, G. T., Hailu, A., Memirie, S. T., & Norheim, O. F. (2019). Measuring progress towards universal health coverage: national and subnational analysis in Ethiopia. BMJ Global Health, 4(6), e001843.

- Eriksson M., & Sigvant J. (2019) Causes and impact of surface water pollution in Addis Ababa, Ethiopia. Uppsala, Sweden: Uppsala University.

- Ethiopian Airlines (2020, October 01). Ethiopian Unveils COVID-19 Global Insurance Cover. Ethiopian Airlines. [Press release]. Addis Ababa: Ethiopia. Retrieved from https://corporate.ethiopianairlines.com/Press-release-open-page/ethiopian-unveils-COVID-19-global-insurance-cover

- Ethiotelecom (2020) Ethiotelecom 2019/2020 Annual Business Performance Summary Report. Addis Ababa, Ethiopia: Ethiotelecom.

- Ethiotelecom (2021) Ethiotelecom 2020/2021 Annual Business Performance Summary Report. Addis Ababa, Ethiopia: Ethiotelecom.

- EWLA (2020). Annual Report 2019/2020. Ethiopian Women Lawyers Association: Addis Ababa.

- Eyob, A. (2015) The impact of mass housing on the urban hydrology of Addis Ababa. Palermo, Italy: University of Palermo (Unpublished MSc dissertation)

- Flinn, B. M., & Kobayashi, L. C. (2020). Structural inequality in the time of COVID-19: Urbanization, segregation, and pandemic control in sub-Saharan Africa. Dialogues in Human Geography, 10(2), 217-220

- FSC (2020). Sports Facilities Standard. Addis Ababa, Ethiopia: Federal Sports Commission.

- Ghosh, D., Bernstein, J., Mersha, T. B. (2020). COVID-19 pandemic: The African paradox. Journal of Global Health, 10(2). https://doi:10.7189/jogh.10.020348

- Gilbert, M., Pullano, G., Pinotti, F., Valdano, E., Poletto, C., Boelle, P.Y, & Colizza, V. (2020). Preparedness and vulnerability of African countries against importations of COVID-19: a modelling study. The Lancet, 395(10227), 871-877. https://doi.org/10.1016/S0140-6736(20)30411-6

- Glouberman, S., Gemar, M., Campsie, P., Miller, G., Armstrong, J., Newman, C., & Groff, P. (2006). A framework for improving health in cities: a discussion paper. Journal of Urban Health, 83(2), 325-338.

- Grant, M. (2015). European Healthy City Network Phase V: patterns emerging for healthy urban planning. Health Promotion International, 30(suppl_1), i54-i70.

- Grant, M., Brown, C., Caiaffa, W. T., Capon, A., Corburn, J., Coutts, C., & Ward T. C. (2017). Cities and health: an evolving global conversation. Cities and Health 1(1). https://doi.org/10.1080/23748834.2017.1316025

- Hamidi, S., Sabouri, S., & Ewing, R. (2020). Does Density Aggravate the COVID-19 Pandemic? Early Findings and Lessons for Planners. Journal of the American Planning Association, 86(4), 495–509. https://doi.org/10.1080/01944363.2020.1777891

- Hancock, T. (1993). The evolution, impact and significance of the health cities/healthy communities movement. Journal of Public Health Policy, 14(1), 5-18.

- Hancock, T. (1996). Planning and creating healthy and sustainable cities: the challenge for the 21st century. In Price, C., & Tsouros, A. (Eds.) Our cities, our future (pp.65-88). Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.132.6427&rep=rep1&type=pdf#page=73

- Hancock, T., & Duhl, L. (1988). Promoting Health in the Urban Context. Copenhagen, Denmark: WHO.

- Harris, D., Teklu, A., Medhin, G., Mitiku, I., Tadesse, B., Demissie, M., & Belachew, F. (2020). The effect of COVID-19 and government response measures on poor and vulnerable groups in urban areas in Ethiopia. Research Report. Oxford, UK: Oxford Policy Management.

- Heneghan, C., & Howard, D. (2020). How cities need to change to avoid spreading infections. Global Center on HealthCare and Urbanisation. Retrieved from https://www.cebm.net/COVID-19-19/how-cities-need-to-change-to-avoid-spreading-infections/

- Horton, R., (2020). COVID-19 is not a pandemic. The Lancet, 396(10255). https://doi.org/10.1016/S0140-6736(20)32000-6

- IHRC (2020). The Human Rights Protection of Vulnerable Groups. Icelandic Human Rights Center. Retrieved from https://www.humanrights.is/en/human-rights-education-project/human-rights-concepts-ideas-and-fora/the-human-rights-protection-of-vulnerable-groups

- ILO (2020). World employment and social outlook: trends 2020. International Labour Organization (ILO). Retrieved from https://www.ilo.org/global/research/global-reports/weso/2020/lang--en/index.htm

- IMCL (2020). Social Dimensions of Sustainability in Neighborhood Planning. International Making Cities Livable. Retrieved from https://livablecities.org/blog/social-dimensions-sustainability-neighborhood-planning

- IMF (2020). IMF Executive Board Approves US$411 Million in Emergency Assistance to Ethiopia to Address the COVID-19 Pandemic. International Mon-

etary Fund. [press release No.20/199]. Retrieved from https://www.imf.org/en/News/Articles/2020/04/30/pr20199-ethiopia-imf-executive-board-approves-emergency-assistance-to-address-the-COVID-19-19-pandemic

• Interpol (2020). COVID-19 Pandemic. Guidelines for Law Enforcement. Retrieved from https://www.interpol.int/en/How-we-work/COVID-19

• Jackson, R. J., Dannenberg, A. L., & Frumkin, H. (2013). Health and the built environment: 10 years after. American Journal of Public Health, 103(9), 1542-1544.

• Kenzer, M. (1999). Healthy cities: a guide to the literature. Environment and Urbanization, 11(1), 201-220.

• Ketema, K. (2020). Life in Addis Ababa and parts of Ethiopia after the advent of COVID-19. Retrieved from https://healthasset.org/life-in-addis-ababa-and-parts-of-ethiopia-after-the-advent-of-COVID-19/

• Kihato, C.W., & Landau, L. B. (2020). Coercion or the social contract? COVID-19 and spatial (in)justice in African cities. City and Society, 32(1), 1-11. https://doi.org/10.1111/ciso.12265

• Koning, J. (2001). Social sustainability in Globalizing world; Context, Theory and methodology explored. Presented at the UNESCO / MOST Meeting 2001, The Hague, The Netherlands: UNESCO.

• Larsen, L., Yeshitela, K., Mulatu, T., Seifu, S., & Desta, H. (2019). The impact of rapid urbanization and public housing development on urban form and density in Addis Ababa, Ethiopia. Land, 8(4), 66.

• Lim, S. (2016). Measuring the health-related Sustainable Development Goals in 188 countries: a baseline analysis from the Global Burden of Disease Study 2015. The Lancet, 388(10053), 1813-1850.

• Lukman, A., Rauf, I.R., Abiodun, O., Oludoun, O., Ayinde, K., & Ogundokun, R.O. (2020). COVID-19-19 prevalence estimation: four most affected African countries. Infectious Disease Modelling, 5, 827-838. https://doi:10.1016/j.idm.2020.10.002

• MacCallum D., Haddock, S.V., Moulaert, F. (2009). Social innovation and territorial development. London, UK: Routledge.

• Makoni, M. (2020). Air pollution in Africa. The Lancet Respiratory Medicine, 8(7), e60.

• Mendenhall, E., & Singer, M. (2019). The global syndemic of obesity, undernutrition, and climate change. The Lancet, 393(10173), 741.

• Menendez, E. P., & Higueras Garcia, E. (2021) Urban Sustainability Versus the Impact of Covid-19: A Madrid case study. DiSP 56(4), 64-81

• Misganaw, A., Haregu, T. N., Deribe, K., Tessema, G. A., Deribew, A., Melaku, Y. A., & Naghavi, M. (2017). National mortality

burden due to communicable, non-communicable, and other diseases in Ethiopia, 1990−2015: findings from the Global Burden of Disease Study 2015. Population Health Metrics, 15(1), 1-17.

- Misikir, M. (2020). Ethiopia Ends Closure Fully Reopens to Tourists. Addis Fortune (27 September 2020).Retrieved from https://addisfortune.news/ethiopia-ends-closure-fully-reopens-to-tourists/

- MoCT (2020a). Number of arrivals in 2012 EC (2019/20). Addis Ababa, Ethiopia: MoCT Statistics Directorate

- MoCT (2020b). Recovery Strategy for Tourism Sector-Ethiopia to mitigate COVID-19 impact. Addis Ababa, Ethiopia: MoCT.

- MoCT (2020c). Recovery Strategy for Tourism Sector-Ethiopia: Urges to mitigate COVID-19 impact. Addis Ababa, Ethiopia: MoCT

- MoCT (2020d). Ethiopian Tourism Safe Travel Protocols. Addis Ababa, Ethiopia: MoCT National Tourism Recovery Technical Taskforce.

- MoCT (2020e). List of Tour Operators. Retrieved from http://www.moct.gov.et/tour-operators

- Mohammed, H., Oljira, L., Roba, K. T., Yimer, G., Fekadu, A., & Manyazewal, T. (2020). Containment of COVID-19 in Ethiopia and implications for tuberculosis care and research. Infectious Diseases of Poverty, 9(1), 1-8.

- MoWCY (2020, September). Report on the Work done for Women, children and youth sector on prevention of COVID-19. Addis Ababa, Ethiopia: MoWCY.

- Mullan, Z. (2016). Transforming health care in Ethiopia. The Lancet Global Health, 4(1), e1.

- Musanabaganwa, C., Semakula, M., Mazarati, J.B., Nyamusore, J., Uwimana, A., Kayumba, M., & Nsanzimana, S. (2020). Use of technologies in COVID-19 containment in Rwanda. Rwanda Public Health Bulletin 2(2), 7-12.

- New Business Ethiopia (2020a). Ethiopia injects $98 million into hospitality industry. New Business Ethiopia (14 May 2020). Retrieved from https://newbusinessethiopia.com

- New Business Ethiopia (2020b). Ethiopia introduces zero profit tax incentive to boost tourism. New Business Ethiopia (30 December 2020). Retrieved from https://newbusinessethiopia.com

- Northridge, M. E., Sclar, E. D., & Biswas, P. (2003) Sorting out the connections between the built environment and health: a conceptual framework for navigating pathways and planning healthy cities. Journal of Urban Health, 80(4), 556-568.

- Ogbolosingha, A.J., & Singh, A. (2020).

COVID-19 pandemic: Review of impediments to public health measures in Sub-Saharan Africa. American Journal of Preventive Medicine and Public Health, 6(3), 68–75. https://doi:10.5455/ajpmph.20200512020014

• Porta, M. (Ed.) (2014). A dictionary of epidemiology. Oxford, UK: Oxford University Press.

• Qian, E. (2020). Survey identifies troubling effect of pandemic on where women give birth in Ethiopia. Retrieved from https://hub.jhu.edu/2020/12/17/pandemic-affects-where-women-give-birth/

• Reference

• Rutayisire, E., Nkundimana, G., Mitonga, H.K., Boye, A., & Nikwigize, S. (2020). What works and what does not work in response to COVID-19 prevention and control in Africa. International Journal of Infectious Diseases, 97, 267-269. https://doi:10.1016/j.ijid.2020.06.024

• Rydin, Y., Bleahu, A., Davies, M., Dávila, J. D., Friel, S., De Grandis, G., & Wilson, J. (2012). Shaping cities for health: complexity and the planning of urban environments in the 21st century. The Lancet, 379(9831), 2079-2108.

• Sahasranaman, A., & Jensen, H. (2020, June 22). COVID-19 in Urban Slums of the Developing World. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3634915

• Sharifi, A., & Khavarian-Garmsir, A.R. (2020). The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management. Science of the Total Environment, 749: https://doi:10.1016/j.scitotenv.2020.142391

• Sileshi, A., & Hailu, W. (2020). Accessibility of urban green infrastructure in Addis-Ababa city, Ethiopia: Current status and future challenge. Environmental Systems Research, 9 (26). https://doi.org/10.1186/s40068-020-00187-0

• Temesgen, T. (2011). Implementation of Universities & Urban Development in Ethiopia: Chances for Strategic Urban Project Approach. Leuven, Belgium. K.U. Leuven (Unpublished MSc dissertation)

• Tola, A. T. (2017). Coen Beeker's 'Urban Fields' for Addis Ababa. In A. Folkers, & I. Perzyna (Eds.), "The Beeker Method. Planning and working on the redevelopment of the African City: Retrospective glances into the future" (pp. 109-121). ASC Occasional Publications, 27. Leiden, The Netherlands: African Studies Center Leiden

• UN Ethiopia (2020). One UN Assessment: Socio-Economic Impact of COVID-19 on Ethiopia. Retrieved from https://ethiopia.un.org/en/87497-one-un-assessment-socio-economic-impact-COVID-19-ethiopia

• UN Habitat (2017). The State of Addis Ababa 2017: The Addis Ababa We Want. Retrieved from https://unhabitat.org/the-

state-of-addis-ababa-2017-the-addis-ababa-we-want

- UN Habitat (2020) Design Guideline

- UNDP (2019). Human Development Report 2019: beyond income, beyond averages, beyond today. United Nations Development Programme. Retrieved from http://hdr.undp.org/sites/default/files/hdr2019.pdf

- UNDP (2020). Human Development Report 2020. The next frontier Human development and the Anthropocene. United Nations Development Programme. Retrieved from http://hdr.undp.org/sites/default/files/hdr2020.pdf

- United Nations (2017), New Urban Agenda. Retrieved from http://habitat3.org/the-new-urban-agenda/

- United Nations General Assembly (2016). United Nations Conference on Housing and Sustainable Urban Development (Habitat III) regional report for Africa: transformational housing and sustainable urban development in Africa. Retrieved from https://digitallibrary.un.org/record/3827079

- UNOCHA (2020). The 2020 Ethiopia Humanitarian Response Plan. Retrieved from https://ethiopia.un.org/en/32688-2020-ethiopia-humanitarian-response-plan

- Wasdani, K.P., & Prasad, A. (2020). The impossibility of social distancing among the urban poor: the case of an Indian slum in the times of COVID-19. Local Environment 25(5), 414-418. https://doi:10.1080/13549839.2020.1754375

- Weldeghebrael, E. H. (in press). The framing of inner-city slum redevelopment by an aspiring developmental state: The case of Addis Ababa, Ethiopia. Cities. https://doi.org/10.1016/j.cities.2020.102807

- WFP (2020, July 23). COVID-19 Update. World Food Programme-East Africa. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/External%20COVID-1919%20Update_2020July23.pdf

- WHO (2010a). A conceptual framework for action on the social determinants of health. World Health Organization. Retrieved from https://www.who.int/sdh-conference/resources/ConceptualframeworkforactiononSDH_eng.pdf

- WHO (2010b). Hidden cities: unmasking and overcoming health inequities in urban settings. World Health Organization. Retrieved from https://www.who.int/publications/i/item/9789241548038

- WHO (2012a). Addressing the social determinants of health: the urban dimension and the role of local government. World Health Organization. Retrieved from https://www.euro.who.int/en/publications/abstracts/addressing-the-social-determinants-of-health-the-urban-dimension-and-the-role-of-local-government

- WHO (2012b). Healthy cities tackle the social determinants of inequities in health: a framework for action. Copenhagen, Denmark: WHO Regional Office for Europe.

- WHO (2016). Urban green spaces and health: a review of evidence. Retrieved from https://www.euro.who.int/__data/assets/pdf_file/0005/321971/Urban-green-spaces-and-health-review-evidence.pdf

- WHO (2020a). COVID-19 in the WHO African Region. Retrieved from https://who.maps.arcgis.com/apps/ops-dashboard/index.html#/0c9b3a8b-68d0437a8cf28581e9c063a9

- WHO (2020b) WHO ramps up preparedness for novel coronavirus in the African region. World Health Organization (WHO). Retrieved from https://www.afro.who.int/news/who-ramps-preparedness-novel-coronavirus-african-region

- WHO (2020c). Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). World Health Organization (WHO). Retrieved from https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)

- WHO (2020d) Ethiopia: Organigram of the Emergency Coordination Center, its link to the Health Emergency Operations Center, and the support by the international humanitarian community to the various functions. Retrieved from https://www.humanitarianresponse.info/fr/operations/ethiopia/document/ethiopia-organigram-emergency-coordination-center-its-link-health

- Wolde, A. M., Jemal K., Woldearegay G.M., & Tullu K.D. (2020) Quality and Safety of Municipal Drinking Water in Addis Ababa City, Ethiopia. Environ Health and Preventive Medicine 25, 9. https://doi.org/10.1186/s12199-020-00847-8

- Wondimu A. (2007). Which an Urban Livelihood without Adequate Breathing Space? A Reflection on the Green Areas of Addis Ababa. Environment for Survival. Addis Ababa, Ethiopia: Green Forum.

- Wondimu, A., & Alfakih, E. (1998). Urban Drainage in Addis Ababa: existing situation and improvement ideas. Development in Urban Drainage Modelling; Fourth International Conference, 823−830. London, UK: SAGE Publications.

- World Bank (2019). Maternal mortality ratio (modeled estimate, per 100,000 live births) - Ethiopia. Retrieved from https://data.worldbank.org/indicator/SH.STA.MMRT?locations=ET

- World Bank (2020). Transforming Addis Ababa: Integrated Strategic Development.

Phase I – Multi-Sector Diagnostic. Retrieved from https://documents.worldbank.org

• WSP (2020). Cities After COVID-19: How Can We Create A Positive Legacy For Health And Wellbeing? Retrieved from https://www.wsp.com/en-GL/insights/cities-after-COVID-19-how-can-we-create-a-positive-legacy-for-health-and-wellbeing

• WTTC (2020a). Economic Impact Report. World Travel and Tourism Council (WTTC). Retrieved from https://wttc.org/Research/Economic-Impact

• WTTC (2020b). Safe Travels: Global Protocols & Stamp for the New Normal. World Travel and Tourism Council (WTTC). Retrieved from https://wttc.org/COVID-19-19/Safe-Travels-Global-Protocols-Stamp

• WTTC (2020c). To Recovery & Beyond: The Future of Travel & Tourism in the Wake of COVID-19. World Travel and Tourism Council (WTTC). Retrieved from https://wttc.org/Research/To-Recovery-Beyond

UN☺HABITAT
FOR A BETTER URBAN FUTURE

www.unhabitat.org