SLURC/DPU Action-Learning Alliance
Strategic pathways to disrupt risk in Freetown

MSc Environment and Sustainable Development
Practice Module 2019-20

POLICY BRIEF Nº6

Enhanced Mobility

Key Points

- Mobility is constrained by the frequency and magnitude of precipitation, natural hazards and topography, the effects of which will be exacerbated by climate change. Informal settlements located on the coast and hillsides lack adequate and safe road networks.

- Women experience physical violence, children are prone to road accidents, and the eldery and disabled are not afforded the necessary attention required to accommodate their needs.

- Residents primarily rely on walking and informal modes of transport to access economic, social, health and education services, reinforcing the cycle of poverty. The lack of data and research on transport/mobility hinders the ability to identify and implement effective policy for those who are most at risk.

- Roads accidents can be reduced through the pro-pedestrian infrastructure, signage and the enforcement of speed limits and traffic regulations.

- Informal modes of transport can navigate narrow, unpaved, congested roads in times of flooding but also are harder to regulate and represent more risk.

- Improving connectivity, reliability and affordability of transportation within Freetown will foster a more inclusive and interconnected environment allowing residents to participate in different social, economic and political spheres.

Figure 1: Vehicular movement in Freetown, Sierra Leone, 2018. Photo Credit: T-SUM

Introduction

Mobility within Freetown is constrained by poor physical infrastructure, public transport and safety, as well as its geography and climate. Such conditions are all exacerbated during the rainy season and in times of disaster, the effects of which are going to increase with climate change. People living in informal settlements are disproportionately burdened by the lack of mobility which cause, drive and reinforce the cycle of poverty. The difficulty in addressing these issues in part stem from the lack of resources, attention, and data devoted to enhancing mobility at a city, community, and individual scale. This brief aims to identify the ways in which enhanced mobility can address and contribute to socio-environmental justice within the city of Freetown. It will suggest that through multilevel, transnational partnerships with an emphasis on community-based participation Freetown can effectively remedy its mobility problems. Improving connectivity, reliability and affordability of transportation within Freetown will foster a more inclusive and interconnected environment allowing residents to participate in different social, economic and political spheres.

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"Enhanced mobility: Improving connectivity, reliability and affordability of transportation within Freetown will foster a more inclusive and interconnected environment allowing residents to participate in different social, economic and political spheres."

1. Overview

Freetown has experienced rapid population growth, increasing by 43% within the last decade alone [1]. This was due to natural population growth and migration catalysed by poverty, insecurity and conflict in rural areas of Sierra Leone. The unmanaged urban expansion and lack of suitable, affordable land has resulted in the fragmentation of the city which is a cause and symptom of poor mobility [2]. As a result, it is comprised of high density (8,450 persons per km2) [3], informal settlements in hazard-prone areas in which 75.6% [4] of the population lives. These areas often go unrecognised when infrastructure development is implemented. Informal settlements, characterised by narrow dirt and gravel paths, are often inaccessible to conventional public transport and emergency services. According to the World Bank, Freetown's urban transport system suffers from three major deficiencies: "an inefficient road network, a backlog of road maintenance, and a lack of pedestrian facilities." [5] Furthermore, the current public transport system is largely unreliable and inaccessible to the city's poor due to the remote locations of informal settlements, inadequate road networks and frequently irregular services. This affects informal residents' ability to access goods, services and to participate in decision-making processes. This has created a challenge in meeting the required need and provision of transport infrastructure and services.

For the purposes of this brief, enhanced mobility will be defined as: increased movement of people and goods through improved infrastructure, transportation and safety, enhancing people's access to social, economic, and emergency services. Enhanced mobility through improving connectivity, reliability and affordability of transportation within Freetown will foster a more inclusive and interconnected environment allowing residents to participate in different social, economic and political spheres. This policy brief will begin by providing context regarding climate and topography, transportation networks, and road safety in Freetown. It will then examine road safety initiatives implemented in Mexico City, Mexico and Kampala, Uganda which serve as valuable case studies that can aid in achieving Freetown's current mobility targets. This will be followed by an evaluation of the current governance landscape identifying community organisations and funding avenues to achieve enhanced mobility. It will conclude by briefly reviewing the current mobility constraints and those that would be most benefited by enhanced mobility.

1.1 Climate and Topography

Mobility is constrained in Freetown due to the city's geographical positioning, topography and climate. Its location on low-lying, coastal plains bordered by inland hillsides makes it particularly vulnerable to natural hazards. Natural hazards occur frequently and severely, with flooding ranking at 5 and 4 on the HARPIS-SL frequency and magnitude scales respectively [6]. This is prominent during the wet season (May-November) when rainfall increases from 125-250mm (dry season) to 2500-3500mm [7]. Deforestation, poor drainage and rising sea levels all exacerbate the risk and effects of flooding. Flooding further increases the risk of other natural hazards occurring, such

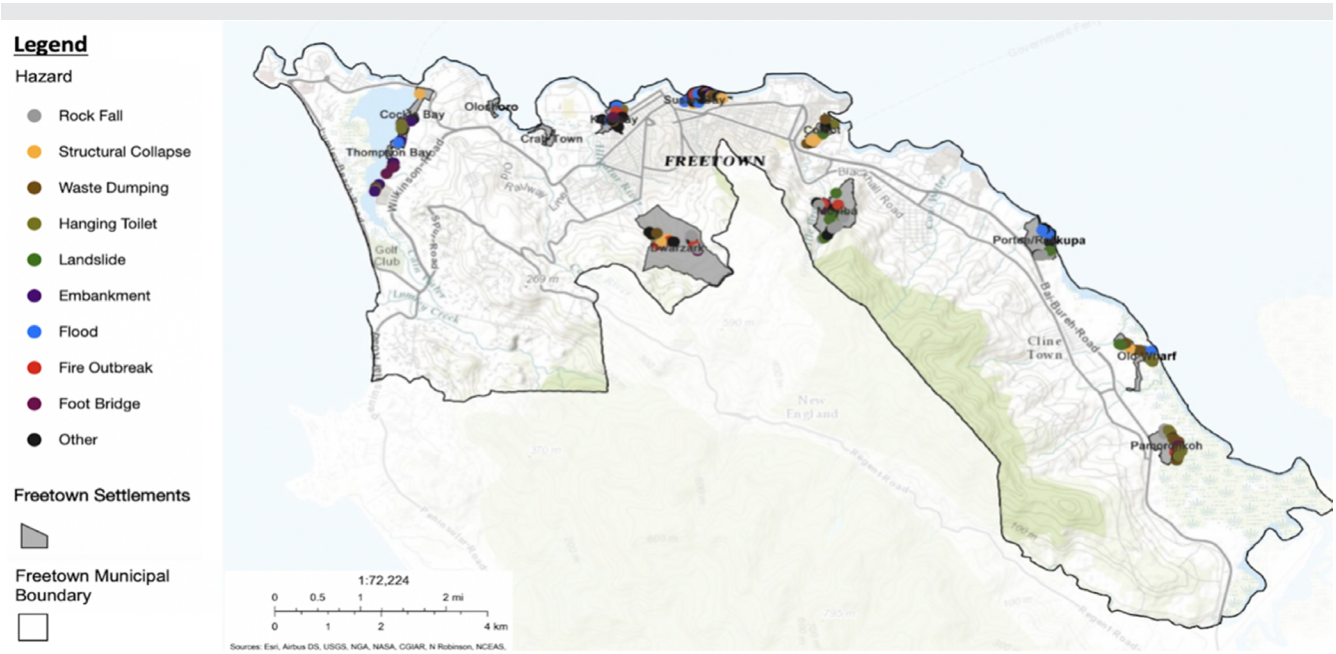

Figure 2: Map of Freetown highlighting the most vulnerable settlements and hazard location, 2019. Source: ReMapRisk Freetown.

as mud and landslides, which create widespread destruction to roads, infrastructure, and livelihoods. A more interconnected transportation system would improve the city's resilience and ability to cope with natural hazards allowing continued mobility throughout all seasons reducing economic stagnation, loss of life and livelihood, and infrastructural damage that disproportionately affects those in the risk areas shown in Figure 2.

1.2 Transportation Networks

Currently, Freetown has a formal public transport network consisting mainly of bus and ferry routes run by Sierra Leone Roads Transport Authority (SLRTA). However, the current public transport system is largely unreliable and inaccessible to the city's poor due to the remote locations of informal settlements, inadequate road networks and irregular services.

As a result, residents are dependent on more expensive, often unsafe informal modes of transport, such as okadas (motorbikes), kekes (three-wheeled autorickshaws) and poda-podas (minibuses). These modes of transport are able to navigate unpaved, narrow roads, hillside terrains, and minimally flooded areas for residents' daily transport needs. High costs of transportation additionally reduces mobility. Reports from citizens showed that the bottom 20%, in terms of income, spend as much on transport toschool as they do on school fees, and spend double their medical costs to travel to a medical facility [8]. In the Urban Mobility targets, there is an attempt to improve public and private modes of transportation, but informal transportation accounts for 70% of transportation modes in Freetown [9]. As exhibited in Figure 3, the primary modes of transport used in informal settlements are walking (82%), taxis (75%) and motorbikes/buses (50%) [10].

Informal settlements are further away from the central economic and services located in the city centre and therefore have to travel further. According to data from KNOWYOURCITY, a global campaign headed by Slum Dwellers International focused on creating alternative systems of knowledge created by residents, Cockle Bay (Hill View) residents have no access to hospital facilities and must travel to either Aberdeen or Lumley [11]. Residents of Cockle Bay (population 20,000), and Moeba (population 30,00) to the east have to walk 30-60 minutes to reach health facilities. In contrast, those in Susan's Bay (Population 12,500) in the near northwest, only walk ten minutes [12]. It is estimated that up to 25% of Freetown's residents live further than 500m from bus stops [13], restricting their access to the public transport network and constricting their overall mobility.

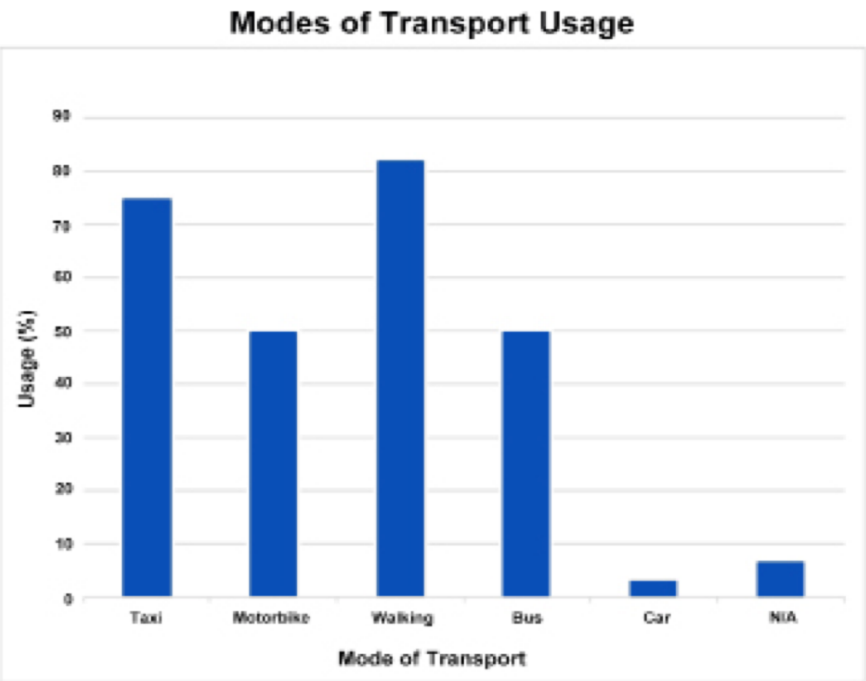

Figure 3: Modes of transport used in informal settlements in Freetown. Source: Know Your City (2017).

The use of these modes of informal transport have significantly increased, growing by more than 20% annually in recent years [14]. Their ability to navigate congested and unpaved roads and challenging topographics makes them an essential resource for under-serviced communities, especially during the rainy season and natural disasters, in part due to their ability to navigate the congested and unpaved roads. The current transport system is particularly vulnerable and highly exposed, the effects of which will be exacerbated by the impacts of climate change. Improving connectivity, reliability and affordability of transportation within Freetown will foster a more inclusive and interconnected environment allowing residents to participate in different social, economic and political spheres. At the moment, marine transport are used for airport transfers and ferries used to cross the Tagerin Bay, overall it is underutilized when considering the large amounts of people living along the coast.

1.3 Stakeholders

One of the groups most negatively affected by mobility issues are women. Transport affordability is an issue for women, as well as disabled people, as they tend to have less access to funds. Furthermore, 50% of women considered physical violence as a deterrent to using public transport and walk instead [15]. 30% of those using informal transport reported experiencing sexual harassment which hindered their ability to move around the city efficiently [16]. The International Labour Organisation estimates that in developing countries, a lack of safe transport affects women's likelihood to participate in the labour market by 16.5 percent, lowering the GDP level of Sierra Leone [17].

Restricted and unsafe mobility also specifically disadvantages children as they lack access to education and healthcare, and are vulnerable to road accidents. 36% of children across Freetown say they can't reach school easily. Of this, 64% say transport is too expensive and another 30% face inadequate public transport and inaccessibility, particularly those in the Eastern part of the city [18]. Children of lower economic status or those living in underserviced areas are disproportionately burdened by poor mobility within the city. Consequently, their constrained access to education and healthcare makes it harder to escape the cycle of poverty.

1.4 Road Safety

Freetown accounts for 40% of all road accidents in Sierra Leone. Annually, data shows 70 people die and 300 are severely injured in traffic accidents enhanced by high congestion especially in and around the CBD, and actual figures are potentially even higher due to a lack of reporting [19]. Walking is the most used mode of transport, however, in this car-centric city pedestrians are often the most at risk of injury due to narrow pedestrian pathways, sharing roads with motorised vehicles, poor driving education and regulation, lack of traffic control, road signage, and minimal street lighting. Accidents are prevalent at road junctions and roundabouts, such as at Congo Cross and Wilkinson Road in the West of Freetown [20]. Parking and street vending in high traffic flow areas have created issues of congestion and escalated road accidents.

Figure 4: Students painting critical crossing points in Mexico City, 2018.
Source: Carolynn Johnson and Gonzalo Peon Carballo.

2. Case Studies

2.1 Case Study: Mexico City, Mexico

Mexico City has adopted a series of public policies to improve road safety under 'Vision Zero' [21]. This seeks to significantly reduce road traffic accidents and raise road safety awareness.

The policy is founded on 3 main pillars: law enforcement, road design, and education. For example, Mexico City's government has reduced speed limits from 70km/h to 50 km/h on primary routes [22], dramatically declining the number of road traffic fatalities from 5,398 to 2,921 in 2017. The introduction of pro-pedestrian measures, such as building a 'pedestrian-priority' street, levelling roads with sidewalks separated by bollards, and painting critical crossing points in vibrant colours, offers citizens with greater security, versatility and connectivity.

Moreover, the Institute for Transportation and Development Policy (ITDP) conducted information sessions with teachers and parents to educate them on the issues and values of road safety. The efforts have especially benefited the most vulnerable road users, such as children [23], and has improved road safety in the most dangerous intersections near schools and fostered equitable sharing of

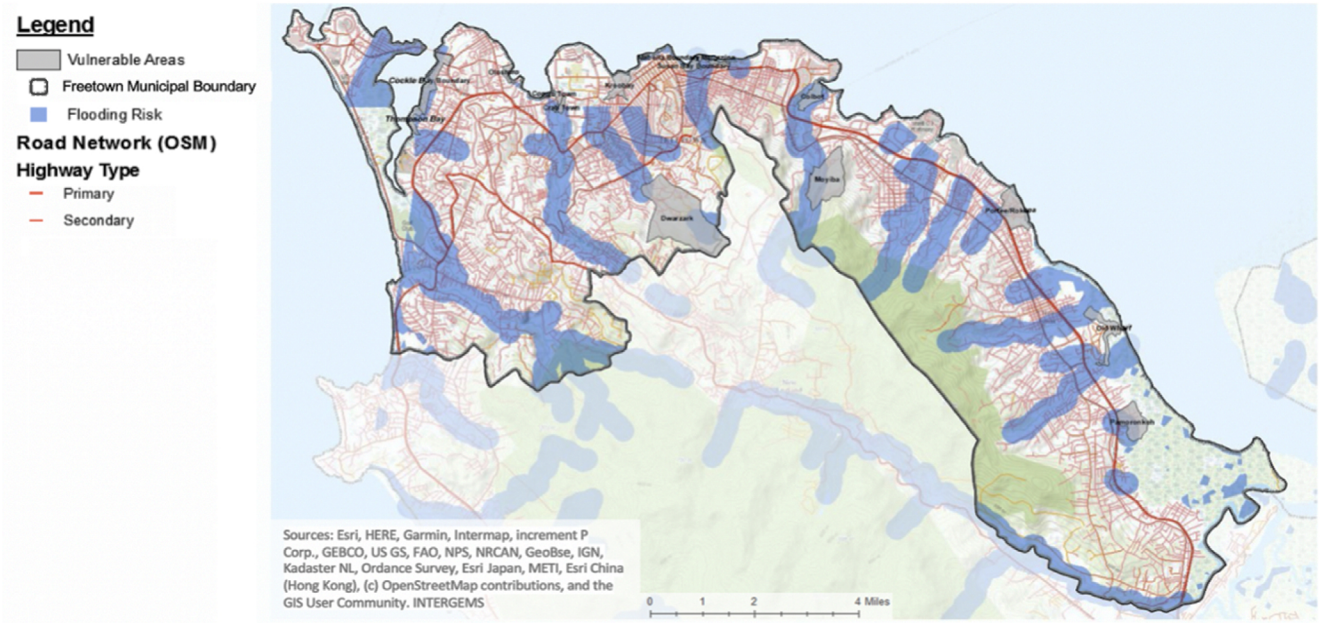

Figure 5: Map of Freetown highlighting the road network, flood risk and most at risk areas, 2019. Source: ArcGIS.

space. The result of this implementation was very successful. Citizens were more aware of the problems and potential solutions for road safety and families were also pleased to know that the health of their children was taken seriously.

A lot can be learned from this case study in Mexico City. Firstly, reducing the speed limit from 70km/h to 50km/h reduced fatalities caused by road accidents by 45.8%.While the official access road speed limit is set at 50km/hr in Freetown, there is a lack of enforcement of the speed limit. Researching optimal speed limits specific to Freetown as well as the enforcement of safe speed limits may provide opportunities to reduce road accidents. In fact, lowering speed limits may also reduce congestion which will improve traffic performances and minimising the constraints of economic growth of Freetown.

A greater enforcement on speed limit would place less stress in the CBD in particular, simultaneously decreasing exposures to sudden shocks. Moreover, if there were stronger traffic regulations, secondary environmental and social impacts, including local air pollution and noise would also be reduced significantly. Secondly, the building of pro-pedestrian infrastructure could greatly improve the safety of those walking in Freetown. This can take the form of levelling roads, separated pedestrian walkways with bollard barriers, and using brightly coloured signage. The improvement and implementation of appropriate pro-pedestrian infrastructures and measures could promote walking as an alternative to other key modes of transportation as it will offer a greater sense of security and safety for citizens to move around the city.

The ability to travel and commute around the city enables citizens to gain access to essential services, maintain livelihoods and participate in various communities. In order for mobility to enhance the resilience of the city, the implementation of methods to build resilience for the urban poor will require strong commitments on the part of local authorities collaborating with various stakeholders, national and international organisations.

2.2 Case Study: Kampala, Uganda

Informal modes of transport such as motorcycle taxis or boda-bodas (bodas) play a vital role in addressing urban mobility challenges in Kampala. Evidence collected from Kampala residents' survey responses suggested that bodas offer flexible and economical transportation of people, goods, information and can even serve as ambulances [24]. Females in particular, who experience lower levels of mobility, claim that bodas are their "only choice" [25] and makeup almost half of boda users. During times of flooding and disasters- conditions that limit mobility -bodas offer access to informal settlements in the periphery where poor roads and tracks are often flooded and are too narrow or bumpy for large vehicles. Due to their ability to navigate congested and narrow roads, bodas are able to take shorter routes allowing riders to avoid traffic jams and flooded areas.

However, it is understood that bodas are notoriously unsafe. There were broad efforts made by the Asia Injury Prevention Foundation which initiated the Uganda Helmet Vaccination Initiative. This project educated boda-drivers in best practices regarding road safety through various workshops teaching them proper helmet use, bike maintenance, defensive driving, and traffic laws and regulations [26]. Under this initiative, helmet use among boda drivers increased dramatically from 49% to 77%in 2014 [27].

Air pollution is a serious environmental issue in Kampala. A startup, Zembo, has ambitious plans in introducing electric bodas to clean up Kampala's air. The vision is to make bodas electric, powered by replaceable batteries and rechargeable by solar energy. Another electric bike company, Feiying Electric Limited, released 4 electric motorbikes, which has changed the scene of biking in Uganda. Compared with gasoline bikes, they are cost-effective and have better performance. The e-motorbikes reduce GHG emissions, help better air quality, and emit less noise, thus reducing noise pollution as well.

This case study in Kampala offers a lot to be learned. Boda-bodas in Kampala, like okadas in Freetown, are an essential mode of transport as they are able to navigate roads in times of disaster and difficult topography. The education and training initiatives in Kampala can

Figure 6: 'Wear a helmet' campaign in Kampala, Uganda, 2014. Source: AIP foundation.

be applied to okada drivers in an effort to reduce road accidents and fatalities. In fact, boda-bodas would also provide employment opportunities since it requires minimal amounts of investment. It is easy for people to enter the market and earn income as minimal training and low upfront investment are required. Additionally, e-motorbikes could also be introduced to reduce the amount of GHG emissions. Ultimately, encouraging the use of informal transport along with strict monitoring and regulation suggests it is more adaptable and potentially sustainable in the long-run, which it could fill in the gaps left by inadequate public formal transport and their benefits should not be overlooked [28].

3. Pathways to Enhance Mobility

3.1 Governance

Recently, the Freetown City Council (FCC) through its 2019-2022 Urban Mobility targets have proposed initiatives aimed at increasing urban mobility through reducing congestion and improving road safety. One of the FCC targets is to, in partnership with the Sierra Leone Ministry of Transport and Aviation, replace the multitude of regulatory bodies and establish a single authority for urban mobility. This would help to draw attention and funds towards Freetown's urban transport system, but is yet to be established. During this restructuring, a department devoted to informal settlements can be created to address the inequitable distribution of mobility services. Areas to focus on include Cockle Bay, Crab Town (Hill View), Cobolt, Moeba, and Old Wharf [29].

The Sierra Leone Road Safety Authority (SLRSA) and the Sierra Leone Road Authority (SLRA) are working to introduce, upgrade, and maintain road signage. Additionally, regulations to mandate drivers to pass driving tests and deduct speeding points was enforced as of December 2019. Apart from working to impose stricter road safety for those who drive, the FCC in partnership with SLRS planned to raise road safety awareness to all populations in Freetown by running announcements on public radios and teaching at schools [30]. The Mexico City case study demonstrated success in reducing road accidents through education. While these targets are put in place there is a common issue of inadequate public data on the stages and progress of these initiatives along with the number of traffic accidents that occur.

3.2 Community Organisation

To map out informal and formal bus routes, students from Fourah Bay College created an app-the World Bank also has the Road Lab app, that tracks flooding of roads as a method to find better accessibility and emergency evacuation routes [31]. To boost the economy in better accessibility, the European Union and the World Bank have worked on road building and rehabilitation. However, there is a lack of support on frequent maintenance of roads, lack in construction of road networks connecting the East to the West, and better road networks to reduce congestion. To manage better road safety, the Government of Sierra Leone with the WHO have adopted the Global Road Safety Week to raise awareness of speeding on roads. With the increase in road accidents, there is an equivalent in road trauma over the past decade. To address such, the Road Safe Sierra Leone has supported victims of road accidents mental care [32]. Various initiatives are attempting to address road congestion and mapping out the accessibility dependent on the season. Before the flood season, communities clear out ditches to reduce flooding nonetheless, there are not enough bottom-up community-led actions like these.

Figure 7: Flooding in Freetown, Sierra Leone, 2017. Source: Trócaire's Eimear Lynch

3.3 Funding

Funding can be sought from a partnership between international aid, government funds, and private sector investment. The World Bank International Development Association in partnership with the Sierra National Government and private partners are currently developing the Integrated and Resilient Urban Mobility Project with a grant total of $50million USD [33]. Despite claims to direct funding to local communities, the reality on the ground is different. It is evident that local citizens are facing difficulties in accessing donations and foreign aid. The historical tension between the citizens and the government in distributing funding and the importance of international funding for local needs [34]. To have an effective distribution of funding, community stakeholders should have a key role in the negotiation processes and should be consistently consulted throughout the implementation.

It is also vital to implement policy framing to consult locals and opportunity throughout the planning stages for community collaboration to indicate the needs that builds resilience over time.

Figure 8: Cars stuck in flooded road during flooding in Freetown, 2017. Source: Ben Bradford

Conclusion

Mobility within Freetown is constrained by poor physical infrastructure, public transport and safety, as well as its geography and climate. Such conditions are all exacerbated during the rainy season and in times of disaster, the effects of which are going to increase with climate change. When looking forward into Freetown's goals for a more interconnected city, special consideration must be given to people living in informal settlements who are disproportionately burdened by the lack of mobility, especially children, women, elderly, and disabled, which cause, drive and reinforce the cycle of poverty. The difficulty in addressing these issues in part stem from the lack of resources, attention, and data devoted to enhancing mobility at a city, community, and individual scale. This can be addressed by bringing together international, national and community level stakeholders to better serve projects and concentrated efforts towards enhancing mobility in Freetown.

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