


Improving Cape Town's public lighting policy for informal settlements

Report

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Improving Cape Town's public lighting policy for informal settlements

Unequal access to public lighting in Cape Town is an increasing focus for the public and city government but existing policies prevent the situation from improving in the most underserved areas – informal settlements.

Stephanie Briers, 09/2019
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ABSENT PUBLIC LIGHTING POLICY FOR INFORMAL SETTLEMENTS

Rapid urbanization has led to public service challenges that disproportionately affect residents of informal and poor neighborhoods in Cape Town, as in countries across the globe. Until recently, public lighting was a neglected government service, overshadowed by access to water, sanitation and electricity in informal settlements. Few informal neighborhoods have sufficient public lighting, yet it might play an important role in enabling people to feel and be safe outside at night as well as to access shared basic services after dark.

In Cape Town, South Africa, insufficient public lighting in informal neighbourhoods is largely attributed to historical race-based inequality in infrastructure provision and extreme economic inequality. Existing policies enable the City of Cape Town (CoCT) to continue to recommend and deploy high-mast lights (or no lighting at all), in historically black African townships and informal settlements, despite the City's own evidence on high-mast lighting's shortcomings and the their identifying that the most problematic areas are areas lit with high-mast lights¹.

The CoCT's recommendations against high-mast lights, have happened in the absence of clear

SUMMARY

- *Rapid growth in informal settlements and a backlog of infrastructure provision has left many people in the dark. This negatively affects the everyday life of informal settlement residents.*
- *The predominant mode of lighting in black African neighborhoods is high-mast lighting, even though the CoCT has evidence and recommendations against this technology.*
- *We recommend wall-mounted solar public lighting specific for informal settlements, as an alternative to high-mast lighting, implemented and maintained using EPWP, creating jobs.*
- *Many existing policies prevent public lighting in informal settlements from improving. This policy brief highlights and recommends adjustments and additions to these policies.*

technology alternatives and rigorous research addressing access to adequate public lighting designed specifically for informal settlements. We therefore plan to test the efficacy and impact of a high-mast lighting alternative: outdoor, solar lights mounted onto each dwelling. This policy brief analyses existing policies preventing the implementation and improvements of public lighting solutions for informal settlements and recommends adjustments to these policies.

KEY FINDINGS

High-mast lights cast dark shadows

As pointed out by the 2019 CoCT report¹ on lighting in Khayelitsha, high-mast lighting has a technical fall-back regarding the distribution of lighting. The City of Cape Town has admitted that the dark shadows cast by high-mast lighting and the uneven distribution of light is a major challenge. Our lighting measurements confirmed this. We took measurements relative to the high-mast lighting, within the 200m lighting radius² of the high-mast light using a lux meter in PJS

¹ City of Cape Town (2019), *ECC 13/08/19 Khayelitsha Lighting Master Plan*, Cape Town: City of Cape Town

² The City of Cape Town roughly lays out high-mast lights 200m from point to point.

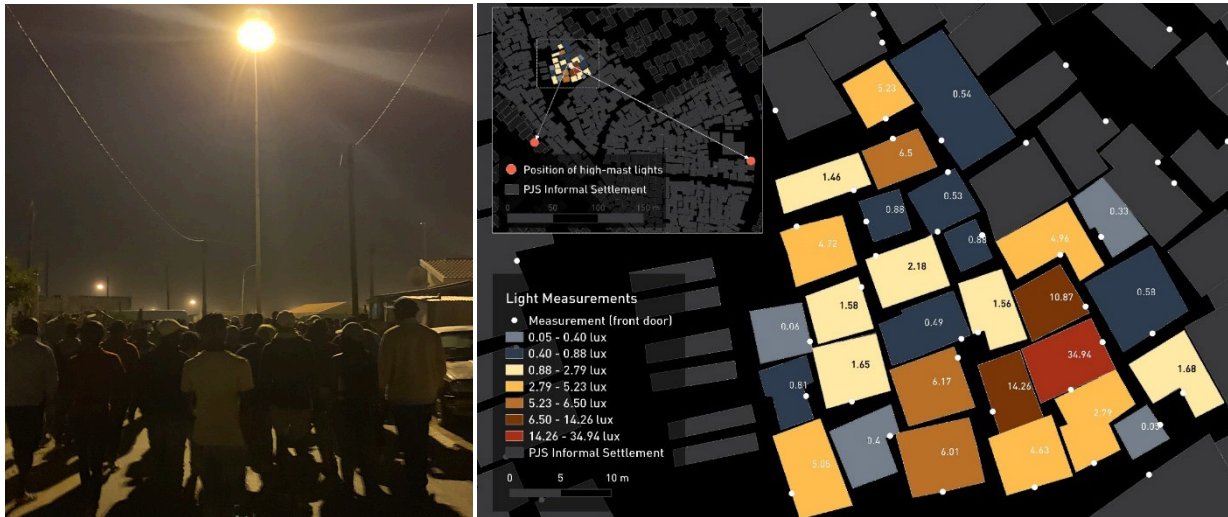


Figure 1: High-mast lighting in Khayelitsha (2019)

Figure 1 Lux measurements taken at each household's front door, where less than 1 lux (blue) is below the City of Cape Town's accepted standards. (Data: Mfubesi, Maha, 2019; Map: Briers, 2019)

informal settlement. We found that several spots within the 200-meter servicing radius of the high-mast light had readings below the required lighting level of 1 lux. One reading 70 meters from a high-mast light measured 0.06 lux, which is equivalent to the light a quarter moon produces. A reading 79 meters from a high-mast light showed 34.94 lux — Twilight measures 10.71 lux. The measurements just 23 meters apart show the extreme contrasts in lighting that found in a relatively small area.

Dual lighting³ policy prevents the deployment of streetlights.

The CoCT's dual-lighting policy⁴ does not allow the use of two different kinds of lighting in the same area.¹ If an area that has high-mast lighting requests streetlighting, the CoCT needs to remove the high-mast lights before installing streetlights. The dual-lighting policy is particularly problematic for informal settlements with high-mast lighting that are upgraded into formal neighbourhoods with serviceable streets for streetlights, as they often remain stuck with high-mast lighting.

Land ownership and zoning restrictions compound inadequate public lighting

The City of Cape Town may not provide permanent infrastructure on privately owned land without the

landowners permission. This results in the high-mast lighting being placed on the periphery of the settlement, on publicly owned land. This unevenly lights the settlements and casts dark shadows in the settlement pathways. Additionally, the city is also not mandated to provide public lighting in areas zoned as Community 1, amongst other zonings, which is often land where informal settlements are located.

Lack of space in informal settlements

The 2019 CoCT report on public lighting in Khayelitsha has named the lack of space as a major reason for the lack of public lighting. Encroachment onto public pavements, where infrastructure would normally be installed, prevents the City from adding more streetlights and high-mast lights. However, the report does not mention informal settlements and a lack of space is an even greater issue in dense informal settlements where pathways are only navigable by foot and some pathways are barely wide enough for one person to walk through. Because of this lack of space, when high-mast lighting is installed in informal settlements, people are often forcibly displaced to make way for the large concrete foundation, and have nowhere to go.

³ City of Cape Town (2013), CTEG Area lighting guide, Cape Town: City of Cape Town

⁴ City of Cape Town (2013), CTEG Area lighting guide, Cape Town: City of Cape Town

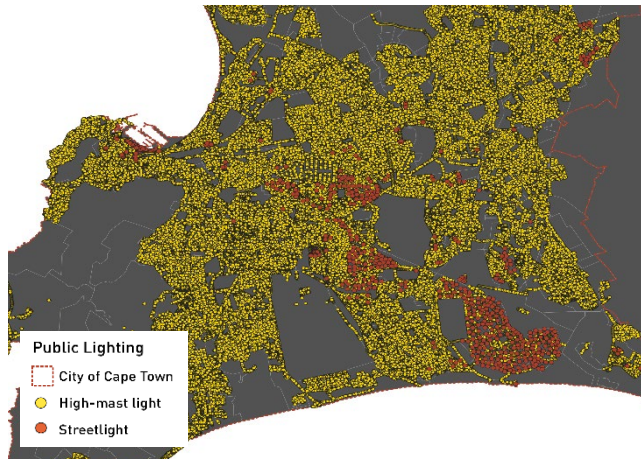


Figure 3 Distribution of public lighting (streetlighting and high-mast lighting) in Cape Town (Data: Public Lighting, 2017, City of Cape Town Open Date Portal; Official Suburbs, 2020, City of Cape Town Open Data Portal; map: Briers, 2020)

High-mast lights are not resilient or sustainable

South Africa's energy grid has faced large pressure in the recent past, with demand exceeding supply and enforcing a series of planned power outages, called Load Shedding. During power outages, South Africa's power utility, ESKOM leaves large parts of the city in the dark, creating real and perceived insecurity for people navigating their way through the dark. High-mast lighting uses high-pressure sodium vapour lamps, which are very energy consuming and put an additional pressure on the city's energy demand. Although the CoCT is looking at replacing these lights with LED lights, this does not address the issue of frequent power outages.

High-mast lights are an Apartheid symbol

High-mast lighting was first implemented in townships during the late apartheid period. Many speculate that the lights were initially installed to allow for easier surveillance of the township areas by the police and defence force during increasingly turbulent political times. Today, Khayelitsha is predominantly lit by high-mast lighting, as opposed to conventional street lighting that services the rest of the city of Cape Town. High-mast lights carry the symbol of apartheid and sets Khayelitsha apart from the rest of the city, furthering the gap in equality between areas that were designated for black South

KEY FINDINGS

- High mast lights cast dark shadows in pathways and the high contrast in lighting levels makes it difficult to see.
- High-mast lighting is a symbol of apartheid
- Dual-lighting policy prevents the implementation of street lighting in areas with high-mast lighting.
- Land ownership and zoning restrictions compound inadequate public lighting.
- Informal settlements lack space for streetlighting and high-mast lighting.
- High-mast lights are not resilient to routine power outages.
- Wards in poor neighbourhoods are forced to spend their limited budget on lighting backlogs.
- Inadequate stakeholder engagement leads to problems.

Africans by the apartheid government and areas previously designated for other racial groups, just as white and coloured South Africans.

Some wards spend allocations on lighting backlogs

When assessing the CoCT public lighting data⁵, Khayelitsha, with an area of 33km², had 2653 streetlights and 218 high mast lights. A similar size area in upper-middle income neighbourhoods consisting of Rondebosch, Mowbray, Claremont, Kenilworth, Newlands, had 9067 streetlights and no high-mast lights. This clear backlog in public lighting in Khayelitsha has resulted in ward allocations being spent on public lighting where other wards have no need to spend their budgets on public lighting.

RECOMMENDATIONS

Unique public lighting policy for informal settlements

The City of Cape Town needs to develop public lighting policy that specifically addresses the socio-spatial conditions in auto-constructed informal settlements. Conditions such as narrow, pedestrian-only walkways, shared basic services, and constantly adapting urban fabric need lighting solutions that are different to formal neighbourhoods.

⁵ Open Data Portal (2017). Public lighting data, Cape Town: City of Cape Town. Available from www.odp.capetown.gov.za

RECOMMENDATIONS

- Create unique public lighting policy for the socio-spatial conditions of informal settlements.
- Experiment with human-scale, decentralised lighting to respond to the particularly dense conditions.
- Create special zoning for land that has been informally settled to allow for adequate service provision.
- Co-produce and manage infrastructure with community members.

Experimenting with alternative lighting for informal settlements

The CoCT needs to be experimental in testing new alternatives to high-mast lighting, following an evidence-based design approach to finding innovative public lighting solutions for informal settlements.

Special zoning for land where informal settlements are located

Land that has been assessed by the CoCT's surveyor general is formally recognised and is therefore entitled to basic services. A new zoning category for informal settlements needs to be implemented, which allows special access to services for informal settlements, even if settled on private land, or settled on areas where zoning does not mandate the City's service provision.

Increased public lighting budget for areas with lighting backlogs

A full comparative assessment of lighting across Cape Town needs to be done, and redistributive budget allocations must allow for previously disadvantaged areas to reach lighting standards comparative to other upper-middle income areas in the City.

Using resilient and decentralised lighting technology for informal settlements

The CoCT's goal of greener and sustainable solutions can be realised through the implementation of

- Increase budget for previously disadvantaged areas to redistribute access to public lighting
- Support green and resilient infrastructure for informal settlements, such as solar lighting

FURTHER READING

Briers (2021). *Infrastructures of freedom: Public light and everyday life in 'informal settlements'*, Zurich: ETH Zurich

Charles M. (2019). *City of Cape Town admits poor lighting spurs crime, Cape Town: Cape Argus.*

human-scale solar lighting technology in informal settlements, where access to electricity is often a challenge. Public lighting infrastructure in informal settlements should be resilient to the ever-changing environment of informal settlements. Lighting infrastructure should be adaptable and even removable.

Co-producing and managing infrastructure

Public lighting in informal settlements must happen in collaboration with residents living there. Residents must be involved in the design, implementation and maintenance of the light, and a local maintenance team should be employed through a similar system as the Expanded Public Works Programme (EPWP).

Institute of Science, Technology and Policy

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Stephanie Briers is an urbanist and PhD student at the Chair of Sociology and at the Institute for Science Technology and Policy, ETH Zurich. She holds a Masters in Architecture from the Nelson Mandela Metropolitan University and is based in the interdisciplinary research team, the Urban Research Incubator (URI) focusing on urban transformation in Colombia and South Africa. Stephanie's work has a focus on critical urban studies in Post-Apartheid South Africa. Her current research focuses on action research approaches to infrastructure planning and implementation in formal settlements in South Africa, with a focus on public lighting infrastructure.