DPU MSc ESD/SLURC Learning Alliance

Understanding urban risk traps in Freetown

MSc Environment and Sustainable Development

Practice Module 2018-19

POLICY BRIEF Nº 1

Exploring the multi-dimensional aspects of Coastal Flooding

Key points

The risk of coastal flooding should be evaluated with respect to its multi-dimensional aspects:

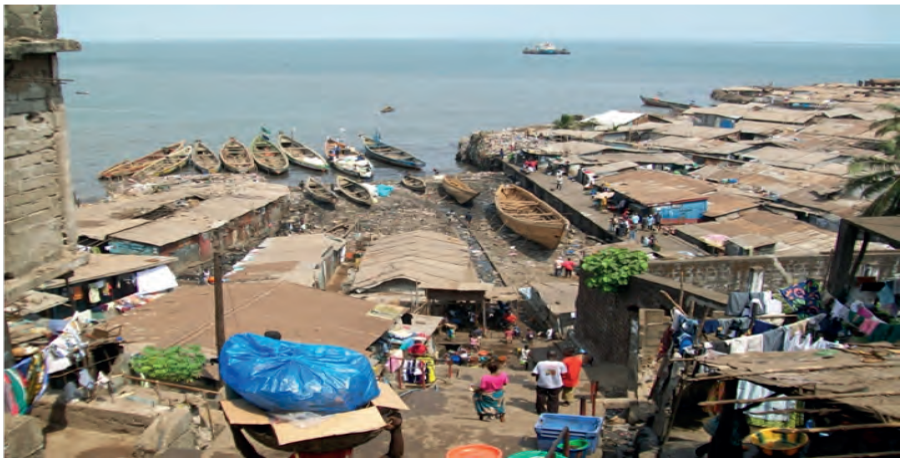
• The impacts of inadequate city-level drainage and waste management is directly linked to coastal flooding and other in-land hazards, as they converge at the coast.

• The livelihoods of informal settlements are contributing to the degradation of land and increasing their vulnerability to environmental hazards. However, evicting settlers is unlikely to end these activities, will negatively affect Freetown's economy, and undermines the residents' capabilities to act.

• The underlying dynamics and drivers for why so many of the city's vulnerable residents live by the coast, despite the immense risks they face.

• The redevelopment of certain areas to accommodate tourism on the coastline is resulting in evictions of informal settlements, undermining sustainable solutions to overcoming the health hazards coastal informal settlers face.

• Community-Based Organisations (CBOs) have the potential to play a key role in addressing coastal flooding. In addition, creating a strong network between CBOs would aid knowledge-sharing and increase resources and support for CBOs. This could result in better community resilience.



Susan's Bay. Photo Credit: Charles and Petra Wirrel

Summary

Freetown's coastal informal settlements have experienced extensive and intensifying coastal flooding in recent years. However, for coastal informal settlements, coastal flooding is also associated with a convergence of a host of different health risk hazards. This is due to the coastline being where all of the city's independent risks accumulate and amplify, such as inland flooding, mudslides, and open waste flow. The accumulation of these health risks render extensive and long-term damage to communities, eroding their capabilities to overcome their situation. Despite these risks, informal settlers are still driven to the coastal areas due to a lack of affordable housing and limited job opportunities elsewhere in the city. As a result, residents are trapped in a negative cycle, whereby the constant presence of risks erode their ability to find sustainable solutions in the long term.

The government has thus far sought to evict informal settlers based on either environmental concerns, health concerns for the residents, or tourism redevelopment plans. However, given informal settlers' constrained context, such evictions inevitably cause residents to return or move to a different coastal settlement. As such, evictions do not meaningfully address the underlying issues, and only undermine the informal residents' ability to act and overcome the risky livelihoods system they are trapped in.

The voices of these informal settlements, and the value they offer, must be recognised in order to find a sustainable solution. The recognition, support, and cooperation of community-based organisations (CBOs) offer the opportunity to address residents' issues. CBOs thus have the potential to first step towards an inclusive approach which reverses the cyclical problems associated with coastal settlements.

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Converging Hazards at the Coast

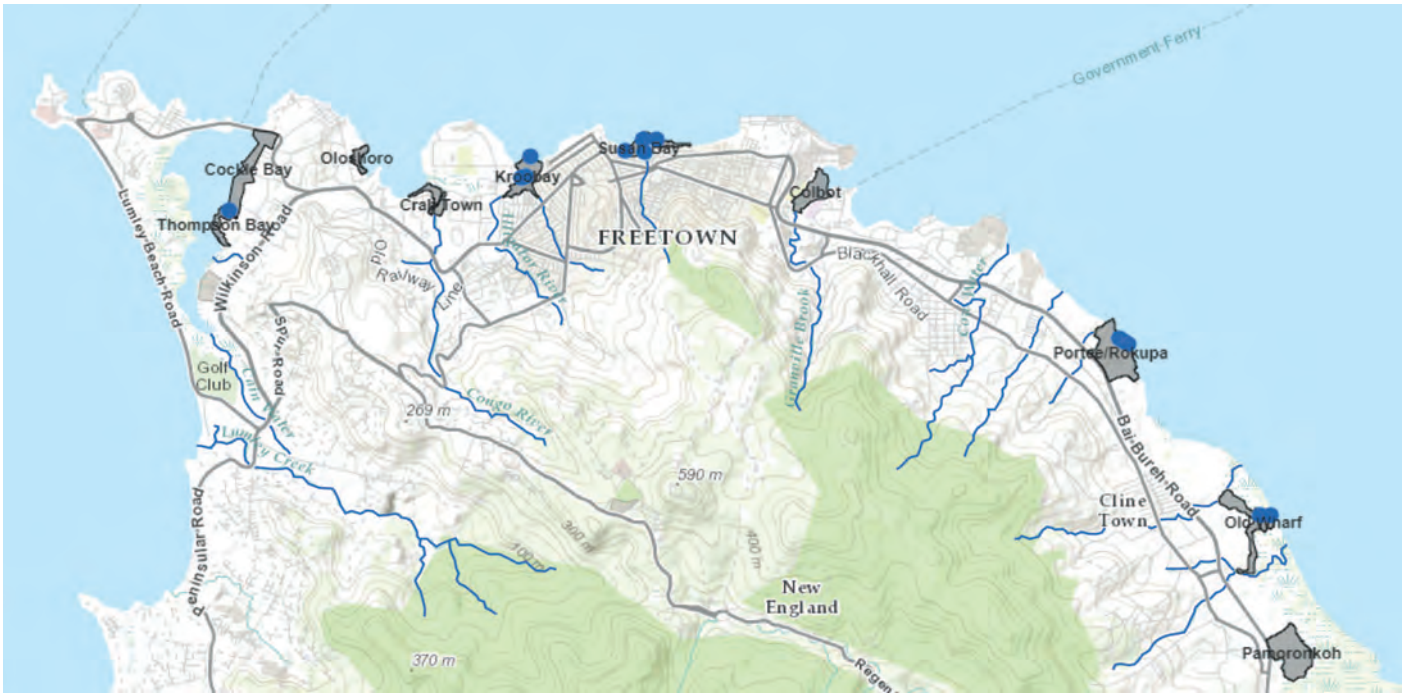
Freetown's coastline has seen large changes to its structure as a result of rapid and unplanned urbanisation. People migrated to the city during and after the Sierra Leone Civil War, which ended in 2001. Many settled along the coast and on floodplains, despite the physical risks prevalent in these areas and the opposition of the local government. The location of the coastal settlements, together with the lack of planning and overall lack of development has resulted in a variety hazards converging at the coast.

With regard to the hazard of coastal flooding, climate change and environmental degradation are increasing becoming amplifying factors. Moreover, rising sea levels are expected in the coming years.

Annual rainfall levels are rising, increasing the succession of extreme weather events. Moreover, sea level rising is expected in the coming years [1]. In the hills of Freetown, deforestation and land erosion are not only generating hazards in the highlands, but also intensifying the rain-water runoff into the lowlands.

In the coast, mangrove logging and degradation are depleting the wetlands ecosystem, reducing the coast's capacity to withstand tidal surges [2].

At the coast, mangrove-logging and degradation are depleting the wetland ecosystem, reducing the capacity of the coast to withstand tidal surges. The rainy season takes place between May and October, peaking in July and August [3]. Although rainfall has decreased in duration, it has increased in intensity over the past decade. This means that heavy rainfall is experienced in shorter intervals,



Location of informal settlements at the coast of Freetown and recent flooding events (blue dots). Photo Credit: ReMapRisk

drastically and suddenly raising the water levels [1]. Coastal flooding is more frequent along river estuaries, where the water from the sea meets the in-land runoff of water coming from higher locations of the city. Despite the risk of flooding, river estuaries are also the most common location of informal coastal settlements due to job opportunities and proximity to the city centre [4]. Occasional storms and extreme weather events intensify tidal surges, increasing the risk of flooding.

In addition, inland flooding has contributed to inundation at the coast. During seasonal rains, storm water runoff from higher ground accumulates at the coast and the conditions for coastal and inland flooding coincide, producing extensive damage [5]. An example of this is the heavy rain during September 2015, which caused widespread flooding in many coastal settlements in the city, with Kroo bay being hit particularly hard [6].

These hazards are amplified by the lack of adequate waste management practices: due to inadequate waste management, Freetown's residents often discard their waste in the nearby rivers and drainage channels, which results in clogging of the drainage system. In addition, some overflowing dumpsites, such as in Kissy and Kingtom, are located near these watercourses, both of which are at full capacity and located next to residential areas [7].

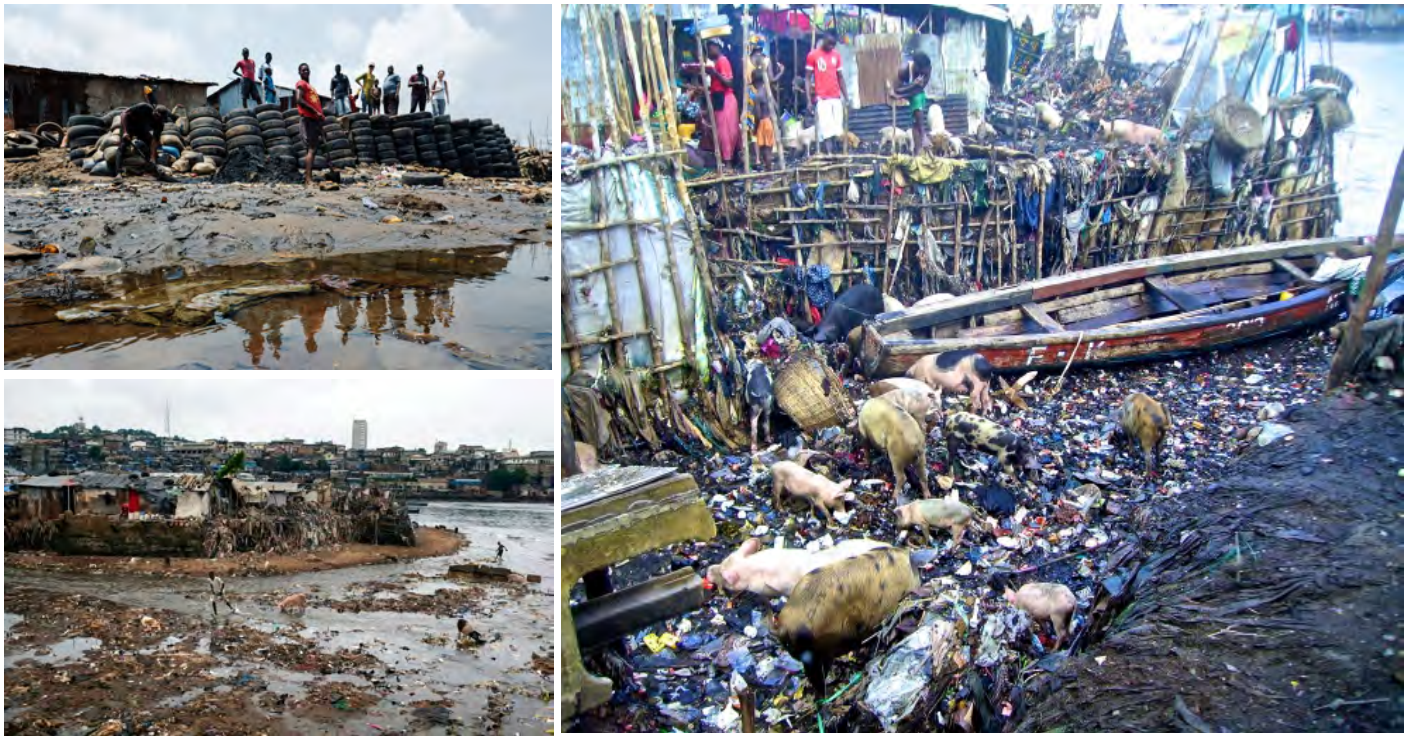
Due to an insufficient amount of built drainage systems, the interconnected waterways and rivers of Freetown serve as natural drainage [8]. As rivers carry waste and debris from the inland to the coast, this results in the further clogging up of drainage channels and prevents water from being discharged at the coast [7]. This process of converging hazards intensifies during the rainy season.

The disaster risks in coastal settlements are therefore an accumulation of the following factors: tidal surges coupled with heavy rain, extreme weather events, insufficient waste management, and lack of drainage systems and clogging of existing ones.

Box 1 Case Study: Kroo Bay

Kroo Bay is situated between two water bodies, Alligator River and Sanders Brook [9]. Upstream, in close to the rivers is Connaught Hospital [8] and overflowing waste sites [7]. Waste from these locations, combined with waste generated in other zones in the city, is carried downstream contributing to clogging the drainage system, especially near the water discharge points by the coast. Additionally, "tidal surges" in the bay further impede the drainage of floodwater into the sea [10]. As a result of the poor drainage, floodwater remains in the settlement long after the actual flooding event. Additionally, effluent discharges pose high risks to health for the community where contaminated groundwater is used for bathing and washing clothes, exacerbating the sanitation risk. Moreover, stagnant and slow-moving water also puts these communities at risk of malaria, filariasis, and various diarrhoeal disease [8].

Socio-spatial Inequality



Top left: Banking with compacted mud in tires, Cockle Bay. Photo Credit: Nam Vo Son
Bottom left: Banking with mud and waste in Susan's Bay. Photo Credit: Holly Pickett
Right: Accumulated waste for later use in banking in Susan's Bay. Photo Credit Costa Anastasakis

While the city of Freetown was initially planned for only 300,000 residents [4], rapid population growth and acute shortage of housing contributed to an uncontrolled proliferation of informal settlement [11]. Rental fees soared by 400 % between 1957 and 1976, and hyperinflation, failure of housing policy, and incapacity of the administrative government all contributed to exacerbate wealth inequalities. Unequal distribution of land between the urban rich and poor made the urban poor unable to acquire adequate housing [12], [13] .As a consequence, many people had no other option than to settle in the low-lying, flood-prone areas [13], where the majority of marginalised people now live.

Uncontrolled urbanisation and the lack of infrastructure in coastal settlements have increased flooding risk in these areas, which are unprotected from sea tides and storms [14]. Overcrowding and poor construction without adequate drainage increase the prevalence and impact of flooding [14]. However, due to fear of evictions by the government, coastal informal dwellers are unwilling to invest in improving their housing or infrastructure, making them more vulnerable to future floods and eroding their capacity to cope and recover from floods [4].

The lack of adequate planning also means that despite a large amount of unoccupied and allocable land in the Western Area, the majority of the poor population remains informal [15]. In addition, more than 60% of all houses in Freetown are insecure tenure [2]. Therefore, people are reclaiming land through banking practices (See Box 4). This contradicts the government, which has stated that the main reason for the prevalence of informal settlements is the lack of allocable land [12]. However, as illustrated in Box 4, the practice of banking comes with increased risks of floods, disease, and most importantly, undermines people's long-term capabilities to meaningfully change their livelihood situations.

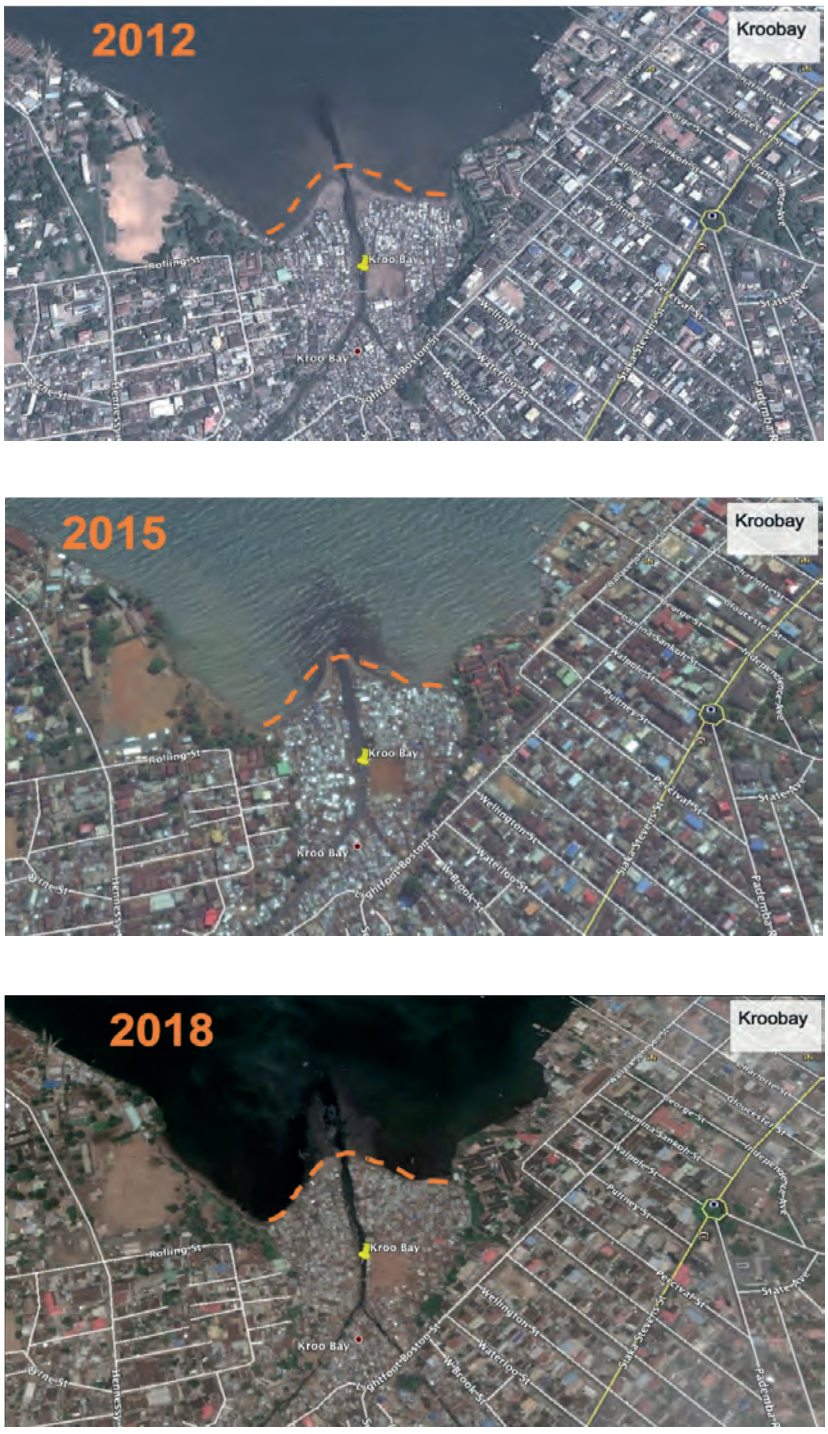
Finally, outdated laws contribute further to socio-spatial inequalities. Women form a particularly vulnerable group, as they are not legally allowed to inherit land [12]. As a consequence, coastal settlements that have been hit particularly hard by diseases, such as cholera spread through residue flood water, have high incidences of women and children being rendered homeless when the male of the household dies. This also prevents female-headed households from accumulating any long-term wealth to improve their socio-economic situation [12].

Overall, the combination of lacklustre planning, outdated laws, and the government not taking meaningful steps to work with, and address the issues that informal settlers are facing, is a devastatingly negative cycle. Insecure tenure and high rent are leading to most vulnerable and poor residents settling near the coast, facing increased risks of flooding, and not having the tools or opportunities to overcome their problems, resulting in them being trapped in this cycle.

Box 2 Case Study: Cockle Bay
The residents of Cockle Bay are constantly under the threat of eviction due to the area being demarcated a high-risk zone, as well as earmarked for ecological conservation (International Wetland Conservation - RAMSAR Site) by the National Protected Area Authority (NPAA). As a result, the residents are hesitant about discussing the risks they face and possible risk management interventions, as they fear it will legitimise the discourse of eviction. Moreover, according to the residents, the justification for eviction threats are not based on a detailed understanding of what areas are specifically unsafe, and which are liveable. Instead, a blanket eviction threat has been issued to the whole settlement.

Livelihoods and the Environment

The construction industry has been one of the key drivers of the Sierra Leonean economy in the past decade, employing a significant proportion of Freetown's working population [9]. For construction in particular, dwellers in informal coastal settlements depend on the environment for its economically valuable resources.
For example, Cockle Bay's economy is largely dependent on sand mining [16], which takes place in mangrove swamps. Due to job scarcity, many youths gravitate towards sand-mining because of its good pay [9]. In addition, mangrove logging is an important activity in the informal economy due to the multiple uses of mangrove for construction, banking (see Box 4), and as fuel wood [9].
However, the disappearance of swamp vegetation and continued mangrove logging has accelerated coastal erosion. With fewer natural barriers acting as a storm buffer to wind and wave action, instances of flooding have also become more extreme [9].
This has been noted by the government, who has highlighted settlements for degrading the environment and for exacerbating their vulnerability to coastal flooding (see Box 2). This, in turn, has been used as a reason for eviction [17].
However, the discourse from the government is not positively addressing these issues. The representative for the Ministry of Housing has said that the goal for urban development is "[one] of enforceable rules and regulations. This ensures control, human safety, and free flow of traffic, goods and services, socio-economic development, among others" [18]. There seems to be an omission of the underlying factors that drive these inequalities and environmentally damaging practices. Moreover, there needs to a recognition of the importance of the informal economy that takes place by the coast, in order to find sustainable solutions that does not disrupt the city economy as a whole.



The growth of banking area in Kroo Bay. Photo Credit: Google Earth

Box 5 Case Study: Portee-Rokupa's PERAV
Portee Ebola Response Alliance Volunteers (PERAV) was formed in 2014 in response to the Ebola outbreak in Portee-Rokupa. This network of CBOs was formed by a local councillor who gathered respected and hardworking community members to mobilise and fight the spread of Ebola. The alliance's activities were widespread, ranging from social mobilisation, awareness campaigns, to community cleaning, and clearing of drains. They also actively worked with NGOs and the relevant government bodies by distributing relief items, tracing possible victims, and carrying out quarantines. Much of the inter-CBO connections made during this time still remain, but PERAV itself has dissolved due to a lack of funding [24].

Tourism and Evictions

Tourism is an important and growing industry in Freetown, with a growth of 24,000 overseas arrivals in 2015 to 74,400 in 2016 [21]. To contend with the economic potential that tourism can create, the Freetown Structure Plan 2013-2028 further proposed to modernise the city as a part of its development strategy [20]. A major component of the plan is 'Cleaning up', which involves relocating informal settlements out of areas that are attract tourists [20]. The justification from the government is ambiguous, at times citing environmental conservation concerns, and at others claiming that informal settlements are a "hideout for criminals" and "illegal misconducts" [17].

There are reasons to be sceptical and critical of the manner in which the government is carrying out these development projects, mainly through evictions and relocations of coastal informal settlements. Despite the government citing land conservation and protection as the main reasons, redevelopment plans tend to focus on modernising areas where coastal settlements are present [9]. For example, settlements in Aberdeen, especially those along Lumley beach, are being evicted under the pretense of environmental protection in order to attract more tourists [9], [22]. Further areas recommended for upgrade include Cline Town, Kissy, and Allen Town, which have been envisioned to host wholesale markets, replacing "uncontrolled street trading", but are also important hubs for informal settlements and the informal economy [10].

This practice is not only misleading, but also disruptive to the economy of Freetown as a whole; by formalising and eliminating significant parts of the informal economy, a very vulnerable demographic of the city is being targeted and made more vulnerable. Additionally, due to the scarcity of job opportunities, removing settlements from these areas may not necessarily result in the termination of these environmentally depleting activities, suggesting that the approach itself is fundamentally flawed. While this redirection of the economy to be more 'formalised' and regulated bolsters the image of Freetown, it also overlooks the vital role of the informal sector and settlements in Sierra Leone's economy [9].

The prioritisation of the tourism sector for the government is apparent in the substantial investment that the government has put in, such as the newly constructed Radisson and Hilton Hotels. However, the crucial question to ask is 'who benefits from the growth of the tourism sector?' Coastal settlements have been under severe eviction threats with some settlements facing forced removal (see Box 3). The government's relocation efforts have been unsuccessful, with these settlements either refusing to relocate or returning to their flood-prone homes when the water levels recede [22]. The locals understand the risks of staying, but due to a combination of lack of opportunities elsewhere, familial ties to the location, the uncertainties associated with a new location, foregoing existing livelihood structures, they tend to return to the same informal coastal settlements [22]. If the substantial number of residents in informal settlements near the tourist attractions are seldom benefiting, but being evicted instead, it suggests that the growth of the tourist industry is only benefiting those that can already afford to have formal businesses there and are presumably already much wealthier than the informal residents. Therefore, promotion of the tourism industry may bring more wealth into the city of Freetown from tourists, it does not rectify the wealth inequalities already present, and may even increase the inequalities.

Moreover, the process of relocation (or returning after forced eviction) takes time and resources away from informal residents, and the threat of being evicted again in the future means they are not willing to make long-term investments in their livelihoods and the community. This undermines the community cohesion of informal settlements, as well as eroding people's capabilities to resist and adapt to flooding events. As people are not willing to make significant investments due to eviction threats, the community is less likely to come together to find long-term solutions [22]. Furthermore, due to the constant eviction threats, residents are not willing to discuss the risks they face with officials because of the fear that this may legitimise the government's eviction threats. This results in a paralysis in regard to finding a solution and alleviating life-threatening risks that residents in these areas are facing every day. Overall, this increases the negative cycle of residents being under constant threat of eviction, again, leading to them not willing to make long-term investments or openly discuss their problems, resulting in increased vulnerability, damage, and risks when coastal flooding occurs.

Box 3 Case study: Lumley Beach, Aberdeen
Many informal residents near the popular tourist destination Lumley Beach were forcibly evicted in 2015 where houses were demolished without consulting any of the community members, nor a plan for re-settling the residents who are rendered homeless [17]. The official justification given by the government was the continual overexploitation of the mangroves in the area by the residents. However, residents are sceptical of this justification as other large building that were also encroaching on mangroves were spared from demolition. Further adding to the conflicting discourse is the fact that the General Manager of the National Tourist Board has stated that the residents were an "eye sore" and were negatively impacting tourism in Aberdeen Creek and Lumley Beach [17].

Community-Based Organisations

The Office of National Security's (ONS) support for community-based organisations (CBOs) has focused on flood preparedness and relief, rather than prevention and long-term resilience [16]. This current discourse can be problematic due to the onus being placed more heavily on the communities to act accordingly during coastal floods, rather than the government and NGOs [23]. During and after coastal flooding disasters, CBOs are often undermined or ignored, especially those found in informal settlements, because their role is not fully recognised and formalised in the official disaster risk reduction policies. When NGOs are mobilised during floods, they tend to follow their own rigid procedures and do not factor in the value that CBOs can bring to the process, not meaningfully involving community members [24]. This effectively means that despite CBOs being most directly impacted by the floods and knowing the situation best, their role is seldom acknowledged, therefore their potential is wasted. Furthermore, ONS' overall approach is focused on post-disaster recovery and therefore is not conducive to enhancing the communities' capabilities to cope and adapt to the disasters themselves.

The government is also foregoing considerable skills and resources available by not properly involving CBOs when dealing with disaster risk reduction. An illustration of the effectiveness of CBOs in dealing with flooding risks is the case of the informal settlement Colbot. When they experienced flooding, the community came together, and they built drainage and retaining walls, drastically reducing flood-related risks in the future [25]. However, compared to other coastal settlements, they are not inundated consistently or at the same scale. If more recognition, support, and resources were provided for CBOs in more flood-prone settlements, the results of Colbot may be replicated. There exist the potential and willingness of people in these coastal communities to take concrete steps towards finding solutions, but without recognition or support, it is difficult for it to become productive. This requires a fundamental discourse shift away from limiting the role of CBOs to disaster relief, and towards a more holistic and integrated role in dealing with coastal floods.

If the government is to aspire for an environmentally just, inclusive Freetown, recognition and meaningful engagement with CBOs from informal settlements are essential. Given the current peripheral role that is given to CBOs, they have no voice to influence policy. Through the empowerment and support of them, local communities can build resilience over time and achieve real change in the long run. Only by giving them the tools, training, and capacity to act, will they be able to improve how they cope and recover from flooding events, allowing them to eventually overcome the perpetual risk cycle that communities are caught in.

The lack of recognition and funds are not the only challenges CBOs are facing. Lack of coordination among CBOs across the city means that it is more difficult for other organisations or the government to engage and train them. Moreover, they do not have the social networks to speak to relevant stakeholders, especially regarding DRR policies for floods [26]. Despite facing similar risks (namely floods and its converging hazards), CBOs do not have a consolidated voice or a platform where they can engage in policy making. There are powerful examples, such as the PERAV (see Box 5), which illustrate the potential and value that CBOs and CBO networks can bring when facing crises, but there needs to be a stronger foundation of support for them to be able to survive, grow, and expand over time. Currently, it is mostly volunteer-based, taking time and resources away from the most vulnerable people in the city. With funds, training, and a platform that allows them to engage other CBOs, NGOs, and the government, it can significantly enhance the efficacy of disaster relief, recover, and preparation for a future that looks increasingly extreme and uncertain.

Box 4: Banking

Land reclamation on the seashore, locally known as 'banking', is a long-lasting and common practice in many informal coastal settlements. The reclaimed land is used for the construction of dwelling shacks, often with unsuitable materials such as plastic and straw roofs [19]. As the reclaimed land is located on the coast at sea level, this practice exposes local dwellers to higher risk of coastal flooding and other hazards [2]. According to the Ministry of Land Country Planning and the Environment "The coastal flood-prone sites in Freetown are those sites situated less than 3.0–4.0 m above daily mean sea levels, as high tides might rise up to 3.03 m" [20, p. 23]. There are many different techniques and methodologies for banking, depending on the location and available materials. More often than not, the banking materials include the use of mud and waste, which are unsafe and often toxic. Also, in some locations, such as Cockle Bay, banking material includes mangroves, which contribute to the overall environmental degradation of wetlands and mangroves [20].

Banking started as a response to the high rental prices and the lack of appropriate land allocation for the construction of affordable housing and is now a common and widespread practice among coastal settlements [2]. Nevertheless, because of the lack of appropriate drainage and infrastructure to withstand flooding, this practice exposes dwellers to hazards and accumulating risks. Overall, banking thus erodes residents' abilities to improve their living situations through the continual loss of property and goods.

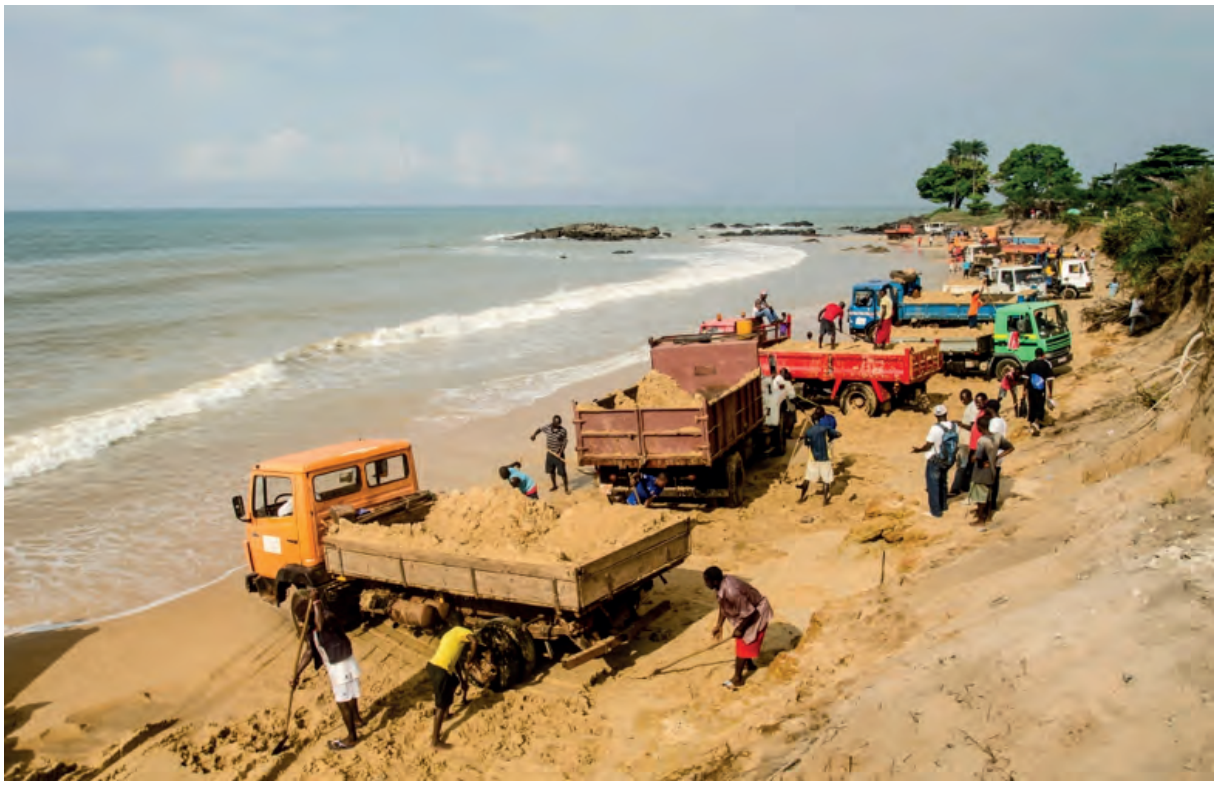
Recommendations

Policy Platform

A way to address the issues of recognition and lack of coordination that CBOs are facing would be to establish a common policy platform that brings together key stakeholders and coordinates initiatives across the city [26]. The key benefits of this include strengthening Freetown coordination by having secure and sustainable financing. This can also improve Freetown risk identification and assessment by involving the community members that know the risks best. As a result, the coordination between government and CBO actors can also improve disaster response and readiness through this knowledge-sharing. Cooperation and coordination between settlements during flooding events could create a culture of good practices. Creating a common platform for key stakeholders also means that it is easy to get an overview of initiatives that are on-going, allowing for tracking of progress, funds, identifying gaps and potentials for new initiatives; all facilitated in a transparent, collaborative manner that would ensure accountability. The organisation SLURC has already proposed a similar initiative, but this needs to be supported and advocated for to and by the actors at all levels. It is crucial that actors understand the numerous benefits of such a policy platform. Moreover, based on the preceding diagnosis of the multitude of problems that coastal informal settlements are facing in Freetown, this would be an actionable, inclusive, concrete step towards finding solutions.

Federation of Freetown CBOs

Another recommendation is to coordinate CBOs across the city first, especially those in coastal settlements. As the conditions and timings of when the risks of coastal flooding strike these settlements are similar, creating an umbrella organisation of coastal settlement CBOs could provide a host of benefits. For example, most coastal settlements will be simultaneously flooded twice annually [9]. Similar to the proposal of a policy platform, an umbrella organisation of CBOs would allow for knowledge- and skill-sharing, easier distribution of resources across the city (e.g. funds, training, policy implementation), and more efficient coordination of disaster relief efforts. This would tap into the intimate knowledge community members have of their own communities, but also have a space where these knowledges can be shared across the city. Given the emphasis on the severity of converging hazards for coastal settlements, having an established alliance and a working warning system between coastal and inland CBOs can help alleviate the intensity of risks during floods.
Additionally, on a political level, the umbrella organisation can serve as a unified voice when dealing with state-level policymaking, given that there are many commonalities in the conditions of coastal informal settlements. A consolidated political voice also demonstrates the self-organising capabilities of informal settlements, adding legitimacy to their cause, as well as being able to serve as a feasible model for other CBOs in the city to follow.
However, coordination on such a large scale is undoubtedly very challenging, and requires the collaboration of many key actors, e.g. Councillors, Chiefs, Ward Committees, Facilitating organisations (FEDURP-SL, SLURC, CODOHSAPA) [16].



Sand-mining in Freetown. Photo Credit: Tommy Trenchard

Conclusions

The multi-dimensionality of coastal flooding means the underlying causes cannot be identified in isolation. Through the examination of converging hazards at the coast, it has been shown how multiple health risks accumulate at the coast, negatively impacting coastal informal settlements. Moreover, this is increasing the vulnerability of residents in coastal informal settlements, and their capacity to act is being eroded over time, making them effectively trapped in their current circumstances. A lack of secure land tenure and eviction threats, coupled with inadequate infrastructure, are making these communities more prone to flood risks and less able to find solutions. Moreover, the main practices for coastal settlements of sand mining, mangrove logging, and banking are also increasing the risk of flood events. The threat of eviction itself is also fuelling their vulnerability by inhibiting any upgrading of households. Furthermore, rather than investing in these areas, investment is instead earmarked for tourism development, thus excluding development for the people. It is crucial to understand the problem that coastal informal settlements are facing as dynamic and cyclical. The actions that residents, NGOs, and the government are taking are not conducive to long-term change, but are effectively making the situation worse.

The first step in reducing the occurrence and intensity of flooding events begins at the acknowledgement of coastal settlements' vulnerabilities. In addition, it is important to acknowledge the value and scale of contribution that the informal economy offers to the city. Nevertheless, every settlement has different characteristics, thus experiences risks differently. The case of Kroo Bay showcases how the convergence of hazards manifest in regard to inadequate drainage infrastructure and physical layout of Freetown. The government's perspective on these local livelihoods acknowledges them in respect to their role in the degradation of the coastal environment but does not provide any alternative livelihoods.

The key to overcoming this cyclical problem is to empower and support the community-based organisations in the informal settlements. By encouraging communities to come together and gather resources, and by offering them the tools for change, can a truly positive and sustainable change happen. This includes the recognition of the importance of CBOs, and the value their cooperation and inclusion offer, not just to the government, but to the city as a whole.

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