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Understanding the African Two- Wheeler Market: **A Context for Micromobility**

A white paper for the Rosebank e-Micromobility Pilot Project

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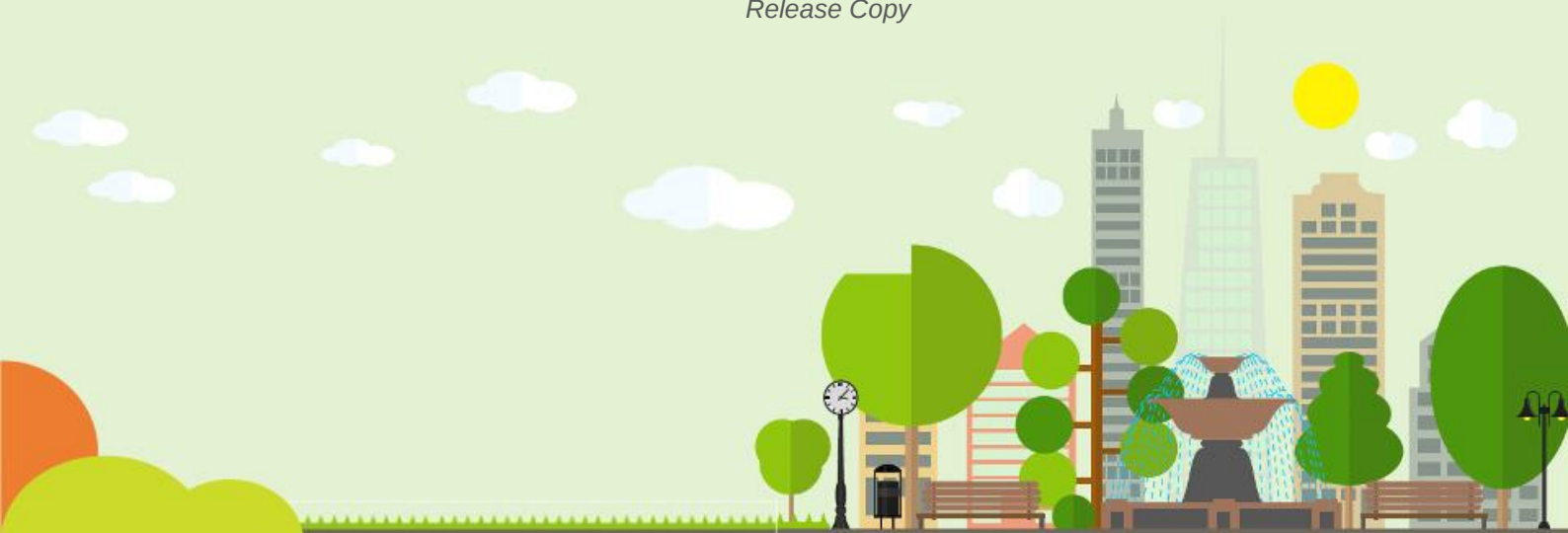
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Understanding the African Two-Wheeler Market: A Context for Micromobility



A boda-boda taxi stand in Kenya (Image courtesy <https://kenya-safaris.co/>)

Although micromobility has recently been gaining traction as a plausible solution to high carbon emissions and congestions in cities, micromobility is not new in Africa. With the Boda Bodas or Piki Piki in East Africa and the Okadas or Inagas in West Africa, the two-wheeler market has been a formidable competitor as a choice for individual, passenger and goods mobility in both West and East Africa alike. This paper explores the two-wheeler market in the African context.

A case for ubiquitous non-conventional mobility

Mobility solutions across the African continent have been driven by purpose, the availability of infrastructure and the cost of acquisition and maintenance. It is no wonder that the most popular modes of mobility are those that are not only fit for purpose but also demonstrate unrivalled operational sustainability. This has little to no consideration to carbon emissions or the latest in technology trends. Africa's triple challenges of poverty, inequality and unemployment have created a unique backdrop for the way people move themselves and their things.

Demand responsiveness where there is poor road infrastructure and dense urban settings requires mobility solutions that are characterised by easy manoeuvrability. Thus, two-wheeler usage and densities are higher in African countries with constrained transport infrastructure development in both rural and urban settings. The evident lack of organised and sophisticated



transport systems, regulation and law enforcement has significantly lowered barriers to entry to this market across Africa.

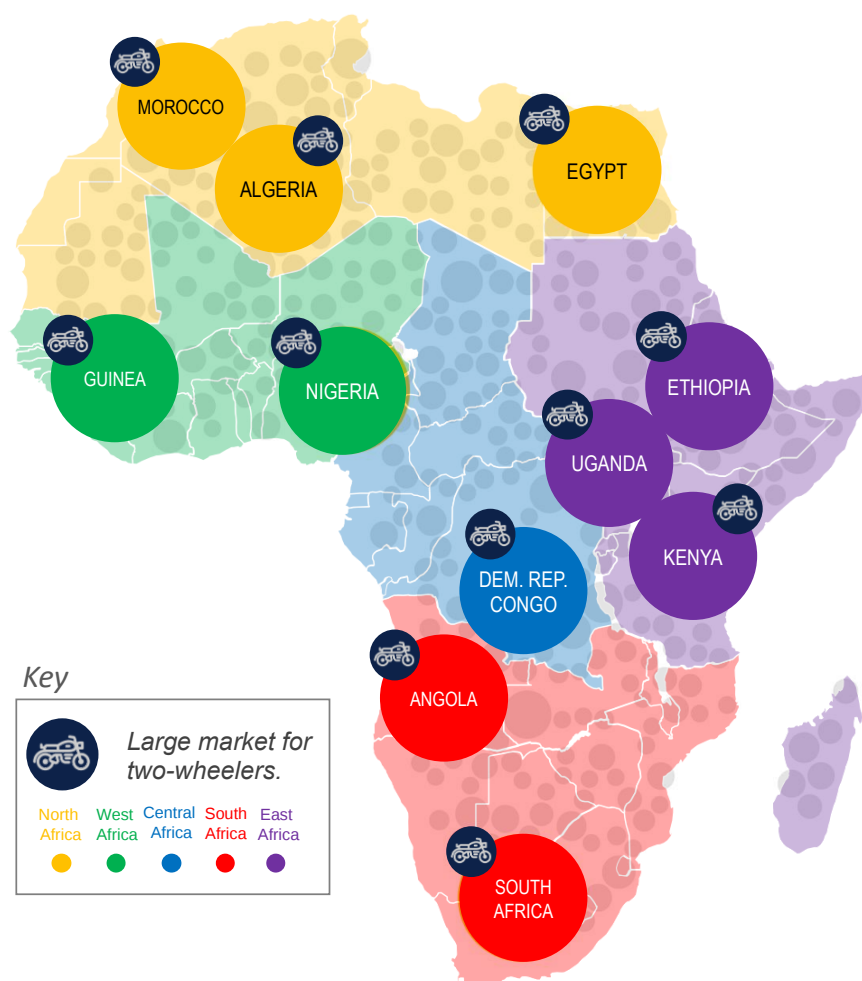


Figure 1: Largest two-wheeler markets in Africa by AU Region

While South Africa has been lagging compared to its counterparts, it sure is catching on very quickly. Its apartheid legacy spatial planning of urban and peri-urban (townships) contributed to very low adoption in the past few decades where there was assumed unsuitability of two-wheelers as a functional mode of transport for lower income groups. However, this has changed significantly in the past five years with the growth of the e-commerce market and need for faster last mile food delivery. Furthermore, in urban areas with dense traffic, two-wheelers are easier to manoeuvre. Perhaps this model will help diversify and provide sustainable transport solutions for moving people and goods.

Origins of the two-wheeler in Africa

It was in the 1960's that Kenya, Tanzania, Burundi, Rwanda and Uganda saw the birth of the Boda Boda, a modified bicycle to transport people to and from borders for commercial purposes. Designed to carry weights of over 250kg¹, these bicycles were and still are a modal choice for a fast journey over poor road infrastructure. The class A motorbike entered the East African market in the early 1980's after it had already made some headway in West Africa in the 1970's.

¹ Cushions or racks are added to the back of the bicycle to create room for passengers or balance heavy loads such as cement bags.

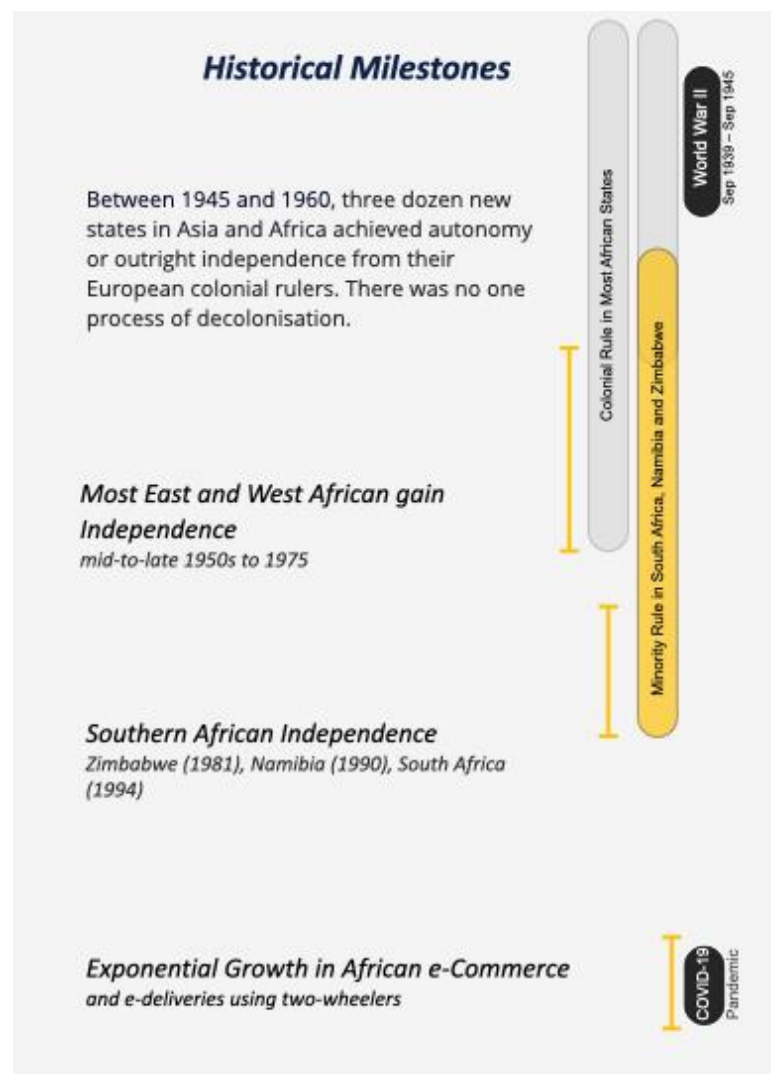


Figure 2: A Timeline of Mobility Trends in African Cities



The period between 1970 and 1980 saw rapid urbanisation and inadequate intracity mobility in both East and West Africa which created a demand for readily available, cheap transportation means, which could easily manoeuvre poor and narrow road infrastructure. An informal transportation market operated by mostly unemployed boomed.

Southern Africa was very late to the two-wheeler wave. It saw a slow adoption due to a mixed bag of influences. In South Africa, the apartheid transport policies, systems, and spatial planning, saw sophisticated public transport in white urban areas while those living in the periphery depended on government-controlled busses and trains to commute. South Africa's neighbours borrowed from this disinterest in two-wheelers.

From the early 2000 to 2010, countries in east and west Africa reported growth of up to 40%² in their respective markets, further cementing the two-wheeler as a dominant mode of last mile commercial transport. Despite the challenges of regulation and policy inclusion, this mode continued to thrive, often referred to as the necessary nuisance.

Technology innovations such as SafeBoda³, sought opportunity in driving innovation in this informal mode of transport. However, post the Covid-19 pandemic this platform has had to pull operations in both Nigeria and Kenya, sighting challenges with sustainability of their operating model in those economic environments.

Growth in the two-wheeler market in Southern Africa can be directly attributed to the emergence of last mile food delivery. South Africa's two-wheeler market is unique compared to east and west Africa. Largely anchored on e-commerce platforms there is an undisputed dependency. As e-commerce grows in Sub-Saharan Africa so does the two-wheeler market. The use of innovative platform technologies to manage, track and settle payments for operators are key characteristics. One can argue that while acceptance and adoption of the two-wheeler was slow over the past few decades perhaps the South African market's growth will display a lot more sophistication and rapid growth of e-motorcycles compared to east and west Africa.

It is important to note that smaller more efficient modes of transport in the African context do not follow the traditional logic for transport planning. This is a known fact amongst transport practitioners in the continent. Informal mobility solutions often grow exponentially outside of the ambit of planning and regulation. Filling the gap for missed mobility needs, these solutions become a runaway train, where regulation chases.

An established market

Four decades ago, the two-wheeler market was significantly small in Africa, albeit growing steadily in East and West Africa. Today with various conflicting reports, the market is an estimated USD 3 billion and is expected to reach USD 5 billion by 2027. These conflicting reports are due to a lack of concise data and informality in some of the largest markets within the continent. Nigeria is by far the largest market, in second place Egypt and surprisingly South Africa comes in at third place according to TechSci Research, 2022.

What is undisputed is the fact that the Southern Africa market is significantly smaller compared to that of East and West Africa. The African market is still dominated by combustion engines

² Research for Community Access Partnership (2014) – Conducted a comparative study across the African continent.

³ A Ugandan Tech Startup, launched its super e-hailing start up in 2017, with expansion to Nigeria, Kenya, etc.



produced by Japanese brands such as Yamaha, Suzuki and Honda, followed closely by Indian brands TVS and Bajaj⁴. Chinese models have also gained some market share although small.

The African e-commerce boom coupled with louder environmental concerns, has created ground for rising demand in energy efficient two-wheelers. From electric bicycles to e-motorcycles and e-scooters, market significance is growing. New manufacturers have entered this very competitive market, as the continent is making a steady transition from combustion engines. However, this does not come without challenges. According to PREO⁵, there are some major challenges:

1. More than 90% of electric two-wheelers available in the market are Chinese brands which are not built for the African environment.
2. Access to electricity is estimated at 48%, which makes it impossible to fully support a stable charging network.
3. Price parity - Electric vehicles are normally priced at double the price of combustion engines. With operators already facing the challenge of financing, the market leader who will drive adoption of electric two-wheelers will surely have competitive pricing.

Is the African market ready for e-micromobility?

With a population of 1.3 billion, 60 % of which is under the age of 25, Africa is still growing. Rapid urbanisation is a catalyst for efficient and affordable modes of transport as a service.

Straddling between both formal and informal economy, the African two-wheeler market is a critical economic contributor. Asset acquisition and running costs sit in the formal economy, while revenue generation is largely in the informal economy. With many African countries battling the youth unemployment challenge, perhaps here lies the opportunity to create employment and drive innovation in this already thriving market.

Affordability

Access to financing has always been a challenge for informal mobility providers across the globe. Some African Governments have become creative, using policy instruments, incentives and being deliberate about attracting investment towards the establishment of manufacturing industries. The attractiveness of Government incentives has contributed to the exponential growth of the two-wheeler market in some East African countries. While these incentives drive two-wheeler prices down, they also reduce barriers to entry significantly. Countries like Kenya have introduced tax waivers on the production localisation⁶ and on import taxes. These initiatives are targeted at attracting and growing robust manufacturing activity compared to importing the fully assembled two-wheelers and have resulted in Kenya growing its two-wheeler fleet from a mere 100 000 in 2007 to over 700 000 to date.

The price point for an entry level combustion engine Class A two-wheeler has decreased from UDS 2000 in the 1990's to as little as USD 420⁷, making it affordable for individual operators.

⁴ TechSci Research, 2022

⁵ Powering Renewable Energy Opportunities (PREO), 2022

⁶ In 2007 Kenya introduced a waiver on both import tax and completely knocked down (CKD) parts for Boda Bodas

⁷ Starkey 2016 ; McCamel & Mtanga 2019 – a mass market was created between 2007 and 2010 specifically



Given the significant reduction in operational costs such as fuel, the energy efficient two-wheeler should make for competitive pricing.

While many Governments in Africa have not created policies and tangible incentives to drive the market towards energy efficient micromobility, the sad truth is the combustion market will continue to thrive.

Sustainability

Creating an ecosystem that captures resources and capabilities of multiple players in the market is what creates sustainable and efficient transport systems. Energy efficient mobility is no different. No one single entity (private or government lead) will be able to provide a self-sustaining market entirely alone. While Government's primary focus is creating favourable policy conditions, entrepreneurs should focus on building thriving industry and making sizeable investment towards manufacturing, infrastructure, and battery solutions. According to PREO, this sustainability ecosystem has three critical tenants. These include:

1. Efficient production of durable electric two-wheelers

Many emerging start-ups in Southern Africa are reliant on complete Knock-down (CKD) or fully assembled unit imports. East Africa has established a thriving manufacture and assembly market, in which Kenya leads with over 20 different entities. Growing local manufacture ensures customization, of these electric two-wheelers, and ensures that they are built for the rough African terrain.

2. Reliable and dense charging infrastructure

Off-grid energy solutions that are publicly available have not gained the necessary momentum in Africa at large. Southern Africa has made some headway in diesel generator powered grid power and is a less viable option given the unsustainable carbon emissions. Solar Home Systems (SHS) are unaffordable and only provide a small fraction of the energy required. That use on-site solar PV is perhaps the more sustainable solution for scaling battery charging and swapping infrastructure for two-wheelers. The absence of extensive investment in this sector is the biggest challenge.

3. High- Quality Batteries for Low-Volume African buyers

Large volume global players enjoy the benefit of accessing quality batteries from European suppliers, while Africa contend with this barrier. Low quality batteries do not provide the reliable range and performance thus, two-wheeler operators will always gravitate towards ICE model two-wheelers. Again, investment into the establishment of a sustainable battery market is a prerequisite to driving electric two-wheeler adoption.

A just energy transition for the African two-wheeler market - Context matters

Transitioning from combustion to electric becomes a lot more complex in the African context. Socio- economic factors such as unemployment, poverty, and poorly developed infrastructure, require a unique approach that is empathetic to current condition and is not driven by the excitement of new innovations.

Reality VS the Ideal

While Africa battles it's 3 most wicked challenges, the pressure for the reduction of carbon emissions is becoming the fourth. Many solutions directed at African mobility fail before they



take-off, mainly because they do not consider the real needs of the people. Mobility solutions should be centred around people, thus should be fit for purpose. This is evident in how the two-wheeler or even the Mini-bus Taxi has become the backbone of most transport services in the African Continent. Will an electric two-wheeler deliver the service a combustion engine provides in rural KwaZulu Natal or the outskirts of Lagos? That's but one of the questions transport planners should be asking.

Inclusivity

Transport planning in Africa is synonymous with exclusionary solutions that further drive inequality or are simply just not fit for purpose. While innovation and technology should enhance efficiencies of an existing mobility as a service solution. Creating an entirely new market with new operators is not only disastrous but dangerous as well. One only must look at recent history when uber entered the African market.

Adoption or lack thereof, poor infrastructure, unsophisticated transport systems, informal markets with little to no regulation, spatial planning and urban densification, unreliable energy sources and scanty government funding are just some of the most wicked shortcomings of the African mobility context. The approach to solutions that are impactful should always be mindful of these. As Africa redefines and redesigns the way people move their things, perhaps the approach should be focused on creating efficiencies and innovation of what works for Africa.

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