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Murang'a County Unveils Smart City Programme to enhance Urban Mobility and Connectivity.

County:	Murang'a		
Sector/s:	Urban, Roads, and Transport Infrastructure	Sub-sector/Theme:	Roads and Urban Transport
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Target Audience:	County Governments, National road agencies, Ministry of roads and transport, ministry of urban development, County departments of roads, urban, and transport, development partners in the roads sector, transport planners		
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Introduction

Murang'a County's road network spans an impressive 5,053 km, with the County managing 3,006 km, yet only 21% of it is paved. This means that for many residents, rainy seasons bring impassable roads, while dry spells kick up dust that poses serious health risks.

Abreast of these challenges, particularly in urban areas, the County is transforming its urban landscape with the Smart City Programme, a game-changer for mobility, connectivity, and economic growth.



Figure 1: Murang'a County Road

Through the Smart City Programme, the County is enabling seamless transport, thriving businesses, and a more inclusive, accessible future for all by upgrading roads and drainage across key urban areas.

Implementation of the practice

In 2022, Murang'a County set out on an ambitious plan to redefine its urban areas with the Smart City Programme. The initiative aims to construct 40 km of paved roads by 2026/27 at a cost of Ksh. 1 billion. To initiate this transformation, the County allocated Ksh. 175 million in FY 22/23 and Ksh. 150 million in FY 23/24. Since inception of the programme, the County has constructed 7Km of paved road annually.



Figure 2: Ongoing construction of road in Kabati town

As of February 2024, 14 towns in Murang'a County have benefited under the initiative. These towns include:

1. Maragua in Maragua Constituency.
2. Gatura in Gatanga Constituency.
3. Kabati in Kandara Constituency.
4. Kangari in Kigumo Constituency.
5. Murang'a Town in Kiharu Constituency.
6. Kangema in Kangema Constituency.
7. Kiriaini in Mathioya Constituency.
8. Kahatia in Kiharu Constituency.
9. Kaguku in Gatanga Constituency.
10. Gacharage in Kandara Constituency.
11. Kanyenyaini in Kangema Constituency.
12. Zebka and Kenol Town in Maragua Constituency.
13. Kamune (ongoing) in Mathioya Constituency.
14. Cabros Murang'a Town in Kiharu Constituency

Private contractors have been engaged through open tendering to actualize the County's vision of smart cities. The County employed innovative road construction technologies tailored to local terrain. A key approach is the Low Volume Seal Road (LVSr) technology, a cost-effective bitumen standard technology adapted from the National Government's Road 2000 Strategy for sealing gravel roads in rural areas.

LVSrs are designed to carry low traffic of about 200 vehicles per day and are unlikely to reach design traffic loading exceeding one million cumulative standard axles over a 20-year period (Department for International Development, 2006). In contrast, high volume traffic roads carry traffic of over 1000 vehicles per day (Ministry of Roads and Transport, 2023).

LVSr technology enables development of road with low traffic to be economically justifiable (SATCC, 2003). Their construction cost is relatively low compared to conventional roads as they are constructed using locally available materials, they follow the existing alignment with provisions for non-motorized transport and adopt low-cost road safety measures (Pinard et al., 2015). Additionally, LVSr use surface dressing where a thin layer of bitumen is sprayed onto road surface followed by a layer of stone chipping as opposed to asphalt concrete that is used in standard roads. Figure 1 shows a typical LVSr constructed in Murang'a.

Other methods, including cabro and concrete paving, are also being deployed to enhance resilience and longevity.



Figure 3: Concrete road in Mjini, Murang'a



Figure 4: Cabro Road in Gatura, Murang'a

Results of the Practice

Construction of paved roads has benefitted over 118,000 residents in the urban areas (KNBS, 2019). Key benefits include of the smart city programme include:

1. **Improved mobility:** Paved roads have facilitated smooth and efficient transport in all the urban areas by reducing travel time and vehicle wear & tear. The roads are all weather and ensure that people and goods can move quickly and reliably even during adverse weather conditions.



Figure 5: Kabati Road has connected an ECDE Centre to the Main Road thereby providing access

2. **Economic Growth:** Paved roads promote trade by connecting producers to market. Additionally, they attract investment in industries. For example, the newly constructed Kabati Road links the County Industrial park to the main road.

3. **Access to Social Amenities:** Paved roads ensure that essential services such as healthcare, education and emergency response are more accessible thereby promoting social inclusion. The Kabati Road in Kabati town has linked an Early Childhood Facility to the main road thereby enabling accessibility of the facility to the local community.

4. **Environmental and Health Benefits:** The paved roads help reduce dust pollution and social erosion.

Lessons learnt:

- Adoption of innovative and alternative road construction technologies can help reduce the cost of construction. These technologies can be used depending on the traffic volumes and terrain.
- Interdepartmental collaboration during planning is critical for optimal utilization of infrastructure. The infrastructure department collaborates with other departments such as trade, education, and health to ensure that the project implemented have maximum benefits to the community.



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Recommendations

- Development of road assets maintenance strategy is critical to ensure that the road maintenance is sufficiently budgeted from the onset. This should include routine and periodic maintenance.
- Development of LVSR roads should include strategies to upgrade them to the standard requirements after generating sufficient traffic and capacity. This can include collaboration with National Government Road Agencies such as Kenya National Highways Authority and Kenya Roads Board.

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PHOTO GALLERY



Figure 6: Site demarcation before road construction in Kabati



Figure 7: Ongoing excavation Works



Figure 8: Completed Kabati Road with Markings, Side walk and drainage



Figure 9 : Boda Boda Shade in Mjini, Murang'a County



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Figure 10: Cabro Road in Gacharage Market