

Smart And Sustainable City Index for Mombasa City

By Martha Naikumi, Humphrey Njogu and Betty Kaibung'a

Introduction

The Smart and Sustainable Cities Index (SSCI) in Kenya is a comprehensive framework to measure the status of smartness and sustainability across the Kenyan cities. The pursuit of smart and sustainable urban development has become an imperative for cities globally as cities experience increased population. Consequently, cities are expected to offer sustainable solutions to modern urban life problems. The concept of smart and sustainable cities underscores the need to leverage on technology for innovative urban environments that enhance the quality of life for residents (Giffinger et al., 2007). The overarching goal of smart and sustainable cities is to strike a harmonious and efficient balance between economic development, social well-being, and ecological preservation. In this policy brief, we present the score card of Mombasa City, a significant urban centre in Kenya.

This policy brief explores the specific indicators and performance measures relevant to Mombasa City, allowing stakeholders to pinpoint areas for improvement, prioritize policy actions, and collectively work towards a smarter and more sustainable urban future.

Mombasa City Urbanization Journey and Demographics

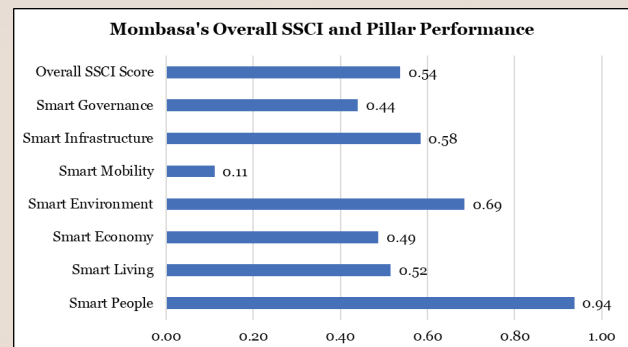
- Established by Arab traders around 900 AD and was capital of East Africa Protectorate until 1907
- Gained city status in 1928 thus the oldest city in Kenya
- The city has a population of 1.3 million people (KNBS, 2019)
- The city has a land mass of 295 square kilometres

SSCI Overview

The SSCI is based on seven critical pillars of smartness and sustainability: smart people, smart environment, smart mobility, smart infrastructure, smart governance, smart living, and smart economy. The city of Mombasa has an overall score of 0.54. The city performed well in

smart people (0.94) and smart environment (0.69). The performance for smart infrastructure (0.58) and smart living (0.52) was above average while smart economy (0.49) and smart governance (0.44) scored slightly below average. The city performed low on smart mobility (0.11) (Figure 1).

Figure 1: Mombasa's overall SSCI and pillar performance



Smart People

This pillar entailed developing an easily accessible and inclusive environment for people to thrive. The indicators assessed under the pillar included: education level, access to digital devices, and demographics (dependency ratio). Mombasa performed quite well in this pillar with a score of 0.94. The specific score for each indicator is listed below:

- Education level: 0.90
- Access to digital devices: 0.98
- Dependency ratio: 0.93

Area of Concern

- Unequal access to education funding.

Policy Recommendation

- The city county of Mombasa to increase funding for basic education to facilitate better enrolment while the National government through the National Government Constituency Development

Fund (NG-CDF) to facilitate provision of bursaries to increase school enrolment.

Smart Living

The smart living pillar assessed the standards of living in an urban area leading to sustainability. The index measured five critical indicators under the smart living pillar: life expectancy, health insurance coverage, births attended by skilled health personnel, housing quality, and crime rate. Mombasa City performed slightly above average on this pillar with a score of 0.52. The specific score for each indicator is listed below:

- Life expectancy: 0.74
- Health insurance coverage: 0.29
- Births attended by skilled health personnel: 0.96
- Housing quality: 0.94
- Crime rate: 0.16

Areas of Concern

- High crime rate
- Low health insurance coverage for citizens

Policy Recommendation

- i) Mombasa City through the Department of Health to facilitate the provision of health insurance coverage to enhance access to health services.
- ii) The County government to fast-track full implementation of the Urban Areas and Cities Act to establish a coordination framework for implementing the National and County government security initiatives.

Smart Economy

The pillar assessed critical indicators under the smart economy pillar. The pillar refers to the use of modern and efficient technology systems in enhancing productivity and job creation. Six indicators were assessed: GDP per capita, employment rate, ease of doing business, tech hubs, own source revenue, and e-commerce. In this pillar, Mombasa scored slightly below average with a score of 0.49. The specific score for each indicator is listed below:

- GDP per capita: 0.58
- Employment rate: 1.00
- Ease of doing business: 0.30
- Tech hubs: 0.03
- Own source revenue: 1.00
- E-commerce: 0.02

Areas of Concern

- Under development of the E-commerce sector
- Limited establishment and operationalization of tech hubs
- Strains on the ease of doing business

Policy Recommendations

- i) Mombasa City county needs to allocate resources to develop technology infrastructure and build digital skills for tech hubs.
- ii) The National Government and the County government to fast-track the implementation of an integrated national addressing system to facilitate the uptake and growth of e-commerce in the city.
- iii) The city county of Mombasa to develop comprehensive policy framework to facilitate easy access to markets, goods and services.

Smart Environment

The smart environment pillar involved measures taken technologically to facilitate the preservation of the ecosystem to improve on the quality of life. The indicators measured by the index included: forest cover, waste management, access to improved water, access to improved sanitation, access to clean energy for cooking, and access to clean energy for lighting. Mombasa City scored an average of 0.69 in this pillar. The specific score for each indicator is listed below:

- Forest cover: 0.51
- Waste management: 0.76
- Access to improved water: 0.52
- Access to improved sanitation: 0.95
- Access to clean energy for cooking: 0.43
- Access to clean energy for lighting: 0.94

Areas of Concern

- Limited forest cover
- Limited access to improved water and water services
- Insufficient access to clean energy for cooking

Policy Recommendations

- i) The city to develop a comprehensive policy framework to increase forest cover in the area.
- ii) The city to collaborate with the National Government to facilitate the provision of clean water to the residents of the city.
- iii) The city in collaboration with Ministry of Energy and Petroleum to focus on incentivizing and adopting renewable energy sources to reduce reliance on fossil fuels.

Smart Mobility

The smart mobility pillar emphasized on enhancing public transportation to create resilient, eco-friendly, and efficient cities. Smart mobility is critical in enhancing the quality of life of urban citizens. The SSCI assessed several indicators including miles to bike per path, cars

per capita, and EV charging stations. The specific score for each indicator is listed below:

- Miles of Bike per Path: 0.00
- Cars per Capita: 0.17
- EV charging stations: 0.17

Areas of Concern

- Limited miles of bike path
- High cars per capita
- Limited EV charging stations

Policy Recommendations

- i) The County Transport and Infrastructure Departments in collaboration with the National Government's Ministry of Roads and Transport to prioritize investments in cycling infrastructure, promote efficient public transportation, and incentivize electric vehicle adoption in the city county of Mombasa.
- ii) The National Government to consider enacting policies that reduce car dependence such as mass public transit, enhance connectivity, and support eco-friendly modes of transportation.

Smart Infrastructure

The smart infrastructure pillar focused on digital structures in building resilience and sustainability. The indicators assessed under this pillar included: computer or laptop ownership, access to electricity, households with mobile broadband, mobile money subscriptions, use of the Internet, and smartphone ownership. Mombasa City scored above average in this pillar, with a score of 0.58. The specific score for each indicator is listed below:

- Computer/Laptop: 0.30
- Access to electricity: 0.86
- Household with mobile broadband: 0.56
- Mobile money subscription: 0.89
- Use of internet: 0.39
- Smart phone ownership: 0.51

Areas of Concerns

- Inadequate access to computer/Laptop
- Low internet usage by households
- Low ownership of smart phones by households

Policy Recommendations

- i) The National Government to partner with the City County of Mombasa to accelerate the provision of affordable 4G/5G internet.
- ii) The National and County governments to consider offering cheap smart phones to the low-income households through the recently established smart phone plan at the Konza Technopolis.
- iii) The National and County governments to hasten the coverage of the optic fibre connectivity for affordable Internet access.

Smart Governance

The smart governance pillar measured by the SSCI included the role of technology in promoting leadership and inclusivity. The indicators measured for this pillar included: voters' turnout, women representation in the County Assembly, and budget transparency. Mombasa City scored below average in this pillar with a mean score of 0.44. The specific score for each indicator is listed below:

- Voters' turnout: 0.44
- Women representation: 0.60
- Budget transparency: 0.28

Areas of Concern

- Voters' turnout was slightly below average
- Limited transparency on the budget making process

Policy Recommendations

- i) The Independent Electoral and Boundaries Commission to adopt e-voting system to enhance voters' turnout.
- ii) The city county of Mombasa to avail relevant information and the process of budget formulation and implementation to the public to increase the level of transparency.

Acknowledgement

The authors acknowledge special contributions made in this study by Dr Rose Ngugi, the Executive Director of KIPPRA

About KIPPRA Policy Briefs

KIPPRA Policy Briefs are aimed at a wide dissemination of the Institute's policy research findings. The findings are expected to stimulate discussion and also build capacity in the public policy making process in Kenya.

KIPPRA acknowledges generous support from the Government of Kenya and development partners who have continued to support the Institute's activities over the years.

For More Information Contact:

Kenya Institute for Public Policy Research and Analysis
Bishops Road, Bishops Garden Towers

P.O. Box 56445-00200, Nairobi

Tel: 2719933/4, Cell: 0736712724, 0724256078

Email: admin@kippra.or.ke

Website: <http://www.kippra.or.ke>

 @KIPPRAKenya