Public Disclosure Authorized

GREATER MONROVIA URBAN REVIEW

A Spatial Analysis investigating Constraints and Opportunities

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Abbreviations

AfT	Agenda of Transformation
DHS	Demographic Health Survey
GCI	Global Competitive Index
HIES	Household Income and Expenditure Survey
IDP	Internally displaced person
ITU	International Telecommunication Union
LISGIS	Liberia Institute of Statistics and Geo-Information Services
LWSC	Liberia Water and Sewage Corporation
MCC	Monrovia City Corporation
PAPD	Pro Poor Agenda for Prosperity and Development
PCC	Paynesville City Corporation
OSR	Own Source Revenue
SSA	Sub-Saharan Africa
UN DESA	United Nations Department of Economic and Social Affairs
WDI	World Development Indicators

Introduction

1. **In 2012 and after decades of conflict, the Government of Liberia launched a visioning exercise – Liberia Rising 2030 – that aimed at reaching middle income status by 2030.** The first 5 year plan – the Agenda of Transformation (AfT) was oriented towards building infrastructure, increasing youth employment opportunities, strengthening human development and sustaining peace and stability. In continuation of this first phase, another 5 year plan was conceived in 2018 laying out a Pro-Poor Agenda for Prosperity and Development (PAPD). The agenda – like the previous one – emphasized the need of improving all four pillars identified above, but it went one step further. It recognized that, despite Liberia's enormous resource wealth, it was poor of human and financial capital, and to unlock economic growth it needs to leverage its resource wealth through value additions to agriculture, fisheries and mining produce.

2. **Greater Monrovia could play an important role in supporting the economic transformation necessary for the country to generate shared prosperity and reduce poverty**. When cities function well, they create a livable and productive environment that connects workers to jobs and consumers to markets, thereby increasing opportunities and fueling productivity. Proximity and density also bring people physically closer, facilitating exchange of ideas and generating economies of scale that enable more cost-effective service provision. This typically means better access to schooling, health facilities, water and sanitation, electricity, markets and jobs.

3. **It is the proximity and density associated with urbanization that – if well managed and able to overcome the negative impact from congestion – drives economic growth and prosperity**. Well managed cities require planning for future development and subsequent finance for infrastructure, and functioning land markets to cater to a growing population and to thwart off future development threats. Greater Monrovia lacks some of these fundamental foundations, resulting in sprawling, crowded and disconnected settlements that are costly for businesses and residents and disappoint in their ability to generate jobs and thus prosperity.

4. **Greater Monrovia is the largest agglomeration in Liberia by far, but decades of conflict has stalled investments and development, impacting the economy**. Greater Monrovia is home to about 1.3 million people[1], a fourth of the country's total population. The next largest city, Buchanan, is less than a tenth of its size. Greater Monrovia dominates in terms of number of firms and jobs. Its residents are, on average, both wealthier and better served compared to their rural counterparts; however, the city is estimated to contribute less than 20 percent towards national GDP[2]. The number of urban poor is growing, finance for infrastructure and services is not available, and the cost of congestion threaten to exceed the gains from proximity and density.

5. **To manage the population growth that comes with agglomeration, policies and investments for the efficient use of land and responsive service delivery are needed**. Between the last census in 2008 and 2016, the population of Greater Monrovia grew at an estimated 2 to 4 percent annually[3] -- depending on approach and source of data. Of the roughly 180 square kilometers of land, ten percent is occupied by buildings, twelve percent by roads, including sidewalks, and the remaining 78 percent is vacant land. About ninety percent of

[1] The population estimates vary between 1.1 to 1.4 million, as will be outlined in detail in the report.
[2] Based on both an analysis using nightlight (19%) and other subnational data from Oxford Economics (13%).
[3] Again depending on approach to defining its boundaries and source.

that vacant land is estimated to be privately owned, and its efficient use needs to be incentivized through regulation.

6. **Sea level rise and flood risk from torrential rains will make some areas, currently home to numerous people, in Greater Monrovia uninhabitable**. The majority of the population in Clara Town are already living on reclaimed land that is under water throughout most of the year. The informal settlement of West Point – home to an estimated 75 thousand people on 0.4 square kilometer of land – is the densest area in Greater Monrovia and at risk if sea levels rise by 1 meter. In order to adapt to future sea level and climate change scenarios, existing land use needs to be revisited and planning instruments be designed to guide infrastructure and housing development in safe areas.

7. **Unfinished decentralization, unclear and overlapping mandates and lack of finance significantly hinder Greater Monrovia's potential to further contribute to Liberia's economic transformation**.[4] Most service delivery functions are carried out by under-resourced and weak state-owned utilities. Other urban functions, like urban planning, stormwater drainage and roads, are provided in conjunction with central government agencies – with concomitant fractious overlapping mandates. The remit of local service provision by the Monrovia City Council (MCC) is limited, mostly pertaining to waste collection and management. MCCs Own Source Revenues (OSRs) barely cover its operations and all capital investments are either financed externally or through the national government. Moreover, Greater Monrovia includes Paynesville managed by the Paynesville City Corporation (PCC), 9 other township and one additional borough, making joint planning difficult due to fragmentation.

8. **Greater Monrovia can do more to capitalize from agglomerating, but it needs to leverage Liberia's resource wealth.** In 2012 the Government of Liberia embarked on an ambitious vision, *Liberia Rising 2030*, that outlines its plan to reach middle income status by 2030. The two agendas that have been put forwarded by the two administrations are comprehensive and support a wider reform of Greater Monrovia's territory to make it more livable, competitive and resilient against climate shocks.

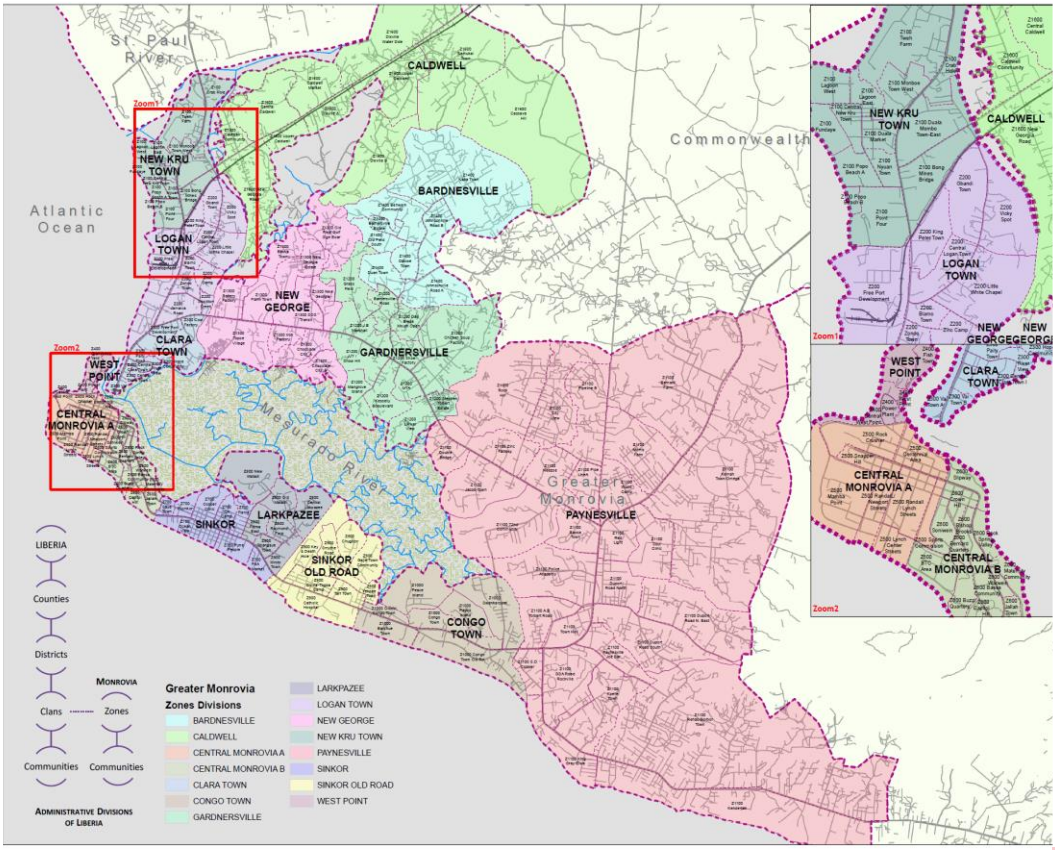
9. **This study seeks to identify the factors that hinder Greater Monrovia to achieve higher productivity of its workers and welfare for its citizens**. It will do so by combining specifically gathered spatial data through drones with statistics derived from household, labor and enterprise surveys. It offers pragmatic recommendations on policy, regulation and investments to the country's local and national stakeholders, with an understanding of the serious limitations the country faces with regard to finance and capacity.

10. The **first chapter** examines the evidence between urbanization and the economy and provides details on demographic trends and the state of economic transformation. The **second chapter** outlines the constraints pertaining to growth, including discussions on risk and informality, urban services, land use and urban form, connectivity to jobs, congestion and markets, and education and skills. **Chapter three** highlights the institutional fragmentation and lack of resources hindering the transformation of Greater Monrovia, and **chapter four** offers recommendations to address identified bottlenecks. The last chapter concludes.

[4] The devolution of certain administrative, fiscal and political powers and institutions from the national government to local governments is still underway (Local Government Act 2015). Monrovia City Council, as municipal authority, is only responsible for solid waste management and is allocated funds in the national budget for that service alone along with salaries subsidy. MCC has municipal revenue sharing arrangements with some adjoining Local Government Areas (LGAs).

MAP 1: MAP OF LIBERIA

MAP 2: ADMINISTRATIVE BOUNDARIES OF GREATER MONROVIA



Executive Summary

11. **In 2012 and after decades of conflict, the Government of Liberia embarked on an ambitious program and launched a 5 year national plan on transformation to generate economic growth and prosperity**. The Agenda of Transformation (AfT) under the umbrella of *Liberia Rising 2030* aimed at reaching middle income status by the year 2030, by building infrastructure, increasing youth employment opportunities, strengthening human development and sustaining peace and stability. Historically, no country has attained middle income status without reaching at least 50 percent urbanization. This is because urbanization is in theory associated with the structural transformation of the economy from agricultural to urban jobs in manufacturing and services, and an increased production of goods and services at scale that enhance labor productivity, spur higher wages, increase local demand for food and thereby generate a win-win for both urban and rural workers.

12. **In continuation of the vision laid out in *Liberia Rising 2030,* another 5-year plan was conceived in 2018, laying out a Pro Poor Agenda for Prosperity and Development (PAPD)**. The new agenda emphasizes the need to invest in human capital, so that Liberia can better leverage its massive resource wealth through value additions to agriculture, fisheries and mining produce. It understands the role urban areas and especially Greater Monrovia need to play in supporting the economic transformation necessary for the country to generate shared prosperity, and is fully cognizant of the extent of informality and lack of service access that has paralyzed the economy of Greater Monrovia.

13. **Liberia's structural transformation is still incomplete**. Agriculture, mostly subsistence farming, still employs the largest share of workers (46 percent) in Liberia, even though its contribution to GDP is declining and is with 37 percent lower than services. Yet, much of the transition to urban jobs in Greater Monrovia went to employment within non-tradeable sectors (85 percent), which growth is by definition conditioned by local demand. Other urban areas – though growing in population at similar or higher rates as Greater Monrovia – have changed little, partly because they lack critical infrastructure and scale. The next largest town in Liberia (Gbarnga in Bong) is not even 7 percent the size of Greater Monrovia.

14. **For Liberia to reap the benefits from urbanization, Greater Monrovia needs fixing**. The district of Greater Monrovia is home to about a quarter of Liberians; counting the agglomeration of Greater Monrovia this figure could be as high as 29 percent; and the number is growing. However, both nightlight data and other estimates of local GDP show the contribution of Greater Monrovia towards national GDP at only 19 and 13 percent, respectively, thus lower on a per capita basis than the rest of the country. One of the reasons is that Liberia's economy still heavily relies on exports of primary commodities, rather than generating value additions to these primary goods within the country. This has made the economy vulnerable to external shocks, as during the sharp decline of commodity prices in 2015/2016, and is limiting its growth potential. Due to scale and proximity to the port, Greater Monrovia could become a major hub for local agro-processing industries and light manufacturing, but it needs to address constraints to its economy stemming from decades of neglected investments.

There are multiple constraints impacting the functioning of Greater Monrovia

15. **Land use in Central and Greater Monrovia is highly inefficient and unequal**. Only an estimated 37 percent of land in Central Monrovia is built upon, either by roads and sidewalks (13 percent) or buildings (24 percent). What should be prime real estate in Central Monrovia is a majority (77 percent) of one story houses that are not built of materials that could support another one. An estimated 63 percent of the land, net of roads and sidewalks, is privately owned. Many government owned buildings are empty and in need of repair.

Informality is ripe, with half of the available land mass in Greater Monrovia covered by slums and not counting the increasing encroachment of informal settlements into wetlands and reclaimed land. These settlements have become hotspots of possible COVID 19 transmissions; similar to 2014, when they were the most affected areas during the Ebola crisis.

16. **Inefficient land use adds to the cost imposed by the fragmentation of the city due to its geography**. The Mesurado river divides Greater Monrovia and generates large distances that need to be overcome, when workers commute to their jobs, sellers and buyers travel to the markets and children to school. About a third of employed individuals reach their work on foot, making the location of their home an important function of which jobs they can access. In addition to natural barriers, the low utilization of land and prevalence of low rise housing add to the cost – not only because of longer distances of daily commutes, but also because network infrastructure costs are so much higher as they do not benefit from economies of scale.

17. **Climate change will reduce some of the land mass – permanently or temporarily – creating an even stronger urgency of making land use more efficient**. Threats from climate change hit Greater Monrovia both from the Mesurado river delta and from the long coastal line that exposes the city to sea level rises. They over-proportionally affect the poor that reside in these informal settlements bordering the shores of the river or sea. These risks generate an even greater urgency for improving current land use, beyond the economic argument of the cost of fragmentation. They also call for urgent planning tools to avoid investments being sunk in areas that are under water in the future and a rethinking about how to provide affordable housing for the thousands of slum dwellers near their jobs when they are displaced from their current location.

18. **Infrastructure service provision is largely conditioned by land use**. Population density makes a key difference to the cost of network infrastructure, being the primary reason why grid electricity, sewage systems and piped water from the utility are not financially or economically viable investments in rural and low densely populated urban areas. Greater Monrovia's piped water and sewage system predates the civil wars of the country and was once built to cater to a much lower population. It is thus hardly surprising that, following decades of conflict and underinvestment in the systems, piped household connections of water were estimated to be as low as 3 percent in 2016. Future network extensions for both water and sewage could be a fraction of the cost, if land use and population densities were better managed through formal housing of more than one floor that would be commensurate to expected urban densities.

19. **Economic infrastructure – transport and electricity – though so much better than in other urban areas are still constraining the traffic flow within Greater Monrovia and the growth prospects of the private sector**. Lack of access to electricity has been identified as one of two top constraints to Liberian firms. Only 27 percent of households report access to electricity, including those connecting illegally, with the downside of the state owned electricity company LEC incurring financial losses in the millions that are recovered through higher tariffs and government subsidies. Two important markets – the Duala market and the Redlight market – are located on the few paved corridors and are so congested that at certain hours they virtually halt all traffic into and out of Central Monrovia. Both markets are critical in connecting urban shoppers to rural farmers in Montserrado and neighboring counties, but without alternative corridors, this will continue to impose major constraints both to the delivery to the markets as well as those commuting from Greater Monrovia's periphery to work.

20. **Skills, literacy and education are critical components for Greater Monrovia's 'knowledge' based economy and as input to firms**. Even though both literacy level and education attainments are improving in Greater Monrovia – and elsewhere – one in four adults still reports having not completed primary schooling.

While the proportion of Monrovians with completed higher education is small (about 5 percent), almost 20 percent of the adults report attending polytechnic, vocational or adult education classes as a means to make progress in their careers. There are high returns to better education, as evidenced through wages, signaling scarcity of skilled labor and pointing to the need to make more progress on achieving education for all.

21. **Lack of remit and clearly delineated responsibilities hinder Greater Monrovia's local and central government institutions to guide the city's investment needs**. Most service delivery functions are carried out by under-resourced and weak state-owned utilities. Other urban functions, like urban planning, stormwater drainage and roads, are provided in conjunction with central government agencies – with concomitant fractious overlapping mandates. The remit of local service provision by the Monrovia City Council (MCC) is limited, mostly pertaining to waste collection and management. MCCs Own Source Revenues (OSRs) barely cover its operations and all capital investments are either financed externally or through the national government.

22. **Greater Monrovia – the MCC, PCC and other entities – needs a model of inter-jurisdictional governance to improve service delivery**. The MCC and PCC, as the institutional leaders of Greater Monrovia, should consider advocating for a broader assignment of local expenditure functions, supported by new tax revenue sources, to operate under a model of metropolitan governance characterized by clear transparency and strong accountability. To enhance this transparency, MCC should consider reporting both planned and executed expenditures (de-jure and de-facto) in each jurisdiction covered by an MoU in order to enhance accountability, as part of good governance.

For Greater Monrovia to unlock its important role in support of economic growth and shared prosperity, it needs to prioritize its land issues

23. **Reliable and digitalized land ownership and transaction records are the most important instruments for local revenue generation, land use regulation and urban planning**. Without a reliable cadaster, land owners cannot be taxed, vacancy of land cannot be penalized thus better land use cannot be incentivized, and urban plans – including those for infrastructure development and housing – cannot be formulated unless there is a clear understanding on what land belongs to the government and what is private. Due to its revenue generation potential, land could also unlock much of the severe fiscal constraints currently limiting local infrastructure and economic development.

24. **Without reliable land records, the risks from climate change that are and will continue to impact Greater Monrovia cannot be effectively mitigated**. The location of climate resilient settlements and business districts needs to be planned today on land that is not affected in the future by sea level rise and flood risk. Choices need to be made between (i) deflecting future population growth into the periphery of Greater Monrovia, while planning appropriate transport corridors and modes to connect to the future location of jobs; (ii) intensifying land use in the safe areas of central areas of Greater Monrovia by building higher and reducing the vacancy of land. A combination of both is needed to match incomes with affordable housing options.

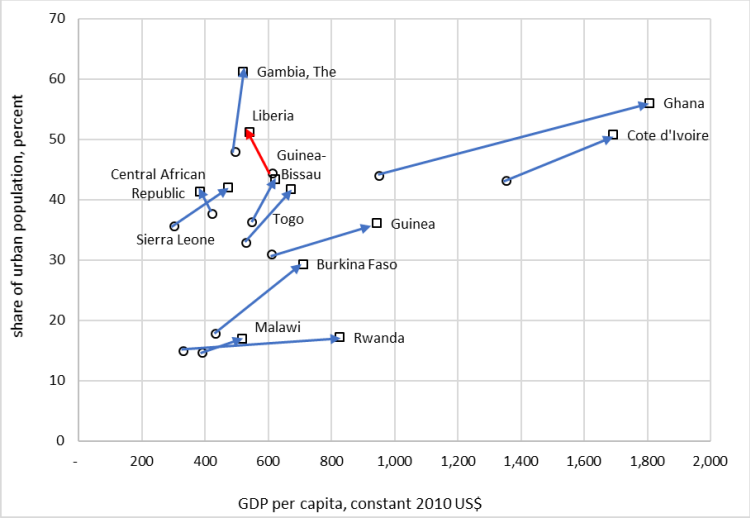
25. **Until longer term choices for network infrastructure, housing, and business districts are planned and designed, temporary relief needs to be granted to the 70 percent of slum residents that cannot wait until viable alternatives are in place**. The 2014 Ebola crises and today's COVID 19 pandemic over proportionally affect the poor households residing in informal settlements of Greater Monrovia. They lack access to potable water, sanitation and many of these settlements are already year-round in knee deep waters. Eventually, these residents will need to be evacuated, but until then non-network service solutions need to be explored, using creative private provision models adopted by social entrepreneurs in other parts of Africa.

1. Liberia's Linkages between Urbanization and Economic Growth

26. **Countries cannot reach middle income status without going through structural transformation that is enabled by the urbanization process**. Urbanization has typically been associated with a structural transformation of the economy from agriculture to manufacturing and services, leading to an increased productivity both among urban as well as rural workers. The theory goes like this: structural transformation begins with the release of agricultural labor to higher productivity jobs in urban centers, where firms absorb released labor to produce at scale, thus reducing the cost of production and increasing urban labor productivity. The release of labor in rural farms would also increase agricultural productivity, which would get another boost, when urban demands for agricultural produce are increasing with rising urban wages. Structural transformation has been historically a major driver for economic growth and no country has reached middle income status without becoming at least 50 percent urbanized (Spence et al, 2009).

27. **However, Liberia together with the Central African Republic are the only two countries among a select group[5] that have experienced urbanization without economic growth**. Both Liberia and the Central African Republic have a shared history of conflict and instability. Even though Liberia's economy was able to sustain an average annual GDP growth of 6.2 percent in the decade following the end of conflict in 2003, economic recovery was disrupted in 2014 by the Ebola crisis and a sharp drop of global commodities prices (Liberia SCD, 2018). Moreover, Liberia's modest increases in GDP over the past two decades were – due to its fast growing population – insufficient to maintain or grow its average GDP per capita, explaining the decline in the figure below. It is likely that the ongoing COVID19 pandemic will send another shock to Liberia's slowly recovering economy, though the extend of the damage is not yet know.

FIGURE 1: URBANIZATION AND ECONOMIC GROWTH (2000-2018)



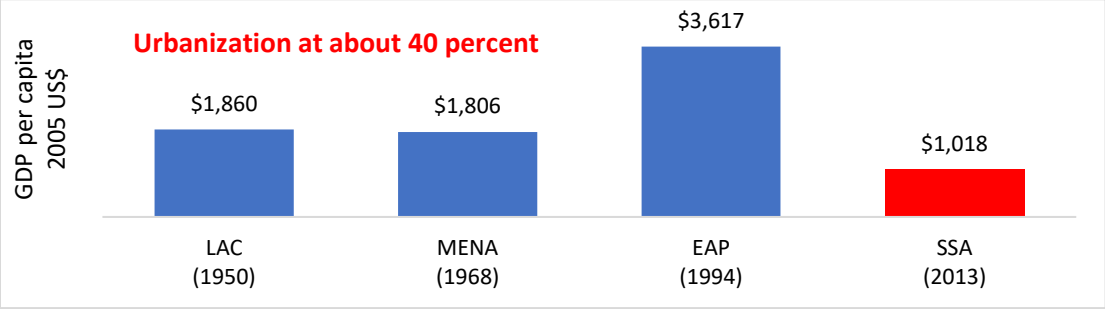
Source: Staff calculations using WDI (2019)

28. **Constraints to reaping benefits from urbanization are not unique to Liberia, but other countries managed better to reap the expected returns from agglomerating**. One factor common to most countries in SSA is that they have been urbanizing while poor. When SSA reached about 40 percent urbanization level, its

[5] This group of African countries was constructed using regression analysis to generate a comparable peer group of countries. The methodology is outlined in Annex 1, including some comparison graphs. Added to the group were neighboring countries to capture shared location characteristics.

GDP per capita was about one thousand US dollars. Latin America and Middle East/North African countries had almost double that GDP per capita, and East Asia was more than triple as wealthy, when reaching an urbanization level of 40 percent. Being poor while urbanizing means fewer financial resources available for critical infrastructure and human capital. Without such investments, the benefits from urbanization are much harder to reap: the workforce does not receive needed education to match the skill requirements of firms and, without capital investments, expansive informal housing occupies urban centers, thus increasing the cost of the commute, lowering the economies of scale of service provision, and raising the cost of doing business.

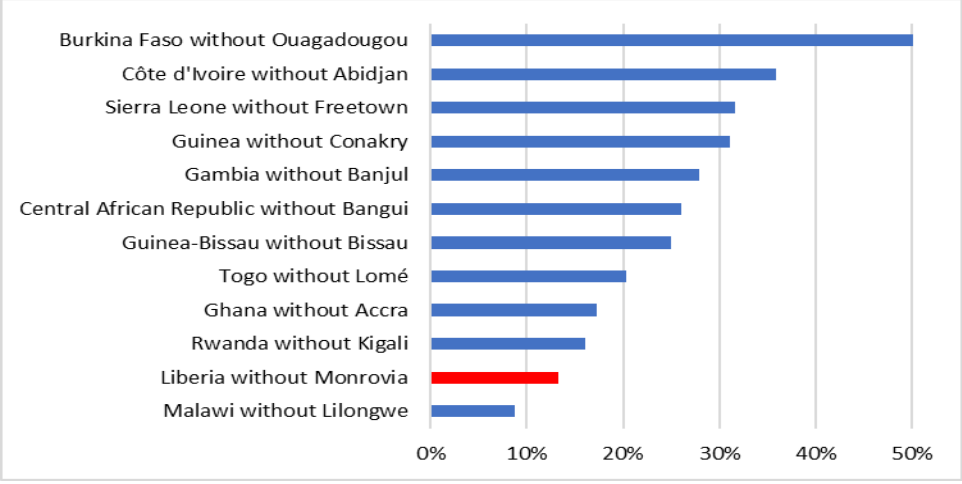
FIGURE 2: SUB-SAHARAN AFRICA IS URBANIZING AT A LOWER GDP PER CAPITA THAN OTHER REGIONS



Source: Lall, Henderson, and Venables (2017)

29. **Greater Monrovia dominates both in terms of concentration of population and economic activity, but it needs to leverage its opportunities for economic growth better and at par with other cities in SSA**. Apart from city level performance, the extent to which capital cities contribute to country GDP also depends on their primacy status within the country, i.e. are there other larger cities that are also significantly contributing to national GDP (like for example Kumasi in Ghana that is almost the same size as Accra). The population of Greater Monrovia was in 2008, the year of the last census, about 16 times the size of the next largest town Gbarnga in county Bong. Therefore, if Greater Monrovia does not reap the full benefits from urbanization then, by extension, neither will Liberia.

FIGURE 3: LOSS OF GDP (IN PERCENT) IF CAPITAL CITY WERE REMOVED (YEAR 2015)

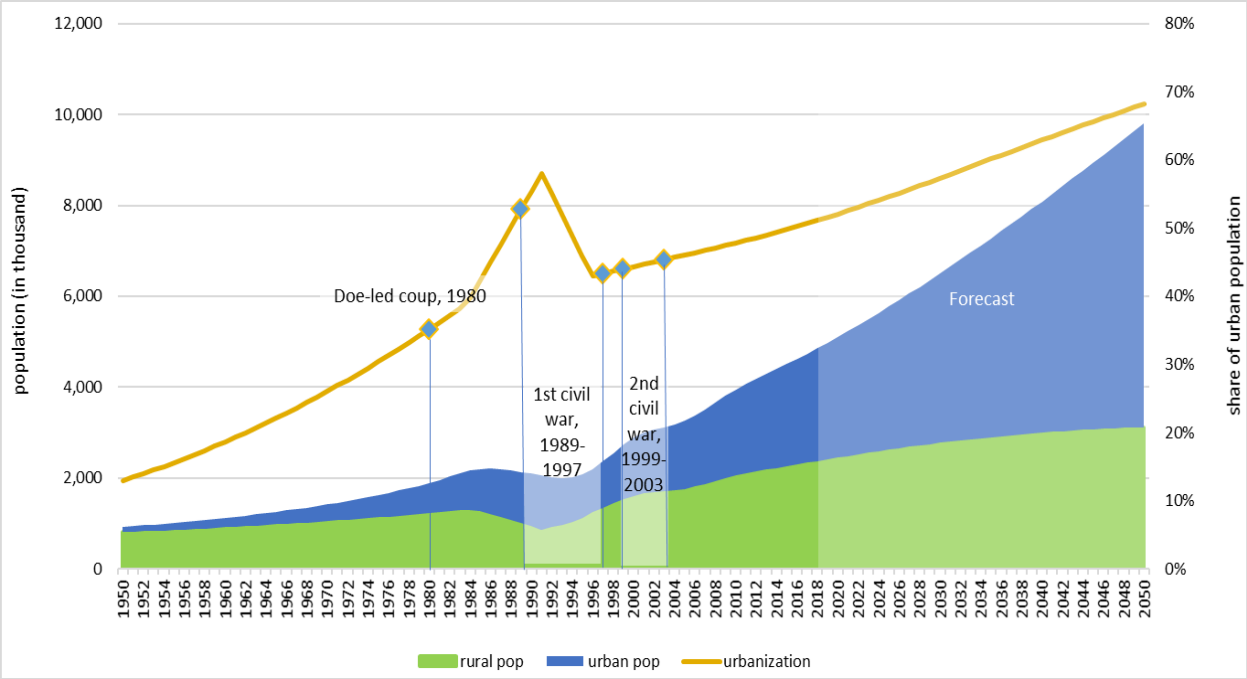


Source: Oxford Economics (2015)

1.1. Urbanization and Demographic Trends

30. **Liberia's pattern of urbanization needs to be viewed as a product of its history of instability and conflict.** Two civil wars between 1989 and 2003 killed several hundred thousand people and displaced more than a million, half of Liberia's population at that time. The share of the urban population peaked during the initial years of conflict (58 percent in 1991) as people sought safety in urban areas and Greater Monrovia became host to numerous IDPs. In subsequent years as the conflict intensified and reached the capital, a third of the population was displaced further, either fleeing to neighboring countries or taking refuge in the interior of Liberia. By 1996, the urban share of the population had plummeted to 42 percent[6]. Today half of the 4.6 million Liberians live in an urban settlement[7] and about a quarter (or 1.3 million) reside in Greater Monrovia.

FIGURE 4: LIBERIA'S URBANIZATION LEVEL IN 2018 IS THE SAME AS 30 YEARS AGO



Source: UN DESA (2018)

31. **Over the next thirty years, Liberia's urban population is expected to triple, reaching almost 6.7 million by 2050**. According to the United Nations Department of Economic and Social Affairs (UN DESA), Liberia's urban population is projected to grow at about 3 percent annually between 2020 and 2050. This urban population growth rate is slightly below the one witnessed during the past decade or, more specifically, between 2008 – the year of the last census – and 2016 – a year for which comparable statistics can be derived using the last household income and expenditure survey (HIES). In fact, there is a slight variation between official population statistics provided by the Liberia Institute of Statistics and Geo-Information Services (LISGIS) and other sources, as outlined in the table below.

[6] Nmoma, V. (1997), *The Civil War and the Refugee Crisis in Liberia*, in: Journal of Conflict Studies, Vol. XVII No. 1, Spring 1997. https://journals.lib.unb.ca/index.php/JCS/article/view/11734/12489

[7] Liberia current classifies settlements with more than 2000 people as urban. Under the proposed Local Government Act, settlements of 25,000 are expected to be classified as cities, and settlements of 10,000 people as townships.

TABLE 1: POPULATION ESTIMATES FOR GREATER MONROVIA VARY BY STATISTICAL APPROACH AND BY SOURCE

	LISGIS 2016[1]	HIES 2016[2]	WDI 2016	UN DESA 2016[3]	EU GHSL 2015[4]	Africapolis 2015[5]
Greater Monrovia	n/a	1,134,545	1,317,509	1,321,090	1,420,945	1,190,635
Urban	2,287,037	2,197,584	2,305,044	2,318,610	2,459,358	1,715,625
Rural	1,956,438	2,045,736	2,281,744	2,295,213	2,048,948	2,369,196
Liberia	4,243,475	4,243,320	4,586,788	4,613,823	4,508,306	4,084,821

Sources: 1/ LISGIS (2016); 2/ staff calculations using HIES (2016); 3/by averaging reported statistics using UN DESA (2018) for the years 2018 and 2014; 4/ EU Commission (2015) GHSL (https://ghsl.jrc.ec.europa.eu/CFS.php); 5/ OECD (2015) Africapolis (https://www.africapolis.org/data)

32. **Depending on the statistical source, Greater Monrovia is growing at approximately the same pace as Liberia's urban population – or significantly less.** As outlined in the box on the left, different approaches to measuring urban areas lead to different population estimates, thus different population growth rates and urbanization levels. Most of the approaches are united on the growth of Liberia's urban population, with estimates ranging from 3.4 to 3.9 percent. Higher variation can be observed when attempting to approximate population growth of Greater Monrovia. If all methods were to deliver accurate results, then significant population growth should be expected outside of the official boundaries of Greater Monrovia district, i.e. in areas that are captured by all other data sources other than LISGIS, as these include areas beyond the official district boundaries.

BOX 1: DEFINING 'URBAN' AND GREATER MONROVIA

Official statistics from LISGIS classify a settlement as 'urban' if it has at least two thousand inhabitants, and this definition is followed in the data by LISGIS for both census and HIES, and adopted by WDI and UN DESA for all urban areas. In contrast, the Global Human Settlement Layer (GHSL) advocated by the European Union and Africapolis applied by OECD, use a population density approach to define areas as 'urban', irrespective of administrative definitions.

In measuring the size of the agglomeration of Greater Monrovia, official statistics from LISGIS capture Greater Monrovia through the official boundaries demarcating the district of Greater Monrovia. In contrast, the EU (using the GHSL), OECD (using Africapolis), UN DESA and WDI define the agglomeration of Greater Monrovia through the lens of urban densities. This means that areas adjacent to the district of Greater Monrovia with 'urban' characteristics are included in defining the size of the agglomeration.

Sources: LISGIS (2008), UN DESA (2018), EU Commission (2015), OECD (2015), WDI (2019)

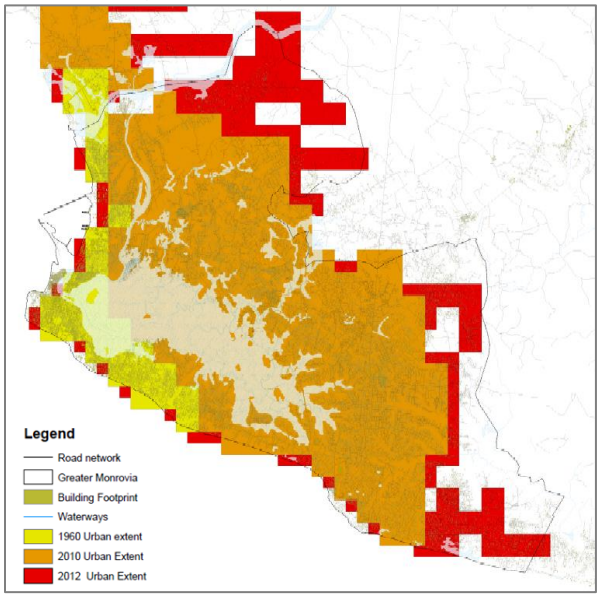
TABLE 2: POPULATION GROWTH RATES BY AREA AND SOURCE (IN PERCENT)

	LISGIS (Census 2008-HIES 2016)	WDI **(2008-2016)**	UN DESA **(2008-2016)**	EU-GHSL (2000-2015)	Africapolis (2000-2015)
Greater Monrovia	2.0[1]	3.8	4.0[2]	4.2	3.0
Urban population	3.8	3.9	3.8	3.8	3.4
Rural population	1.3	2.3	2.1	2.1	n/a
Liberia	2.5	3.0	2.9	3.0	n/a

Sources: as above. 1/computed using census 2008 and survey estimates using HIES (2016); 2/computed as average of 2007 and 2009 to get 2008 and average of 2014 and 2018 to get 2016 using UN DESA (2018)

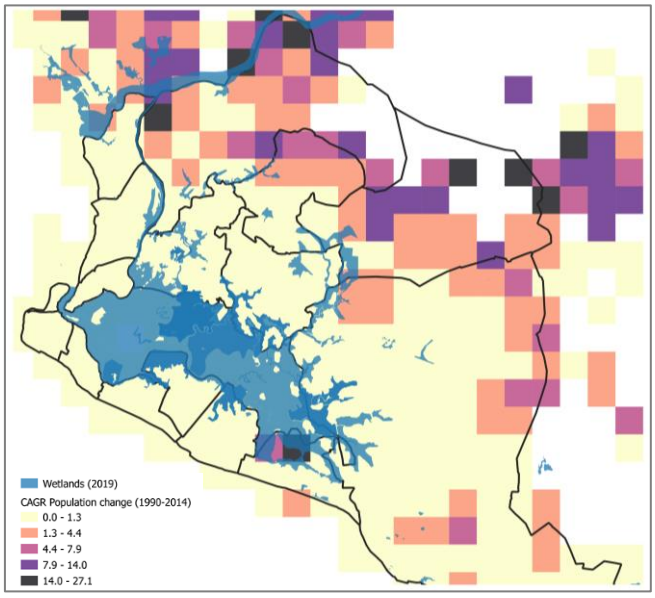
33. **Considering spatial data for Greater Monrovia strongly suggests that the agglomeration is growing beyond its official borders**. As noticeable in the maps below, areas classified as 'urban' under the definition of the GHSL are identified adjacent to the district of Greater Monrovia, suggesting expansion of the agglomeration of Greater Monrovia beyond official boundaries. Likewise, population growth rates outside the district's boundaries were far higher than within the district, giving credence to higher population growth rates for data sources that focus on the agglomeration. The analysis and data in this report will rely foremost on the census, household survey, labor force survey and other data from LISGIS, but it is important to note the legitimacy of varying population estimates for Greater Monrovia and the fact that they point to an increase in the urban footprint of the capital area.

MAP 3: THE GROWING FOOTPRINT OF GREATER MONROVIA (1960-2012)



Source: Landscan (1960, 2000, 2012)

MAP 4: POPULATION GREW FASTER ON THE FRINGES OF GREATER MONROVIA DISTRICT BETWEEN 1990 AND 2014



Source: EU Commission (1990-2015), GHSL

34. **Urban population growth exceeds rural population growth by far, suggesting migration from rural to urban areas as a contributing factor**. As outlined above urban population growth is almost double the annual rural rate, despite a much higher fertility rate in rural (5.4) versus urban areas (3.6). The fertility rate for Greater Monrovia is with 3.3 births per woman[8] even lower than the urban average, while population growth is about the same, except for the estimate of growth in the district produced by LISGIS. This would point to migration being potentially a significant factor in explaining urban population growth in general, and population growth in the agglomeration of Greater Monrovia in particular.

[8] SCD 2018

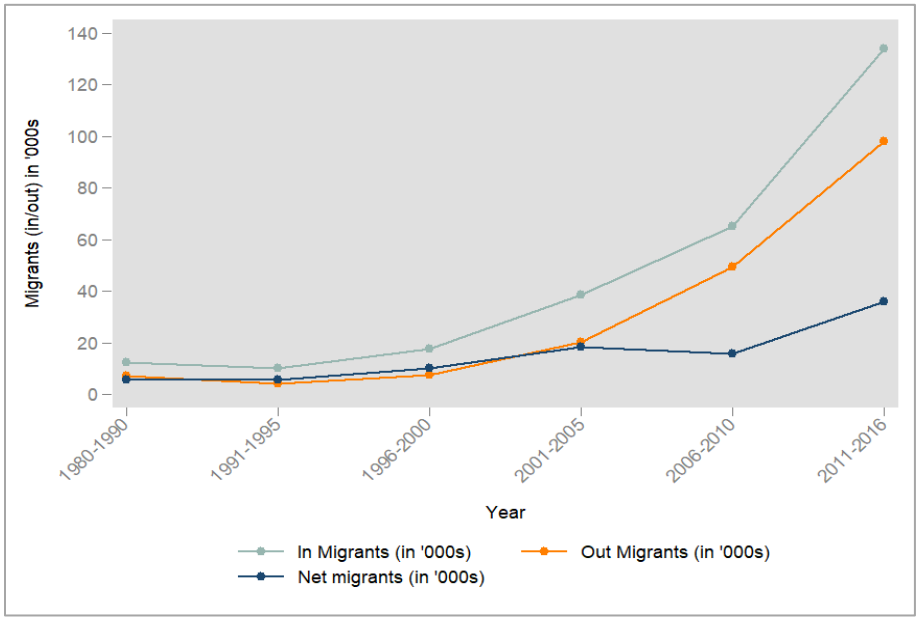
TABLE 3: FERTILITY AND MORTALITY RATES FOR URBAN AND RURAL LIBERIA (2008-2016)

		2008	2013	2016
Urban	Fertility (births per woman)	4.9	3.8	3.6
	Crude death rate (deaths per 1000 inhabitants)	17.9		
	Life expectancy	54.4		
Rural	Fertility (births per woman)	6.5	6.1	5.4
	Crude death rate (deaths per 1000 inhabitants)	23.7		
	Life expectancy	51		

Source: Census (2008); DHS (2013); DHS MIS (2016)

35. **Despite much of the population growth in Montserrado being likely driven by migration, there is also a sizeable movement of people out of Montserrado – though inflow has always exceeded outflow**[9]. Liberia's history of conflict and the Ebola epidemy have clearly been contributing factors of migration in and out of Montserrado. Throughout the past six decades however, estimated inflow using responses from the HIES (2016)[10] always exceeded the outflow of migrants to Montserrado. Between 2011 and 2016 and using the weighted survey data, an estimated 135 thousand people arrived in Montserrado and almost one hundred thousand left for other counties in Liberia, not counting those that left the country permanently and are therefore not captured.

FIGURE 5: PATTERN OF MIGRATION FROM AND TO MONTSERRADO (1980 TO 2016)



Source: Staff calculation from HIES (2016)

[9] The HIES only asks for the county as a place of birth, which is why the migration analysis cannot be conducted at a lower administrative level, i.e. one cannot distinguish between somebody born in Montserrado versus Greater Monrovia.

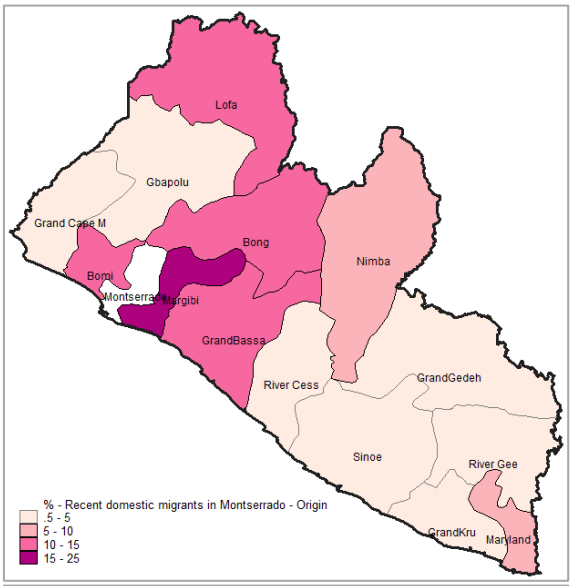
[10] The number of net-migrants to the city is estimated using the HIES 2016, which includes two questions on (i) a respondent's previous County of residence and (ii) the number of years spent in their current location.

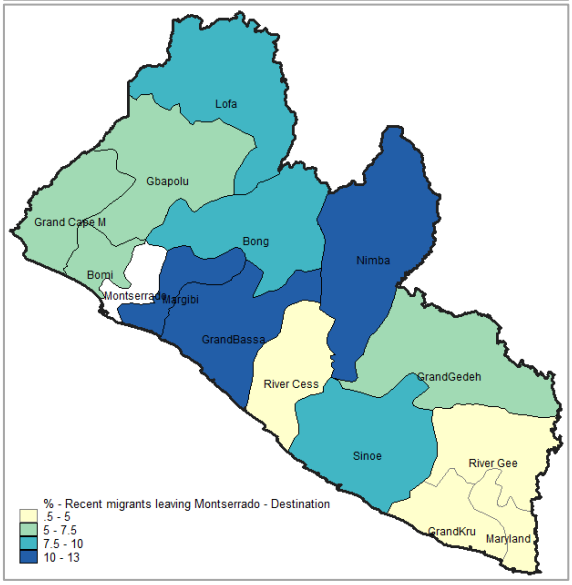
36. **Both permanent and temporary movements of Liberians between Montserrado and nearby counties suggest deep connections between the capital region and rural areas**. As one can see from the tables and corresponding maps below, the majority of recent immigrants came from nearby counties; almost a quarter originated from the county Margibi towards the East of Montserrado. Similarly the largest emigration flow out of Montserrado was to Margibi (13 percent), but also to Grandbassa along the coast and the much more inland county of Nimba. These linkages to nearby counties is also confirmed by data from the International Telecommunication Union (ITU) that analyzed the destination of visitors originating from Montserrado through cell phone data and concluded – similar to the HIES estimates – that Margibi, Bomi and Bong are the most visited counties.

TABLE 4: THE COUNTY OF ORIGIN AND DESTINATION OF RECENT MIGRANTS (2011-2016) TO AND FROM MONTSERRADO

County of origin	% of recent domestic migrants
Bomi	**12.9**
Bong	**14.3**
Grand Bassa	10.7
Grand Cape Mount	1.2
Grand Gedeh	1.6
Grand Kru	1.8
Lofa	12.3
Margibi	**24.1**
Maryland	5.3
Nimba	9.4
River Cess	3.5
Sinoe	1.5
River Gee	0.6
Gbarpolu	0.7

County of Destination	% of recent domestic migrants
Margibi	**13.0**
Grand Bassa	**12.9**
Nimba	11.2
Lofa	8.9
Bong	8.7
Sinoe	8.2
Grand Cape Mount	7.3
Bomi	6.9
Grand Gedeh	6.3
Gbarpolu	5.8
River Cess	4.7
Maryland	2.8
River Gee	1.7
Grand Kru	1.6



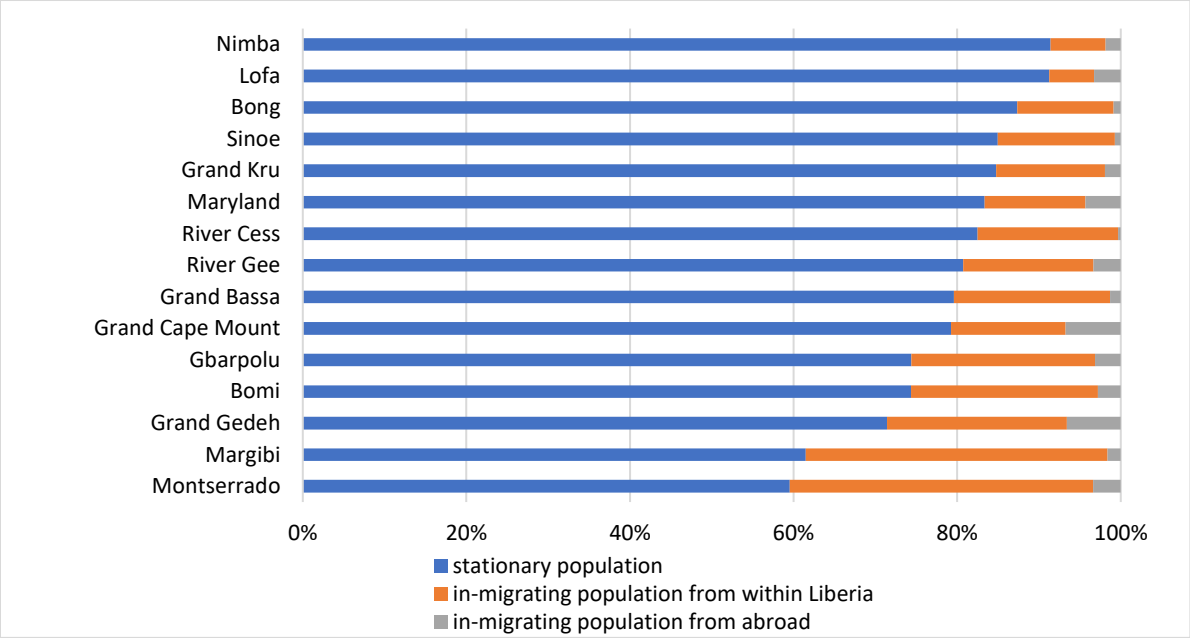


Source: Staff calculations using HIES (2016)

37. **In terms of population stock in 2016, Montserrado was the county with the largest share of population with migratory background**. About 60 percent of the population of Montserrado reported having been born in the county in 2016, whilst the remaining 40 percent (about 550 thousand people) moved into the

county at various times. On the other hand, about 125 thousand people (that have participated in the household survey of 2016) report having been born in Montserrado but were now living in another county for various number of years and reasons unknown. As mentioned earlier exits from Montserrado to other countries cannot be captured by the data, but the size of the Liberian diaspora is large and is playing an important role for Liberia's receipt of remittances that contribute 10 to 20 percent of Liberia's GDP (WDI, 2019).

FIGURE 6: POPULATION WITH MIGRATION AND NO MIGRATION BACKGROUND IN 2016 (IN PERCENT AND BY COUNTY)



Source: Staff calculations using HIES (2016)

38. **One of the supporting hypothesis of the beneficial aspects of urbanization is that 'pull' factors would encourage the highest skilled or most educated rural workers to move to urban areas to seek better remuneration**. In reality a combination of 'pull' and 'push' factors are driving migration decisions and it is often difficult to distinguish one from the other, as they are clearly intertwined: for example, low job opportunities at origin may be a 'push' factor, while better job opportunity at destination a 'pull' factor. However, it is possible to compare educational achievements of population above 15 years of age across different groups: more recent migrants, migrants that have been residing in Montserrado for a longer period, and their stationary peers. Montserrado natives are less likely to have no education and more likely to achieve secondary and tertiary schooling compared to migrants that moved to Montserrado less than 5 or less than 15 years ago. There is no significant difference between the more recent and the less recent migrants to Montserrado, with the exception that the latter are more likely to have no education compared to less recent migrants. Moreover and as one would expect, urban residents – whether in other urban areas or in very urbanized Montserrado – have higher educational achievements, especially at secondary and tertiary level compared to their rural peers, and are less likely to have only primary schooling or no education.

39.

TABLE 5: EDUCATIONAL ATTAINMENT OF STATIONARY POPULATION AND MIGRANTS (POPULATION >=15 YEARS OF AGE)

	Montserrado Natives n=1898	<=15 years ago n=462	<=5 years ago n=231	Rural non-migrants n=9408	Other Urban non-migrants n=2802
No Education	15.8%	31%	35.6%	53.9%	28.8%
Primary	11.4%	21%	21.4%	24.0%	20.0%
Secondary	57.7%	42%	37.0%	21.4%	47.5%
Tertiary	15.2%	5.8%	6.0%	0.6%	3.7%

Source: Staff calculations using HIES (2016)

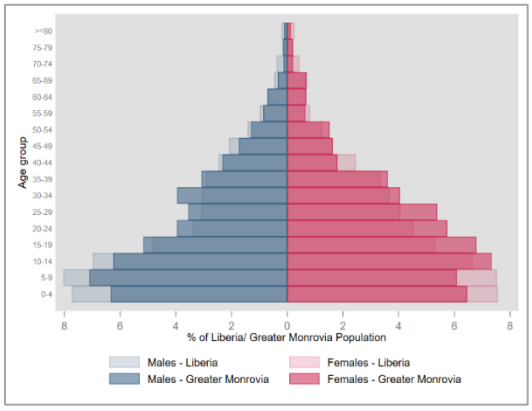
40. **Family reasons dominate the motivation of migrants to move to Montserrado, for recent migrants more than for those that have arrived longer time ago**. 28 percent of earlier migrants and 47 percent of recent migrants report having moved to Montserrado because of family reasons. Likewise, a smaller percentage of earlier migrants were motivated by business and employment opportunities (13 percent) or improved services and housing (17 percent) compared to more recent migrants (18 and 25 percent respectively). Access to better education (both secondary schooling and universities) was more important to earlier cohorts (23 percent) than more recent ones (9 percent).

TABLE 6: WHY DID PEOPLE MOVE? SELF-REPORTED REASONS FOR MIGRATION (HOUSEHOLD HEADS)

	Long-term domestic migrants (15-40 years ago) n=91	Recent domestic migrants (5-15 year) n=92	Recent domestic migrants (<=5 years) n=62
Business/ employment/ work	13.1%	14.6%	17.7%
School/ studies	23.2%	12.8%	9.4%
Marriage	4.5%	6%	
Other family reasons	28.1%	36.8%	47.0%
Better services/ housing	17.1%	18.3%	25.2%
Land/ plot	6.4%	0.4%	
Security	6%	5.9%	
Medical reasons		0.4%	2.2%
Other specify	1.5%	4.8%	

Source: Staff calculations using HIES (2016)

FIGURE 7: POPULATION DISTRIBUTION IN LIBERIA AND GREATER MONROVIA



41. **Greater Monrovia's population is young and needs employment**. 45 percent of Greater Monrovia's population is at its prime age between 15 and 40, and 40 percent are below 15 years of age constituting the next cohort of youth seeking employment and opportunities. If the rising youth cohort could be engaged in urban jobs, a sizeable demographic dividend could be on offer for Liberia; however failure to do so risks alienation and hopelessness in a country that needs every support to sustain peace and security.

Source: Staff calculation using HIES (2016)

1.2. Economy of and Employment in Greater Monrovia

42. **Liberia's economy is experiencing a structural change in the composition of its GDP towards services and away from agriculture**. Over the last two decades, the contribution of agriculture to GDP has fallen from 76 to 37 percent, whereas services have grown from 20 to 50 percent over the same period. Value added of mining, manufacturing and construction as percent of GDP – though tripling since 2000 – remains limited, despite Liberia's large exports in mining products, especially iron ore. In fact, many of the natural resources Liberia has a potential comparative advantage in – rubber, cocoa, palm oil, iron ore – are under concession agreements that provide revenue to government (about 30 percent in 2014 according to the SCD 2018), but are exported as raw materials and therefore add less value to GDP or job creation than if they were processed within Liberia.

43. **Though agriculture represents a declining share of Liberia's GDP, it remains the largest share of employment and is important to leverage Liberia's advantage**. The majority of agricultural workers is dependent on subsistence farming, which modernization is constrained by the lack of physical, financial and human capital (SCD, 2018). Despite earlier efforts to ensure concession agreements generate more local benefits in terms of employment and investments in infrastructure, progress has been limited by the rent-seeking culture surrounding concessions (ibid). For agriculture to play a more dominant role in terms of its contribution to poverty reduction, GDP, and sustainable employment, support to agro-processing industries needs to be extended with a win-win approach for the urban economy, on which increases in agricultural productivity will depend.

FIGURE 8: CHANGE IN THE COMPOSITION OF GDP IS ASSOCIATED WITH A MODEST INCREASE IN GDP

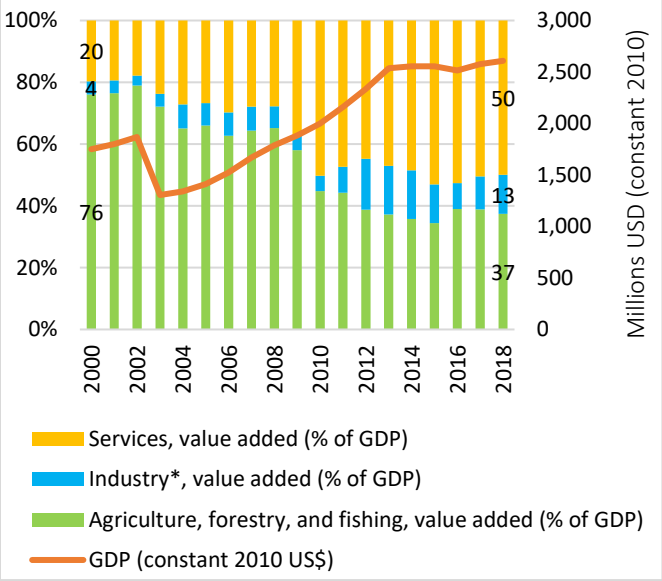
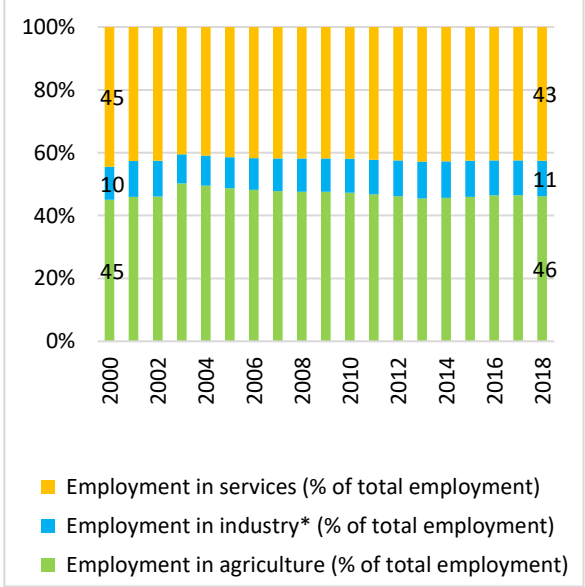


FIGURE 9: EMPLOYMENT SHARES HAVE BARELY CHANGED OVER THE PAST TWO DECADES



Source: Staff calculations using WDI 2019; * including mining, manufacturing and construction

44. **Among Liberia's urban areas, only the economy of Greater Monrovia has transitioned from agriculture to services**. About five percent of Greater Monrovia's workforce is still engaged in agriculture, while more than 65 percent have shifted to service sector jobs. Even though the share of agricultural employment in

Greater Monrovia is negligible, the markets in and around Greater Monrovia are a critical lifeline for farmers to sell their produce and residents to meet their food demands. Likewise, there are opportunities for agro-processing industries that could add value to agricultural produce for exports and that benefit from improved infrastructure and connectivity offered by urban densities. Other urban areas have seen little change to their local economy[11], despite the rapid urban population growth outside the capital area, which suggests that Greater Monrovia could play an important role in engaging local supply chains and incentivizing local value-additions within the capital area to Liberia's abundant raw materials.

TABLE 7: PRIMARY SECTOR OF EMPLOYMENT OF WORKERS IN URBAN MONTSERRADO/GREATER MONROVIA

	2008^^	2016^^
Agriculture	5.1	5.4
Mining and quarrying	1.1	1.6
Manufacturing	2.1	3.8
Utilities	3.7	1.6
Construction	3.8	6.1
Commerce	48.5	48.0
Transportation, storage, communication*	5.5	4.5
Financial and Business Services	1.7	1.5
Public administration and defense	14.1	15.8
Other Services	14.5	11.7

Source: Census (2008), HIES (2016), LISGIS (2011)
Notes: non-tradable sectors in bold; * could be partly tradeable

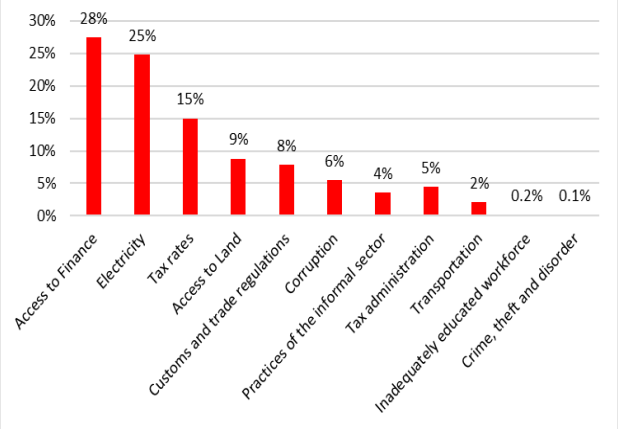
45. **The majority of Greater Monrovia's service sector employment is within the informal, low-productive and non-tradeable segments**. About 90 percent of all jobs tabulated above produce non-tradable goods or services. By definition, the growth of the non-tradeable sector is dependent on domestic demand, thus limiting economies of scale in the production and therefore efficiency improvements that could lift productivity. Variations between 2008 and 2016 are a likely manifestation of domestic demand fluctuations, driven by the presence of United Nations and other agencies in the aftermath of the conflict and during the Ebola crises.

46. **Informality and low productivity correlate with firm size**: 57 percent of the firms in Montserrado employ three or fewer employers and almost two thirds had a turn-over of less than LRD 70k in 2017, equivalent to about USD 560 at 2017 exchange rates[12]. Montserrado is home to nearly 70 percent of the 17,642 firms assessed in Liberia's establishment census in 2017. The majority of these businesses are run by 'reluctant entrepreneurs'[13] that have insufficient skills to work in formal jobs, no access to credit to expand and grow their business, but need to produce something to make a living. Only 962 firms registered under the Establishment Census in Liberia have more than 20 employees; nearly 80 percent of these larger firms are in Montserrado.

[11] SCD (2018), p.33
[12] National Establishment Census (2017)
[13] A term coined by Abhijit Banerjee and Esther Duflo (2011)

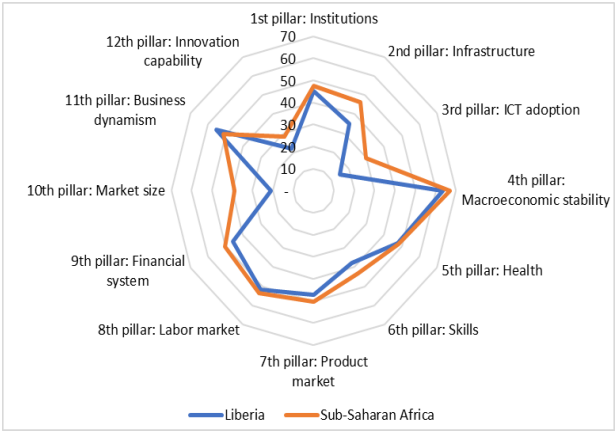
47. **Productivity of firms and thus wages are driven by a variety of factors, some of which point to a larger failure of local and national institutions to guide policies and investments that support the urbanization process**. The 2017 enterprise survey identified lack of access to finance and electricity as the top two constraints for Liberian firms, followed by high taxation, access to land and customs and trade regulations. Liberia scores equal or worse than the SSA average on 11 out of 12 indicators assessed by the 2018 Global Competitiveness Index (CGI), with widest gaps or lowest scores with respect to institutions, infrastructure, ICT, skills and market size. The very large distance to the SSA average on market size – an indicator drawn from national GDP, imports and innovation ecosystem – emphasizes the importance of Liberia to leverage its raw materials as processed exports to the world.

FIGURE 10: ACCESS TO FINANCE AND ELECTRICITY TOP CONSTRAINTS TO LIBERIAN FIRMS, 2017



Source: Enterprise Survey (2017)

FIGURE 11: GLOBAL COMPETITIVENESS INDEX, 2018: LIBERIA COMPARED TO SUB-SAHARAN AFRICA



Source: Global Competitiveness Report (2018)

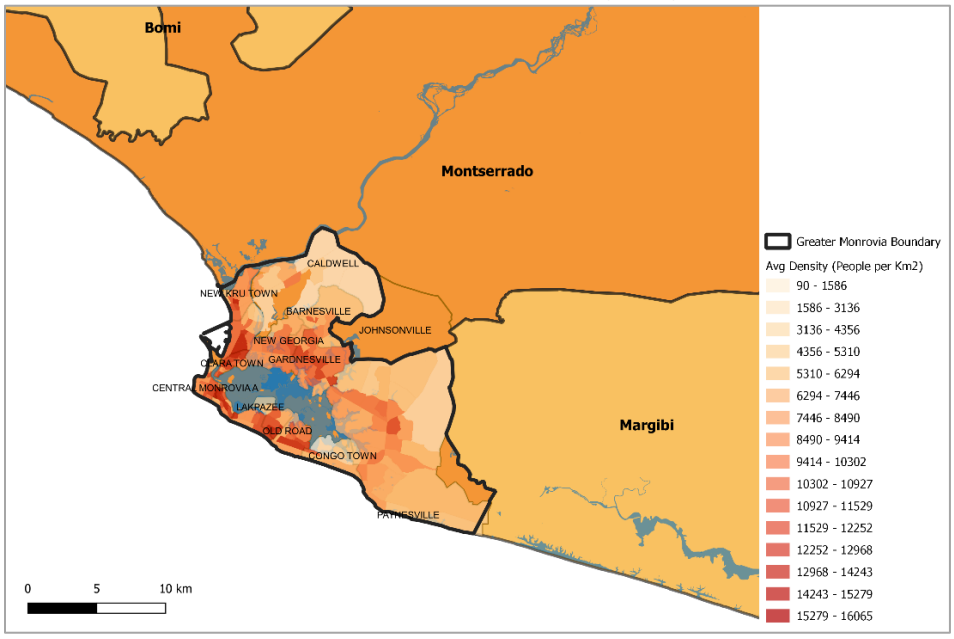
2. Understanding Greater Monrovia's Constraints to Growth and Prosperity through a Spatial Lens

48. **When consumers, producers and workers cluster in proximity, they spur competition and enable scale and specialization that bring agglomeration benefits in form of higher productivity**. To generate proximity, either the physical distance needs to be reduced or overcome by investing into connective infrastructure and transportation services. Therefore, productivity generated through scale and specialization, can only be reaped if connectivity between workers, producers and consumers is fostered through density and efficient transport options. Many African cities are fragmented, disconnected and costly (Lall and Venables 2017) and therefore fail to reap these agglomeration benefits.

49. **Population densities bring workers closer to jobs, increasing workers' opportunities and fueling their productivity**. However, Liberia did not reap the benefits it should from agglomerating as shown in Figure 1. Neither did Greater Monrovia contribute proportional to GDP on a population basis: only about 13 percent as shown in Figure 3 above and corroborated at 19 percent by using nightlight[14] to estimate Montserrado's subnational GDP for 2015. Urbanization without commensurate planning and regulation of investments has resulted in almost 70 percent of Greater Monrovia's population residing in informal settlements, the majority of population lacking critical urban services, congestion in some parts and inefficient use of land in other parts of the city.

2.1. Density and Fragmentation in Greater Monrovia

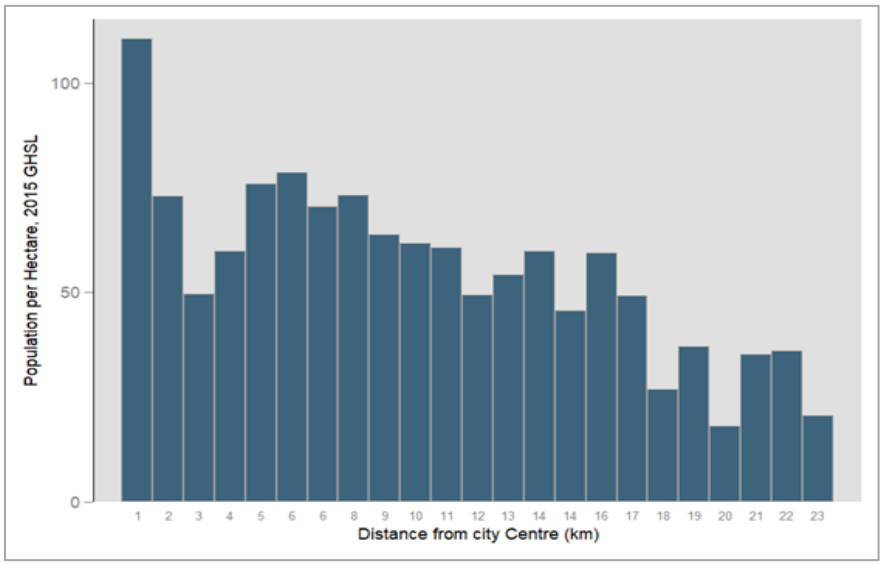
MAP 5: POPULATION DENSITY IN MONTSERRADO COUNTY (2015)



Source: GHSL 2015, density per 250 meter grid

[14] Census (2008); Data from Kummu et al (2018) were overlaid on administrative maps of Greater Monrovia to estimate the district's GDP.

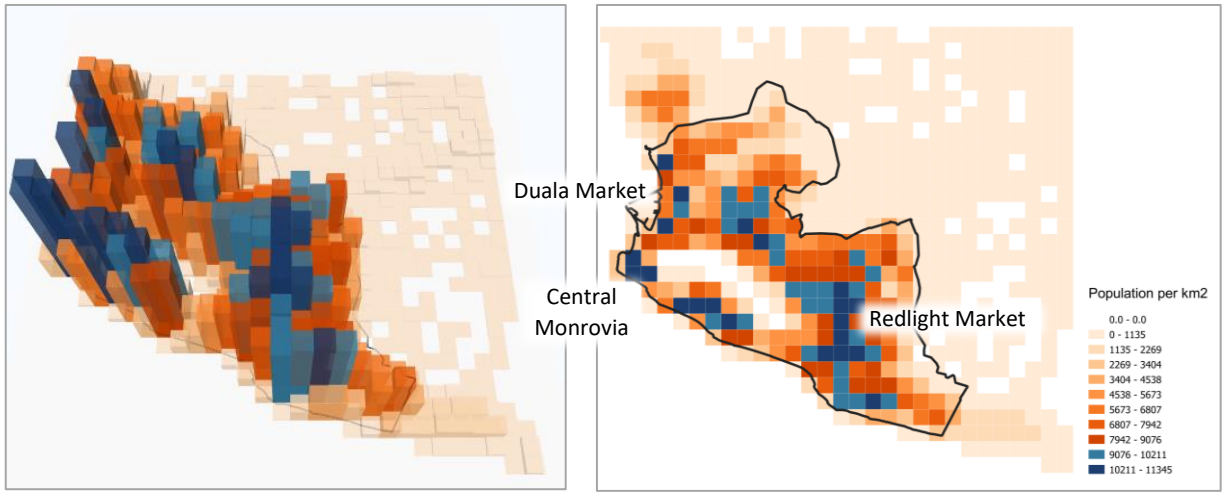
FIGURE 12: AVERAGE POPULATION DENSITY PER HECTARE AND DISTANCE FROM CBD



Source: Staff calculation using GHSL (2015)

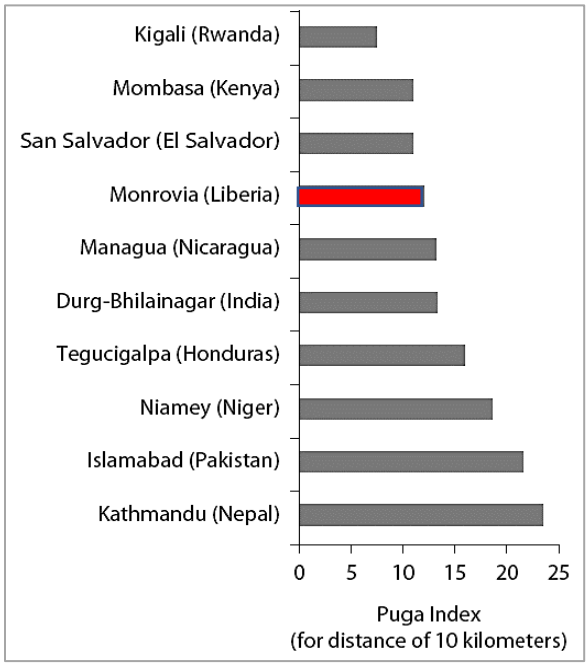
50. **Greater Monrovia's pattern of population density suggests a less monocentric shape and more fragmentation that increase the cost of doing business**. Most cities experience peak densities in the center, with density gradually falling with distance. As shown in the figure above, population density is highest in the center but fluctuates from then on with little peaks. Greater Monrovia's topography generates natural barriers where population cannot reside, explaining some of these density peaks that are also captured in the figures below. The large basin formed by the Mesurado river is uninhabitable, even though encroachment along its shore has become a flood hazard not only for the residents in these informal settlements but also – by constraining the natural hydraulic capacity of the river – for other areas. The river divides the city and reduces the agglomeration benefits. The large distances between firms and workers tend to reduce workers' access to jobs by raising the cost of the commute, undermine job market pooling and matching, and hinder the transfer of innovation and ideas.

FIGURE 13: POPULATION DENSITY PER SQUARE KILOMETER (2015)



Source: CIESIN/ Facebook High Resolution population data (2015) - https://ciesin.columbia.edu/data/hrsl/

FIGURE 14: THE PUGA INDEX FOR GREATER MONROVIA



Source: World Bank (2019a)

51. **Beyond the natural barriers of Greater Monrovia's topography, there is fragmentation because of inefficient land use** . While Central Monrovia is one of the areas with highest density, similar densities covering a larger area can be seen around the Redlight market in the Eastern part of the city (see figure above). What should be a densely populated area between the Redlight Market and downtown Central Monrovia, is a stretch with relatively low density and little commerce. The cost of such fragmentation is measured by the PUGA Index for select cities in the figure on the left and include an estimate for Greater Monrovia. Based on a dataset by Henderson et al (2018), it measures current 'connectedness', as opposed to fragmentation, and shows that, controlling for income levels and city population size, a one percentage point increase in connectedness is associated with urban costs that are 12 percentage points lower.

52. **The cost of such an inefficient urban form is reflected in higher wages firms have to pay its workers**. Apart from transportation cost, households in African cities are estimated to pay, on average, 77 percent more for housing and 26 percent more for food than households in other cities at comparable levels of economic development (Nakamura et al, 2016). In turn, this may result in higher urban wages that are not driven by productivity gains, but higher urban costs that are passed on to consumers and reduce firm level competitiveness.

53. **Greater Monrovia's wages are higher than rural and other urban wages in both nominal and real terms, though the premium is diminishing to only 5 percent in some regression specifications**. Following Jones et al. (2017), a regression analysis shows that nominal wages in Greater Monrovia of those formally employed are about 13-52 percent higher than in rural areas and 7-25 percent higher than in other urban areas. However, when considering real wages, Greater Monrovia's advantage over other urban areas is slightly reduced to 5-22 percent, depending on the regression specification, confirming a far higher earning potential despite higher cost of living.

TABLE 8: WAGES IN MONROVIA ARE NOT SIGNIFICANTLY HIGHER CONTROLLING FOR EMPLOYEE CHARACTERISTICS

	(1)	(2)	(3)	(4)	(5)	(6)
Location Variables (Rural=base)	Log nominal weekly wages (LRD)			Log real weekly wages (LRD)		
Greater Monrovia	0.515***	0.226***	0.126**	0.473***	0.188***	0.161***
Other Urban Areas	0.272***	0.103*	0.196***	0.252***	0.0866	0.111**

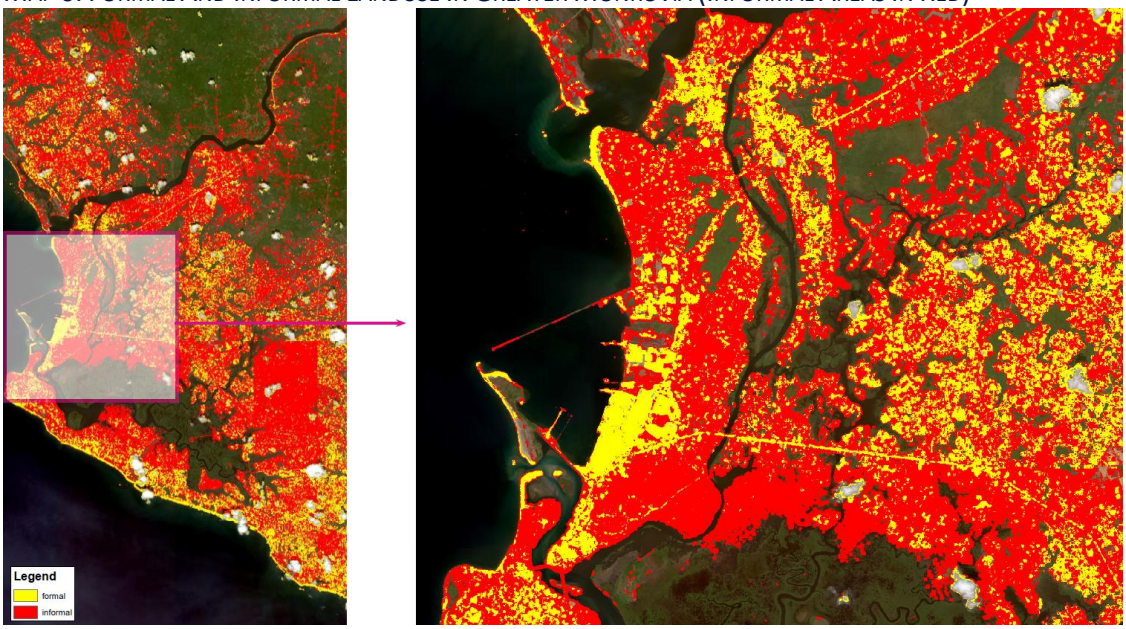
Source: Staff Calculations using HIES (2016) using only wage earners, full regression output is in Annex 2
Notes: statistically significant at *** one percent, ** five percent, * ten percent

2.2. The State of Informality and Risk

54. **Inefficiencies associated with fragmentation are exacerbated by a high degree of informal settlements which are** extremely vulnerable pandemics and disaster – especially to floods – and with the latter predicted to increase in frequency and intensity with climate change, questions on viability of infrastructure investment in areas that may be soon submerged emerge. Greater Monrovia is 70% informal, with associated poor access to services. Flooding is also a concern – expected to be exacerbated by climate change – and with a significant amount of infrastructure located in flood zones, questions on the viability financing network infrastructure in areas which may soon be destroyed by flooding emerge.

55. **Informal areas in Greater Monrovia are estimated to cover about 70 percent of the total built-up area, and accommodate two thirds of Greater Monrovia's population.** Using algorithm that combined satellite imagery with machine learning to predict informal land use (through similarity in built density, type of structures, rooflines, access to paved streets, low elevation and so forth) estimates that about 70 percent of built-up area in Greater Monrovia is informally developed. (see maps below). This means two out of three Monrovians reside in such informal settlements,[15] with limited or no security of tenure, on public or private land that is often illegally encroached or reclaimed.

MAP 6: FORMAL AND INFORMAL LANDUSE IN GREATER MONROVIA (INFORMAL AREAS IN RED)



Source: Staff calculations using machine learning algorithms

56. **Among informal areas, there are about 113 demarcated slum communities[16] distributed across the city – some of these are the most densely populated areas of Greater Monrovia, and highly concentrated in**

[15] UN-Habitat (2017)

[16] *Know your city* Initiative by Slum Dwellers International (SDI) in collaboration with Federation of Liberia Urban Poor Savers (FOLUPS) and Cities Alliance to profile existing slums in Greater Monrovia and conduct participatory needs assessment for each of those. The slum profile data collected by local communities using a participatory approach, includes detailed information on locality, size, tenure status, basic amenities, educational, health and social facilities as well as transport and other public services in each of the slum, along with the key challenges identified and prioritized by

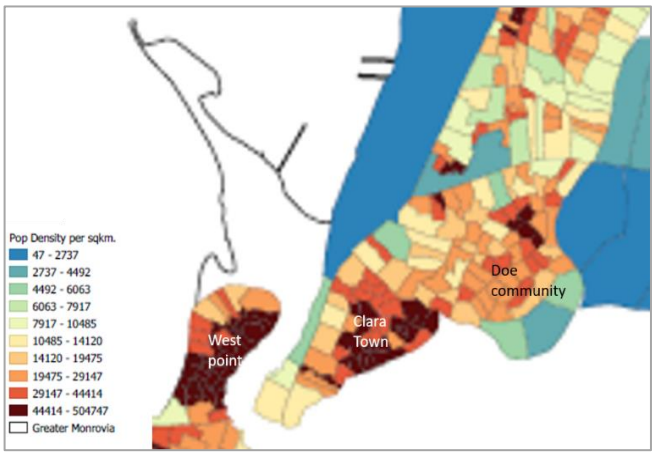
environmentally sensitive wetlands. These slum communities are distributed across the city and are not concentrated in any particular area. As highlighted in the map above, 5km buffer around wetlands have higher proportion of informality. Additionally, population density in these informal settlements is among the highest and coincides with peak population densities. For example, population density of West point slum is as high as 40,000-50,000 people per square kilometer in certain sections of the settlement – about the same density as the infamous Dharavi slum in Mumbai.[17]

TABLE 9: INFORMAL SETTLEMENTS IN EACH LGA AREA OF GREATER MONROVIA

Number of settlements profiled per Local Government Authority	
Monrovia	10
Paynesville	10
Borough of New Kru town	22
Gardnersville Township	12
Barnersville Township	10
New Georgia Township	15
Garworlohn Township	13
Caldwell Township	6
Dixville Township	5
Congo Township	5
WestPoint township	1

Source: SDI and Cities Alliance '*Know your city*' slum profile.

MAP 7: POPULATION DENSITY IN SLUMS IS AMONG THE HIGHEST IN GREATER MONROVIA



Source: LISGIS (2008) Census (2008)

IMAGE 1: ORTHO IMAGE OF WEST POINT SLUM

Source: Drone imagery captured by HOT (ilab and Uhurulabs) in January 2020

the inhabitants, such as water, drainage, sanitation, waste management, flooding, fire outbreak, coastal erosion or security of tenure.

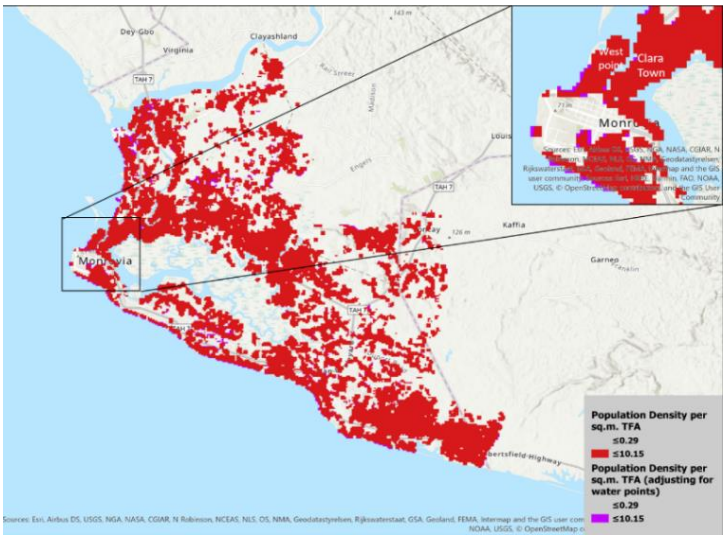
[17] https://en.wikipedia.org/wiki/Dharavi

57. **These slum communities are characterized by inadequate access to basic services, poor living condition and limited accessibility**. Most slums are characterized by poor access to improved water and sanitation, limited solid waste collection, low rates of electrification, poor or limited access to paved roads, and are at high risk to disasters and epidemics[18]. A case in point are Clara town and the Doe community[19], both low lying settlements located in or near the flood plain. The few shallow wells in the settlements are contaminated and residents have to buy water from small-scale private providers. More than 80 percent of slum dwellers practice open defecation and about 95 percent of the population do not have access to waste collection services. The communities have limited accessibility, with most people walking on foot to access services, health facilities and jobs, often through makeshift walkways during the rainy season, as shown in the pictures below. A significant number of households in both communities live in wet conditions year-round due to recurring flooding, posing further health risks from cholera, diarrhea and other water borne diseases.

IMAGE 2: DRONE AERIAL IMAGE AND PHOTOGRAPH OF DOE COMMUNITY (SLUM) DURING FLOODS

Source: Humanitarian OpenStreetMap Team, iLab Liberia and OSM Liberia (2019).

MAP 8: MOST INFORMAL SETTLEMENTS ARE IDENTIFIED AS COVID-19 CONTAGION RISK HOTSPOTS



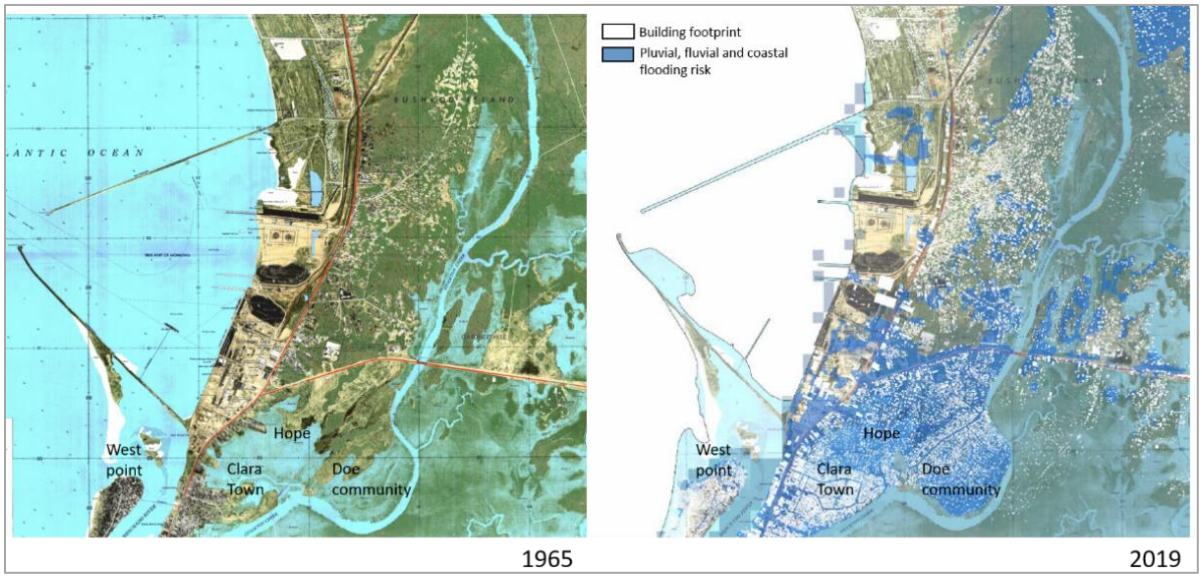
Source: WB (2020)

58. **Today and in the midst of the COVID-19 pandemic, most informal settlements in Greater Monrovia have emerged as hotspots for COVID-19 transmissions**. A contagion risk analysis for COVID-19 [20] was carried out for Greater Monrovia, using existing population density and livable floor space (to estimate the potential to maintain physical distancing) and the location of public services (water points and public toilets, where people will cluster). The analysis identified that almost 1 million people in Greater Monrovia are at risk of becoming ill with COVID 19, and the risk areas are all in poor and low income neighborhoods – such as Clara Town, West Point, Doe, Oakwell, New Kru Town, Zinc Town, New Georgia – some of which were also 'hotspots' during the Ebola outbreak.

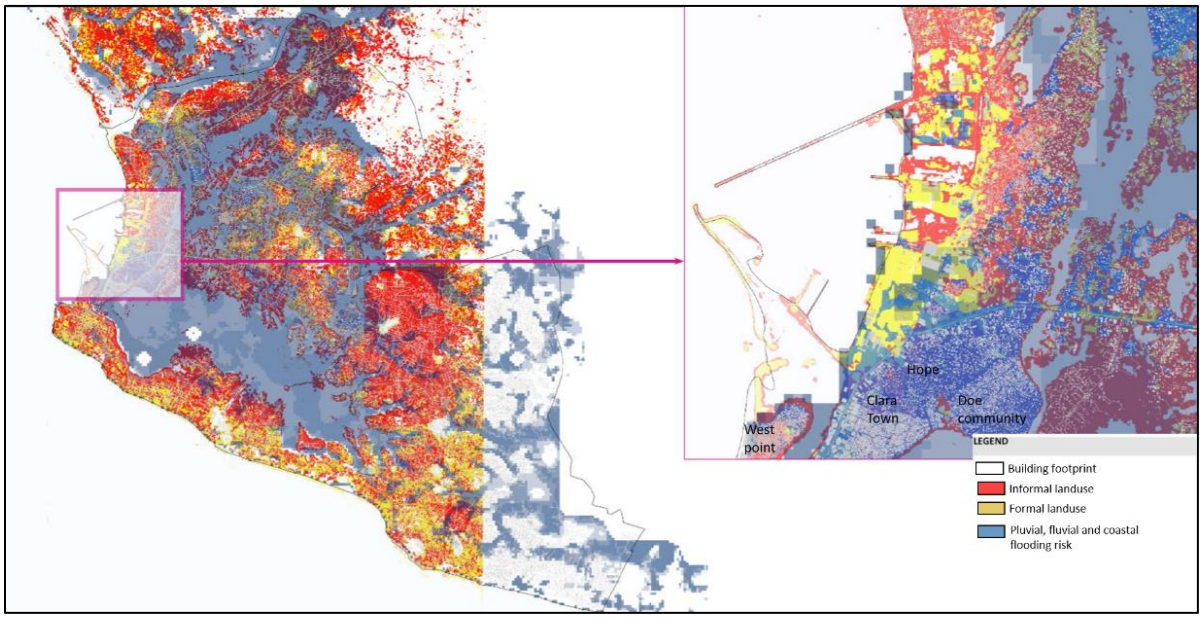
[18] Humanitarian OpenStreetMap Team, iLab Liberia and OSM Liberia (2019)
[19] For these two communities a community mapping pilot program was implemented.
[20] World Bank (2020)

59. **Over the years, informality has been associated with disaster risk – and especially flood risk - as population increasingly settled in environmentally sensitive areas such as wetland, swamps, and reclaimed land**. While not only destroying the environmental functions of these wetland, including the hydraulic regulations of the river, these highly populated settlements are at a severe risk from flood waters upstream, sea-level rise, coastal erosion, and land subsidence. For example, since 2013, sea level rise and coastal erosion has displaced more than 6,500 and destroyed 800 houses in the West Point slum of Monrovia, which is built on reclaimed land. Additionally, it should be noted that city is subsiding at an average of 1.5mm every year, especially the reclaimed land on which slums have settled, which will further exacerbate flooding risk.

MAP 9: INFORMAL SETTLEMENTS ON RECLAIMED LAND ARE MOST VULNERABLE TO FLOODING AND LAND SUBSIDENCE



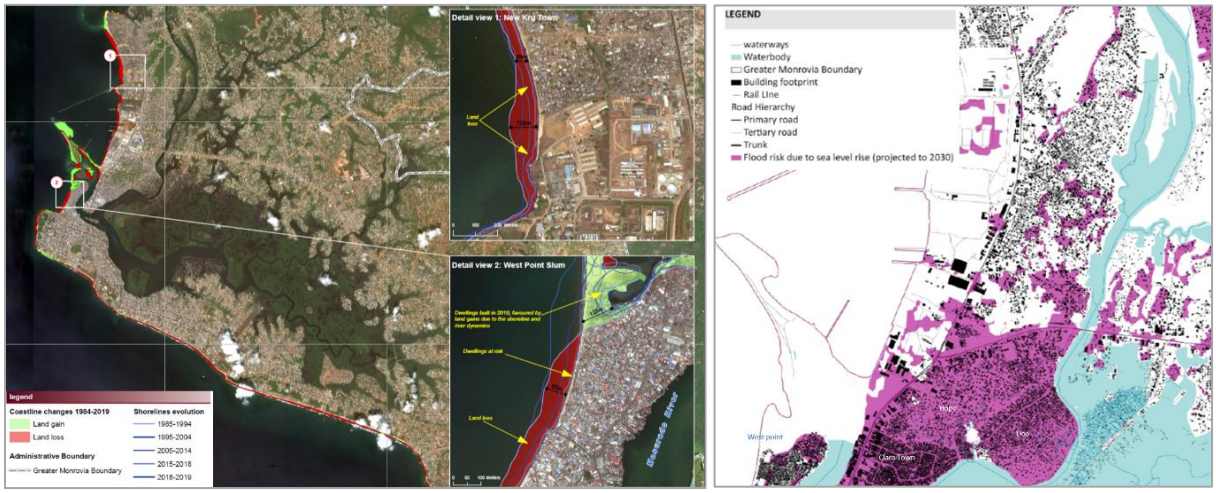
MAP 10: PLUVIAL, FLUVIAL AND COASTAL FLOODING RISK, WILL PRIMARILY HARM INFORMAL SETTLEMENTS



Source for both maps above : Staff calculations using machine learning algorithms for land use; Flood risk estimation for 2030 based on sea level projection by ESA; 1-100 year Pluvial and fluvial flood risk from Fathom Global Flood Hazard dataset;1965 map from Columbia University Library

60. **Climate change is projected to exacerbate existing flood related disaster risks and increase vulnerability of informal settlements**. Rising temperatures due to climate change[21] are prone to impact water availability across Liberia[22], as well as change the amount and distribution of precipitation. Significant inter-annual variability[23] and an increase in extreme weather events, such as heavy rainfall and storm surges are predicted with higher frequency in next 30 years.[24] As informal settlements are already located in precarious sites, sea level rise, coastal flooding, erratic rainfall and erosion will further exacerbate vulnerability and exposure of slum dwellers, damage critical infrastructure and negatively impact their livelihoods, especially in 'climate-sensitive' sectors. Together, the upsurge in rainfall and flooding will also increase risk of epidemics such as malaria and cholera and diarrheal diseases. 0.8 square kilometer of land has been lost in past 35 years due to coastal erosion and based on that, 16 cm sea level rise by 2030, will place 675,000 people and 9,500 hectares of land at risk in Greater Monrovia region.

MAP 11: COASTAL EROSION AND SEA LEVEL RISE BY 2030 IS PROJECTED TO DISPROPORTIONATELY IMPACT SLUMS



Source: Coastal and inland flood risk estimation for 2030 based on sea level projection by historical shoreline changes from 1985-2019, by E04SD team of ESA.

61. **Informality – and poor access to services – coupled with flood risks raises a conundrum for policy makers.** Provision of services is key to decrease pandemic risks and improve living conditions, and such upgrading of informal settlements is also associated with significant economic returns. But flood risks places concerns on the viability of network infrastructure investments, leading to discussions on alternative 'off grid' approached to the delivery of services in these settlements.

[21] Under a high-emission scenario, projections show a likely increase of monthly temperatures of 3.2ºC for the 2080-2099 period, with a possible increase of more than 4.8ºC by 2099 for Liberia (World Bank Climate Change Knowledge Portal (CCKP))

[22] Drakenberg, O., Andersson, F. and Wingqvist, G. 2014. Liberia-environmental and Climate Change Policy Brief. http://sidaenvironmenthelpdesk.se/wordpress3/wp-content/uploads/2014/01/Liberia_EnvCC-PolicyBrief-2013-Final-Draft.pdf

[23] Under a high-emission scenario, monthly precipitation is projected to change by -1.3mm per month in the 2040-2059 period (World Bank Climate Change Knowledge Portal (CCKP))

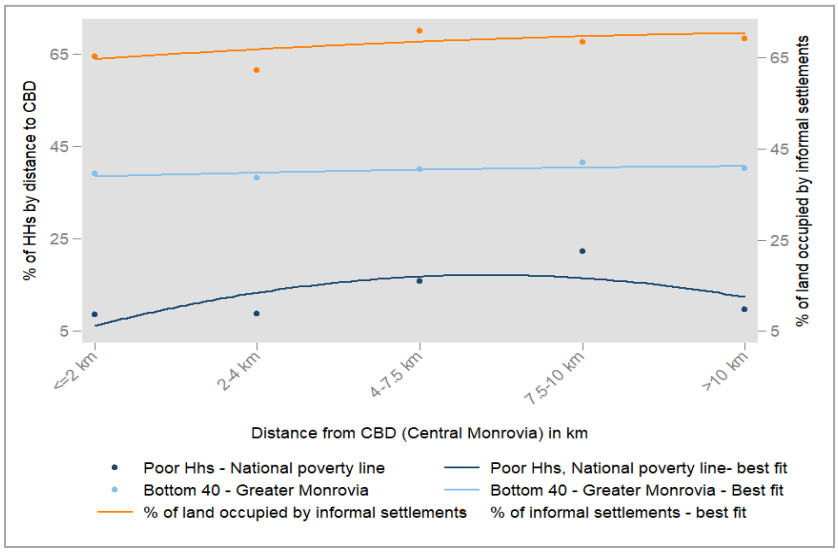
[24] USAID, 2017. Liberia Fact Sheet. Climate Change Risk Profile. https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID%20ATLAS_Climate%20Risk%20Profile_Liberia.pdf

2.3. Housing and Urban Services

62. **The quality of the housing stock in Greater Monrovia, as assessed through other data mirrors the spatial analysis on informality**. Construction materials for most dwellings are of poor quality: approximately two thirds of households in Greater Monrovia report living in dwellings constructed out of low-cost, temporary or basic load-bearing materials. Nevertheless, flooring materials and roofing materials – city-wide – are generally of a higher quality with non-porous materials such as tile, cement and stone for floors and zin/tin or cement roofs constituting the vast majority (>95 percent) for most housing. Finally, overcrowding is pervasive with a quarter of households (23 percent) in the city living in overcrowded conditions.[25]

63. **Poor households and informal settlements are uniformly distributed across the city**. Despite the clustering of slums in certain central parts of the city, proportion of households living in informal dwellings is evenly distributed making up between 60-70 percent of the housing stock regardless of the distance away from the city center. Additionally, the distribution of poor households based on the national poverty line mirrors the distribution if informal settlements across the city.[26] This is similar to the distribution of the bottom 40 percent of households when taking only Greater Monrovia as the frame of reference: the distribution of poor Monrovian households is even across the city. Overall, this pattern suggests two trends. First, many non-poor sections of society are likely to live in informal housing or conditions that are slum-like. Second, poorer households are unlikely to cluster in specific parts of the city but are likely to live in informal conditions whenever space avails (likely around the perimeter of the Mesurado River).

FIGURE 15: PERCENT OF POOR HOUSEHOLDS AND SETTLEMENTS BY DISTANCE TO THE CITY CENTER



Source: Staff calculations using HIES (2016)

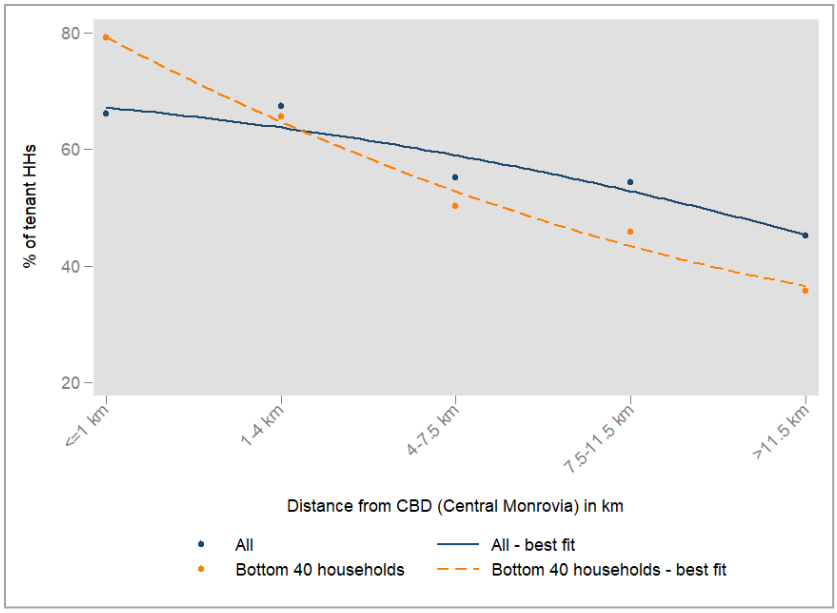
64. **Greater Monrovia is a city of tenants**. As of 2016, the city had a significantly higher proportion of tenant households (55 percent) compared to owner occupants (25 percent), a long-standing pattern as

[25] Overcrowding is here estimated using UN definitions where sufficient living area ought to be 3 or less people per room. See https://unstats.un.org/sdgs/metadata/files/Metadata-11-01-01.pdf

[26] The poverty rate of Montserrado as a whole is 20.3 percent - See https://www.lisgis.net/pg_img/HIES%202016_StatisticalAbstract_Final_final.pdf. Our estimates indicate the poverty headcount of Greater Monrovia is similar (19 percent). However, the proportion of households in poverty is closer to 13.5 percent.

highlighted in previous research.[27] This is especially the case for poorer households that are more likely to be tenants than owners: more than two thirds of households within the bottom 40 percent of Greater Monrovia wealth distribution are either tenants or live rent free. Areas closer to the city center tend to have a higher proportion of tenants compared to areas further away – which is a pattern that is especially acute amongst the poor: the bottom 40 percent of tenant households are far more likely to be located close to the city center. These spatial patterns indicate the importance of living and working close to Central Monrovia, here classified as the Center of the Business District (or in short the CBD), while highlighting potential issues with Greater Monrovia's general level of connectivity and job accessibility.

FIGURE 16: PERCENT OF TENANT HOUSEHOLDS BY QUINTILE AND DISTANCE FROM THE CITY CENTER



Source: Staff calculations using HIES (2016)

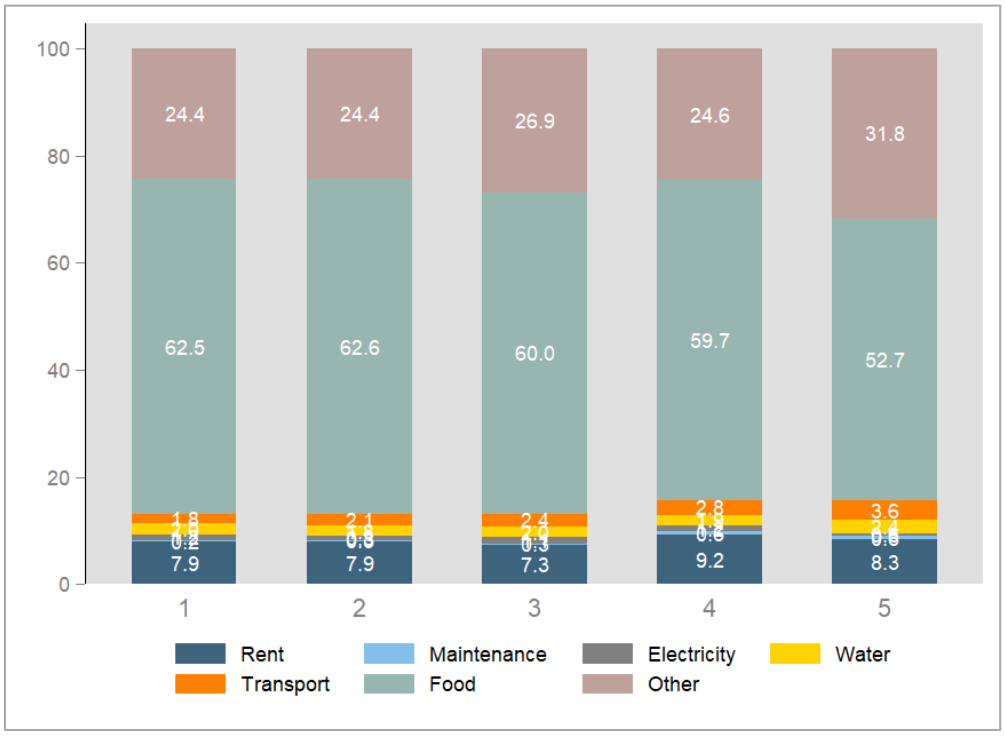
65. **Households in Monrovia spend roughly the same proportion on rental housing across consumption quintiles**. Overall, data from HIES 2016 indicates that households in Monrovia pay between 9 – 10 percent of their overall household consumption on rent, while additional expenditures on utilities and maintenance makes up an additional 3-3.5 percent of household consumption. While the share of these expenditures do not vary significantly across the lower consumption quintiles (Quintiles 1-3), when compared to a national housing benchmark of 7.22 percent it suggests urban households pay more.[28] Overall, patterns in affordability have not changed over time when compared to previous work on housing affordability conducted by UN Habitat in 2014.[29]

[27] See UN Habitat, *Liberian Housing Profile*, 2016, pp 38

[28] CPI weights for urban households are not available for Liberia. Most recently available CPI weights available at the national level from 2019 are available on the LISGIS website – see https://www.lisgis.net/pg_img/INDEX%20COMPILATION.pdf

[29] A study conducted by UN Habitat in 2016 indicated that households living in Greater Monrovia paid, on average, between LRD 878.51 to LRD 1010.7 on a monthly basis depending on the quality of their dwelling - See UN Habitat, *Liberian Housing Profile*, 2016, pp 52

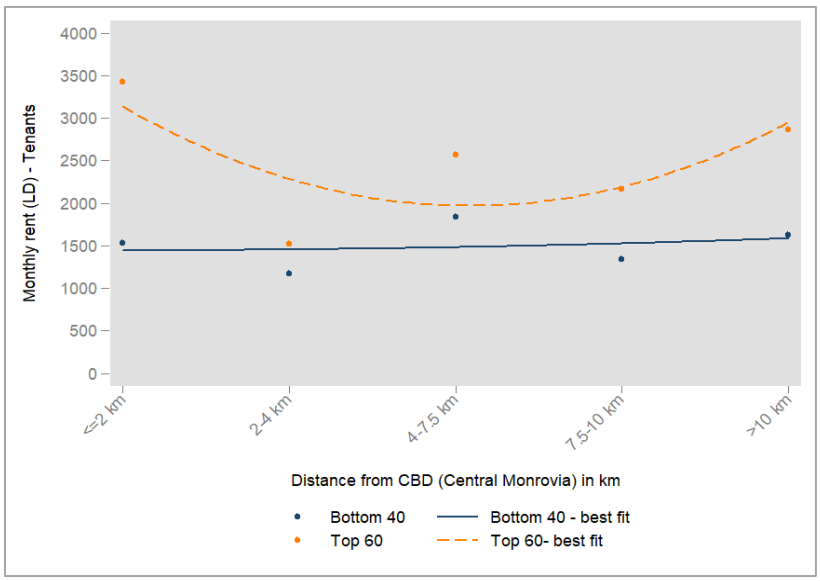
FIGURE 17: ESTIMATED RENT, UTILITIES AND MAINTENANCE, TRANSPORT, AND FOOD CONSUMPTION AS A PROPORTION OF HOUSEHOLD CONSUMPTION FOR TENANTS IN GREATER MONROVIA



Source: Staff calculations using HIES 2016

66. **However, actual expenditure on rent shows that the upper 60 spend more than twice on rental housing compared to the bottom 40**. As highlighted in Figure 18, reported monthly rents for households in the three quintile tend to be higher and vary by location, with highest prices being observed in Central Monrovia. The opposite is true for the lower two quintile households, for whom rents do not vary significantly across the city – a likely consequence of the availability of informal dwellings and housing across the city.

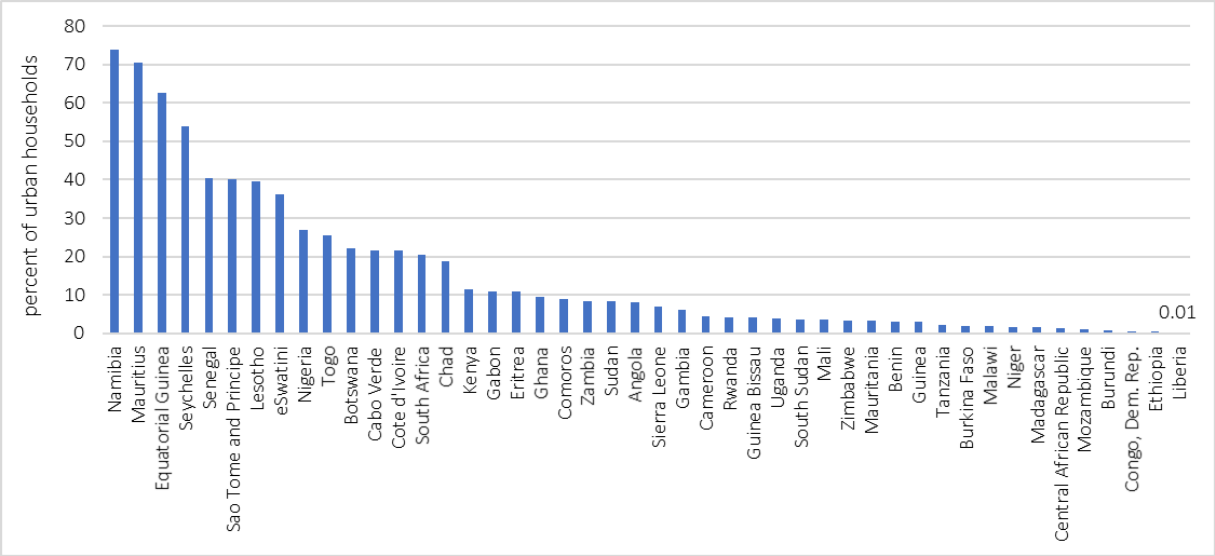
FIGURE 18: MONTHLY RENTS BY LOCATION AND HOUSEHOLD QUINTILE



Source: Staff calculations using HIES 2016

67. **House ownership is unaffordable for most Liberians.** According to research done by Statistika on the price of the least cost newly built house by a private developer and existing mortgage finance agreements, less than 1 percent of Liberia's urban population would be able to afford to buy such a home. It points to the expensive cost of housing construction and dysfunctional land markets – observed in many countries of SSA – in addition to the lack of affordable long term finance.

FIGURE 19: SHARE OF URBAN HOUSEHOLDS WHO CAN AFFORD THE LEAST EXPENSIVE NEWLY BUILT HOUSE IN 2019

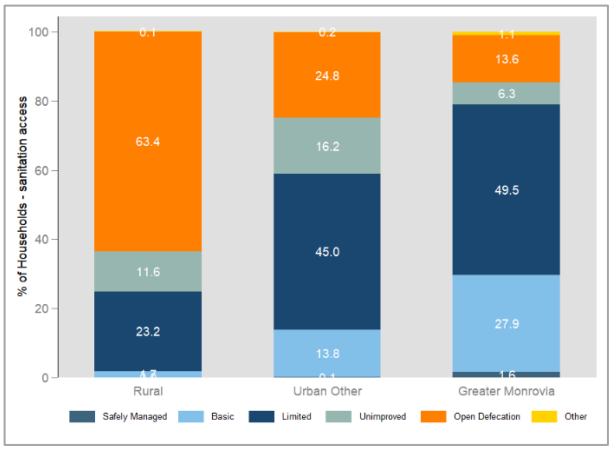


Source: Statistica website (2020) https://www.statista.com/statistics/613846/urban-households-who-can-afford-the-cheapest-new-houses-africa-by-country/

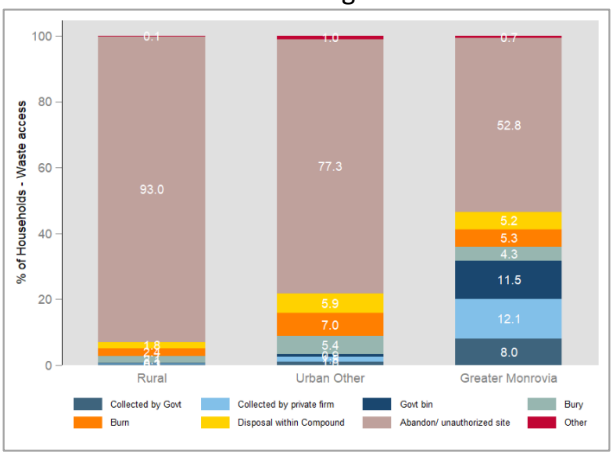
68. **Households in Greater Monrovia report higher access to urban services compared to the rest of the country**. Access to water – including both drinking water and water for other activities like washing – sanitation, waste collection and electricity are significantly higher compared to rural and other urban areas. Urban service access in other urban areas stand in stark contrast to those in the capital. For example, 27 percent of households in Greater Monrovia report access to grid electricity compared to approximately 2 percent of households in urban areas outside Greater Monrovia; access to adequate solid waste management services is reported by almost 32 percent of households in Greater Monrovia compared to only 3.5 percent of households in other urban areas . Using JMP definitions for water and sanitation, households report higher access to 'safely managed' or 'basic' services compared to their counterparts in the rest of the country.

TABLE 10: COMPARED TO RURAL AND OTHER URBAN AREAS, GREATER MONROVIA'S URBAN SERVICES ARE FAR BETTER

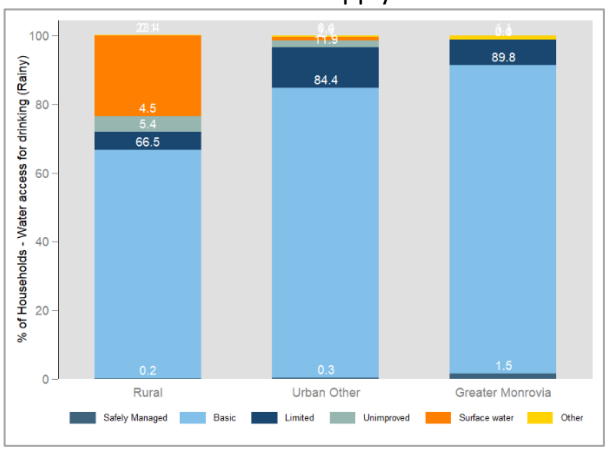
Sanitation



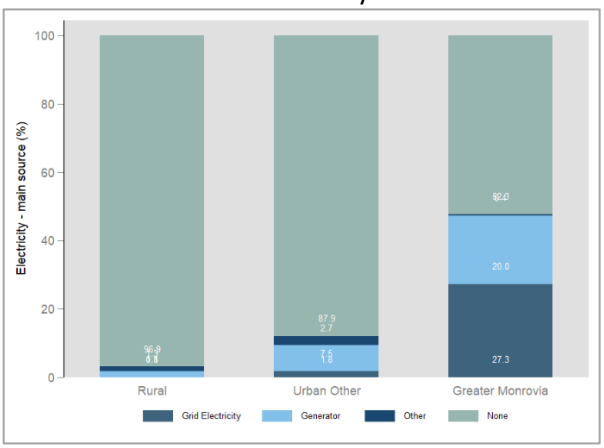
Waste Management



Water Supply



Electricity



Source: Staff calculation using HIES (2016). JMP guidelines and definitions have been applied to estimate access to water and sanitation – See: WHO/ UNICEF at https://washdata.org/ for definitions

69. **Despite better access compared to the rest of the country, the provision of urban services in Greater Monrovia is still poor and has not much improved in recent years**. Access to grid electricity and piped water are especially low with only 27 percent of households reporting access to a grid electricity connection – and this including illegal connections households tap and that may only light a bulb – and 12 percent reporting access to piped water, either private or public.[30] Between 2008 and 2016, improvements in extending access have been minimal, except perhaps for electricity, which has increased by 15 percent over this period, but with the extent of legal connections unknown. The use of piped water for drinking purposes has actually decreased, a trend likely attributable to the actual or perceived quality of piped water supply.

[30] The HIES 2016 does not distinguish between private and public access, and while one can infer 'private' access from households reporting piped indoor connections, households can also have private connections within their compound and therefore outdoors. Further, the HIES distinguishes between washing and drinking purposes, and 'rainy' and 'non-rainy' season. To understand 'access', washing and rainy season appear to better capture 'technical' access, as households may use other sources for drinking purposes, especially if they can afford.

TABLE 11: SERVICE IMPROVEMENTS IN GREATER MONROVIA BETWEEN 2008 AND 2016

	City-Wide 2008^^ %	City-Wide 2014 %	City-wide 2016 %
Piped drinking water (private and public)^	50.6	32.9	22.8
Piped water for washing (private and public)^		11.8	11.8
Flush/ VIP Toilets	70.9	59.5	63.9
Waste collection services (collected by govt/ private firm)	-	32	31.6
Grid Electricity (legal and illegal)	12.2	14.0	27.3

Source: HIES (2014); HIES (2016); Census (2008), select indicators with common definitions across years
Notes: ^ water source used during the rainy season; ^^ Urban Montserrado

70. **Access to urban services vary by income group, with richer households being better able to cope with bad quality service provision**. Nowhere is this more apparent than in the availability and quality of water. The penetration of piped water network is limited, with only 8,228 official connections.[31] Based on the household survey, at least 4.2 percent of households within the top quintile have access to private piped water, compared to 0.5 percent in the bottom quintile. While the water source used for non-drinking purposes, such as washing, is more similar across quintiles, when it comes to drinking water richer households are more likely to use bottled water (50 percent) compared to the bottom quintile (8 percent), which relies mostly on boreholes, tube wells and public standpipes.

FIGURE 20: DRINKING WATER BY CONSUMPTION QUINTILE

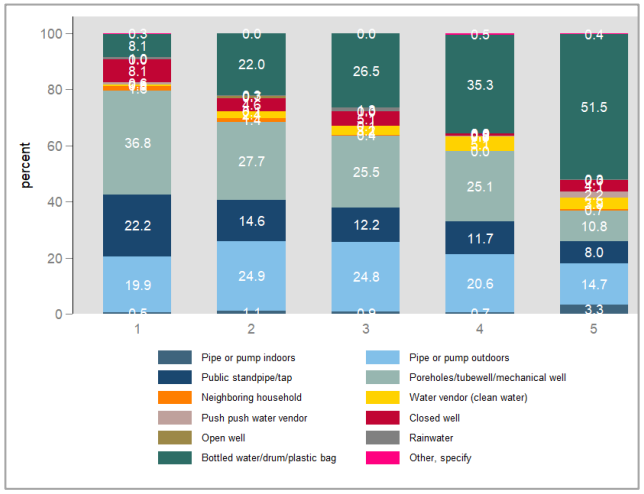
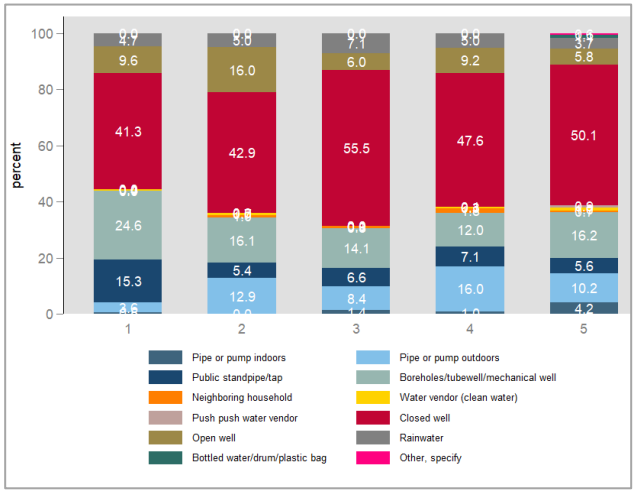


FIGURE 21: WATER FOR WASHING BY CONSUMPTION QUINTILE



Source: Staff calculations using HIES (2016); **Notes**: water source used during the rainy season

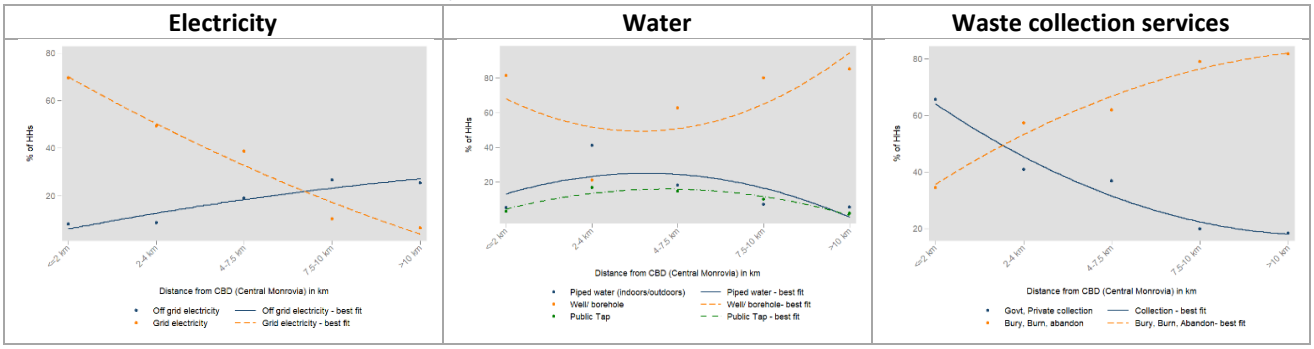
71. **Access to grid electricity is conditioned by location, with households closer to Central Monrovia being more likely connected to the grid**. The electricity network appears to reach households within 7 km of distance to the center, as from that point the majority of households report using off-grid electricity options as

[31] Estimates from WSP/ Hydroconseil in 2014 put the number of residential connections at 8,228. Based on the HIES, the estimated number of households in Greater Monrovia is (276,315). As such, the proportion of connections is approximately 3 percent. See WSP/ Hydroconseil (2014), pp 24

their main source of electricity. A number of factors might be the cause of this, including the fact that most of the city's main Electricity Transmission network is supplied to Central Monrovia[32] and that the high cost (about USD 0.54 per KW hour) and infrequent provision of electricity have pushed many households and businesses to use own power generation options across the city.[33]

72. **Better access to services in areas closer to Central Monrovia are also relevant for other services such as piped water and waste collection**. This is unsurprising given Greater Monrovia's rapid growth, decades of conflict and underinvestment in the expansion of networks to areas that extend beyond the city's original boundaries. Regarding access to piped water, we find that households closer to the CBD are significantly more likely to report using piped connections regardless if they are household, yard or standpipe connections – all of which are services provided by the Liberia Water and Sewage Corporation (LWSC). On the other hand, households further away are more likely to resort to wells and boreholes to obtain water. The figures below show the spatial dimensions of limited access highlighting the proportion of households with access to various sources based on their distance from the CBD.

FIGURE 22: ACCESS TO WASTE COLLECTION, WATER AND ELECTRICITY BY SOURCE AND DISTANCE FROM CBD



Source: Staff calculations using HIES (2016)

[32] See UN Habitat , *Liberia Housing Profile* , 2014, pp 83; See also World Bank, Greater Monrovia Region Spatial Analytics, August 2019, pp 21

[33] UN Habitat, *Liberia Housing Profile*, 2014 pp 88

BOX 2: ESTIMATING IMPLICIT SUBSIDIES FOR WATER

Across greater Monrovia, access to reliable piped water connections are most often only available for wealthy households. As highlighted in Figure 21, approximately 65.5 percent of those with reliable* indoor piped water connections are in the top two quintiles while only 22 percent are in the bottom two.

In most countries across the world, including Liberia, piped water access is subsidized by government as a means of expanding access. WSP/ Hydroconseil estimate that the cost of water distribution by LWSC is approximately USD 6.8/1000 GL while the cost of water production is approximately USD 1.57/1000 GL. This means that the country's current tariff of USD5/1000 GL is well below the actual costs incurred.** Additionally, households with piped water connections save time from having to fetch water from sources outside their dwelling.

Assuming a benchmark of 20 liters per capita per day for water usage (drinking, cooking, washing) for Monrovians, we can use the HIES 2016 to estimate the amount of the implicit subsidies that is enjoyed by households with piped water connections both in terms of (i) costs and (ii) time savings.

In terms of financials we estimate the following:

Source*	Avg. HH size	Est. No. of Households (in Greater Monrovia)	Tariff (per Gallons) - USD	Total household consumption per day (gallons)	Total Household daily/ yearly expenditure
Piped water (indoors)	4	3875	0.005	21.1	0.105/ 38.5
Piped water (outdoors)	3.7	27470	0.005	19.5	0.098/ 35.8
Standpipe^	5	24,940	0.0025	25.9	0.065/ 23.7
Water vendor/ push-push water cart#	3.6	3,203	0.08	24.8	1.9 / 724.2
Bottled water$	1.4	582	1	7.4	7.4/ 2701

In terms of time savings, we estimate the following using the amount of time it takes an individual to retrieve water from the same source drinking:

Source – rainy season	Total number of households	Time to fetch water (minutes – p50)	Time to wait at water source (minutes – p50)	Cost per trip (USD)^	Cost per year (USD) – 2 trips per day
Piped outdoors	27470	10	5	0.17	62.05
Public standpipe	21490	13	5	0.20	73
Boreholes	44768	8	3	0.15	62.05
Water vendor/ push-push cart	1907	12	4	0.18	131.4
Closed well	127787	10	5	0.17	124.1
Open well	25084	7	5	0.14	102.2
Bottled water	582	5	2	0.07	57.9

Based on these calculations, the estimated cost savings for households with access to piped water is close to USD 58 based on time savings when compared to public standpipe users. Similar savings are also apparent when comparing piped water users to other water users, the largest being those who rely on water vendors or push-push carts.

*As mentioned previously, we use access to piped water connection for washing as an indicator of a reliable connection. This is based on the fact that many poor households seek out improved water connections – including those from pipes - for drinking purposes. The number of households that report access to indoor piped water for washing additionally is 1.4 percent overall (3875 households) while the number of connections is estimated at 8228. Differences might be attributable to a number of official water connections that serve as yard connections serving multiple households.

**See WSP/ Hydroconseil, 2014, pp 30

*As per the Decent Work Act (2015) is USD 0.68 per hour (https://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=100329&p_country=LBR&p_count=53, pp 45)

73. **Lack of widespread availability of public service provision means that households across Greater Monrovia tend to also rely on private and decentralized services**. More than half of Greater Monrovia's households source water for washing and cooking from closed and open wells. Similarly, households often report obtaining drinking water from water vendors and 'push-push' cart vendors, or they buy bottled water. Most households - approximately 70 percent - report obtaining their water from multiple different sources highlighting both the unreliability of any one source and household coping mechanisms. Electricity access is equally reliant on private solutions, with a high proportion of households resorting to diesel generators or solar lamps (20.4 percent), although they are not complete substitutes.[34] Finally, improved sanitation – either flush toilets or improved and ventilated pit latrines – are fairly common, though often not adequate for densely populated areas, where excreta and leachate is more likely to contaminate aquifers and wells, from which some people drink.

74. **The reliance on privately provided or decentralized services, however, does not mean households are better off**. With electricity access, for example, there is evidence that access to larger appliances are more highly correlated with grid electricity but not with generators; these include televisions, irons, water heaters and electric fans.[35] Moreover, for the majority of households that are unlikely to afford a generator, no electricity is often only option (52 percent). Further, when essential public and privately managed services fail or are lacking, households resort to accessing services illegally through theft (such as illegal connections for electricity access), or disposing of waste in unauthorized areas (about 53 percent of households) – see below.

BOX 3: ELECTRICITY THEFT

Electricity theft is regarded as a frequent occurrence in developing countries although the extent of the theft is often unclear. Moreover, the cost of electricity theft to the government is often difficult to calculate or estimate.

The HIES survey asks two questions that might shed light on the extent of electricity theft in Greater Monrovia: (i) Do households report access to grid connections as their main source of electricity and (ii) do they report paying for electricity in the last 30 days? Comparing answers to these questions we observe that approximately 5 percent of households (8,200) report accessing grid power as their main source but not recording payment while 36 percent (36,850) report paying but not receiving electricity as their main source of energy. The former might be classified as households that are most likely to steal electricity while the latter are households that are more likely to obtain limited amounts of electricity from a neighbor to supplement an alternative supply.

Considering only those who do not pay, an average consumption of 57.9 kWh per year and an average tariff of USD 0.54 kWh, the minimum amount that electricity theft might cost the utility could be in the range of USD 1,051,00. Adjusting for the fact that approximately 14 percent of these households are likely to be below the poverty line, the costs to the utility at a minimum is still significant.

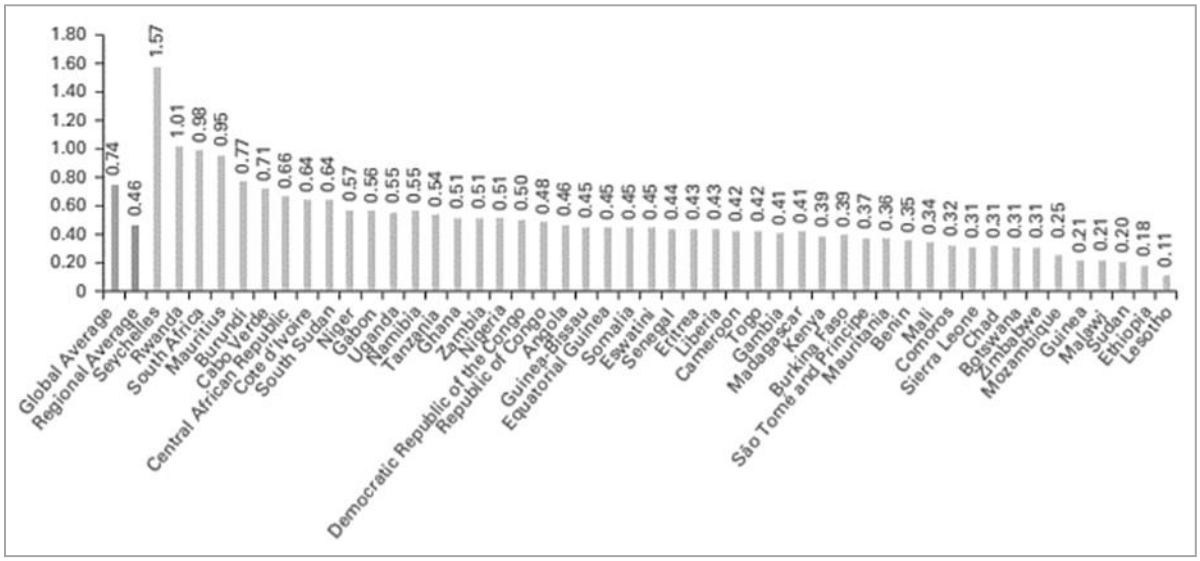
*We assume an average household size of 4.1 based on HIES 2016. We obtain average Liberian per capita electricity consumption rates from World Data - See https://www.worlddata.info/africa/liberia/energy-consumption.php

75. **Waste collection rates in Greater Monrovia are some of the lowest on the continent, despite waste generation rates that are comparable with countries of its level of development and size**. A study by Kaza et al (2018) estimated waste generation in Greater Monrovia at approximately 284,700 tons per year in 2007

[34] We find strong evidence of a positive correlation between generator ownership and grid electricity access. A household that owns a generator in Greater Monrovia is 44 percentage points more likely to also have access to a grid connection (significant at the 1 percent level) compared to household that does not own a generator.
[35] We estimate the difference in the probability of electrical appliance ownership by running two logistic regressions and determining the odds of a household having a grid connection or a generator, conditional on having a certain appliance.

based on a 0.7 kg/person/day generation rate.[36] This is much above the country level estimate shown in the figure below and given today's population in Greater Monrovia, the volume is likely to be severely underestimated. Critically, comparisons of waste collection rates across Sub-Saharan Africa place Greater Monrovia near the bottom of the list in terms of the percent of population being covered with waste collection services, highlighting the fact that most household waste is not being disposed of and treated in an adequate way. Further, even the waste that is collected is unlikely to be disposed of in poorly managed open-air landfills and skip buckets.

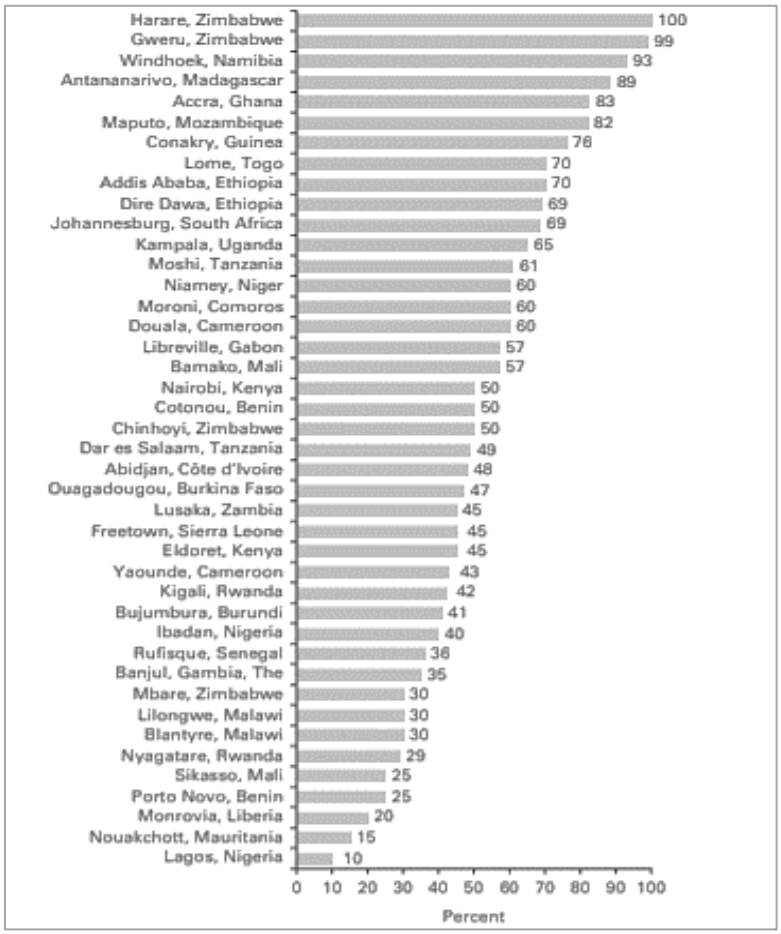
FIGURE 23: WASTE GENERATION RATES IN 2016 (KILOGRAM/PERSON/DAY)



Source: Kaza et al (2018)

[36] See Kaza et al. (2018), pp 201; see Datalibrary - https://datacatalog.worldbank.org/dataset/what-waste-global-database.

FIGURE 24: ESTIMATED WASTE COLLECTION RATES FOR CITIES IN SUB-SAHARAN AFRICA



Source: Kaza et al (2018)

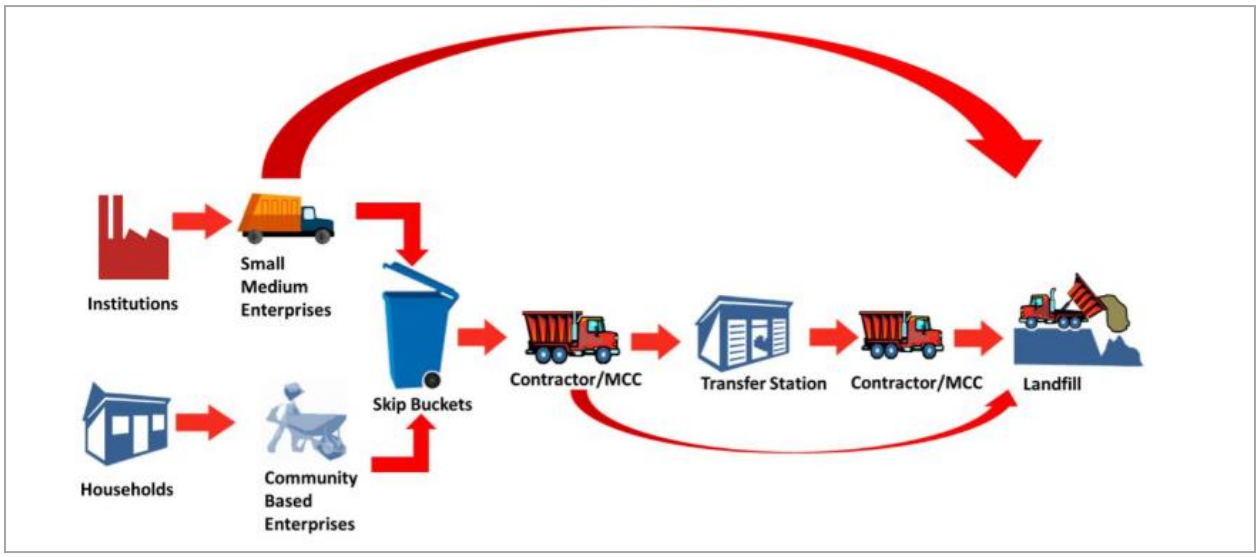
76. **By and large, Monrovia's household waste collection system is decentralized with a number of Community Based Enterprises (CBEs) collecting waste door to door and disposing them in skip buckets**.[37] As of 2016, 40 CBEs provide the majority of primary waste collection services based on a contractual agreement signed with the Monrovia City Corporation (MCC) and are responsible for collecting waste from administrative Zones. Two sanitation firms are then responsible for moving the waste from skip buckets and depositing them to transfer stations in the north and South of the city.

77. **Part of the problem regarding waste collection services in Greater Monrovia might be attributed to the structure of the waste collection system**. A number of problems have been reported across all parts of the system. First, waste collection is divided by zone, leaving CBEs with a limited market in which they can ply their trade; this leaves them with little opportunity to change and invest in additional infrastructure – such as trucks or trolleys - to improve their waste collection capacity. Second, issues have cropped up with secondary waste collectors that have consistently failed to achieve their contractual obligations. Third, the tariffs charged by local CBEs range between LD$10-100 per week and are generally unaffordable to many households, who in turn refused to pay at various times over the last year.[38] And finally, SWM is grossly underfunded in the national

[37] Waste collections from institutions are managed by Small and medium Enterprises (SMEs)
[38] UN Habitat, *Liberia Housing Profile*, 2016, pp 88

budget, with limited revenues collected by the MCC from CBE licensing fees. This has left Monrovia with a situation where many households resort to unofficial means in order to dispose of their waste.

FIGURE 25: SYSTEM DIAGRAM OF GREATER MONROVIA'S WASTE MANAGEMENT SYSTEM



Source: Staff illustrations based on interviews with the MCC

78. **Finally, in Monrovia, existing critical infrastructure and assets, such as 30 km of major roads[39], 35% of schools and 14% of hospitals are currently located in a flood risk zone**. As of 2014, 104sq.km of built-up area in the metropolitan region is located in the flood risk zone, increasing at an average annual rate of 0.37% between the years 1975 and 2014. It is projected that a one-meter rise in sea level by end of century, will place almost 230,000 people at risk and cause the loss of 2,150 square kilometers of coastal land, including the infrastructure and much of Monrovia, valued at US$250 million for the country.[40] Such threats raise questions on the viability financing network infrastructure in areas which may soon be destroyed

[39] Only about 10 percent of the limited road network is passable year-round, and many of the country's productive centers are cut off from Monrovia during the six-month rainy season (ibid,11).
[40] Liberia: Initial National Communication.2013. http://unfccc.int/resource/docs/natc/lbrnc1.pdf.

2.4. Connecting People to Jobs

Most formal employment opportunities are located in central Monrovia, but poor public transportation, coupled with a high degree of pedestrianization means that residents located in the periphery are excluded from formal employment with residents located centrality trading safe housing in the periphery with risky (and cheaper housing) in the center of the city

79. **Firms and formal employment opportunities are concentrated in Central Monrovia**. Both enterprise and employment density is highest in the central zones of Greater Monrovia and around the port that offer about 33 percent of the city's employment opportunities and around 70 percent of all formal jobs. This of course does not include the numerous informal jobs of small businesses, market tenders and other service providers that mostly lack access to motorized transport and therefore work in the majority in the area where they live.

FIGURE 26: ENTERPRISE DENSITY BY ZONE

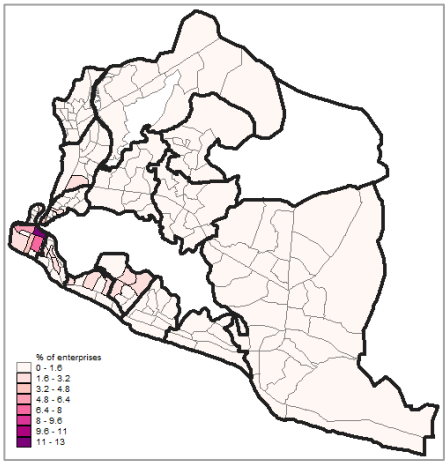
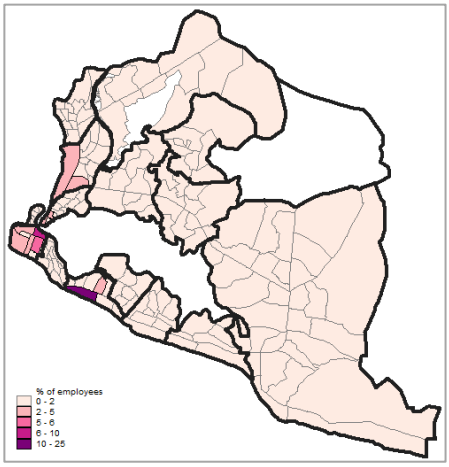


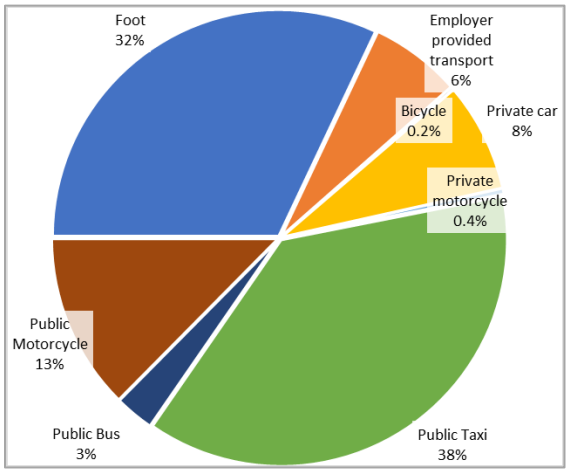
FIGURE 27: EMPLOYMENT DENSITY BY ZONE



Source: MCC business survey 2017

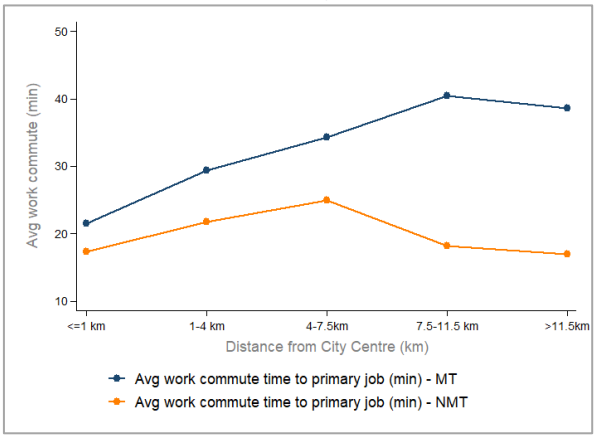
80. **Almost a third of workers employed reach their primary job by foot and slightly more than a third arrive by public taxi (mini-buses)**. Taken together, the use of public taxi (mini-buses), public motorcycle and public bus show a high dependency on public transportation by commuters (54 percent). However, when considering workers living at distance from the CBD without access to motorized transportation, evidence from the HIES survey suggests that they reach jobs within walking distance of less than 20 minutes (see figure on the right below). This highlights the fact that those who rely on commuting by foot are more likely to travel to areas around their place of residence and are unlikely to avail better employment opportunities downtown. Additionally, those who rely on motorized vehicles – including both private and public transport – report longer travel times, suggesting that many jobs are located closer to the city center and are worthwhile the cost of travel.

FIGURE 28: CURRENT MODE OF TRANSPORT FOR EMPLOYED INDIVIDUALS TO THEIR PRIMARY JOB



Source: Staff calculations using HIES (2016)

FIGURE 29: LENGTH OF COMMUTE (IN MINUTES FOR MOTORIZED AND NON-MOTORIZED TRANSPORT MODES (BY DISTANCE OF HOME FROM CBD)



Source: Staff calculations using HIES (2016)

81. **The limited use of public buses (3 percent) is a likely sign of public buses not being more commonly available**. The presence of bus services (or their lack) is often correlated with public sector capacity and the ability to manage viable transit networks. Given the popularity of public taxis or "mini-buses", there is evidence that the private sector has stepped in to offer a service where the government has been unable to provide. Additionally, bus services are also correlated with the availability of a good road network, and the want for paved roads in Greater Monrovia are likely to constitute a severe bottleneck to such services. Given the current fragmentation already imposed by Greater Monrovia's geography and inefficient land use in the more central areas of the city, the lack of critical bus corridors linking settlements to downtown jobs could be a major obstacle to economic growth and shared prosperity.

FIGURE 30: THE LENGTH OF PAVED ROADS IN GREATER MONROVIA IS WITH 57.5 METERS PER 1,000 INHABITANTS THE LOWEST AMONG SELECT CITIES

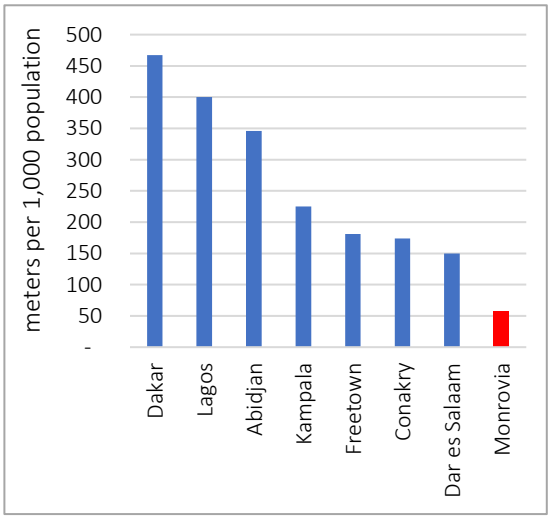
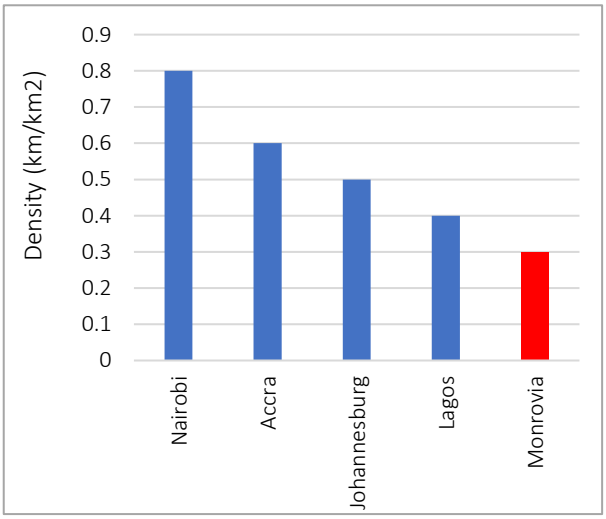


FIGURE 31: THE DENSITY (KM/KM2) OF ALL ARTERIAL ROADS IN GREATER MONROVIA IS THE LOWEST AMONG SELECT CITIES WHERE COMPARABLE DATA IS AVAILABLE



Source: WB (2018), Greater Monrovia Transport Diagnostic, Powerpoint Presentation

82. **Without affordable and viable long distance transport options, the majority of lowest wage earners in the periphery are likely stuck in their current employment**. Lower income earners are five times more likely

to depend on walking to reach their work, compared to higher wage earners that can afford a private car, irrespective of where they live. Public taxi use is also more common among wage earner with at least USD 100 per month but tails off for higher incomes. The use of bicycles as an affordable mode of transportation that could extend the radius of job opportunities is not commonly used and could be a missed opportunity.

TABLE 12: MODE OF TRANSPORT BY ESTIMATED WEEKLY WAGES (LRD)

Mode	<= LRD 1500	LRD 1501-3000	LRD 3001-4500	LRD 4501-7500	>=LRD 7500
	n=138	*n=201*	*n=111*	*n=78*	*n=113*
Foot	55.5	37.8	21.7	14.7	13.1
Bicycle	0.4	0	0	0	0.5
Public Motorcycle	11.9	17.0	17.1	7.0	5.6
Private motorcycle	0.2	0.4	1.2	0	0
Public Bus	2.1	3.3	3.6	3.7	1.7
Public Taxi	23.9	37.2	47.8	63.3	30.0
Employer provided transport	3.0	2.8	7.1	6.3	16.9
Private car	3.2	1.5	1.5	5.0	32.3
Total	**100**	**100**	**100**	**100**	**100**

Source: Staff calculations using HIES (2016)

83. **When presented with limited connectivity to jobs, households are likely trading-off safe housing further away from CBD with housing that is risky but affordable**. The proliferation of slums near Central Monrovia (West Point, Clara Town, etc) is testimony to its residents seeking proximity to downtown jobs, despite the inherent risks associated with these settlements. Rental payments reflect the willingness to pay for certain housing characteristics, including public services, and the respective location. So one would expect that households would pay more for better housing and, everything equal, less when housing is at risk of flooding or further away from Central Monrovia. This can be tested through a hedonic regression.

84. **As expected , better housing and better services – water, electricity, waste collection and sanitation – are associated with higher rental values**. Better reinforced housing structures are associated with rental values that are about 42 to 43 percent higher, on average and all things equal, and better floors catch 25 percent more rent. Likewise, higher rental values are estimated for piped indoor water (44 percent), having a government bin from where garbage is being collected (18 to 22 percent), access to electricity from the grid (14 to 21 percent) or generator (42 to 45 percent), and using a flush toilet (65 to 74 percent). The lower coefficients for grid electricity compared to generator reflects the unreliable nature of electricity provision, so that households value a generator more than a connection.

85. **However, distance from CBD nor self-reported risk of flooding do not appear to have bearing on rental values**. Controlling for flood risk and distance to Central Monrovia does not generate significant variables; neither when using an interaction term that would identify rent differential in risky and non-risky areas close to CBD. One likely explanations for this is the pervasiveness of informal settlements across Greater Monrovia, and the likely probability that the few high end properties in Greater Monrovia are unlikely to be sampled by the household survey.

FIGURE 32: HEDONIC REGRESSION RESULTS (SELECT VARIABLES)

Log(rental value) is dependent variable	**Coefficients**
No. of rooms	0.160*** to 0.163***
Reinforced construction walls (concrete, cement)	0.423*** to 0.438***
Cement, tiles for roof	Insignificant
Cement, tiles for floors	0.251*
Piped water – indoors	0.438*
Government bin for waste	0.179*to 0.217**
Grid electricity	0.141*to 0.214***
Generator	0.418*** to 0.445***
Flush toilet	0.650** to 0.744***
Floods	Insignificant
Distance	Insignificant
only >8km	0.219**

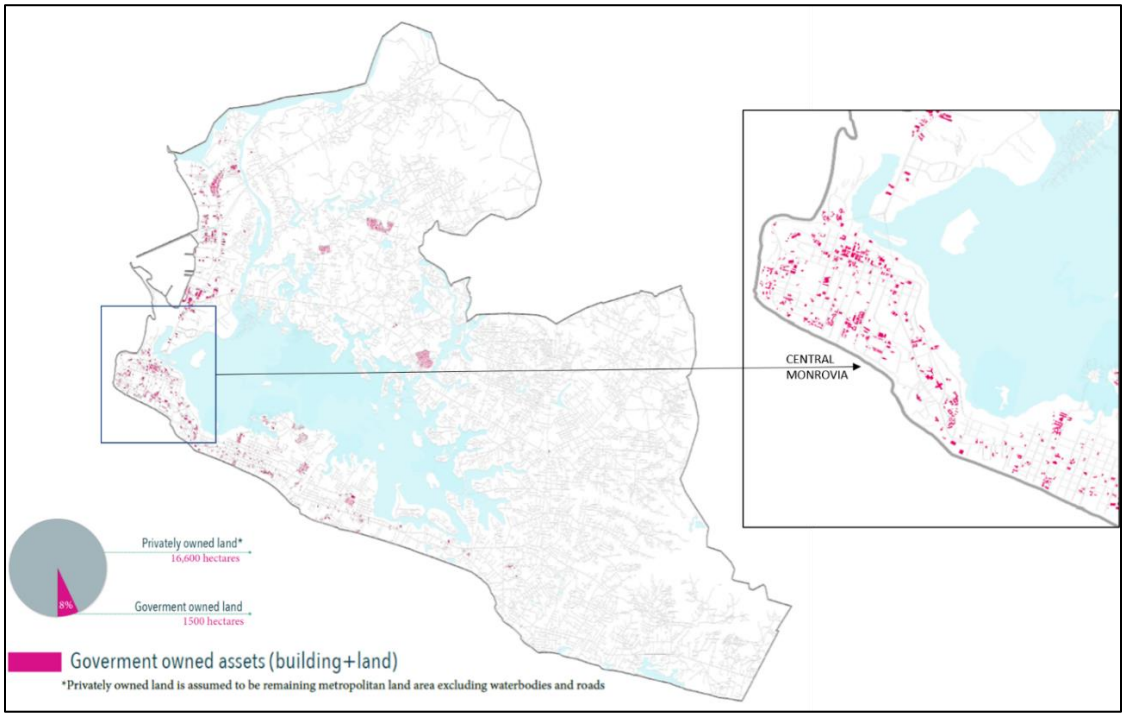
Source: Staff calculations using HIES (2016); detailed regression in Annex 3
Notes: statistically significant at *** 1 percent, ** 5 percent, and * 10 percent

2.5. Monrovia's Underused Real Estate and Land

86. **Only eleven percent of total land in Greater Monrovia is either built upon or occupied by paved roads, leaving more than two-thirds of the land in the city underutilized**. With building footprints occupying about 10 percent (19 sqkm.) and paved roads (excluding sidewalks) occupying less than one percent (1 sqkm), only 11 percent of total land (excluding waterbodies) in the city is used. More than 75 percent of remaining land is underutilized. Additionally, it should be noted that about seventy percent of total land in Monrovia is informally developed, as already discussed in section 2.2. above.

87. **Public assets occupy about eight percent of total land and roughly six percent of built-up area in Greater Monrovia.** As per tentative location of public assets identified by MCC, roughly 15 sqkm of land and 1.15 sqkm of built-up area is publicly owned. This includes assets owned by different tiers of government, public institutions including educational and health facilities, religious buildings, cemeteries and parks (it should be noted that beaches are not included). Specifically, within Central Monrovia, which has most public assets, about 45 percent of public assets are institutional buildings and only two percent accounts for public spaces.

MAP 12: SUBSTANTIAL AMOUNT OF BUILDING AND LAND OWNED BY PUBLIC SECTOR IN CENTRAL MONROVIA

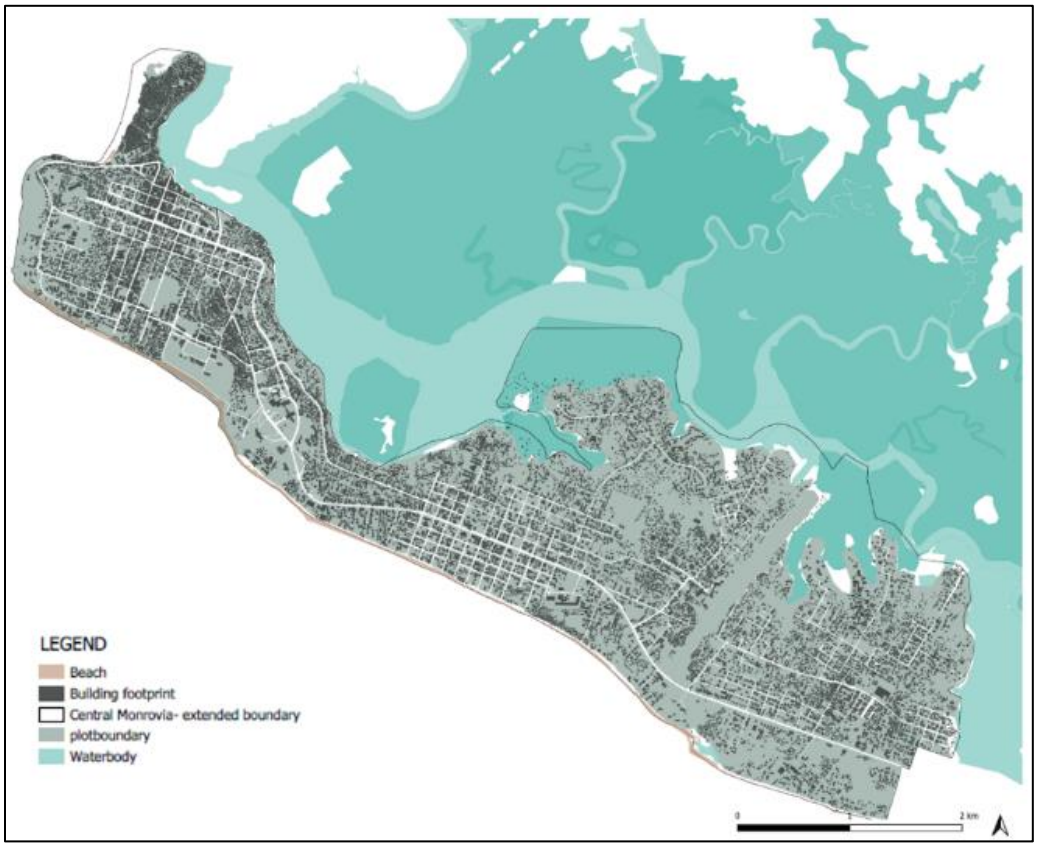


Source: Staff calculations using approximate location of publicly owned assets provided by MCC urban development team (2019).

88. **Within the central part of Monrovia[41], 79 percent of plot areas are underutilized or vacant, indicating high potential for better land utilization**. From 18 sqkm of area analyzed in central part of Monrovia, only 3.6 sqkm is utilized by roads and sidewalks, and from remaining 14.4 sqkm of land only 3 sqkm is built upon leaving more than 11 sqkm as underutilized, unused or inefficiently used open space.

[41] This includes Central Monrovia A, Central Monrovia B, Caldwell, Sinkor, Larkpazee, Sinkor old road and West point.

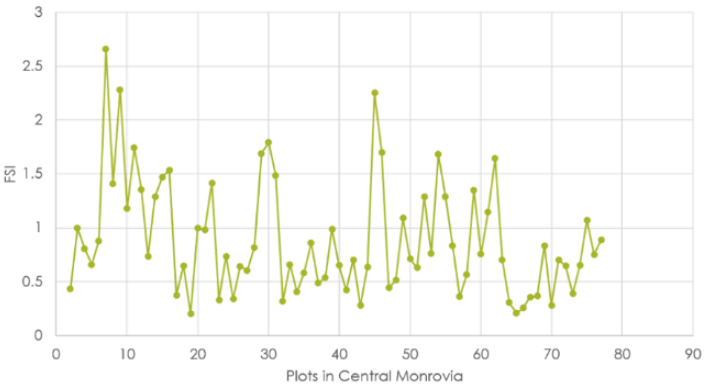
MAP 13: MORE THAN TWO-THIRD OF LAND IN CENTRAL PART OF MONROVIA IS UNDERUTILIZED OR POORLY USED



Source: Plot boundaries and roads digitized from ortho-drone imagery and OSM building footprints.

89. **Floor space Index (FSI) in Central business district is very low, highlighting hidden potential to achieve huge economic gains, by incentivizing densification and leveraging private investment**. FSI in central Monrovia ranges from 0.2 to 2.7, with an average of 0.88, is on lower end as compared to city core of similar capital cities. In most large cities around the world, FSI usually varies from 5 to 15 in the city center to about 0.5 or below in the suburbs. As technology and infrastructure improve, the FSI in the city center tends to increase in most cities and therefore, there is a huge potential to densify CBD of Monrovia for economic incentives. 77 percent of buildings in Central Monrovia are one-storey high with an exception of very few (~15) buildings that are more than six-storeys. There are varied urban development tools that can be used for incentivizing densification for economic gains, such as vacancy taxes (explored in Annex 5), spot-zoning to allow higher FSI, land-value capture, transferring development rights, betterment levies and so on. For example, the city can auction or lease vacant/underused

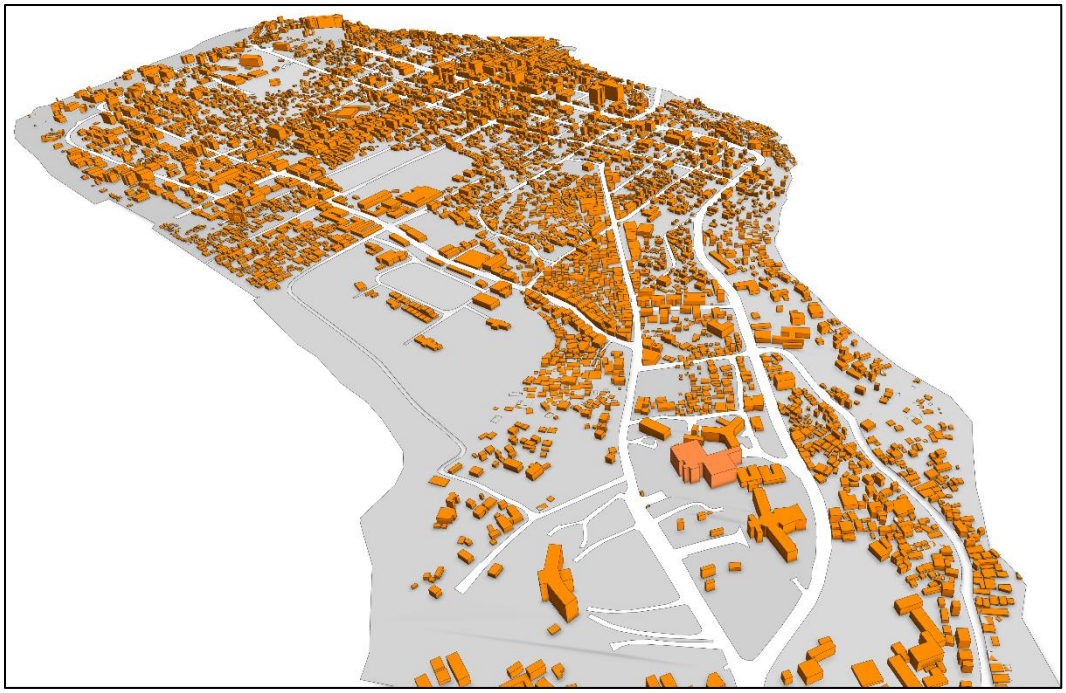
FIGURE 33: FLOOR SPACE INDEX ACROSS PLOTS IN CENTRAL MONROVIA



Source: Staff calculation using total built-up areas per plot.

public land for private sector investment and incentivize high-density real-estate development. The city can also transfer its rights to engage in more intensive land development—a higher floor space index (FSI) or higher FAR—to "finance" and incentivize urban regeneration[42]. Similarly, betterment levies, which are a form of tax or a fee levied on land that has gained in value because of public infrastructure investments, can also be used by the city for value capture. [43]

MAP 14: THREE-DIMENSIONAL MODEL INDICATING HIGHER BUILT-DENSITY IN CENTRAL



Source: 3D view of city created by staff in CityEngine software using digital terrain model and digital surface model to extract mean building heights and by digitizing plot boundary from ortho drone imagery (captured by HOT,ilab and Uhurulabs) and building footprints extracted from OSM.

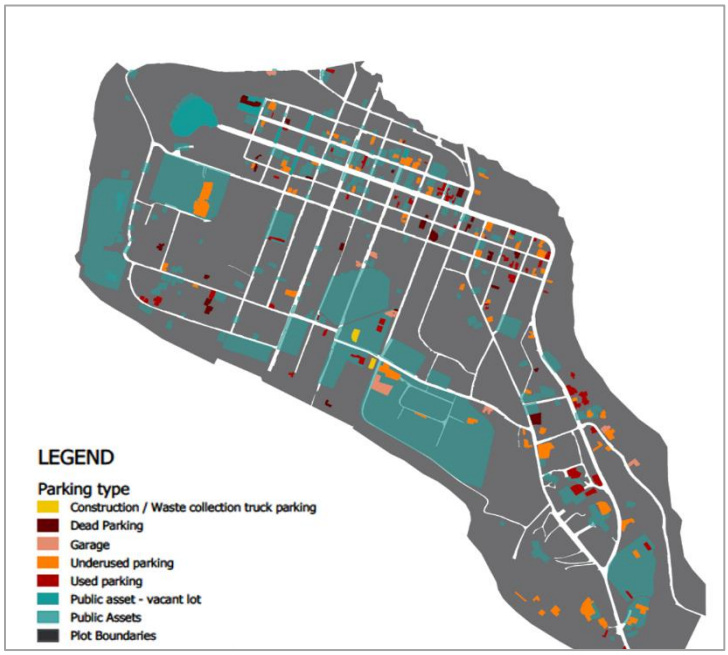
[42] Development rights generally refer to the maximum amount of floor area permissible on a zoning lot. When the actual built floor area is less than the maximum permitted floor area, the difference is referred to as "unused development rights," "air rights," or "excess density rights." These excess density rights represent the publicly controlled share of privately owned land. These rights have economic value that can be sold by public authorities, which happened in São Paulo and New York City. (https://urban-regeneration.worldbank.org/node/22).
[43] Peterson (2009).

FIGURE 34:BUILT-UP AREA VS. OPEN SPACE IN CENTRAL MONROVIA

Source: Building footprint from OSM

90. **Open Space Ratio (OSR) of Central business district in Monrovia, at almost sixty percent, is very high (compared to similar cities) pointing to inefficient land utilization at large**. OSR in central Monrovia ranges from 15 to 85 percent, with an average of 59 percent, is on a higher end as compared to city core of similar cities. As referred above, varied urban development tools, such as land re-adjustment, land pooling, land value-capture and so forth can be used to incrementally improve land utilization that can also yield economic gains for the city. An up to date cadaster is a perquisite.

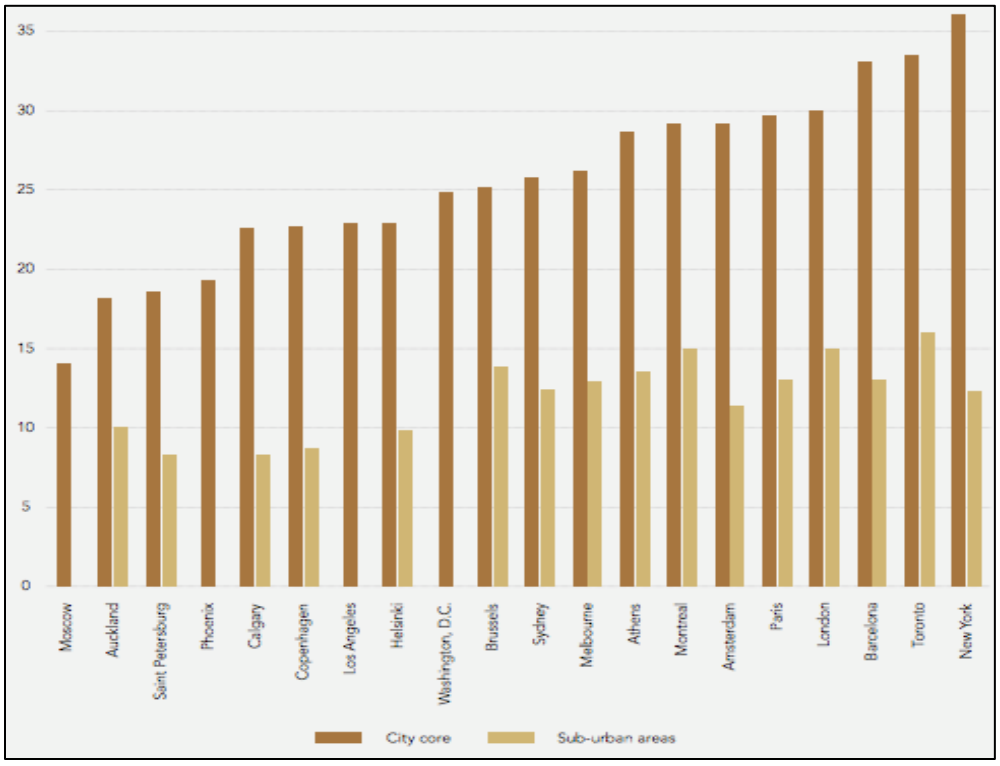
FIGURE 35: BYPOLOGY OF PARKING IN CENTRAL MONROVIA



Source: Staff analysis using ortho drone imagery to digitize and categorize parking.

91. About 78,000 square meter of area in Central District is occupied by underused or dead parking space. From 122,228 sqm of parking space identified in Central Monrovia (A&B), more than sixty percent (~78,000 sqm.) is either underused, dead or vacant, which can be used by the city to incentivize densification and leverage private investment.

FIGURE 36: PERCENTAGE OF LAND AREA DEDICATED TO STREETS IN NORTH AMERICA, EUROPE AND OCEANIA CITIES



Source: Shruggs (2015)

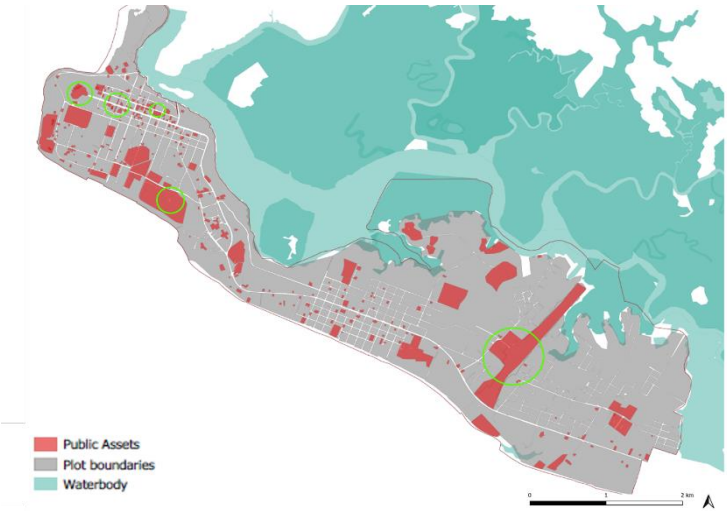
92. **Although area dedicated to streets in central part of Monrovia is quite high (indicating potential for accommodating higher density real-estate development), currently most of those streets and sidewalks are congested by vehicular and pedestrian traffic, thereby reducing its usability, walkability and safety**. The central part of Monrovia has relatively good amount of street space and connectivity, with about 20 percent of the total area occupied by paved roads and sidewalks. But currently, most streets in central district are not pedestrian friendly, are unsafe (due to increased probability of traffic accidents) and are congested, as most of the streets are occupied by vehicular traffic which is mismanaged and most of the sidewalks are encroached by street vendors throughout the day. This ratio of area occupied by streets is comparable to core city areas of high-density city like Tokyo (although it has better transit infrastructure) and indicates potential to leverage high density development provided transit infrastructure is improved, and its streets and public spaces are better organized and managed. Lastly, it should be noted that the road density decreases dramatically as you move away from Central business district towards residential or low-income areas, indicating low-density sprawl in other parts of the city.

IMAGE 3: ORTHO IMAGE OF CBD SHOWING CONGESTED STREETS AND SIDEWALKS

Source: Drone imagery captured by HOT (ilab and Uhurulabs) in January 2020.

93. **Considering the large areas of land and buildings that are underutilized in Central Monrovia, there are different ways to incentivize or leverage their better use**. During and after the civil war, a lot of buildings in central district were damaged or abandoned, which could be revitalized or re-built by leveraging the private sector as a tenant at discounted lease rates or as investor. For example, a seven storey abandoned building in CBD that was previously used by government has a potential to be re-used once revitalized, and a back of the envelop computation based on current real estate rentals could point to significant earnings for government, once these buildings are reinstated (see Annex 5). Similarly, underutilized public land such as abandoned Ducor hotel, old airfield that is not used, vacant lots with remains of damaged buildings, underused or dead parking lots (some within ministry buildings) are potential public assets that could be leveraged for private investment and generate revenue for the long-term improvement of city infrastructure and services. More efficient use of private land could be incentivized by taxing vacancies, but this would require an effective land registration system (see Annex 5).

FIGURE 37: THERE ARE LOT OF UNDERUTILIZED LAND AND BUILDINGS IN CENTRAL MONROVIA (GREEN CIRCLES ARE FEW SAMPLE SITES)



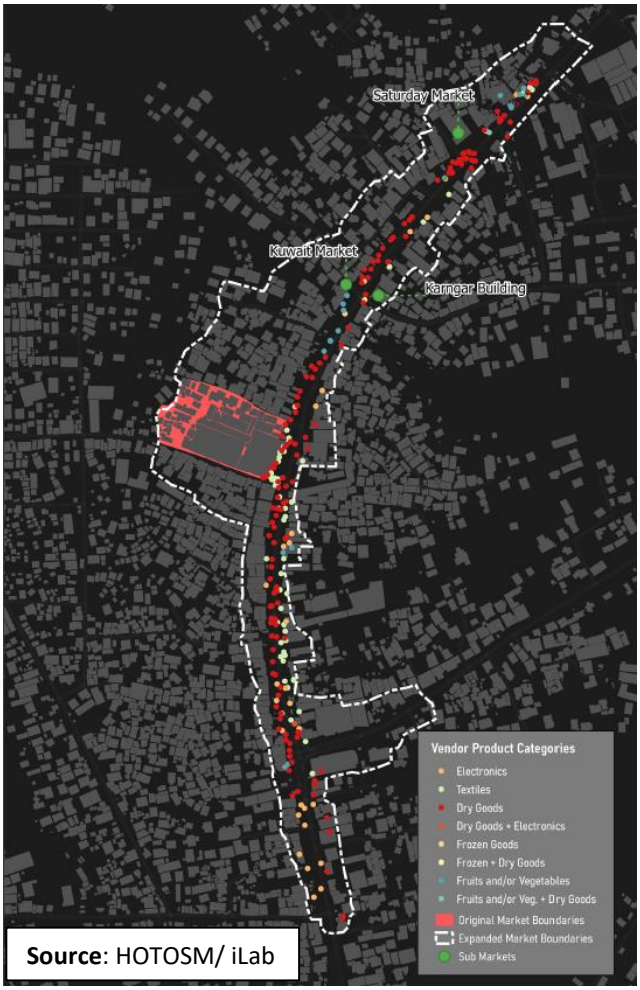
Source: Staff calculations using rough location of publicly owned assets provided by MCC

2.6. Congested markets and waste

94. Monrovia's markets play a key role in informal employment and retail, and have the potential to significantly contribute to local revenues – but they are plagued by poor management and lack of investment. Significant food loss due to inadequate storage – especially cold storage facilities reduces daily profits of vendors by approximately eight percent. Poor market management resulting from unclear agreements between the traders and the Liberia Markets Association (LMA) and the LMA and the Municipality and the growth of the market, reduced revenues collected by the LMA between 3-7 times, while no revenues are remitted to the municipalities. Significant infrastructure deficiencies including drainage and public facilities affects vendor health and has environmental impacts on the surrounding neighborhoods

95. **Open air markets are common across the urban landscape in Greater Monrovia.** These markets, which include vendors selling everything from dry goods, to fresh produce, meat, and fish are an important part of the urban food system. Additionally these markets also provide Monrovians with important non-perishables such as electronics and clothes; service providers such as barbers, tailors and motor vehicle repair shops are commonplace. While open-air markets often operate with informal vendors and do not always conform to regulations, they play a critical role in catering to the urban poor both in terms ensuring food security and providing a common location from which to access essential services.

MAP 15: DUALA MARKET INCLUDING EXPANDED AREAS AND SATURDAY, KUWAIT AND KANGAR SUBMARKETS



Source: HOTOSM/ iLab

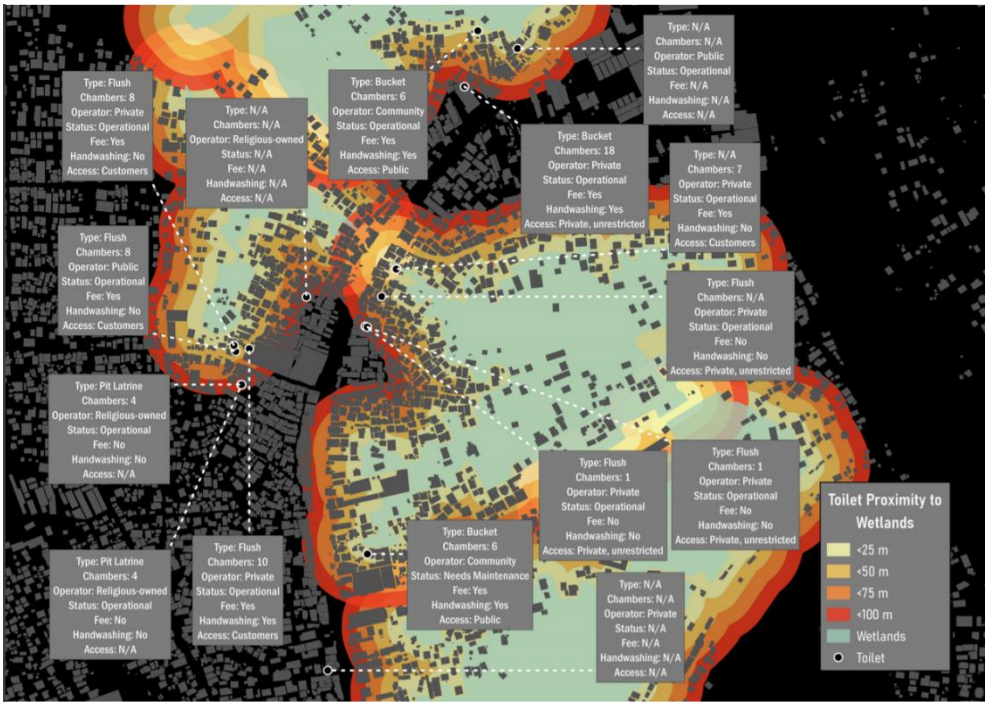
96. **One of the largest and most popular open-air markets is Duala Market**. Located in New Kru town, the market area is home to approximately 1,553-3,793 vendors, the majority of which operate outside the original Duala market building. Over the years, the market has steadily grown to approximately 11.8 times its original size and now encompasses an area 0.20 km^2. Additionally, the market now incorporates three additional sub-markets namely Kuwait, Saturday and Kangar Building markets. Vendors sell all manner of goods including dry goods, fruits and vegetables, frozen foods and meats, textiles and electronics.

97. **Despite the market's importance in providing essential retail services to Monrovians, the area is in need of infrastructure upgrades and managerial improvements**. As part of its work to strengthen food systems and improve the quality of life for Monrovians, the World Bank in collaboration with Humanitarian Open Street Maps (HOTOSM) conducted a comprehensive analysis of Duala Market using multiple surveys of vendors, a study of traffic patterns and congestion, an analysis of solid-waste management practices, and qualitative interviews with government

administrators responsible for market operations. Based on this review, Duala market has the potential to improve across a number of key dimensions.

98. **First, Duala market poses major environmental and health hazards due to the poor number and quality of sanitation facilities as well as their precarious location**. In total only 12 toilet facilities and 17 water points are located in the vicinity of the Duala market area catering to households, vendors and visitors to the market. Rough population estimates based on Facebook population data put the estimated number of users for each toilet facility between 2,200-9,500.[44] Additionally, the location of toilets next to wetlands increases the potential for groundwater contamination and the rapid spread of waterborne diseases. At present 93 percent of toilets without proper infrastructure are situated within 100 meters of a wetland.

FIGURE 38: THE LOCATION OF TOILETS VIS-À-VIS WETLAND AREAS IN DUALA MARKET



Source: HOTOSM/ iLab

99. **Second, the congested nature of the market makes it particularly vulnerable to COVID-19 and other communicable disease related risks**. Overall, the market area has a density equivalent to almost double that of the City. Moreover, it faces an influx of vehicular – mostly *kehkehs* and private vehicles/ taxis - and pedestrian traffic during rush hour (8h00-9h00, and 17h00) creating large roadblocks and difficulties for pedestrians to adhere to social-distancing guidelines. Additionally, the number of freight deliveries from taxis and delivery trucks tend to increase congestion on the road due to the amount of time that is spent unloading goods (~15-20 minutes). The lack of sidewalks combined with intrusion of vendors onto the main road further exacerbates congestion. Finally, the lack of water points or handwashing stations (only 12 exist in the market area - see

[44] We estimate the proportion of potential users by outlining buffer regions around each toilet at 100meters and 250 meters, estimating the population living in these areas and dividing it by the number of working toilets. Facebook population data from 2018 was used to make these estimates – See https://dataforgood.fb.com/tools/population-density-maps/

above) are also problematic given the 'high-touch' environment of the market and the sheer number of daily visitors.

100. **Third, poor infrastructure makes Duala market susceptible to natural disasters, such as flooding, and other public health concerns, such as malaria**. In particular, focus group discussions reveal that drainage networks are one of the biggest shortcomings in the market. Approximately 1.3 km of storm water drains exist in the expanded market area but nearly all of them have no existing outflow or are too blocked by debris to drain. Further, drains are fragmented across the expanded market area and do not conform to any coherent system of stormwater management. As such, flooding is common across the market especially during the peak of the rainy season. Moreover, the pollution resulting from poor solid waste management have resulted in customers avoiding the market in recent times owing to its bad smell and the high probability of contracting diseases such as malaria.

IMAGE 4: FLOODING REACHING WAIST LEVEL ACROSS UN DRIVE DURING PEAK RAINY SEASON

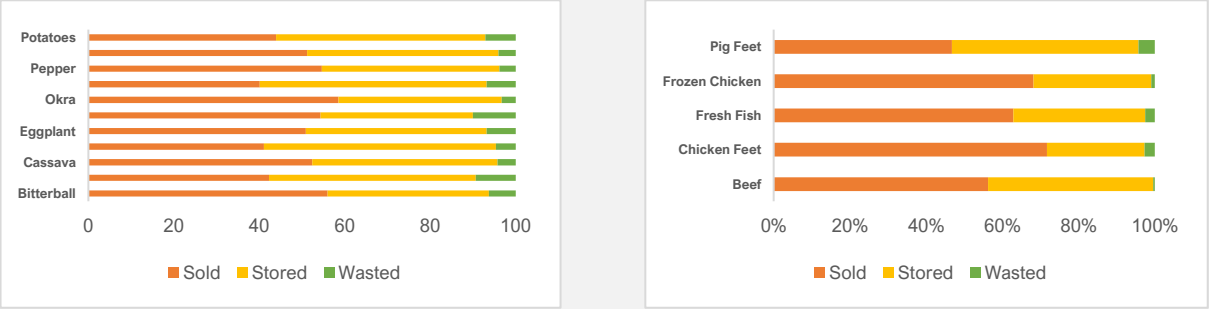
Source: HOTOSM/ iLab

BOX 4: ESTIMATED FOOD WASTE AT DUALA MARKET

In addition to poor drainage, fragmented drainage and haphazard solid waste management, food waste is a major pollution vector at Duala market. The study on Duala Market conducted by the World Bank and HOTOSM/ iLab included questions on the proportion of the total stock that is wasted on a daily basis from various perishable vendors. This provides a rough snapshot of the amount of waste that is produced on a daily basis.

On average, fruit and vegetable vendors experienced a daily loss of 2.4-4.8 pounds (lbs) per day while meat vendors reported a daily loss of 1.1-1.4 pounds (lbs) per day. Vegetable vendors most frequently reported losses for leafy greens such as Cassava leaves and Cabbage* while meat vendors indicated that pig and chicken feet were the products most lost along with fresh fish. Figure 39 breaks down the losses by item.

FIGURE 39: ESTIMATED FOOD LOSS BY PRODUCT



Source: HOTOSM/ iLab; Staff calculations

Based on data from vendors, we estimate that approximately 734-1,363 kg of food waste is generated per day. On a yearly basis this would amount to ~383 tons, which while only being a small fraction of the total waste generated in Greater Monrovia (~284,000 tons), is still significant given the limited number of waste disposal facilities around the market (7).

One of the key impediments to improving issues related to food waste is the lack of an adequate storage facility. While Duala Market and Saturday market manage warehouses they lack sufficient space for all vendors and sufficient facilities such a cooling and electricity based cold storage to allow for vendors to store perishables. Additionally, the cost of storage is high with prices varying based on the volume of good to be stored; an average dry-goods table is reported to cost vendors LRD 250 per month. The consequence of inadequate storage is that most vendors either resort of taking vegetables home or disposing of them in local waste dumpsites.

*We only estimate losses for products for which there were at least 10 vendors
Source: HOTOSM/ iLab; Staff calculations

101. **Fourth, inadequate internal infrastructure – especially around storage – results in significant loss of income for vendors.** On average, vegetable vendors might lose up to LRD 850 while meat vendors might lose up to LRD 154 on a daily basis on food waste. Vendors also report losing a significant proportion of their product as a result of overnight storage – amounting to approximately LRD 373 for vegetable vendors and LRD 148 for meat vendors. Given that vendors carry between LRD 14,819 -15,398 worth of goods daily, these loses represent between 2-8 percent of total revenues, which are significant. Moreover, while these losses are damaging for vendors, they are also likely to translate into higher costs for customers.

102. **Finally, the market is managed in a haphazard manner – a function of the complex web of government entities, private entities and informal entities govern vendors and handle fee collection**. Officially, the Liberia Markets Association (LMA) is primary entity in charge of fee collection and management across the entire market. This institution also handles the daily activities of the formal Duala Market, situated within the confines of the original building. However, between Saturday market, Kuwait Market and Kangar market, three additional institutions – Afrindo Shopping Centre, the Liberia Market Association, New Kru Town Governor's Office, and the Federation of Petty traders (FEPTIWUL) – collect fees from formal, informal and petty traders of which only a portion is received by the LMA. The lack of clarity in terms of organization structure has often resulted in conflict. However, one of the biggest consequences of poor market management is the shortfall in revenue collection by between 3-7 times, as the majority of vendors operating in the expanded market do not pay into the LMA. An added complication is that the LMA then does not remit any funds to the MCC or PCC – as per agreement[45]. These loss of revenues likely hamper improvements to the overall condition of the market and the quality of facilities available.

[45] In 1989 the Government transferred responsibilities for markets from local government to the new Liberia Markets Association (LMA) without clear arrangements for expanding and maintaining the markets or for collecting garbage generated there. Plagued by charges of corruption and mismanagement, the General Auditing Commission (GAC) undertook financial and systems audits in August 2018.

2.7. Skills of Greater Monrovia's Workers

103. **Skills, literacy and education are critical components for the development of Greater Monrovia as a city and for Liberia as a whole**. Indeed, in addition to the 'hard infrastructure' of improved roads, sanitation, housing and flood protection, the city also needs to develop the 'soft infrastructure' of basic literacy, vocational skills and access to education to ensure Monrovians from all walks of life have access to better jobs and better opportunities. Furthermore, in order to reap the benefits of agglomeration economies, and move the economy of Monrovia towards a 'Knowledge-based' economy, improving the overall education level of the city's inhabitants is critical.[46]

104. **Improvements in basic literacy are evident in Liberia's capital over the last decade**. Estimates of literacy based on analysis of the Census and HIES 2016 surveys indicate that both adults and youth population had improved in terms of their ability to read English or any other language. Overall, literacy levels remain lowest in rural areas and highest in urban Montserrado/ Greater Monrovia. Moreover, despite improvements across the country, urban areas – and in particular Greater Monrovia – saw great improvements with literacy rates increasing by approximately 10 percentage points for youth populations and between 7-8 percentage points for adults. This is likely a function of individuals having opportunities to improve their skills in the city. Additionally, higher rates of literacy of youth populations – compared to adults – highlight potential improvements in education access and quality across geographies. Differences between rural areas and the capital, in particular, are likely driven by the availability of opportunities for urban residents.

TABLE 13: LITERACY LEVELS

		Census (2008)	LISGIS (2016)
Adults (15-64)	Rural	42.2	49.2
	Urban	71.2	78.5
	Urban Montserrado/ Greater Monrovia	75.6	84.0
Youth (15-29)	Rural	52	63.1
	Urban	78.1	88.9
	Urban Montserrado/ Greater Monrovia	81.2	91.3

Source: Staff calculations using HIES (2016)
Notes: While literacy levels in the Census were based on a question, literacy was identified in the HIES 2016 based on whether individuals were able to (i) read or write English or any other language and (ii) read any part of a sentence they were asked to read. Urban Montserrado was used to proxy the population of Greater Monrovia.

105. **In addition to basic literacy, there has also been a steady increase in completed levels of education in the city**. Primary education completion rates have increased 4 percentage points amongst Monrovia's youth population (15-29), while a considerably greater improvements have been made to secondary completion rates for the same population, which have increased by almost 14 percentage points. Despite improvements, one in four adults still reports having not completed primary school in Greater Monrovia, a stark reminder of educational and skill challenges that need to be overcome.

[46] See World Bank, *Geography of Growth,* 2012, pp 58

TABLE 14: THERE IS A MARKED INCREASE IN COMPLETED LEVELS OF EDUCATION

	Census (2008) – Urban Montserrado		DHS (2013) – Urban Montserrado		HIES(2016) – Greater Monrovia	
	Youth	Adults	Youth	Adults	Youth	Adults
Less than primary complete	37.1	38.1	26.7	30.7	18.4	23.8
Primary completed	45.1	34.6	48.7	37.2	49.1	35.6
Secondary completed	17.1	24.0	23.3	28.3	30.9	35.4
University Completed	0.7	3.4	1.1	3.8	1.5	5.1

Source: Staff calculations using HIES (2016), Census (2008) and DHS (2013)

106. **Part of the reason for poor primary school completion rates remain key deficiencies in the primary school system which are primarily evidenced through (i) non-enrollment, and (ii) late starting**. Lifetime non-enrollment rates for children of school going age are extremely high with approximately 40.6 percent of children of primary school age (7-12) having never enrolled in school. While non-enrollment rates do decline with age, children in Greater Monrovia tend to start school late – around the age of 12-13 as evidenced in Figure 40. One of the consequences of late starting is a low proportion of children that are "on-track", that is, children who are at the appropriate level of schooling for their age.[47] As evidenced by Figure 41, this disproportionately affects children from households in the bottom quintiles compared to those at the top, highlighting different educational trajectories across income categories.

FIGURE 40: PERCENT OF OUT-OF-SCHOOL CHILDREN BY AGE (2015/2016) IN GREATER MONROVIA

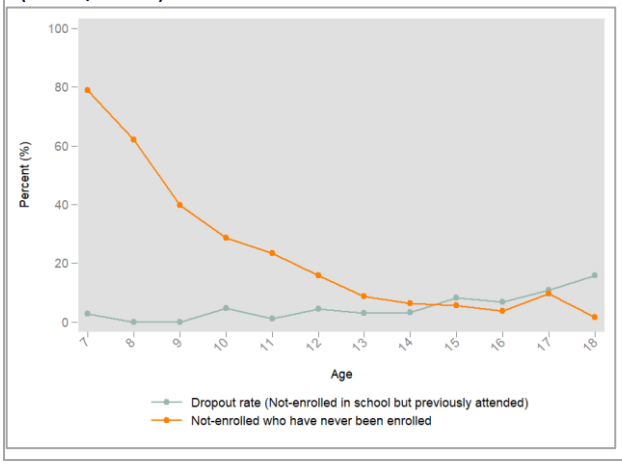
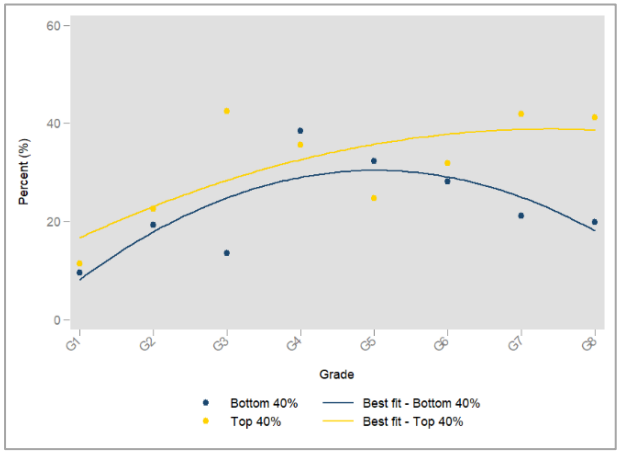


FIGURE 41: PERCENT OF 'ON-TRACK' CHILDREN BY WEALTH QUINTILE AND GRADE IN GREATER MONROVIA



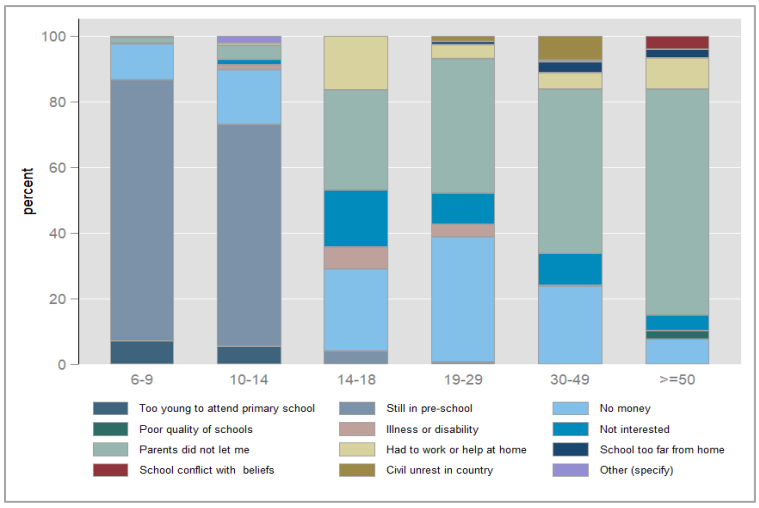
Source: Staff calculations using HIES (2016)

107. **Family and finances limit educational opportunities for children in Monrovia, and might hint at issues related to late starts**. As highlighted in Figure 42 Individuals over the age of 14 report financial reasons as one of the key barriers to education. Additionally, parental restrictions are likely to be additional limitation on

[47] Poorer children are also likely to repeat grades and drop out as evidence by lower "on-track" pupils in higher primary school years

schooling for younger Monrovians – with parents indicating that one of the reasons for late-starts is common understanding that children between the age of 6-14 are too young to begin school.

FIGURE 42: MAIN SELF-REPORTED REASONS FOR NOT ATTENDING SCHOOL



Source: Staff calculations using HIES (2016)

108. **While girls and boys of primary and secondary school age have relatively similar trajectories, the overall educational accomplishments of men and women still diverge**. On average lifetime non-enrollment rates for girls and boys as well as enrollment rates for children of school going age follow similar paths. However, when estimating the highest level of education completed, adult women are significantly less likely to have completed primary school compared to adult men. Similar patterns exist for youths (15-29) albeit to a lesser extent. However, at the highest level of education, the overall attainment rates for younger Monrovians is similar indicating that while males are likely to drop out of secondary education later in life, females that remain in the school system are likely to complete tertiary education.

FIGURE 43: LIFETIME ENROLLMENT AND ENROLLMENT RATES BY GENDER FOR SCHOOL GOING CHILDREN

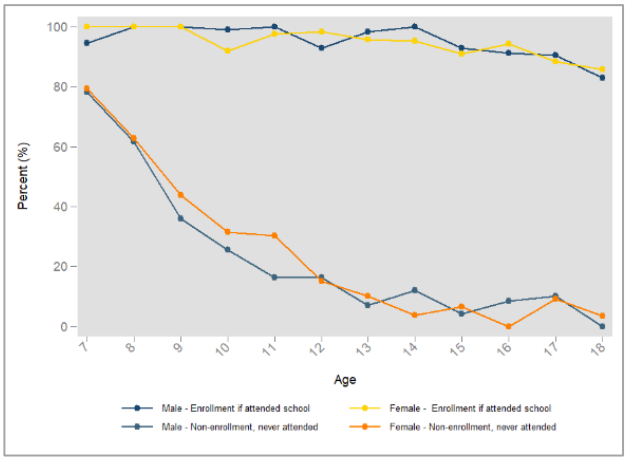
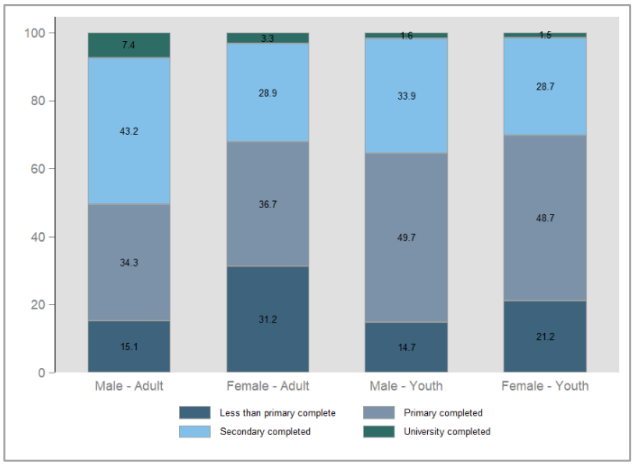


FIGURE 44: EDUCATIONAL ATTAINMENT BY GENDER IN GREATER MONROVIA

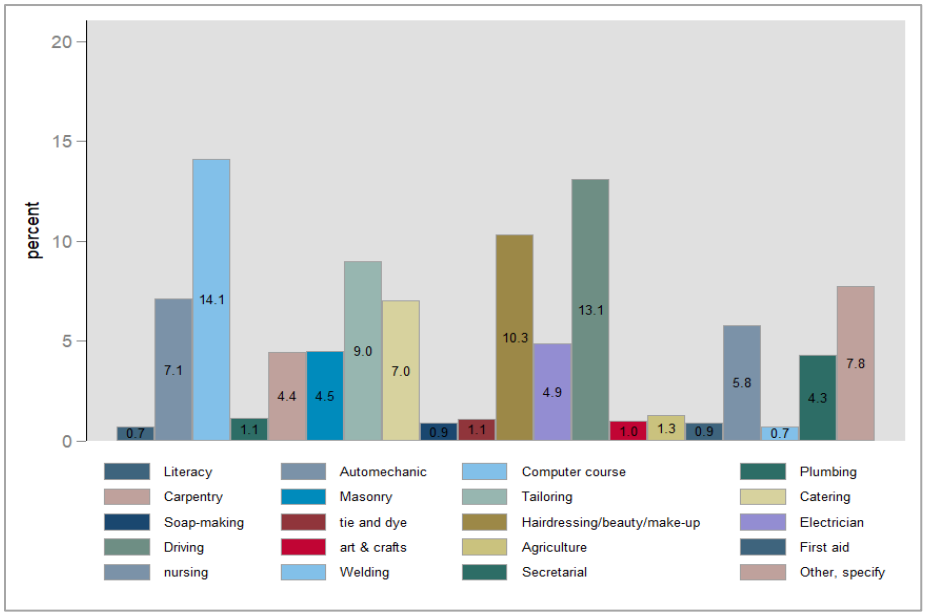


Source: Staff calculations using HIES (2016)

109. **While the proportion of Monrovians in higher education is small, almost one in five adult Monrovians report attending polytechnic, vocational or adult education classes as a means to make progress in their careers**. As of 2016, approximately 144,393 adults in Greater Monrovia report having attended a vocational

course with 79 percent of attendees completing the course. Amongst these respondents, computer courses and driving appear to the most common vocational courses along with hairdressing and tailoring. Job prospects for those who did attend these courses, however, were mixed with only 48 percent of individuals who completed the relevant course reporting successes in the job market. Moreover, the average time needed to find a job after completing training was between 2-4 months.

FIGURE 45: PERCENT OF STUDENTS ENROLLING IN DIFFERENT POLYTECHNIC COURSES IN GREATER MONROVIA



Source: Staff calculations using HIES (2016)

110. The returns to tertiary education are high for Monrovia residents as well as those living in other urban areas. While median weekly incomes are approximately LD$ 2700 for those in Greater Monrovia and LD$ 2250 for those in other urban areas, each additional step in the education system increases the earning potential substantially. The median weekly income for working individuals with no completed levels of education were between LD$1500-LD$ 2000 per week, while those with a primary level of education earned between LD$ 2020- LD$1875 in urban areas; those with secondary-level education LD$2700-2812; and finally, those with tertiary-level education LD$5062-7875.[48] For individuals of a similar age and gender, the median income from employment is about 4 times higher for individuals with a university degree, compared to those having completed secondary education. The very high returns to university-level education point to a shortage of university graduates in Liberia as a whole, with employers willing to pay a very high premium for skills.

FIGURE 46: RETURNS TO EDUCATION OF FORMAL WAGE EARNERS

Highest level of education completed	Median Weekly Wage (LD) – Greater Monrovia	Median weekly Wage (LD) – Other Urban areas
Less than primary complete	2000	1500
Primary completed	2025	1875
Secondary completed	2700	2812
University Completed	7875	5062

[48] Differences in median income between education levels are statistically significant at the 1% level controlling for age, gender and primary job category in a quantile regression

3. Greater Monrovia's Municipal Finance and Governance Challenge and Opportunities

111. **Greater Monrovia's governance is complex, and unlike any other area of Liberia.** It is governed not through a single administrative unit but instead by a number of different – and often overlapping – institutions, with service provision also divided both vertically and horizontally. Most of 'Greater Monrovia' is located in a district in Montserrado County one of 15 administrative divisions. Administrative divisions are usually, in turn, subdivided into a 90 second-level administrative "districts" and further subdivided into third-level administrative divisions or "clans".[49] However, administratively, the District of Greater Monrovia is divided into 16 "zones", instead of "clans".

112. **Furthermore, unlike other districts, Greater Monrovia does not have an organized district administration, with most (but not all) of its lower-level local authorities directly supervised by the Montserrado County Superintendent**. The governance of Greater Monrovia District is further divided amongst two city corporations -the Monrovia City Corporation (MCC) and the Paynesville City Corporation (PCC) - and ten local authorities (nine townships and one borough). All existing local governments were created by specific acts by the Government of Liberian, and thus the structure and responsibilities of each local government varies greatly from one to the other. The Monrovia City Corporation is responsible for the administration of the city of Monrovia and the Paynesville City Corporation is responsible for the administration of Paynesville.

113. **The MCC also provides services to the townships and borough through Memorandums of Understanding (MoUs), but has no zoning or enforcement jurisdiction in these areas**. Different types of MoUs have been prepared to operate across the nine townships, the borough of New Kru Town, and Paynesville City Corporation (PCC).

BOX 5: EXAMPLE OF AN MOU BETWEEN THE TOWNSHIP OF WEST POINT WITH MCC

The agreement covers to "improve revenue collection" and "basic township services" (e.g., street cleaning and sanitation, among other services), as well as to further develop its institutional capacity particularly in local revenue mobilization and administration. On revenue collection, "MCC shall be the sole collecting authority of the above revenue sources". "From all revenue generated by MCC for municipal and advertisement, West Point receives 20% of each and MCC 80%". "The 20% is to be used for enhancement of the developmental agenda and operational expenditures, to be declared on a quarterly basis". On services delivery, "West Point shall be responsible for brushing of roads, alleys, drainage cleaning, demolitions, and transfer of debris to MCC's disposal sites". "MCC shall be responsible for issuance of construction permits, public land lease and land use permits to businesses/residents in West Point."

Source: Municipal finance study for Greater Monrovia (2020), based on author's review of the agreement between MCC and the township of West Point in Greater Monrovia.

[49] https://en.wikipedia.org/wiki/Administrative_divisions_of_Liberia

3.1. Political and Administrative Authority is Highly Centralized

Having experienced years of conflict, Liberia's political and administrative authority remains centrally controlled by national government. The level of centralization has provided limited room for efficient allocation of fiscal resources or opportunities for urban local governments to provide adequate and improved services.

114. Among Liberia's urban local governments, the urban area of Greater Monrovia, which includes the capital city of Monrovia, and its governance body, the Monrovia City Corporation (MCC) as well as Payneville, governed by the Paynesville City Corporation, and nine additional townships and one borough are most affected by this centralized system. In fact, Paynesville and Monrovia's Mayors are still centrally appointed by the national government, more specifically, [50] by the President of Liberia and the city council members are elected by popular vote. This is in spite of the July 19, 1973, establishment of the City of Monrovia, which replaced the Commonwealth District of Monrovia, and which also established for an elected Mayor and an elected City Council consisting of 11 councilors.[51]

115. **Decentralization is ongoing but incomplete**. To devolve authority and service responsibility to local government including counties and other subordinate administrative units, a draft Local Government Act (LGA) was prepared by the Government of Liberia (GoL) in 2013. The preamble to the National Policy on Decentralization and Local Governance ("Decentralization Policy") specified the goals and directions of the decentralization. As a result, since August 2018, county administrations have been assigned increasing responsibilities such as to improve collection of Own Source Revenue (OSR), to plan and implement development projects, to manage natural resources, etc. The decentralization initiative is progressing.

3.2. Despite centralization, the intergovernmental service delivery relationship is convoluted, leading to inefficiencies in service delivery

116. **In spite of the centralization, intergovernmental relations – especially for the delivery of services - are convoluted**. Greater Monrovia relies on multi-government institutional cooperation and coordination for infrastructure, service delivery, governance, and financing. Several functions – including urban planning and developmental control, drainage, sanitation and small public works – are joint with National Government entities, most notably the Ministry of Public Works. As described above, the , MCC also serves the neighboring urban areas of Greater Monrovia under Memorandums of Understanding (MoUs) arrangement. MCC services Greater Monrovia nine townships, and one borough (see Box 5)

117. **The services/expenditure assignments provided by MCC, however, are limited compared to those provided by other comparable cities internationally (see Box 6) and include**:

- Solid Waste Management (SWM), including in the nine townships, one borough, as well as through agreements with Community Based Enterprises (CBE);

[50] The former mayor (Ms. Clara Doe-Myogo) served from 2014 to 2018, and the current Mayor (Mr. Jefferson Tamba Koijee) was appointed in January 2018.

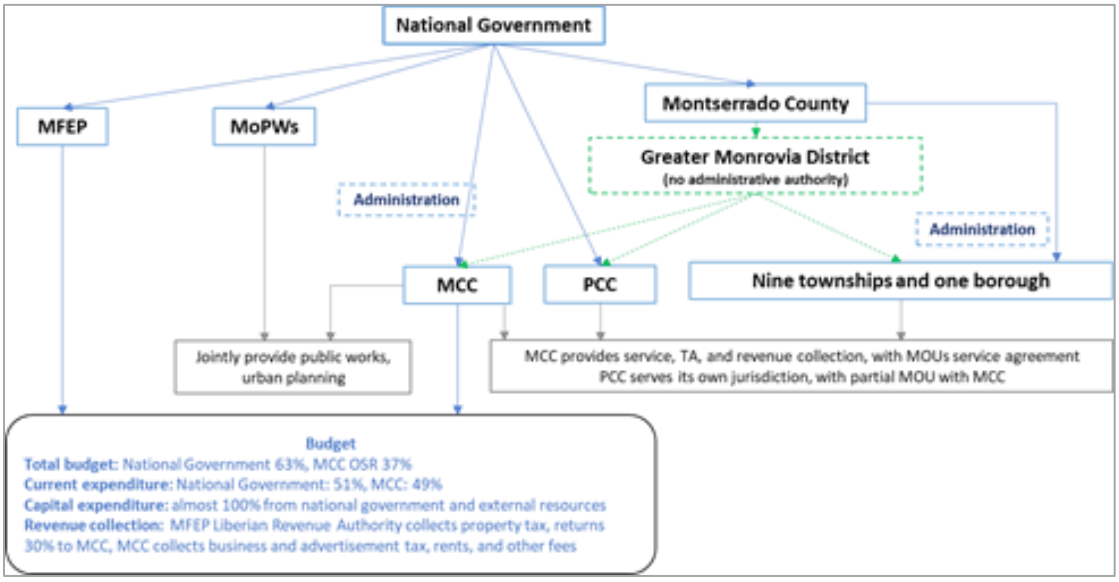
[51] From Hernando report, May 2020. The City of Monrovia is created and replaced the Commonwealth District of Monrovia on July 19, 1973. This legislation is also established for an elected Mayor and a City Council consisting of 11 councilors.

- Environmental Health & Public Safety;
- Urban Planning, in coordination with the Ministry of Public Works (MoPWs),
- City Police (in the capacity of first responder serving Greater Monrovia), and
- Community Services (such as drainage, sanitation and other small public works, in the capacity of first responder serving Greater Monrovia, some coordination with MoPWs).
- Technical assistance (TA) to the neighboring urban areas to strengthen their institutional operating capacity.

BOX 6: EXPENDITURE FUNCTIONS IN GOOD INTERNATIONAL PRACTICES

- Construction and maintenance of local roads and streets
- Drainage and flood control
- Sidewalks and public lighting (streets, squares, and other public areas)
- Solid-waste management
- Water supply, sewers, and sewerage treatment
- Food safety, sanitation, and public markets
- Public safety/police, fire protection, parks, playgrounds, and sport facilities
- Urban planning, upgrading of informal settlements, and gentrification
- Public transportation, urban traffic management, and pedestrian safety
- Environmental control and public health protection,
- Social assistance services, shelters for the homeless, and public housing
- Public health (disease prevention and vaccination)

FIGURE 47: GREATER MONROVIA GOVERNANCE AND SERVICE DELIVERY



3.3. Local Institutions are insufficiently resourced

118. **Although Local Authorities – including the PCC and MCC – have limited functions compared to international example, the City Councils finances remain inadequate in meeting its responsibilities**. MCC can only finance 37% of the city's total expenditure (see Table 15). Consequently, the remaining 63% are granted by the national government, Cheesmanburg Landfill and Urban Sanitation Project (CLUS), and other external donor funding in FY 2019-2020.

119. **Since the majority of the already small budget funds current expenditure, there is limited resource to fund capital expenditure for the city's spatial development, economic growth, and service delivery improvement**. MCC's OSR can only cover 49% of the current expenditure, which is mainly the O&M and government administration cost, with the remaining 51% has to be funded by the national government Most (74%) of the consolidated budget goes to current expenditure to fund MCC current operations, (including 56% for compensation of MCC employees) which left only 26% for capital expenditure. The capital investment is far below other international cities of the size and importance as Monrovia.

BOX 7: MAIN FEATURES OF A GOOD LOCAL TAX

- Tax base should be immobile, so local governments can vary the tax rate without the taxable base moving elsewhere.
- Tax yield should be adequate to meet local needs, be stable and predictable.
- Tax base should not be easy to export to nonresidents.
- Tax base should be visible to ensure accountability.
- Taxpayers should perceive the tax as fair.
- Tax should be easy to administer locally.

Source: Bird 2001.

TABLE 15: MCC EXPENDITURES FINANCED BY OWN SOURCE REVENUE AND BY EXTERNAL SOURCES

MCC EXPENDITURES FINANCED BY OWN SOURCE REVENUE AND BY EXTERNAL SOURCES							
OBJECT OF EXPENDITURES	FY 2019 -2020 GOL Projection (USD)	% of Consulidated	FY2019-2020 MCC Projection (USD)	% of Consulidated	% of Grand Total	FY2019-2020 Consulidated (USD)	% of Consulidated Grand Total
Compensation of Employees	1,652,227	56%	1,300,589	44%	67%	2,952,816	56%
Use of Goods and Services	333,359	37%	594,535	65%	31%	912,894	17%
Consumption of Fixed Capital	-		40,000	73%	2%	55,000	1%
Subtotal (i)	**1,985,586**	**51%**	**1,935,124**	**49%**	**100%**	**3,920,710**	**74%**
Non-Financial Assets by funding source							
Other Fixed Assets	-		-			-	
Clean City Project	600,000	100%	-			600,000	11%
Cheesemanburg Landfill & Urban Sanitation (CLUS) Project/Solid Waste Management	750,000		-			750,000	14%
Subtotal (ii) (GOL and Donor)	**1,350,000**	**100%**	**-**			**1,350,000**	**26%**
Grand Total	**3,335,586**	**63%**	**1,935,124**	**37%**	**100%**	**5,270,710**	**100%**

Source: MCC Expenditure Budget Data FY 2019-20 & authors' calculation

120. **Unfortunately, MCC has very limited own tax sources, comparing to other international cities, even comparing to low-income countries; thus improving OSR is difficult**. The MCC OSR comes from seven types of revenue classifications including both tax and non-tax items. The two major sources which accounted over 80% of MCC's OSR are "local taxes" (business taxes and advertisement tax), which accounts for 65.7% of the total OSR, and "rents", which accounts for 16% of the total OSR, as shown in table 19 below.

121. **This situation is even more critical considering that the collection authority of property tax is currently under the Ministry of Finance Liberian Revenue Authority (LRA) although it also appears as a function under MCC's Ordinance 8**. Within this arrangement the national government is supposed to transfer back 30% of the tax proceeds to MCC, but since the property tax collection rate has been extremely poor, revenue sharing has been realized. This lack of collection effort has been a detriment to the fiscal capacity of the city. As a result, MCC relies on two local taxes only: the "business tax" ("municipal tax") and the "advertisement tax", together with rents from municipal property as the main non-tax revenue source (see tables below).

122. **To capitalize on its limited OSR to ensure the long term service delivery** MCC needs to optimize revenue collection efforts from the two main taxes and non-tax sources and ensuring efficient expenditure. In additional, national government could also focus on improved property tax collection – and subsequent sharing with the MCC. In the longer term, the city could benefit from expanding the tax base to include additional potential sources (see Table 16 and Box 7).

TABLE 16: MCC OWN SOURCE REVENUE

LOCAL REVENUE SOURCES IN GOOD INTERNATIONAL PRACTICES AND IN MCC	
Good International Practices	**Monrovia (Liberia)**
Taxes	**Taxes**
1. Property Tax (real estate)	1. Propoerty Tax (Real Estate) 30%
2. Advertisement Tax	2. Advertisement Tax
3. Business Tax	3. Business License/Tax
4. Excise Tax on Goods & Services	
5. Land Value Capture Taxes	**Non-Taxes**
6. Motor Vehicles Tax	1. Solid Waste Collection Fee
7. Real Estate Transfer Tax	2. Construction Permits
8. Stamp Duties	3. Fines/Penalties
9. Income Tax	4. Other (Lottery Taxes & Fees)
Source: Municipal Finance Handbook (2014) and MCC's Budget Report 2018-2019	

TABLE 17: MCC OSR STRUCTURE

MONROVIA's OWN SOURCE REVENUE STRUCTURE Fiscal Year: July 1st 2018 - June 30th 2019			
	OWN REVENUE SOURCES	US$*	%
1	Taxes	1,168,944	65.7
2	Rents	284,529	16.0
3	Permits	169,018	9.5
4	Fees	55,080	3.1
5	Licenses	10,900	0.6
6	Fines/Penalties	6,672	0.4
7	Others (Contingent Revenue)	83,632	4.7
	TOTAL	1,778,775	100
* These revenues refer to FY approved projections			
Source: Elaborated for this Report based on the "Budget Brief".			

123. **Compounding the poor OSR, the size of the transfer of funds to MCC from the central government is not always clear.** The transfer allocation that finances the sustainability of the urban service delivery to Monrovia's 1.5 million people is subject to annual negotiations between MCC and the national government (through MFDP), as well as the approval of the national budget by the Liberian Legislature. The MCC's service delivery under MOU with other Greater Monrovia Local Governments is also under risk of financial sustainability, since it is subject to similar negotiations.

124. **In addition to actions to improve OSR, MCC's multi-year urban investment and service improvement planning requires improvements given the lack of reliable financing resources to support the planning and**

the criteria for national government budget transfers and capital investment project should be clearly defined. Such subsidies could be linked with MCC's performance in service delivery, own-source revenue collection, effective implementation of development projects and transparent budget reporting. Capacity building can also be provided to ensure that the MCC reaches set performance targets.

3.4. Accountability and Transparency in Financial Management and Reporting

125. **MCC's financing management, accounting, and reporting could be supported to address accountability and transparency.** MCC's yearly budget document primarily refers to the revenue projections for the incoming fiscal year and the distribution of the projected total revenue across the main expenditures' categories. Under current practice, the annual budget document does not report the budget balances for either the *operating* or the *capital* budget in the previous fiscal year. Therefore, it is unknown whether yearly operations in the *current* and *capital* budget, and in the consolidated budget, ended up with budget **surpluses or deficits.** By international standards, these financial balances are among the most basic performance indicators in financial management. Their availability, or lack thereof, are also internationally recognized as indicators of financial *transparency*, *accountability,* and good governance.

126. **The budget reporting system also requires revision to differentiates between current expenditures (i.e., general administration, and O&M on each municipal service), and capital investments on specific urban services to guide expenditure policy, and measure performance in expenditure efficiency**. Accounting and budget reporting currently follow the old traditional classifications by ***line items*** (i.e., *inputs only*). This means MCC does not report municipal expenditures by services/functions (i.e., expenditure programs by *service/output*). Furthermore, under the current system the expenditures in general administration, as a function, are unknown. Without the classification of current expenditures into general administration and municipal services (O&M) it is very difficult to guide expenditure policy, show results on the ground, set *baselines*, and measure performance in expenditure efficiency on different services/functions.

127. **Finally, current accounting of revenues could be revised to systematically compute indicators on revenue collection efficiency ratios**. These ratios would be very helpful for the revenue administration to set priorities in terms of where the revenue collection effort should focus. Based on the small revenue from penalties, it appears that revenue enforcement is fairly weak. Finally, and not least important, currently revenue administration, billing, collection, and enforcement are handled manually for most revenue sources. **International experience shows the multiple benefits of automation. The priorities should be business taxes, advertisement tax, and rents**.

3.5. Summary

128. **Unfinished decentralization, unclear and overlapping mandates – nationally and within Greater Monrovia - coupled with significant underfunding of capital investments and local financing significantly hinder Greater Monrovia's potential to further contribute to Liberia's economic transformation**.[52] Most urban services like power, water, urban transport, health and education fall under the purview of under-

[52] The devolution of certain administrative, fiscal and political powers and institutions from the national government to local governments is still underway (Local Government Act 2015). Monrovia City Council, as municipal authority, is only responsible for solid waste management and is allocated funds in the national budget for that service alone along with salaries subsidy. MCC has municipal revenue sharing arrangements with some adjoining Local Government Areas (LGAs).

resourced and weak central government utilities. Others – including urban planning, stormwater drainage and roads – are provided in conjunction with central government agencies – with concomitant fractious overlapping mandates. Services that are mandated for local provision – including solid waste management – are provided at varying levels by the Monrovia City Council (MCC) through byzantine service agreements (Memorandum of Understanding) with the 9 townships and 1 borough that make up Greater Monrovia. The MCCs Own Source Revenues barely cover its operations – while all capital investments are either financed externally or through the national government.

129. **Greater Monrovia – and the MCC, PCC and other entities - needs a model of inter-jurisdictional governance to improve promote service delivery**. The MCC and PCC as institutional leaders of the Greater Monrovia, it should consider advocating for a broader assignment of local expenditure functions, supported by new tax revenue sources, to operate under a model of metropolitan governance characterized by clear transparency and strong accountability. To enhance this transparency, MCC should consider reporting both planned and executed expenditures (de-jure and de-facto) in each jurisdiction covered by an MoU in order to also enhance accountability, as part of good governance.

4. Recommendations

130. **The Government of Liberia's stated vision, formulated in *Liberia Rising 2030,* aims at reaching middle income status by 2030**. Drafted in 2012, it laid out a strategy for economic transformation under the first phase (2012-2017), followed by the Pro-Poor Agenda For Prosperity And Development (PAPD) outlined by Liberia's current administration for the period 2018 to 2023.

131. **Fixing Greater Monrovia is key and central to achieving sustained and shared economic growth for Liberia**. Even though energy supply and access, connectivity, educational attainment and economic opportunities are far better in Greater Monrovia than in any other urban area, more needs to be done to unlock Greater Monrovia potential agglomeration benefits that would help not only residents of the capital area, but also Liberians across the country and in rural areas to reach greater prosperity. To achieve this addressing the constraints outlined in Chapter 3, and are reformulated below in the context of an agenda for Greater Monrovia.

4.1. Matching roles and responsibilities more effectively across Greater Monrovia's institutional landscape

132. **Greater Monrovia needs a model of governance that addresses the region as a single entity to start to address the geographic administrative fragmentation that currently plagues the area**. This would allow for integrated planning for future development, management of current development, to ensure that efficiencies of agglomeration are captured.

133. **Such a model begins with a local government entity that has jurisdiction over the entire area and an elected Mayor – as envisaged by the 1973 Legislation that established the MCC – to ensure accountability to residents**. But such a government entity also has to be equipped with the relevant expenditure and concomitant revenue assignments to ensure effective management. This, however, is a medium-term solution that should be an integral part of the decentralization discussion currently underway in Liberia.

134. **In the short term, the MCC and PCC, building on the current City Development Strategy** (currently underway with assistance from Cities Alliance), should consider jointly developing a spatial plan that provides clear direction for growth, while recognizing Greater Monrovia's disaster and climate risks, with associated city-wide investments, and jointly advocate for its financing to appropriate national government entities as well s Donor agencies. Such an approach could ensure coherent development in Greater Monrovia – in the absence of a single management entity.

135. **In the short term, MCC and PCC could consider the following institutional improvements** for improved transparency and accountability – and in the absence of elected officials:

a. *Applying international standard in accounting and reporting* is suggested to enhance the financial transparency. Consideration should be given to the implementation of an accounting and budget reporting system that differentiates between: (i) current expenditures (i.e., general administration, and O&M of main municipal services); and (ii) capital investments in specific urban services. This classification would enhance financial transparency and, thereby, accountability.

b. *Ensure consistent reporting* – to Council Members, levels of government and to the public – on use of local funds. Note that this could include reporting both planned and executed

expenditures (de-jure and de-facto) in each jurisdiction covered by an MoU in order to also enhance accountability, as part of good governance;

c. *Include performance indicators for budgets. These* include: (a) execution efficiency ratio of every expenditure category (including both current and capital expenditures); (b) the collection efficiency ratio for every revenue source; and (c) the balances in the operating and capital budgets as well as the balance in the consolidated budget;

d. *MCC should consider producing quarterly and annual reports on revenues collected in each jurisdiction in partnership with local authorities, as well as on the specific investments in urban development in those jurisdictions.* For this purpose, and as part of comprehensive financial reporting, a budget for capital expenditures in urban development should be adopted, including all internal and external revenue sources. This would facilitate the implementation of a multi-year urban investment planning system.

e. *Provide One stop Shops and other outreach facilities* for business and community to ensure improved services to residents.

136. In addition, and even prior to the conclusion of the decentralization discussion, the MCC and PCC as institutional leaders of the Greater Monrovia – and especially considering the MCCs role in delivering certain services in Greater Monrovia could also advocate for:

a. *clarity in the management* (and subsequent revenue assignment) of key functions/mandates currently under contention including urban planning and small works;

b. *improved property tax collection and subsequent sharing of this shared tax* (see 4.2 for a further discussion on this issue); improve revenue collection – with an initial focus on improved consistency in billing and collection of existing revenue sources;

c. *clear and transparent rules on project funding*, and transfers from the national government.

4.2. Generating fiscal space for urban interventions

137. **The limited fiscal space available to the Government of Liberia – central and local – constraints its efforts to advance on its strategy *Liberia Rising 2030***. Governments have essential three instruments at their disposal to increase their fiscal space: saving, external borrowing or increasing taxes. Saving could be achieved by spending more efficiently or by cutting activities and subsidies with low financial or social value. Commercial or concessional lending may be an option for activities where economic returns are sufficiently high to secure the payback of loans, but about 80 percent of Liberia's public investments are already financed through external sources[53]. Increasing taxes needs to be weighed against their distributional impacts and how efficiently they can be administered. While a recent public expenditure review[54] nicely laid out various options for Liberia to increase its fiscal space, the recommendations here – while overlapping in part with that assessment – will be limited to the scope of issues identified in previous chapters.

[53] IMF (2016), Liberia Technical Assistance Report—Public Investment Management Assessment, IMF Country Report No. 16/352, International Monetary Fund, Washington DC

[54] WB (2013), Liberia Public Expenditure Review Options for Fiscal Space Enlargement, The World Bank Group, Washington DC

138. **The Liberia Electricity Corporation (LEC) and the Liberia Water and Sewer Corporation (LWSC) receive sizeable fiscal transfers – without a clear economic or financial rationale – that could be spent elsewhere**. As discussed in section 3.4, electricity and piped water services remain limited and are almost exclusively available to only non-poor households. This makes the public subsidy going to these SOEs highly regressive and without clear rationale. In 2011/12, the fiscal transfers amounted to USD 3.4 for LEC and USD 1.2 million for LWSC[55] -- finance that could be spent elsewhere more effectively and with more inclusive benefits. Both sectors are in urgent need of reforms[56] to expand access beyond the wealthy and operate efficiently to ensure tariffs are in line with international standards and to eliminate the need of blanket government subsidies.

139. **Empty and unused buildings could generate financial revenue to Government**. There are several Government owned buildings that are left empty, because they are in need of repair. A quick back of the envelop computation, using existing advertised rentals, could generate a revenue of several hundred thousand USD per month, which would be a discounted rental in exchange for repair (see Annex 5). Discounted rentals in exchange for making the buildings inhabitable again could be explored by Government, if finance for major repairs is not available or budgeted.

140. **Limited real estate tax collection – only 0.17 percent of GDP was collected in 2011 for entire Liberia[57] – is not only a missed opportunity for generating revenue for urban investments, but also for regulating urban development**. Real estate tax collection, as opposed to other taxes related to property transfer, is limited to Monrovia and few other major urban jurisdictions[58]. Of course and as outlined below, various steps need to be taken that require less financial but political capital to institute a property tax system geared towards collecting real estate taxes. However, once it does, it could leverage finance that could be used to finance many of the infrastructure constraints for Greater Monrovia.

4.3. Completing Property and Land Registration for Greater Monrovia

141. The **establishment of a transparent and trustworthy land and property registration system is vital and the very first step in addressing the difficult political economy around land**. Even though the Government of Liberia took already unprecedented steps to tackle land issues – by creating in 2009 Liberia's Land Commission, adopting a Land Rights Policy in 2012, passing the Liberia Land Authority Act in 2016 and passing the Liberia Land Rights Act in 2018 – only 5,000 properties, at most 30 percent, were registered for the entire Montserrado County in 2012[59], with an unknown number of registrations today. Likewise, there is no comprehensive digital information on the number and values of land and property transactions, which make their valuations for taxation purposes difficult and arbitrary.

142. **Harness the benefits of the digital economy to advance land and property registration efforts**. Remote sensing platforms (satellites, aircrafts, drones) offer massive opportunities to carry out land registration at lower cost and in a more transparent manner by establishing digital audit trails. Given limited capacity within the public sector, the working model in most SSA countries is to allow surveying, valuation and

[55] Ibid.

[56] See for example, Kiazolu, M. O. (2015) Governing Liberia's Electricity Sector Reforms: Challenges and Recommendations. Governance in Africa, 2(1): 1, pp. 1-8.

[57] Franzsen R. and S. Jibao (2017), "Liberia" in R. Franzsen and W. McCluskey (ed.), Property Tax in Africa: Status, Challenges, and Prospects, The Lincoln Institute of Land Policy, Cambridge Massachusetts

[58] Ibid.

[59] Ibid.

land use planning to be carried out by private sector professionals, with the government only responsible for approval[60].

143. **Registration of land and property in Central and Greater Monrovia has high revenue potential**. Under the ongoing Land Administration Project financed by the World Bank digitization of manual deed records are supported and existing drone maps could help pilot cadastral index map that would link deeds to spatial parcel units, thus setting the ground for the establishment of a complete and multi-purpose cadaster for Greater Monrovia. Greater Monrovia seems an obvious choice, since already it forms the basis of current real estate collection effort. Moreover, Greater Monrovia benefited far more from public infrastructure investments than any other area in Liberia, and that effort needs to double and triple with the financial contributions of its residents (through real estate taxation), if economic growth is to be increased in the capital area.

144. **Adopt a simple area-based flat tax on land by zone first**. In the absence of market data, a simplified approach to real estate taxation could be explored and may be preferable to the current value based approach, since market values are difficult to discern and generate dissent when perceived to be measured arbitrarily. Once land parcels are measured and registered, a fee per square meter of land could be levied and varied by zone to reflect the higher value of land in certain areas, especially downtown. Moreover, current distinctions between urban farm land, urban land, underdeveloped lots, land occupied by residential or commercial buildings would be unnecessary, except for penalizing underutilization of land as a regulatory tool to foster better land use and reduce land speculation. An example of different land tax scenarios are outlined in Annex 5 for Central Monrovia and the extended area of Central Monrovia.

TABLE 18: FORMER AND CURRENT TAX RATES FOR LAND AND BUILDINGS IN LIBERIA

Property Category	Tax Rates (2000–2010)	Tax Rates (from 2011)
Residential buildings (used exclusively for residential purposes)	0.25	0.08
Commercial buildings	1	1.5
Industrial buildings	0.5	1.5
Undeveloped city or town lots	7	2
Urban land (one acre or more)	5	3
Urban farmland (land and buildings)	10	4
All undeveloped land (located outside city or town limits)		LRD 5.00 per acre

Franzsen and Jibao (2017)

145. **Reconsider the application of a house/property tax for a later, more advanced system of real estate taxation**. 77 percent of the buildings assessed by drones in Central Monrovia, as outlined in section 3.5, consist of one floor, built out of material that would scarcely support another. At this stage of urban development in Greater Monrovia – with very little economic density – building well and higher would better be encouraged rather than taxed.

[60] A forthcoming study by the WB Africa chief economist unit will elaborate in more detail scalable solutions for land registration and administration using digital technologies.

4.4. Planning and Regulation in support of Greater Monrovia's territorial development

146. **Urban master planning including land use and the planning and coordination of infrastructure need to be strategic, pragmatic and inclusive of all sectors that fall within the territory of Greater Monrovia and implemented by a high level coordination unit**. Given the importance of the capital region for economic growth of the country and as suggested already under 5.1, the delegation to a high level coordination unit with capacity to plan and regulate connective infrastructure across the territory of the agglomeration will be necessary. Such entity could be the focal point and management unit for all investments made in Greater Monrovia and would need to be hold accountable through the formulation of a business plan with specific tasks and milestones.

147. **Coordination of infrastructure and regulation of land use through a binding Master Plan**. One of such tasks is the preparation and implementation of a binding Master Plan. It could built on the Master Plan financed by JICA in 2009[61] – that while comprehensive and covering many aspects needed for urban planning, needs updating – and other analytical work. Such plan needs to be understood as a process, during which support from critical stakeholders shall be garnered to agree on prioritization of activities, implementation arrangements and binding rules. It would entail the nurturing of a common understanding on the climate change risks that will continue to exacerbate flooding in parts of Greater Monrovia; it would regulate land use in areas at risk; it would ensure the extension of network infrastructure (water, sewage, electricity, internet cables) would be coordinated with road improvements so newly paved roads can be longer preserved; and – through participative planning – would generate a vision of the location of the city's main functions (markets, manufacturing and light industry, future waste disposal sites, etc.).

148. **The importance of planning tools and enforcement to prevent loss of lives and white elephant investments cannot be sufficiently underscored**. The territory of Greater Monrovia is particularly vulnerable to climate change as its long coastal line is exposed to threats from sea level rise and its inner shores bordering the Mesurado river are at risk of submersion and flooding. Hundred thousands of people currently reside along the shoreline on informal and often reclaimed land that may be submerged within the next decade. Where should they go? Today's planning needs to meet the criteria for the next 50 to 100 years, especially in an environment where the capacity to invest in lasting infrastructure is extremely limited.

149. **Economic and incentive regulation and crowding in private investors**. An important function of the 'managers' of Greater Monrovia is also to act on the constraints reported by businesses and improve the business environment for future investors. This could range from specific vocational training camps to build skills in need for certain professions to reducing the overall cost of the business environment to make wages more competitive. In addition, Liberia's current model of concessions needs to deliver better in terms of transparency on their revenues and spending, the use of local supply chains including labor, and with respect to the value addition made to these products before they are exported. A recent report by the World Bank[62] outlines comprehensively the various options Liberia could take on enhancing its product diversification, including the establishment of Special Economic Zones (SEZs), so related recommendations should be drawn from that detailed analysis.

[61] Liberia Ministry of Public Works (2009)
[62] WB (2019b)

4.5. Making Monrovia cleaner, better connected, more livable, affordable and safer

150. **The Government of Liberia needs to consider direction of growth given the city's propensity to flood.** Such growth is already taking place in the direction of Paynesville, but also towards the Northern periphery of Greater Monrovia's administrative boundaries, and investments are likely to continue in those directions.

151. **With population densities much lower in the periphery, such deflection of urban growth could be an opportunity to address pervasive constraints to affordable formal housing development**. Land is less expensive in the periphery of Greater Monrovia today, and building formal housing with access to formal infrastructure could save significant finance in the future, when such investments become critical and population densities have risen. This could be done through PPPs with private developers, or in the form of lower cost sites and service projects, in which formal infrastructure – roads, electricity, piped water, communal septic tanks or other – could be built with contributions[63] by the owners of land.

152. **However, generating affordable housing in the periphery of Greater Monrovia will stand or fail with affordable connective transport options that need to be established**. The dependency on employment – formal or informal – in the downtown area of Greater Monrovia will necessitate investments into affordable and fast transportation modes between Greater Monrovia's periphery and its businesses in Central Monrovia. The congestion generated by the vibrant markets – Duala and Redlight – needs particular attention, since many of the informal jobs are connected to these markets and delivery comes from various parts of Montserrado and its neighboring counties.

153. **With so much network infrastructure investments required in Greater Monrovia – paved roads, drainage, electricity, water, sewage – the Government of Liberia needs to consider how to crowd-in private finance through innovative schemes – such as around land value capture.** For example, there is a potential for private capital mobilization through prime real estate or land, where government would leverage its real estate assets to invite private service providers to deliver multiple economic and social services to its citizens. An initial identification and mapping of public assets (land and buildings) has been completed, showing that about 18 percent of Central Monrovia's building footprint or land belongs to Government. Land value capture schemes can also leverage infrastructure service improvements in certain neighborhoods against agreed future real estate tax.

154. **However, since these long term investments will require planning and land markets to function, they should not mask the urgent and immediate requirements to improve urban services in informal settlements.** Already can one see that informal areas are over proportionally at risks from diseases such as COVID19 and years ago it was Ebola. Given climate uncertainty and these areas being particularly at risk of submersion, alternative infrastructure and service provision models are needed in lieu of sinking capital-intensive network infrastructure to reach these settlements. Such models makes a case for an urban upgrading approach that also focus on '*off grid'* infrastructure that could be located in such areas. Such 'off grid' h models could include investments in water kiosks, mini-grids which could be solar powered, small waste water treatment plants, community public toilets and other non-network service solutions.

155. **Greater Monrovia has already experience and capacity with such innovative infrastructure and service delivery models that could be leveraged in the interest of addressing immediate concerns of the large**

[63] Could be land, like in land pooling projects, cash or future taxation as in land value capture.

community of slum dwellers. Management of such innovative service delivery interventions could occur through community based and social enterprises, based on existing practices in Monrovia. CBEs already exist in Monrovia, specifically in Waste Management, but also sanitation, and, it could be argued that nascent enterprises also exist in the management of the water kiosks of LWSC. In fact, the Federation of Liberia Urban Poor Savers (FOLUPS), together with Donor financing has already provided small grants and loans to individual enterprises and CBE for equipment for waste collection. Furthermore, there is significant interest by social enterprises in investing in Monrovia[64]. Such interventions are viable in Monrovia – based on a Market Sounding exercise which generated interest from 230 interested SE. Of these, 50 were short listed for deeper interviews to determine suitability and readiness, and from those 17 – including those focused on water provision and solar power - were selected as having the strongest replication potential. Impact investors who have been contacted have also expressed interest in such investments.

156. **Finally, Monrovia's economic spaces require significant rehabilitation – including its markets – and its commercial nodes.** For commercial nodes, investments in *public land/buildings* could occur based on its potential for private capital mobilization to maximize land value capture.

157. **At the same time, investments in Monrovia's markets, can also support the informal economy, urban/rural linkages and reduce food loss.** The Markets in Greater Monrovia constitute important linkages between rural farmers and urban consumers. However, inadequate infrastructure, including deficient drainage, poor sanitation and water facilities, and inadequate waste management make these food markets unhygienic and risky for the health of vendors, visitors and surrounding communes. **Additionally,** their poor management is estimated to reduced daily profits of vendors by approximately 8%, poor market management which reduced revenues collected by between 3-7 times. Interventions that could be supported could include improved market infrastructure (e.g. toilet facilities, water points, improved drainage) that could be implemented using labor based approaches; investments in cold storage and other storage facilities that could improve profits and productivity of the nascent micro enterprises; and improved market managements and organization that could contribute to local revenues.

TABLE 19: A SUMMARY OF RECOMMENDATIONS AND A TENTATIVE TIME HORIZON

Matching roles and responsibilities effectively across Greater Monrovia's institutional landscape	
Manage Greater Monrovia as a single entity: - Provide a model of governance that considers the regions development within a single entity, together with concomitant Revenues and Expenditure assignments - Ensure coordinated development via a Strategy and Plan for the area	Long Term (through ongoing Decentralization Process) Short Term
Work with MCC and PCC to improve accountability, and transparency through: - Support improvements in the municipal accounting system, and subsequent reporting - Provide One stop Shops and other outreach facilities for business and community to ensure improved services to residents;	 Short Term Medium Term
Encourage MCC and PCC as institutional leaders to advocate for:	Medium Term

[64] Social Enterprises deliver goods and services to customers, hire or source suppliers from marginalized communities, generate profits to service social causes through cross subsidization, protect the environment and function as enablers by facilitating other social enterprises.

- clarity in the management (and subsequent revenue assignments) of key functions/mandates currently under contention including urban planning & small works; - improved property tax collection and subsequent sharing of this shared tax; - clear and transparent rules on project funding, and transfers from national government.	
Generating fiscal space for urban interventions	
Rationalize fiscal transfers especially to the Liberia Electricity Corporation (LEC) and the Liberia Water and Sewer Corporation (LWSC) which receive sizeable fiscal transfers – without a clear economic or financial rationale – and which are regressive.	Short to Medium Term
Generate revenue by leasing out Government owned empty buildings at discounted rates and in exchange for these buildings being repaired.	Short Term
Improve and simplify Real Estate and Property Tax collection which, since only 0.17 percent of GDP was collected in 2011 for entire Liberia, is not only a missed opportunity for generating revenue for urban investments, but also for regulating urban development. Different scenarios for only focusing on an area based land tax could yield a million USD per year from Central Monrovia land taxation only.	Medium to Long Term
Work with MCC and PCC to improve revenue collection – with an initial focus on improved consistency in billing and collection of existing revenue sources.	Short Term
Complete Property and Land Registration for Greater Monrovia	
Establish a transparent and trustworthy land and property registration system and harness the benefits of the digital economy to advance land and property registration efforts	Medium to Long Term
Pilot a cadaster index map linking existing drone imagery with deeds	Short Term
Adopt a simple area-based flat tax on land by zone first	Medium Term
Planning and Regulation in support of Greater Monrovia's territorial development	
Clarify Roles and Responsibilities around Planning	Medium Term
Develop a consensual plan, which outlines direction of growth	Short to Medium Term
Develop and use appropriate planning tools	Medium Term
Making Monrovia cleaner, better connected, more livable, affordable and safer	
Consider long term direction of growth in Greater Monrovia, taking into account existing patterns of growth (currently towards Paynesville and north) and future climate risks which constrain the viability of investments	Medium to Long Term
Use growth in peripheral areas to address pervasive constraints to housing development	Medium Term
Ensure connective infrastructure between core and periphery of the city	Medium Term
Use land value capture to 'crowd in' private sector investment that could then be used for infrastructure financing	Medium Term
Invest in 'off grid' infrastructure in disaster prone informal neighborhoods, to ensure delivery of basic services while also ensuring viability of investments	Short Term
Invest in innovative service delivery models in underserved areas particularly using: - Community Based Enterprises - Social Enterprises	Short Term
Rehabilitate Greater Monrovia's markets including: - Cold storage for improved productivity - Water, sanitation and drainage for improved health outcomes Resolve Market Management issues between LMA and MCC/PCC	

5. Conclusion

158. **Liberia has gone through a difficult past – decades of conflict and an Ebola crisis – and there are new challenges ahead, posed both by COVID19 and lower commodity prices, on which much of Liberia's revenue depends**. Years of conflict have left much of Liberia's once thriving infrastructure in tatters, the Ebola crises hit the economy hard, just when it managed to get back on its feet; worse than destroyed infrastructure or a depressed economy, these experiences have left scars among its population that are harder to heal. However, the healing will be necessary to maintain peace and stability, and what government can offer is to foster trust through its institutions, better services and better jobs for this and the next generation in waiting.

159. **The Government of Liberia's own strategy – Liberia Rising 2030 – has been developed much in that spirit in 2012 and is as valid today as it was then**. The financing of the ambitious Agenda of Transformation that should propel Liberia into a middle income country by 2030 has taken hits from Ebola and commodity crises, but the agenda is reinvigorated by the Pro-Poor Agenda For Prosperity And Development that marked the second phase under this strategy. This report has highlighted the various constraints to improving Greater Monrovia's prospects to accelerate economic growth and job creation. The focus on Greater Monrovia is needed, since without it, Liberia will not be able to reach middle income status, simply by exporting its raw materials to the world.

160. **Greater Monrovia is well suited within Liberia to provide value additions to Liberia's abundant raw materials**. It has better access to electricity, water, and educated workers than any other area in Liberia, and it is close to the port. Service access and quality is far from good, but they can be improved and given existing population densities, improving service provision benefits from economies of scale, i.e. it will always be less costly to serve an urban household with grid electricity than a remote rural one.

161. **However, Greater Monrovia needs to address many of its challenges urgently and before the cost of tackling them later may overwhelm**. Because of lack of affordable formal housing, people choose informal settlements to be near jobs and to rely on the only means of transport affordable to them: walking. Such decisions could differ, if better and affordable transport connectivity could be assured for poorer households to reach their jobs. Likewise, climate change is real and it will affect Greater Monrovia's economy and residents, so steps to prepare for worse frequencies of flooding and increased sea level rise need to be made.

162. **Importantly, some of the recommendations laid out in this report require significant financial capital; yet, the most important decisions require political will and a participatory process to generate support**. Enhancing transparency by publishing government revenues and spending is not costly, but takes political will. Land – ownership, transactions, and its taxation – are in a similar category, and will be contested by those that may gain from obscurity. Land registration is probably the most important activity the government can embark on without significant financial cost. It has the potential to unlock the development challenges constraining Greater Monrovia.

References, Datasets and Leveraged Studies

Reports/Studies

Banerjee, A. and E. Duflo (2011), Poor Economics: a radical rethinking of the way to fight global poverty. Public Affairs (publisher), New York

Dijkstra, L., and H. Poelman. 2014. A harmomised definition of cities and rural areas: The new degree of urbanisation. Brussels: European Commission.

Drakenberg, O., Andersson, F. and Wingqvist, G. (2014), Liberia- Environmental and Climate Change Policy Brief. http://sidaenvironmenthelpdesk.se/wordpress3/wp-content/uploads/2014/01/Liberia_EnvCC-PolicyBrief-2013-Final-Draft.pdf

Franzsen R. and S. Jibao (2017), "Liberia" in R. Franzsen and W. McCluskey (ed.), Property Tax in Africa: Status, Challenges, and Prospects, The Lincoln Institute of Land Policy, Cambridge Massachusetts

https://www.lisgis.net/pg_img/HIES%202016_StatisticalAbstract_Final_final.pdf. Our estimates indicate the poverty headcount of Greater Monrovia is similar (19 percent). However, the proportion

Hydroconseil (2014), Improving Access to Piped Water Supply in Monrovia's Low-Income Households Using an Output Based Aid Approach, World Bank Water and Sanitation Program, Washington, DC

IMF (2016), Liberia Technical Assistance Report—Public Investment Management Assessment, IMF Country Report No. 16/352, International Monetary Fund, Washington DC

Jones, P., Aoust, O. D., & Bernard, L. (2017). The Urban Wage Premium in Africa. In S. Johnson-Lans (Ed.), Wage Inequality in Africa (pp. 33–53). Palgrave Macmillan, Cham. https://doi.org/https://doi.org/10.1007/978-3-319-51565-6_3

Kaza S, et al (2018), What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050, Urban Development Series, The World Bank Group, Washington DC

Kiazolu, M. O. (2015) Governing Liberia's Electricity Sector Reforms: Challenges and Recommendations. Governance in Africa, 2(1): 1, pp. 1-8.

Kummu, M., Taka, M. & Guillaume, J. Gridded global datasets for Gross Domestic Product and Human Development Index over 1990–2015. Sci Data 5, 180004 (2018). https://doi.org/10.1038/sdata.2018.4

Lall, S., J. Henderson, and A. Venables. 2017. Africa's Cities: Opening Doors to the World. Washington, DC: World Bank.

Liberia (World Bank Climate Change Knowledge Portal (CCKP))

Liberia Ministry of Public Works (2009), The Master Plan Study on Urban Facilities Restoration and Improvement in Monrovia in the Republic Of Liberia, financed by JICA, prepared by Yachiyo Engineering Co., Ltd. Katahira & Engineers International

LISGIS (2008), 2008 Population and Housing Census Analytical Report on Migration and Urbanization

LISGIS (2016), Household Income and Expenditure Survey, Statistical Abstract, August 2017

Nakamura, S., R. Harati, S. Lall, Y. Dikhanov, N. Hamadeh, W. Oliver, and M. Yamanaka. 2016. Is Living in African Cities Expensive? Washington, DC: World Bank.

Nmoma, V. (1997), The Civil War and the Refugee Crisis in Liberia, in: Journal of Conflict Studies, Vol. XVII No. 1, Spring 1997. https://journals.lib.unb.ca/index.php/JCS/article/view/11734/12489

Republic of Liberia (2012), Agenda For Transformation: Steps Towards Liberia Rising 2030, Government of Liberia

Republic of Liberia (2018), Pro-Poor Agenda for Prosperity and Development (PAPD), financed by UNDP Liberia

SDI (2019). Slum profiles for 113 slums in Monrovia by Slum Dwellers International (SDI) in collaboration with Federation of Liberia Urban Poor Savers (FOLUPS) and Cities Alliance

Spence, M., Annez, P., & Buckley, R. (2009). Urbanization and Growth. Washington D.C: World Bank.

Shruggs (2015), How much public space does a city need? https://nextcity.org/daily/entry/how-much-public-space-does-a-city-need-UN-Habitat-joan-clos-50-percent

UN Habitat (2007), *State of the World's Cities 2006/2007*, https://mirror.unhabitat.org/documents/media_centre/sowcr2006/SOWCR%206.pdf

UN Habitat (2014). Liberia Housing Profile

UN-Habitat (2017). A national urban policy for Liberia: discussion paper.

World Bank(2019). Greater Monrovia Region Spatial Analytics

USAID (2017), Liberia Fact Sheet. Climate Change Risk Profile. United States Agency for International Development, Washington DC. https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID%20ATLAS_Climate%20Risk%20Profile_Liberia.pdf

WB (2013), Liberia Public Expenditure Review Options for Fiscal Space Enlargement, The World Bank Group, Washington DC

WB (2018), Republic of Liberia- From Growth to Development: Priorities for Sustainably Reducing Poverty and

WB (2019a), Future Drivers of Growth in Rwanda: Innovation, Integration, Agglomeration, and Competition, The World Bank, Washington, DC

WB (2019b), Liberia Growth and Economic Diversification Agenda, Productivity-driven growth and diversification, The World Bank, Washington DC WDI https://databank.worldbank.org/metadataglossary/world-development-indicators/series/EN.URB.MCTY

WEF (2018), The Global Competitiveness Report 2018, Klaus Schwab, World Economic Forum

World Bank (2018), From Growth to Development: Priorities for Sustainably Reducing Poverty and Achieving Middle-Income Status by 2030, Republic of Liberia: Systematic Country Diagnostics, World Bank Group, Washington DC.

World Bank (2020). Cities, crowding, and the coronavirus: Predicting contagion risk hotspots. Working paper. http://documents.worldbank.org/curated/en/206541587590439082/pdf/Cities-Crowding-and-the-Coronavirus-Predicting-Contagion-Risk-Hotspots.pdf

Datasets and Definitions

CIESIN/Facebook High Resolution population data (2015), https://ciesin.columbia.edu/data/hrsl/

DHS (2013), Demographic Health Survey; https://dhsprogram.com/Data/

DHS MIS (2016), Demographic Health Survey: Malaria Indicator Survey, https://dhsprogram.com/What-We-Do/Survey-Types/MIS.cfm

Enterprise Survey (2017), https://microdata.worldbank.org/index.php/catalog/2976

ESA (2019), Coastal erosion and sea level rise, Analysis by Earth Observation for Sustainable Development of European Space Agency

GFDRR (2019), 1-100 year pluvial and fluvial flood risk from Fathom Global Flood Hazard dataset

Columbia University (2018). 1965 map of Monrovia from University Library

EU-GHLS (definitions), https://ghsl.jrc.ec.europa.eu/degurbaDefinitions.php

EU-GHSL (2015), Global Human Settlement Layer, 1990-2015, https://ghsl.jrc.ec.europa.eu/CFS.php/

HOT (2019). Community mapping, market assessment and drone mapping in Monrovia, by Humanitarian OpenStreetMap Team in collaboration with iLab Liberia, Uhurulabs and OSM Liberia.

Landscan (1960, 2000, 2012), https://landscan.ornl.gov/landscan-datasets, Oak Ridge National Laboratory

LISGIS (2016), Household Income and Expenditure Survey, https://microdata.worldbank.org/index.php/catalog/2986

LISGIS (2017), National Establishment Census (2017) https://www.lisgis.net/pg_img/National%20Establishment%20Census%202017%20Report.pdf

OECD-Africapolis (2015), https://www.africapolis.org/data

OSM Liberia (2019), Community mapping of flood-prone neighborhoods, Open Cities Africa project, Link to blog: https://opendri.org/tackling-coastal-flooding-in-monrovia-slums/

Oxford Economics (2015), City level GDP data, https://www.oxfordeconomics.com/african-and-middle-eastern-cities

Statista (2019) https://www.statista.com/statistics/613846/urban-households-who-can-afford-the-cheapest-new-houses-africa-by-country/

UN DESA (2018), https://population.un.org/wup

UN Habitat (2018). Concepts and definitions. https://unstats.un.org/sdgs/metadata/files/Metadata-11-01-01.pdf

WHO/UNICEF (definitions), Joint Monitoring Program, https://washdata.org/

WDI (2020), World Development Indicators, https://datacatalog.worldbank.org/dataset/world-development-indicators

Leveraged Studies by the ASA with Hyperlinks

Community mapping of select flood-prone informal settlements in Monrovia – Funded by GFDRR TF for Open Cities Africa Project (US $75,000)

COVID-19 analysis and recommendation for wholesale market (Duala) – Funded by Monrovia urban strategy ASA

COVID-19 hotspot risk analysis for Greater Monrovia– Funded by Monrovia urban strategy ASA and DFID TF for contagion risk analysis

Drone mapping of Greater Monrovia (data acquisition report)- Funded by GFDRR Resilience TF ($100,000) and Japan-WB DRM mainstreaming trust fund (US $14,000)

Duala market assessment – productivity and pollution impacts– Funded by DFID TF (US $56,400) and GFDRR TF (US $30,000)

Flood modelling study – inception report (final report due by August 31,2020) – Funded by GFDRR TF for CityCORE project (US $220,000) and Japan-WB DRM mainstreaming trust fund (US $50,000)

Land subsidence in Monrovia– Funded by GFDRR TF for CityCORE project

Liberia climate country profile– Funded by World Bank climate change team

Municipal finance study for Greater Monrovia– Funded by Monrovia urban strategy ASA

Projected climate change impacts, sea level rise and coastal erosion, in Greater Monrovia – Funded under WB contract with Earth Observation for Sustainable Development of ESA

Quick diagnostics on City Resilience – Funded by GFDRR TF for City Resilience project (CRP)

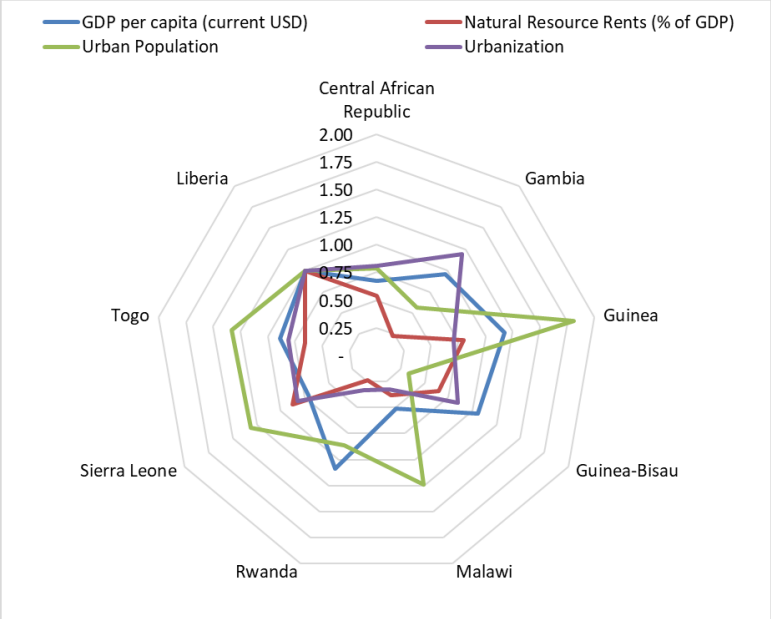
Social enterprise assessment for Greater Monrovia – Funded by GPRBA TF (from US $48,000 total)

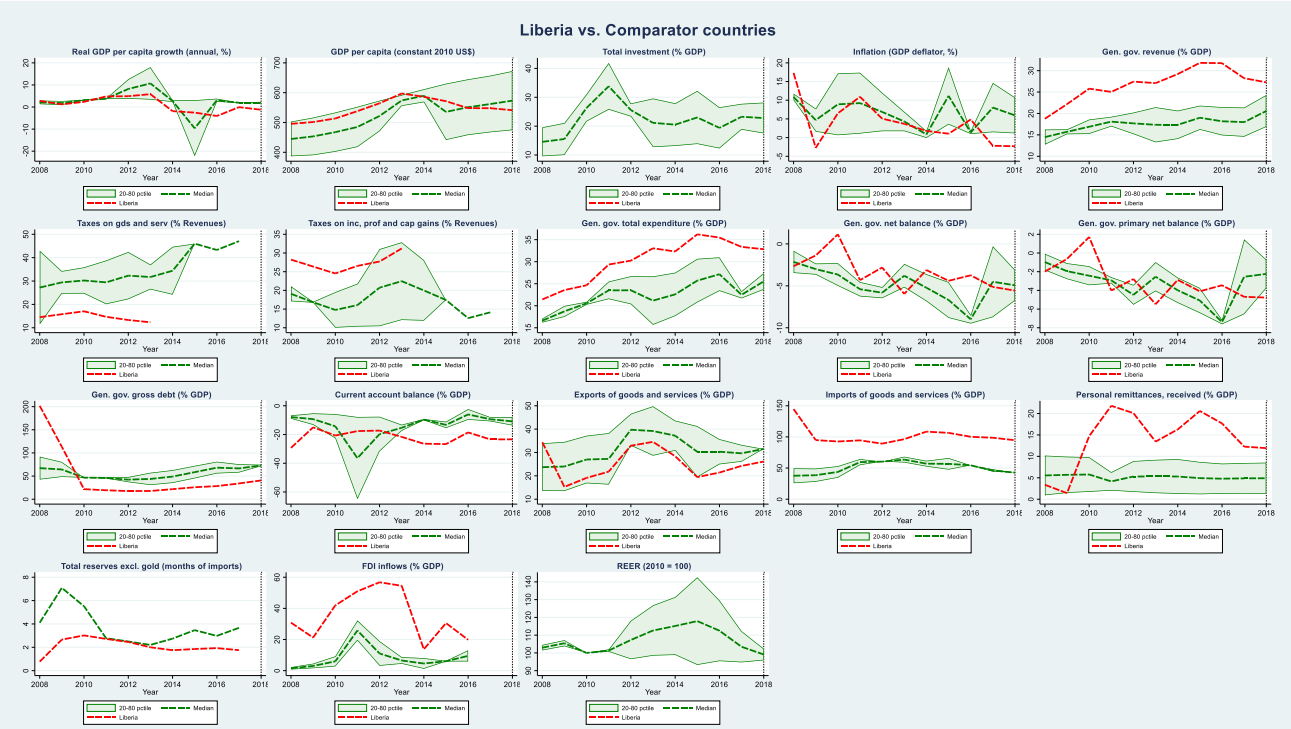
Spatial Analytics for development trends in Greater Monrovia– Funded by GPRBA TF (from US $30,000 total)

Annex 1: Liberia's Structural and Aspirational Peers

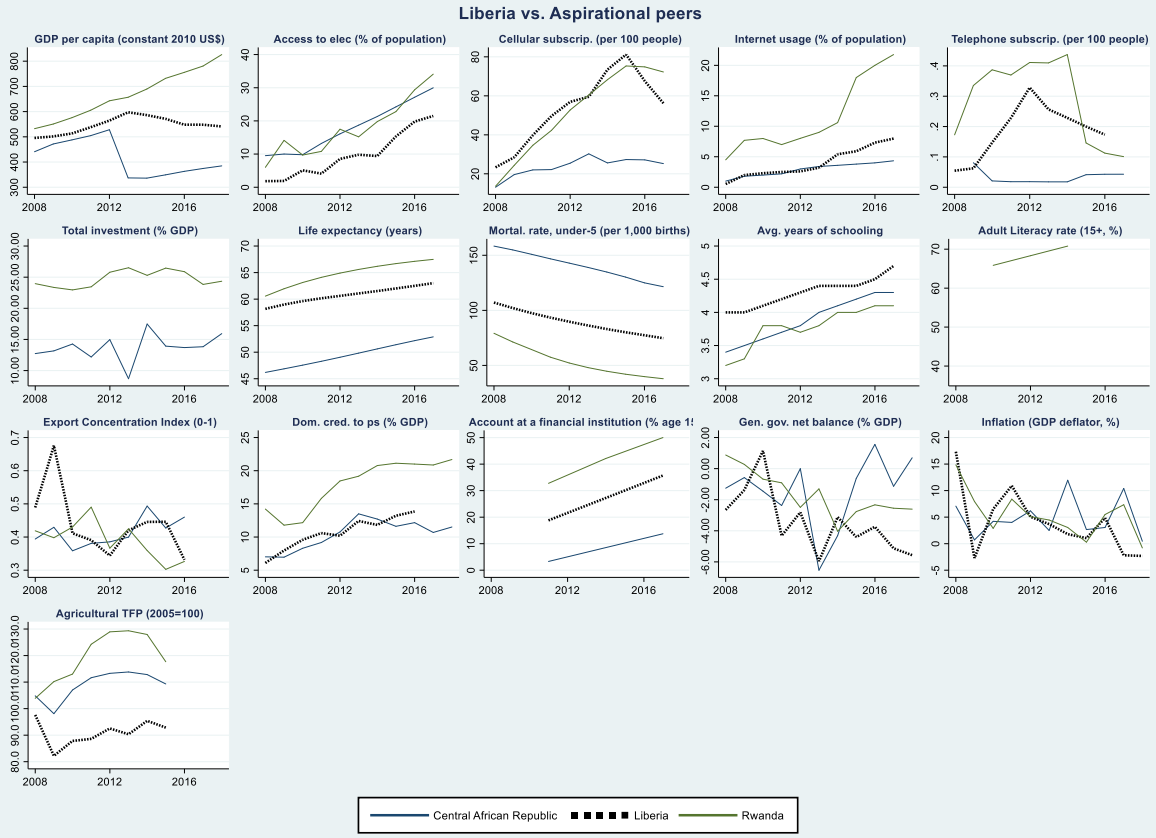
Structural peers: Central African Republic, Gambia, Sierra Leone, Togo

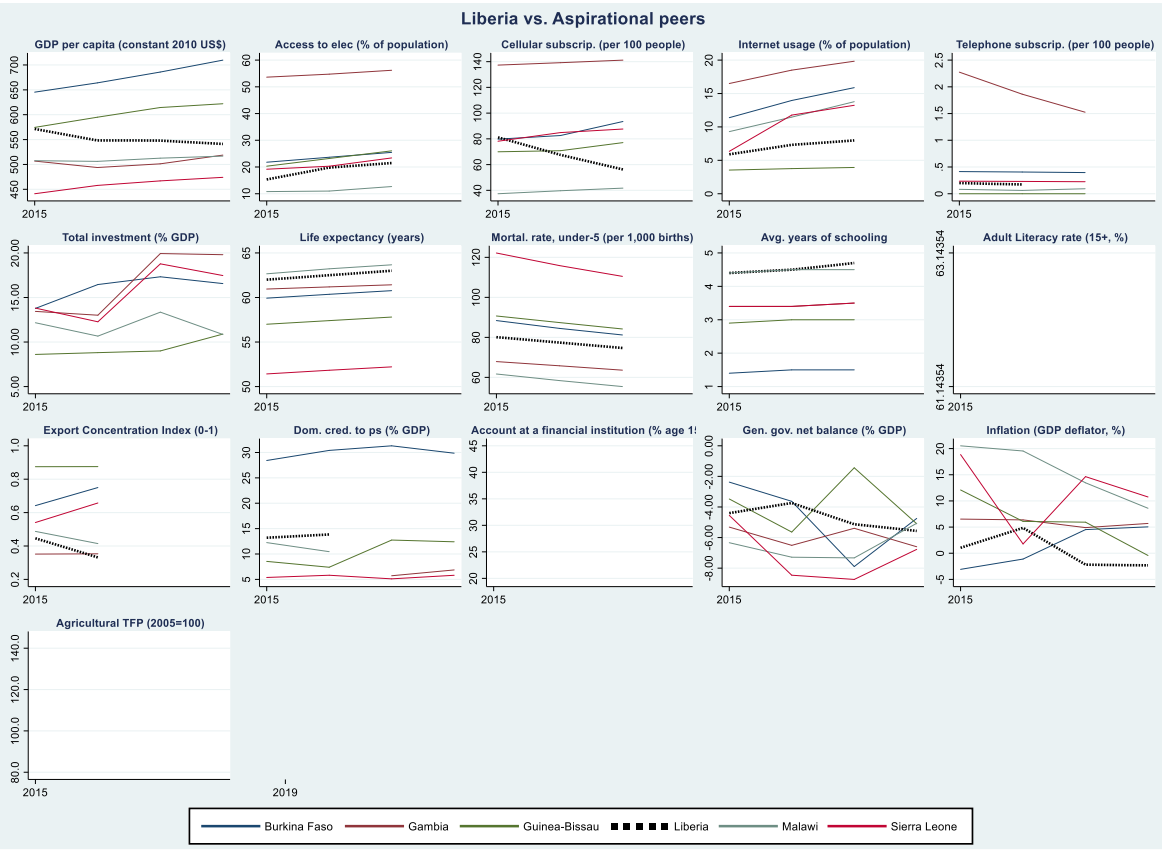
Aspirational peers: Burkina Faso, Gambia, Guinea-Bisau, Malawi, Sierra Leone





Note 1* The period of comparison is: 2008-2018
Note 2* The comparator countries are 2: Sierra Leone Togo


Liberia vs. Aspirational peers
GDP per capita (constant 2010 US$)
Access to elec (% of population)
Cellular subscrip. (per 100 people)
Internet usage (% of population)
Telephone subscrip. (per 100 people)
Total investment (% GDP)
Life expectancy (years)
Mortal. rate, under-5 (per 1,000 births)
Avg. years of schooling
Adult Literacy rate (15+, %)
Export Concentration Index (0-1)
Dom. cred. to ps (% GDP)
Account at a financial institution (% age 1
Gen. gov. net balance (% GDP)
Inflation (GDP deflator, %)
Agricultural TFP (2005=100)
Central African Republic
Liberia
Rwanda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Dom. cred. to ps (% GDP)
Account at a financial institution (% age 1
Gen. gov. net balance (% GDP)
Inflation (GDP deflator, %)
Agricultural TFP (2005=100)
Burkina Faso
Gambia
Guinea-Bissau
Liberia
Malawi
Sierra Leone

Annex 2: Wage Premium Regression Analysis

Omitted Variable	Variables	Log nominal weekly wages (LRD)			Log real weekly wages (LRD)		
		(1)	(2)	(3)	(1)	(2)	(3)
Omitted: Rural	Other Urban	0.272***	0.103*	0.126**	0.252***	0.0866	0.111**
	Greater Monrovia	0.515***	0.226***	0.196***	0.473***	0.188***	0.161***
Omitted: No Education	Primary incomplete		0.0629	0.0787		0.0578	0.0752
	Primary complete		0.107*	0.113		0.0919	0.101
	Secondary complete		0.450***	0.537***		0.440***	0.532***
	Tertiary		0.962***	1.048***		0.945***	1.037***
Omitted: Agriculture	Mining/quarrying			0.486***			0.478***
	Manufacturing			0.308			0.304
	Utilities			0.0622			0.0341
	Construction			0.329***			0.326***
	Retail and trade			-0.151			-0.160
	Transport, storage, comm.			0.156			0.156*
	Hotel and restaurants			-0.205			-0.212
	Financial services			0.763***			0.758***
	Public admin & defense			0.319***			0.301***
	Business services & real estate			0.0574			0.0506
	Education			-0.296**			-0.310**
	Health & social work			0.162			0.155
	Arts, entertainment & recreation			0.246			0.262
	Activities of HH as employers			-0.0165			-0.0336
	Other			-0.443			-0.465
Omitted: Male	Female	-0.257***	-0.219***	-0.120	-0.263***	-0.227***	-0.127*
	Age	0.0849***	0.0663***	0.0642***	0.0842***	0.0654***	0.0636***
	Age Squared	-0.0009***	-0.0007***	-0.0006***	-0.0009***	-0.0006***	-0.0006***
Omitted: Mono-gamously Married	Polygamous married	0.0340	0.0805	0.0970	0.0379	0.0844	0.1000
	Living together	-0.172**	-0.111	-0.138*	-0.187**	-0.126	-0.154**
	Separated	-0.220**	-0.126	-0.0859	-0.223**	-0.129	-0.0907
	Divorced	-0.768***	-0.696**	-0.621**	-0.755***	-0.686**	-0.610**
	Never married	-0.166*	-0.117	-0.0988	-0.175*	-0.125	-0.108
	Widow(er)	-0.445*	-0.336	-0.286	-0.445*	-0.338	-0.284
	Log of Hours worked	0.549***	0.396**	0.433**	0.553***	0.402**	0.439**
	Log of Hours worked Squared	-0.0615**	-0.0327	-0.0449	-0.0635**	-0.0350	-0.0475
	Constant	4.632***	4.982***	4.904***	4.715***	5.075***	4.993***
	Observations	3,150	3,129	3,029	3,150	3,129	3,029
	R-squared	0.135	0.207	0.252	0.128	0.199	0.246

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Annex 3: Hedonic Regression Analysis

Omitted Variable	Variables	Log of reported rental values		
		Model 1 (baseline) - all	Model 2 (Location controls - All flood Risks)	Model 3 (Location controls - Self Reported Flood risk interaction)
	No of rooms in the dwelling	0.160***	0.163***	0.161***
Temporary Construction (mud bricks, zinc, Blocks, poles,/ reeds/ bamboo)	Reinforced construction	0.438***	0.423***	0.428***
	Load-bearing construction	0.197	0.196	0.205
	Low cost construction	-0.197	-0.272	-0.256
Thatch, plastic sheets, tin	Cement, tiles	0.331	0.298	0.320
Earth/ mud/ wood planks	Cement, tile, Stone	0.242	0.251*	0.249
Water vendor/ push push cart	Pipe or pump indoorss	0.447	0.438*	0.377
	Pipe or pump outdoors	0.151	0.202	0.175
	Public standpipe	0.277	0.327	0.301
	Borehole/ tubewell	-0.00131	-0.0524	-0.0898
	Closed well	0.0856	0.0100	-0.0291
	Open well	0.214	0.129	0.102
	Rainwater	0.0690	0.0409	-0.00174
No waste collection (Abandon)	Collected by govt/ private firm	0.0118	0.0400	0.0379
	Govt bin	0.179*	0.214**	0.217**
	Disposal within compound/ bury/ burn	0.151	0.141	0.138
No Electricity	Other	0.371	0.408	0.395
	Generator	0.418***	0.442***	0.445***
	Grid Electricity	0.141*	0.214***	0.211***
No Toilet (Bush, Beach, other)	Flush/ pour flush toilet for hh use	0.744***	0.650***	0.660**
	Flush/ pour flush toilet shared	0.0861	0.0440	0.0521
	VIP latrine	0.0940	-0.0103	-0.0133
	Covered pit latrine	-0.256	-0.306	-0.293
	Open pit latrine	-0.185	-0.204	-0.192
	Toilet cleaning	0.165	0.170	0.176
	Flood incidence		0.102	-0.145
0-2 Km	2-4 km		-0.154	-0.440
	4-6km		-0.0113	-0.190
	6-8km		-0.119	-0.303
	>8km		0.219**	0.0182
	no flood, 0-2 km			0
	no flood, 2-4 km			0
	no flood, 4-6 km			0
	no flood, 6-8 km			0

Omitted Variable	Variables	Log of reported rental values		
		Model 1 (baseline) - all	Model 2 (Location controls - All flood Risks)	Model 3 (Location controls - Self Reported Flood risk interaction)
	no flood, >8 km			0
	flood, 0-2 km			0
	flood, 2-4 km			0.401
	flood, 4-6 km			0.211
	flood, 6-8 km			0.226
	flood, >8 km			0.349
	Constant	8.636***	8.592***	8.811***
Observations		837	837	837
R-squared		0.421	0.435	0.437

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Annex 4: Area Calculations from Drone Image Analyses

TABLE 20: AREA CALCULATION FROM DRONE IMAGERY - CENTRAL MONROVIA (A AND B)

	Hectares	Sqkm	Sqm.
Total area in Central Monrovia (A & B)	**453**	4.533	4,532,800
Total Plot Area	395	3.945	3,945,300
Total paved road area (incl. sidewalks)	59	0.588	587,500
Total building footprint area **	107	1.074	1,074,100
Total Built-up Area (building area x no. of floors)	194	1.940	1,940,237
Total open space within plot boundaries	287	2.871	2,871,200
Total area occupied by parking space	12	0.123	123,228
Total area occupied by underused or dead parking space	8	0.080	79,664
Total Govt. owned asset (building footprint + land) area	85	0.853	853,493

Source: Drone image calculation

TABLE 21: ANALYSIS FROM DRONE IMAGERY - CENTRAL MONROVIA (EXTENDED BOUNDARY, INCLUDING CALDWELL, SINKOR, LARKPAZEE, SINKOR OLD ROAD AND WEST POINT)

	Hectares	Sqkm	Sqm.
Total area in Central Monrovia with extended boundary	1,806	18.060	18,060,000
Total Plot Area	1,440	14.400	14,400,000
Total paved road area (incl. sidewalks)	366	3.660	3,660,000
Total building footprint area	305	3.050	3,050,000
Total open space within plot boundaries	1,135	11.350	11,350,000
Total Govt. owned asset (building footprint + land) area	203	2.027	2,027,000
Area occupied by public space (incl. cemetery but excluding beach)	9	0.092	92,905

Source: Drone image calculation

TABLE 22: AREA CALCULATION FROM DRONE IMAGERY - GREATER MONROVIA REGION

	Hectares	Sqkm	Sqm
Total area inside metropolitan boundary	23,368	234	233,680,000
Total area of waterbodies	5,290	53	52,900,000
Total city area excluding waterbodies	18,078	181	180,780,000
Total building footprint area	1,878	19	18,780,000
Total Road area	2,111	21	21,110,000
Total city land area excluding roads and waterbodies	15,967	160	159,670,000
Total Govt. owned land area	1,489	15	14,890,400
Total Govt. owned building footprint area	115	1	1,150,000
Total privately owned city land area	14,478	145	144,779,600
Total Privately owned building footprint area	1,762	18	17,620,000

Source: Drone image calculation

TABLE 23: ESTIMATION OF INFORMALITY FOR GREATER MONROVIA USING MACHINE LEARNING

	Hectares	Sqkm	Sqm
Study area for land-use based on 2019 imagery	17,700	177	177,000,000
Total area occupied by formal areas (in study area - 177 sqkm)	3,536	35	35,360,000
Total area occupied by informal areas (in study area - 177 sqkm)	8,964	90	89,640,000
Total area occupied by vegetation in study area of 177 sqkm	1,972	20	19,720,000
Total area occupied by marsh in study area of 177 sqkm	2,368	24	23,680,000
Total area occupied by water in study area of 177 sqkm	1,972	20	19,720,000

Source: Staff calculation by Ghost team, WB

Annex 5: Real Estate Computations

REPORTED REAL ESTATE DATA FROM DIFFERENT SOURCES

TABLE 24: AVERAGE RENTAL PRICE OF OFFICE SPACE IN CENTRAL MONROVIA (EXT AREA)

Neighborhood	Clan	Zone	Type	square feet	square meter	Rental Price (USD/month)	Rental price per sqm
Sinkor	Fish Market	Sinkor	Office	2,178	202	4,000	20
Lakpazee	Gbangaye Town	Lakpazee	Office	10,890	1,012	18,333	18
Mamba Point	Mamba Point	Central Monrovia A	Office	12,000	1,115	12,000	11
Sinkor		Sinkor	Office	3,000	279	3,000	11
Sinkor		Sinkor	Office	3,000	279	6,000	22
Mamba Point	Mamba Point	Central Monrovia A	Office	5,524	513	7,500	15

Sources: http://banjooestates.com; https://pricelessrealestateservices.com; https://kaikana.com

Average rental price of office space is estimated at USD 16 per sqm.

TABLE 25: REPORTED LAND LISTINGS FROM REAL ESTATE AGENCIES BY NEIGHBORHOOD

Neighborhood	Clan (reported or conjectured)	Type	Lots/Acres	Square meter	Sale Price (USD)	Sales Price per sqm
Clara Town		Land	1.5	6,070	200,000	33
Mamba Point	Mamba Point	Land	1.4	5,666	180,000	32
Mamba Point	Mamba Point	Land	4	16,187	500,000	31
Paynesville	Rehab/Bohor Town	Land	1	4,047	12,000	3
Paynesville	King Gray-Elwa, Kpelle Town, Kende-jah, Rehab/Borbor Town	Land	2	8,094	125,000	15
Paynesville	Rehab/Borbor Town, Duport Road South	Land	1	4,047	12,500	3
Paynesville		Land	8	32,375	20,000	1
Paynesville	Town Hall	Land	6	24,281	200,000	8
Congo Town	Catholic Hospital, Divine-Togba Camp	Land	5	20,234	60,000	3
Paynesville	Duport Road N. East, Duport Road North, Duport Road South	Land	1	4,047	6,500	2
Mamba Point	Mamba Point	Land	1.4	5,666	175,000	31
Paynesville	Rehab/Bohor Town	Land	8	32,375	18,000	1
Paynesville	Rehab/Bohor Town	Land	1	4,047	900	0.22

Sources: https://propertyfinder.com.lr/properties/land/monrovia; https://bamadurealestateliberia.com; https://pricelessrealestateservices.com/property; https://kaikana.com

Notes: 1 lot (=acre)=4047 sqm

The resulting average price of land in USD per square meter in Central Monrovia is USD 32/square meter and for the extended area of Central Monrovia, an average of Central Paynesville prices is assumed, computed by taking the average of USD 15 and USD 8 which is equal to about USD 12 per square meter.

BACK OF THE ENVELOP ESTIMATION OF REVENUE FROM VACANT BUILDINGS AND LAND TAXATION

TABLE 26: OPPORTUNITY COST OF EMPTY GOVERNMENT BUILDINGS COULD BE ABOUT 60 THOUSAND USD/MONTH

Central Monrovia plus Extended Area		
price per sqm (USD) based on commercial rents	14.83	
total government owned assets (land)	2,027,000	sqm
average building footprint as percent of land area	21%	
average public building footprint	29,330	sqm
assumed average stores are 2/building	858,660	total floor space
assumed unoccupied building is 5%	42,933	floor space not used
rent out at lower percentage with obligation to restore (assumed at 10% of commercial rental value)	63,661	monthly

Source: Drone image calculation; Real estate data

TABLE 27: TWO LAND TAXATION MODELS TO GENERATE LOCAL REVENUE

	Potential Revenue at given taxation levels	
	Central Monrovia	Extended Central Monrovia Area (net of Central Monrovia)
Price per sqm (USD) based on sales	32	12
Private land	2,504,307	6,115,788
Percent of private land	63%	58%
Simple taxation using estimated land values		
0.1%	79,195	72,414
0.5%	395,976	362,069
1%	791,951	724,137
Simple taxation applying a fixed rate per square meter		
USD 0.03 per square meter	75,129	72,414
USD 0.15 per square meter	375,646	362,069
USD 0.30 per square meter	751,292	724,137

Source: Drone image calculation, real estate data

TABLE 28: VACANCY TAX TO INCENTIVIZE BETTER LAND USE (USING TAX ON LAND VALUES)

	Central Monrovia			Extended Central Monrovia Area (net of Central Monrovia)		
tax penalty for underutilization (on total tax revenue above and levied on vacant nd) for different tax levels iterated above	0.1%	0.1%	0.5%	USD 0.03	USD 0.15	USD 0.30
10%	7,920	7,920	39,598	7,241	36,207	72,414
30%	23,759	23,759	118,793	21,724	108,621	217,24
50%	39,598	39,598	197,988	36,207	181,034	362,069

Source: Staff calculations