

COUNTRY REPORT



# Barriers to E-Mobility

TANZANIA – March 2023



A F R I C A  
E-MOBILITY  
A L L I A N C E

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## Acronyms

TBS	Tanzania Bureau of Standards
TRA	Tanzania Revenue Authority
LATRA	Land Transport Regulatory Authority
TANESCO	Tanzania Electricity Supply Company
DIT	Dar es Salaam Institute of Technology
EWURA	Energy and Water Utilities Regulatory Authority
UEMI	Urban Electric Mobility Initiative
UNEP	United Nations Environment Programme

## Terminology

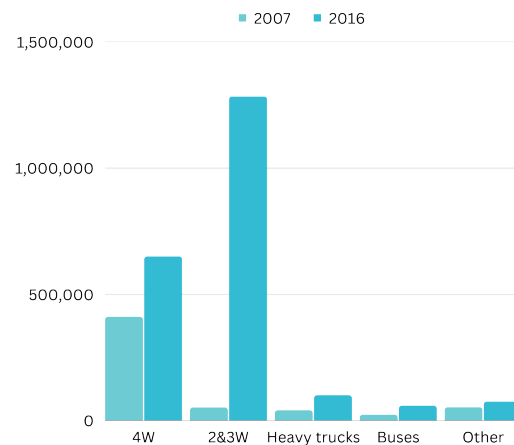
ICE	Internal combustion engine
EV	Electric vehicle
Li-On	Lithium-ion
LFP	Lithium-iron phosphate
NMC	Nickel magnesium cobalt

# Barriers to E-Mobility in Tanzania

## Executive Summary

After decades of global stagnation, transportation systems are undergoing massive change, with the introduction of electric vehicles (EVs) at the forefront. Electric mobility has been shown to have a wide range of positive impacts on the economy and society. Transitioning from internal combustion engine (ICE) vehicles to EVs will reduce or eliminate local air pollutants and save tens of thousands of lives. They will enable Tanzania to meet its nationally determined contributions (NDCs) to the global fight against climate change. And they will save Tanzanian drivers money on fuel and maintenance, reducing foreign exchange losses to oil imports and boosting the domestic economy. Over the past ten years the global electric vehicle market has boomed, with Asian manufacturing, lower costs of consumer demand, and political support expanding the options, quality and number of EVs.

In Tanzania, the number of vehicles in Tanzania has quadrupled, with the number of two- and three-wheelers significantly increasing in recent years to 1.2 million in 2016. With over 5,000 EVs estimated on the road, Tanzania has the largest number of EV than all EV in East Africa combined. Over the last few years, at least ten companies have entered the e-mobility industry market in Tanzania. They see significant opportunities in the relatively open field and large ICE fleet.



*Vehicle fleet in Tanzania, 2007-2016*

The case study of Piki, a food delivery service that has successfully deployed electric mopeds driven by women and students, exemplifies the demand and opportunities for affordable and reliable EV2W suppliers. However, the industry faces a number of barriers slowing adoption, including high import taxes, unclear government policy,

limited funding, too few technicians, low electricity grid access, and limited consumer knowledge.

As electric vehicles are primarily imported, distributed, and serviced by private sector actors, and the business is capital-intensive, there is a need for a significant increase in funding in the sector. This includes grant money for research and development and small pilots, high-risk equity funding, and debt financing provided by vehicle asset financiers, traditional banks, or infrastructure lenders. Yet Tanzanian e-mobility companies have raised only a little over \$1 million so far, compared to over \$5 million in Uganda and \$50 million in Kenya, restraining the ability of startups to serve the Tanzanian market.

Electric vehicles are a new technology, and as such have yet to be fully understood by customs agents, standards officials, and policy makers. In some cases policies are unclear and in others they are being applied haphazardly. E-mobility startups report a wide range of experiences with government regulation: some have had no issues with registration but are paying over 50% taxes on their imports, while others are unable to register their vehicles, get license plates, or insurance. There is a need for clarity from the government on policy, and a roadmap for adoption.

Finally, customer awareness, technical capacity, investor interest, and public policy all require functional ecosystem actors such as associations, civil society, and individual experts to conduct research on e-mobility and its potential in Tanzania. Together, the e-mobility ecosystem in Tanzania can thrive.



**Funders** to expand financing in the Tanzanian e-mobility ecosystem



**Government** to provide regulatory clarity and a roadmap to e-mobility



**Ecosystem actors** to conduct research, improve awareness & capacity

# Acknowledgements

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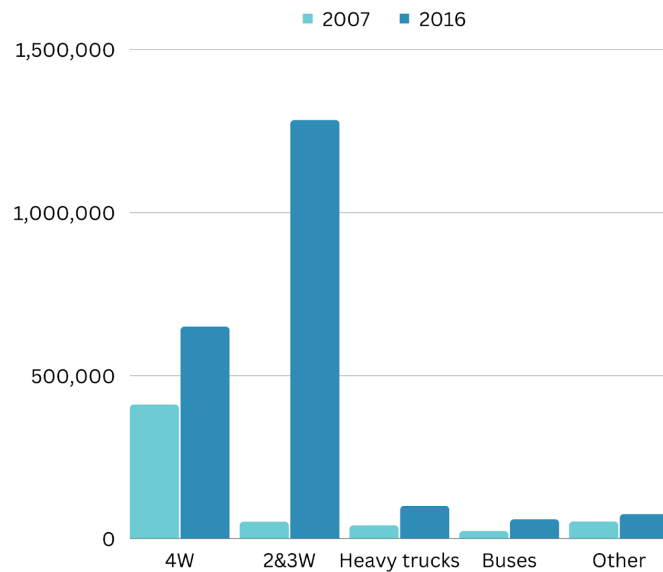
Our contributors: Tanzania Bureau of Standards (TBS), Dar es Salaam Rapid Transit (DART) and Tanzania Electricity Supply Company (TANESCO) were generous with their time and very helpful in explaining the national government's perspective and work in this area. Entrepreneurs at eMo Bodaboda, Auto-Truck Tanzania, SESCOM, Tri, Greenfoot, E-Motion, and Piki held valuable insights on the e-mobility landscape for private sector companies in Tanzania. In addition, the Tanzania Renewable Energy Association (TAREA), EUTech, and Institute for Transportation and Development Policy (ITDP) helped us understand the wider green transition ecosystem in Tanzania.

This report is part of a two-part series in collaboration with UN-Habitat & the Urban Electric Mobility Initiative (UEMI) on the barriers to and policies for electric mobility in Tanzania. This first report is on the barriers to e-mobility in Tanzania and was led by the Africa E-Mobility Alliance (AfEMA), and supported by UNH/UEMI. The next upcoming report is on the policies for e-mobility in Tanzania and is supported by AfEMA.



# I. Introduction

Vehicle numbers in Tanzania have exploded over the past 20 years, quadrupling from 2007 to 2016.<sup>1</sup> There has been a steady increase in the number of two- and three-wheelers (motorcycles and tuktuks) throughout Tanzania, and they have now become a common sight on the streets. In 2007, there were a mere 52,015 2&3W registered in Tanzania, but this exploded to 1,282,503 by 2016, accounting for 59% of all registered vehicles in the nation.<sup>2</sup>



In the same time, Tanzania has added significant gas-powered generation to the electricity grid, which has enabled the expansion of the grid to nearly triple electricity access between 2010 and 2020.<sup>3</sup> However, this has made the previously hydro-dominated grid dirtier.

Globally, the electric car stock surpassed 10 million in 2020, marking a 43% increase over 2019 and representing a 1% share.<sup>4</sup> Battery electric vehicles (BEVs) comprised two-thirds of new electric car registrations and the total stock, with China having the largest fleet and Europe experiencing the largest annual increase to reach 3.2 million.<sup>5</sup> Electric two- and three-wheeler vehicles have expanded much faster globally, and there are already over 250 million on the roads, primarily in Asia.<sup>6</sup> With dropping costs for these vehicles, Tanzanian entrepreneurs have begun importing electric vehicles or converting existing vehicles to electric over the last few years - yet it remains a very young industry.

A variety of barriers continue to face the industry, from high import taxes and unclear registration processes to a lack of funding options or knowledge from consumers.

This report seeks to describe these barriers primarily from the view of the private sector actors who have been pushing the e-mobility agenda forward in Tanzania, to point us in the direction of better policy and a more supportive e-mobility ecosystem in Tanzania. First, however, we must understand the current state of transportation in Tanzania.

## Transportation in Tanzania

### *Motorcycles and Mopeds (2W)*

There are no current updated public statistics on the number of motorcycles in Tanzania, but the fleet of two- and three-wheelers was recently estimated at 1.5 million in 2020.<sup>7</sup> Reasonable estimates would place motorcycles at  $\frac{1}{3}$  to  $\frac{2}{3}$  of those, or 500,000 to one million motorcycles in Tanzania today.<sup>8</sup>

The story of motorcycles in Tanzania today is one of boda bodas, the ubiquitous motorcycle-taxis that can be found everywhere from downtown Dar es Salaam to remote villages on the edge of Lake Tanganyika. While there have been motorcycles used for personal transportation in Tanzania since the introduction of motor vehicles over a century ago, they were relatively few in number until the rapid growth of boda bodas, starting from around 2010.<sup>9</sup>

Boda bodas, which now make up at least 90% of motorcycles in Tanzania, play a key role in moving passengers and goods in cities, towns, and villages.<sup>10</sup> They move people on rough roads and muddy paths, and through narrow alleyways and tight traffic jams. Boda bodas have made up for where daladalas (minibuses) cannot reach in Tanzania, or where they cannot reach on time. The vast majority operate offline, picking up customers at the *kijiwe* (stage) or while roaming around, but some have joined ride hailing apps including Uber, Bolt, Piki, Nibebe and others. They can carry anywhere from one to four passengers, and loads as diverse as a restaurant meal to an entire bed.



There are currently at least five companies providing electric motorcycles in Tanzania: eMo Bodaboda, Greenfoot, Sinoray and Linkall. They serve boda bodas, personal users, and delivery drivers, and operate in both Dar es Salaam and Arusha.

### *Bajajis & Gutas (3W)*

Bajajis and gutas - known elsewhere as tuktuks and cargo tuktuks respectively - make up the other 500,000 to one million two- and three-wheelers on Tanzanian roads.<sup>11,12</sup> Similar to motorcycles, there have always been a few odd three-wheelers in Tanzania, but their numbers have grown exponentially over the last ten years. In many cases, they came in just one or two years after boda bodas, and have muscled in to fill the gap between walking and daladalas.



*Guta, 3W cargo vehicle*



*Bajaji, 3W passenger vehicle*

Bajajis play a unique role in transportation in Tanzania, as they provide both arterial service and door-to-door transport. Bajajis seating capacity is regulated by LATRA to be less than or equal to four people including the driver. However, some bajajis with a 'special purpose' such as Bajaj Maxima are allowed to operate.<sup>13</sup> Arterial trips can move up to 3 passengers on average on a defined route for a fare compared to that of a daladala. Door-to-door trips can be more expensive, particularly if they are carrying fewer passengers. A single bajaji moves an estimate of 108 km to 136 km per day.<sup>14</sup>

Gutas, on the other hand, are cargo tuktuks, which typically have open truck beds in the back to carry a variety of goods. They are less common than bajajis in much of the country, but are plentiful in market areas.

There are at least two companies currently providing electric three-wheelers in Tanzania - Tri and Sinoray - with Auto Truck, SESCOM, and Elico on the edge of entering the market.

### *Passenger Cars*

Passenger cars are estimated at around 650,000 in Tanzania.<sup>15</sup> They are used for personal transportation and owned as fleets for utilities, NGOs, tour companies and businesses. They are more commonly found in larger cities and higher-income neighborhoods.

There are two companies providing electric four-wheelers in Tanzania: E-Motion and Kaypee Motors. E-Motion has focused on the tourism sector, using previous experience from parent company Hanspaul Ltd in assembling open-top safari vehicles to retrofit and manufacture electric versions for high-end safaris.<sup>16</sup> Kaypee Motors, on the other hand, has piloted a small electric flat-bed truck in Dar es Salaam.<sup>17</sup>

### *Buses*

Buses in Tanzania range from the very common daladala to the state-owned rapid transit buses. There are around 60,000 buses in Tanzania.<sup>18</sup> Even though some local players such as E-motion Africa<sup>19</sup> that have shown interest to retrofit ICE buses, there are currently no known electric bus providers in Tanzania unlike in neighboring countries where BasiGo has been providing BYD e-buses and Kira Motors in Uganda.

# Overview of EV Market Actors

## Companies

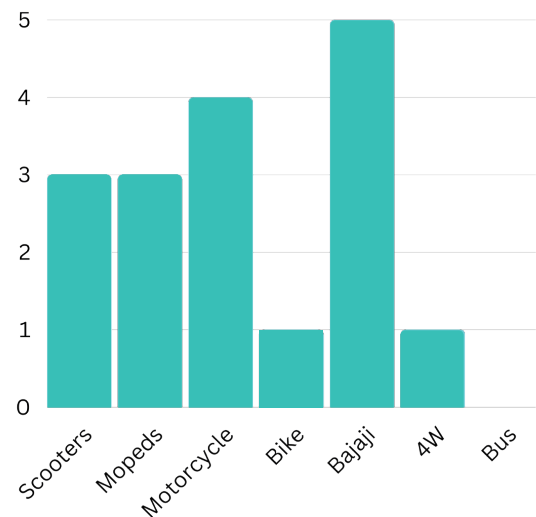


A list of e-mobility companies in Tanzania

As of February 2023, there were at least ten companies involved in importing, selling, retrofitting, servicing, or charging electric vehicles in Tanzania. The most common model is to import, distribute, and service the vehicles, but several are looking into building charging solutions in order to ensure accessible charging for customers. Furthermore, discussions with regional companies and interested parties reveal

significant interest in the Tanzanian market and signal the likelihood of several new entrants to the market.

Startups report the Tanzanian market as attractive for two primary reasons: the size of the market, and the relative lack of competition.<sup>20</sup> This lines up with the relative size of the market: Tanzania is the largest country by population and area in East Africa, while the more than two million vehicles on the road are being serviced by less than a dozen companies - all relatively young - pushing to transition them to e-mobility.



Vehicle type for e-mobility companies in Tanzania

## Fleet Ownership and Engagement

There were also a handful of companies in related fields that were increasingly involved in e-mobility in Tanzania, primarily through owning small fleets. Amongst these, Piki is likely the most active and interesting case study.



## **Piki: Electrifying a Delivery Fleet**

Piki is a food delivery service in Dar es Salaam, founded in December 2019 by Zadok Prescott and Emanuel Charles. With a fleet of over 120 motorcycles, Piki began by recruiting regular boda boda riders in Dar es Salaam, who are almost exclusively male. However, they found that these drivers, accustomed to informal business practices, had difficulties adapting to a formal company. To increase driver earnings while reducing costs, Piki implemented measures such as reducing fuel and maintenance expenses, rather than relying on heavy subsidies commonly used by other ride-hailing and delivery startups.

As a measure to reduce operational cost, Piki took a unique approach of hiring women and students with no experience driving 2W and outfitting them with electric mopeds, which are easier to drive and less expensive to maintain. Piki provides a two-week training program that covers both driving and customer service, and also geofences the EV2W users to nearby locations due to their limited range.

The approach has been very successful; with 22 women drivers on the road, Piki is the only known company with female drivers, and is doing it with very little outside funding or backing. However, Piki is highly resource-constrained, and faces a very limited range of EV2W suppliers in Tanzania. The mopeds reliance on lead-acid batteries, in particular, is a significant downside; while the mopeds are sold for the relatively affordable price of 1,500,000 TZS (\$645), the batteries have a short lifespan, and must be replaced at a cost of 420,000 TZS (\$185) annually - a cost that must be borne by Piki.

Piki would like to see a supply of affordable, sturdy, lithium-ion 2W in order to transition its entire fleet to electric, but has found that there is little available grant or debt capital to pay for this expansion.

## Government bodies

There are several sets of government bodies that are critical to the advancement of electric mobility in Tanzania: automobile registration, import taxation, standards, and electricity policy.

For vehicle registration, the Tanzania Revenue Authority (TRA) and the Land Transport Regulatory Authority (LATRA) work together to register, tax, and license vehicles in Tanzania. LATRA registers and licenses all commercial vehicles while TRA registers all imported vehicles regardless of their intended use: commercial or private use.



Electricity in Tanzania is primarily generated, distributed, and sold by the Tanzania Electricity Supply Company (TANESCO), which is regulated by Energy and Water Utilities Regulatory Authority (EWURA), under the Ministry of Energy and Minerals.

Finally, the Tanzania Bureau of Standards (TBS) stands behind both organizations, setting the standards for imported and modified (including ICE to EV converted) vehicles as well as for electricity. However, they have limited powers of enforcement.<sup>21</sup>

## Supporting institutions

There are a few, slowly growing numbers of supporting institutions in Tanzania. The SOLUTIONSPlus coalition has brought UN-Habitat, UNEP, ITDP, UEMI, and DART to the table, and has financially supported two organizations to enter the e-bajaji sector (SESCOM and Auto-Truck) in Tanzania, and one German-Uganda partnership to provide pedal-assist electric bicycles for urban deliveries (EURIST/FABIO). Related organizations that AfEMA spoke with, including GIZ, Amend, and Transaid, indicated plans to enter a supporting role for the sector, but had yet to roll out concrete plans in Tanzania.

## II. Barriers and Solutions for E-Mobility in Tanzania

### Regulatory landscape

#### *Policies*

The lack of relevant policy is seen as a clear drag on the sector by e-mobility startups in Tanzania. Even though the Nationally Determined Contributions 2021 encourages the use of renewable energy in transportation systems, there are currently no specific incentives for the import, manufacturing, assembly, or purchase of electric vehicles in Tanzania.<sup>22</sup> This means that cleaner technologies are having to compete directly with polluting fossil fuel vehicles. There is also a need for more clarity from and within government bodies on the policy related to electric vehicles in Tanzania, as well as increased coordination between government bodies on matters related to e-mobility.

#### *Registration*

The existing registration application for motor vehicles by TRA permits the registration of both traditional Internal Combustion Engine (ICE) vehicles and electric vehicles.<sup>23</sup> However, in interviews with stakeholders in the electric vehicle industry some expressed concerns that the current TRA vehicle registration process does not accommodate EV registration which is not correct. Given that TRA already has a Taxpayers Education department that educates taxpayers on tax-related processes and policies, it would be beneficial to the public if they also provide education on EV-related matters.

#### *Policymakers awareness, clarity & enforcement*

Conversations with private sector actors revealed a struggle to understand government policy and collaboration between government bodies. A case in point is around TRA vehicle registration.



Critically, there is no clear lead on EV policy within the Tanzanian government, making it difficult for EV entrepreneurs to know where to start. When asked to identify the lead government body, six private companies pointed to four different ministries: the Ministry of Works and Transport, Ministry of Energy, Ministry of Finance, and Ministry of Trade and Commerce. This leads to a wide variety of outcomes for the same issues. For example, when dealing with registration issues, EV companies reported dealing variably with regional police commanders, TRA, or local police. This can lead to different rules for different players, which in turn can foster resentment or the belief that certain players receive special treatment.

## Standards

As of the time of writing this report in January 2023, there were no standards for electric mobility, EV charging or related products and processes in Tanzania. The Tanzania Bureau of Standards (TBS) typically reviews international standards such as the International Organization for Standardization (ISO) and adopts or adapts those where necessary for the Tanzanian context. Relevant ISO standards in this context would be ISO 13062, which establishes the terminology for electric two-wheelers, as well as ISO 13063 and ISO 13064 which lay out safety specifications and performance respectively.<sup>24</sup>

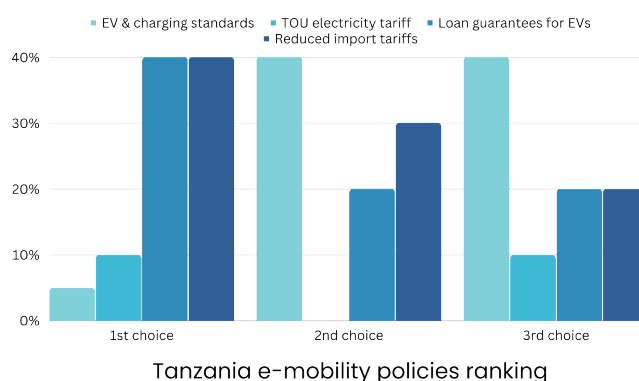


Commonly adopted standards for electric cars

While the lack of existing standards does not prevent importation or sales per se, it means the only bar set for quality is that of the exporting country, in the case of imports. The lack of quality guardrails sets up the possibility of subpar electric vehicle models to undermine and ruin the reputation of electric vehicles in the country. Private sector players expressed a desire for the adoption of standards for the industry, and it was ranked as the most important non-fiscal policy that the government could implement to support the industry.

### Importation issues

Currently, import taxes for 4W – including import duty, VAT, excise duty and others – can reach up to 100% of the value of the imported vehicles, making electric vehicles much less affordable to average Tanzanians.<sup>25</sup> According to industry data gathered by SolutionPlus from different companies in Tanzania, for ICE or electric 3Ws imported SKD import tax is about 46.7% (25% import duty, 18% VAT, 0.6% CPF, 1.5% RDL, 1.6% wharfage)<sup>26</sup>. Even though the East African Community (EAC) enables a duty remission scheme for CKD with an import duty rate reduced from 25 to 10% companies have reported not being able to access the CKD rate despite importing vehicles as such.<sup>27</sup> In addition, taxation on lithium-ion should be clarified: it is possible to get 0% import tax and 0% VAT if the batteries are declared as solar PV batteries, but it is unclear how to obtain these benefits for many companies.<sup>28</sup> These barriers could be addressed with clear communication from the government to the Tanzania Revenue Authority, among others.<sup>29</sup>

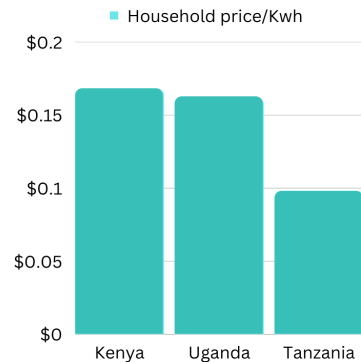


Along with providing loan guarantees for local banks for EV purchases, reducing import taxes were identified as having the greatest potential to boost the private sector by respondents, of whom 70% ranked this as their first or second highest policy priority.

# Electricity network

## Tariffs

Residential electricity tariffs in Tanzania are 220 TZS (\$0.10) per kWh, around half the price of that in neighboring Kenya and Uganda.<sup>30</sup> Considering frequent fossil fuel price fluctuations and lack of heavy fuel subsidies in Tanzania, transitioning to EVs can reduce energy expenditures. As a result, Tanzania is already in a stronger position to drive savings for EV owners and operators.



## Grid access

Currently, around 40% of Tanzanians have access to grid electricity.<sup>31</sup> However, Tanzania has very ambitious goals to electrify 75% of Tanzania by 2025 as part of its Vision 2025.<sup>32</sup> As in many countries, grid access is highest in cities and dwindles in rural areas. Similarly, vehicle density is highest in urban areas – thus the opportunity for EVs begins in Tanzanian cities.

Rural areas may need a combination of approaches to provide electricity for EVs, including grid extension and mini grids. While mini grids have in many ways fallen short of their promise and present a much more expensive alternative to the grid, as they are often around four to five times the cost of grid electricity, they can still play a role for rural fleets or in permanently off grid areas such as national parks. E-Motion, for example, who have been converting safari vehicles to electric, report that their customers almost universally charge their vehicles on site-specific mini grids.<sup>33</sup>

## Grid reliability

Grid reliability is notoriously difficult to measure, but it is a well-known need for e-mobility, as well as to improve productivity and healthy lives.<sup>34</sup> However, anecdotal reports and the increase in capacity on the grid seem to point to an improvement in

grid reliability over the past several years, in both Dar es Salaam and in the rest of the country.<sup>35</sup> This is a positive shift driven by the government, and it is one that will require sustained effort to support the rollout of clean mobility.

## Supply

For investors and those looking to procure electric vehicles within Tanzania, the lack of options is a significant constraint on market development. Of the known companies selling or manufacturing electric vehicles in Tanzania, only two claim to have sold more than a thousand vehicles, while the rest have all deployed less than thirty vehicles each. Companies are currently supplying electric scooters, mopeds, motorcycles, tuktuks, cargo tuktuks, pickups and safari vehicles, but there is as of yet no one known to be providing electric buses or passenger cars.

An open field creates opportunities for startups, but a lack of any clear market leader or companies strongly associated with Tanzanian e-mobility also provides a barrier to a wider understanding of the sector amongst investors.

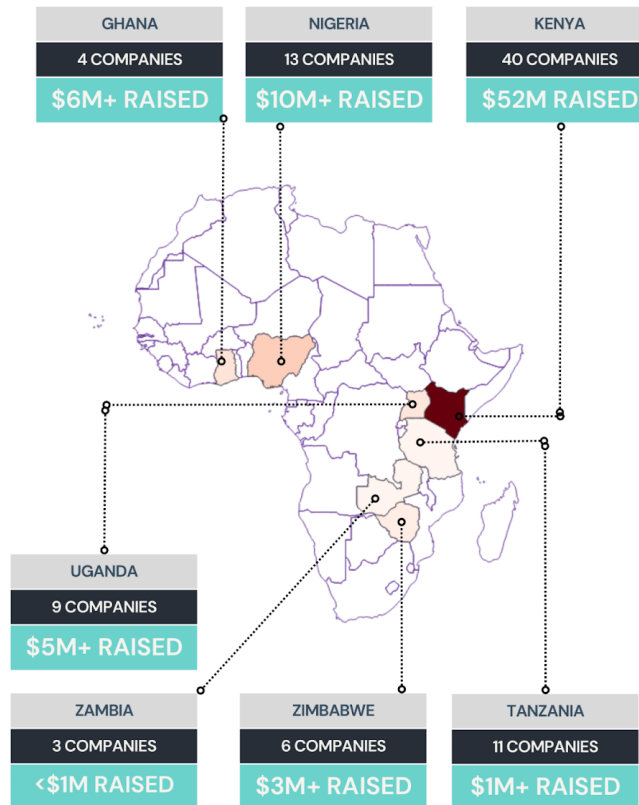
### *Product-Market Fit*

Though Asian manufacturing has been a huge boon to the transition to EVs, most manufacturers have not adapted their vehicles to the African context and use cases - intensive usage, high temperatures, and significant dust. While manufacturers are in the process of adjusting to serve African markets, market orders from Tanzania remain small in comparison to domestic Asian markets and thus are treated as lower priority by Asian manufacturers.

## Investment

E-mobility is a very capital-intensive business. Electric motorcycle startups in neighboring East African countries have faced a steep curve early on, requiring several million dollars to roll out bikes in the hundreds - however, this can then improve with scale. The lack of financing - be it grant, equity, or debt - comes up consistently in conversations with e-mobility companies in Tanzania. Yet very little investment has gone into the sector in Tanzania - of the ten companies in the sector,

only one is known to have raised more than \$500,000 from outside sources, with most having raised less than \$100,000. In total, e-mobility companies are estimated to have raised just around \$1 million dollars. This pales in comparison to the \$5 million in Uganda, or \$50 million in Kenya, which have comparable vehicle fleets ripe for replacement.



This can be seen especially in the types of funds raised by companies in Tanzania. Less than a quarter of the e-mobility companies operating in Tanzania report receiving any equity funding and only one company reported taking any debt financing. On the other hand, two-thirds of the e-mobility companies in Tanzania have relied only on founder bootstrapping and family & friends.

As recognized by multiple studies on the e-mobility sector across Africa, there is a need for mixed financing.<sup>36</sup> In early stage markets like Tanzania, there is a need for grant money for R&D and small pilots, and investor connections to provide high-risk equity funding. Following on from this, debt financing will be required; as provided by either vehicle asset financiers, traditional banks, or infrastructure lenders. Occasional

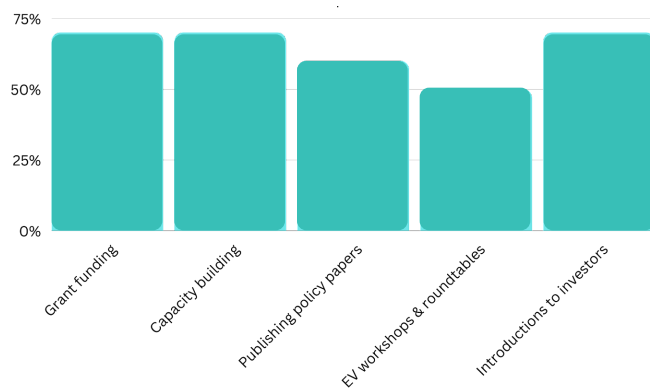
grant and equity injections for market expansion or new products will continue to be needed as companies scale up and offerings expand.

Organizations providing grant money for e-mobility in Tanzania so far are few and far in-between, but so far include UN-Habitat under the SOLUTIONSplus project and Siemens Stiftung. UN-Habitat has provided grants for two e-bajaji companies and one e-bike company to test out new electric vehicle models. This funding has primarily gone towards local entrepreneurs and for vehicle types with large fleets in Tanzania, which is a good start to help the Tanzanian ecosystem grow. Siemens has also provided grant money to Greenfoot.<sup>37</sup> However, much more is needed, as few other organizations have yet to release funding for e-mobility in Tanzania, and it pales in comparison to the more than \$3.1 and \$1.6 million in grants alone in each Kenya and Uganda.<sup>38</sup>

## Local Startup Ecosystem

### *Need for supportive institutions*

There are several key roles that can be played by NGOs: grant funding, investor introductions, policy publications, educational programs, and convening ecosystem events. Respondents rated these all as relatively high priority needs, indicating the startup ecosystem remains young. The mislabelling of startups as SMEs by the government was also considered an obstacle to e-mobility companies, as startups' funders invest in high-risk ventures seeking the prospect of outsized returns - compared to SMEs operating in traditional areas with more most growth profiles.<sup>39</sup>



E-mobility companies requested support from institutions

Industry players requested a wide range of support from institutions, including but not limited to grant funding, providing educational programs for the workforce,



publishing policy papers, convening workshops & roundtables, and introductions to investors. The desire for financial programs stood out, with grant funding and introductions to investors the most highly requested actions requested from NGOs, along with workforce education.

### *Need for an association*

Even though the Tanzania Startup Association (TSA) exists and is responsible to foster, nurture and enhance the startup ecosystem in Tanzania, there is a need to strengthen it and/or establish an e-mobility focused association in Tanzania that represents private sector companies and pushes the industry forward with supportive, smart regulation.

At the time of publishing, the Tanzania E-Mobility Association (TAEMA) was in process to be registered. Even though the association's registration is pending, it currently has an office, selected leadership, a constitution and 19 registered members. Such an association could be critical in working with the government to recognize the sector and implement supportive policy. This was backed up by the majority of interviewees, who noted that this should be the key mandate of any such association. Nevertheless, during the research, it became evident that unlike neighboring countries, e-mobility startups in Tanzania had limited discussions with potential institutional supporters and NGOs.

The experience of the Tanzania Renewable Energy Association (TAREA) is instructive. It played a key role in getting solar and wind products exempted from import duties and VAT in Tanzania in 2005.<sup>40</sup> A close relationship between TAREA and the newly formed Tanzania E-mobility Association may be helpful in implementing e-mobility supportive policies.

## Technical capacity

Compared to other barriers to e-mobility in Tanzania, technical capacity and knowledge in the local workforce was considered a less important barrier. Regardless, 70% of respondents noted it as being a very important barrier to e-mobility. There are few programs teaching e-mobility skills in Tanzania, and

startups such as E-Motion, Auto-Truck and others have been heavily involved in improving engineering skills and local capacity by partnering with local universities.

One of the first training programs in Tanzania is a joint program between Auto-Truck and the engineering department at the Dar es Salaam Institution of Technology (DIT).<sup>41</sup> Auto-Truck has been retrofitting tuktuks to be fully electric. Through their partnership with DIT, they have access to workshop space and student interns from the engineering department at DIT. Professor Gerutu Bosinge leads students from the university in retrofitting the vehicles, giving them rare hands-on experience in the sector. Around 70 students from the engineering department have participated either as interns or as part-time assistants, building a new generation of e-mobility experts in Tanzania. DIT is working towards becoming a key node in the EV ecosystem in Tanzania, and is also hosting an assembly workshop for e-bicycles.

In addition, Arusha Technical College is a board member of E-Motion, and has been providing technical input to the organization. E-Motion has in return hosted visitations and training of ATC students.<sup>42</sup>

## Consumer awareness

Consumer awareness was rated by 75% of private sector companies as low or very low. This is unsurprising, as the industry remains young - yet Tanzania has a larger operating fleet than some neighboring countries. Most companies have engaged in little publicity, and there has been little to no direct effort from government or institutions. Direct engagement by the government, and inclusion in government officials' addresses and broadcasts to the nation could go a long way to address this.<sup>43</sup>

### III. Recommendations

To accelerate the rollout of e-mobility in Tanzania, it is clear that there is a need to address three major barriers: a lack of supportive policy, a dearth of financing options for startups, and a weak supporting ecosystem.



Supportive e-mobility policy is needed in several key areas, including clarity from the government on registration policies, EV standards, and import taxation. Registration policies for all electric vehicle modes are needed to ensure that companies are facing the same streamlined system. EV standards will help to ensure quality products in the market, and to build consumer and government trust in electric vehicles. And finally, import taxes should be lowered on EVs to help bring them to parity with fossil fuel vehicles, such as by reducing import duty and VAT.



Tanzanian e-mobility firms require all kinds of financing options, starting first and foremost with grant money for piloting small vehicle fleets. International donors should step up to provide grant money in the range of \$50,000 to \$250,000 to cover small fleets, demonstrate a business model, and help companies become investment-ready. Introductions and advocacy for the Tanzanian e-mobility ecosystem can also help encourage venture capital firms to invest in equity. Finally, debt from larger financiers such as GuarantCo or asset financiers like Watu will follow the flow and growth of Tanzanian e-mobility efforts.



The registration of the Tanzania E-mobility Association is a good step and hopefully will help to support industry players, pushes for policy, and convenes sector-wide discussions. Working hand-in-hand with NGOs such as GIZ, Solutions Plus and others, an e-mobility focused association can help improve the policy environment, spark collaborations, and help spread the good news of e-mobility in Tanzania.

## IV. Endnotes

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