BICYCLE MOBILITY IN SUB-SAHARAN AFRICA: A MARKET SYSTEM INVESTIGATION INTO DEMAND AND USE

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ABSTRACT

Throughout Sub-Saharan Africa (SSA), a well-functioning bicycle market system would significantly improve the lives of the large numbers of people who struggle to travel to health services, education, economic opportunities, and basic social services, community or religious events, because of limited access to motorised transport. Research into the use of bicycles as a mode of transport in SSA typically considers either (i) the 'demand' side of a bicycle market system – barriers and challenges to increased individual use, from a cost, road safety, acceptability, capability, and preference perspective or (ii) the enabling environment – infrastructure and policy gaps. This research instead takes an entire bicycle market system approach, which considers the enabling environment, demand factors, supply, and supporting services and systems. Key to the market systems approach is understanding why the market fails to meet the needs of the vulnerable, and developing appropriate market interventions. This paper shares market system research conducted for the Bicycles for Growth project in two Southern Africa countries (Malawi and Zambia) and for comparative purposes also presents findings from Ghana, Rwanda, and Uganda. Key findings are that the bicycle market system across SSA is weak, and that the robust demand for bicycles is not met by similarly robust systems or supply-side 'pillars' of a market system. Access to bicycle financing, policy support and commitment, supportive import taxation regimes, supplier/retailer feedback systems, and strong advocacy networks, are particular weaknesses in the overall system.

1. INTRODUCTION

Throughout Sub-Saharan Africa (SSA), a well-functioning bicycle market system would significantly improve the lives of people who struggle to access health services, education, economic opportunities, and basic social services, community or religious events, because of limited mobility. In rural and to lesser extent urban SSA, most people travel by walking, and the distances to destinations are long – sometimes between 5-15 km or more. Individuals try to make travel easier, by boarding their children at school so they do not have to travel, by taking public transport part-way, or by selling produce below market value to find money for emergency transport fares. Many times, people simply do not travel, and miss important events and opportunities (Porter, Abane & Lucas, 2020; Sambu, Jennings & Myers, 2023).

Bicycles can help people move more easily, travel further distances, save time and costs, and improve their livelihoods and life potential. Cycling is affordable, accessible, door-to-door and efficient compared to both walking and public transport (Nkurunziza *et al.*, 2012; Acheampong, 2016; Irlam & Zuidgeest, 2018; Ardizzi *et al.*, 2021; UNHABITAT & Walk 21,

2021). Bicycles can also contribute to low-carbon and inclusive economic growth and improve development outcomes (Jennings, 2021b).

This paper shares findings from market system research conducted for the Bicycles for Growth (BFG) project in Malawi, Ghana, Rwanda, Uganda, and Zambia. BFG is a five-year USAID-funded initiative that aims to reduce poverty by improving sustainable uptake of affordable, fit-for-purpose bicycles in SSA.

2. RESEARCH APPROACH

2.1 Conceptual Framework

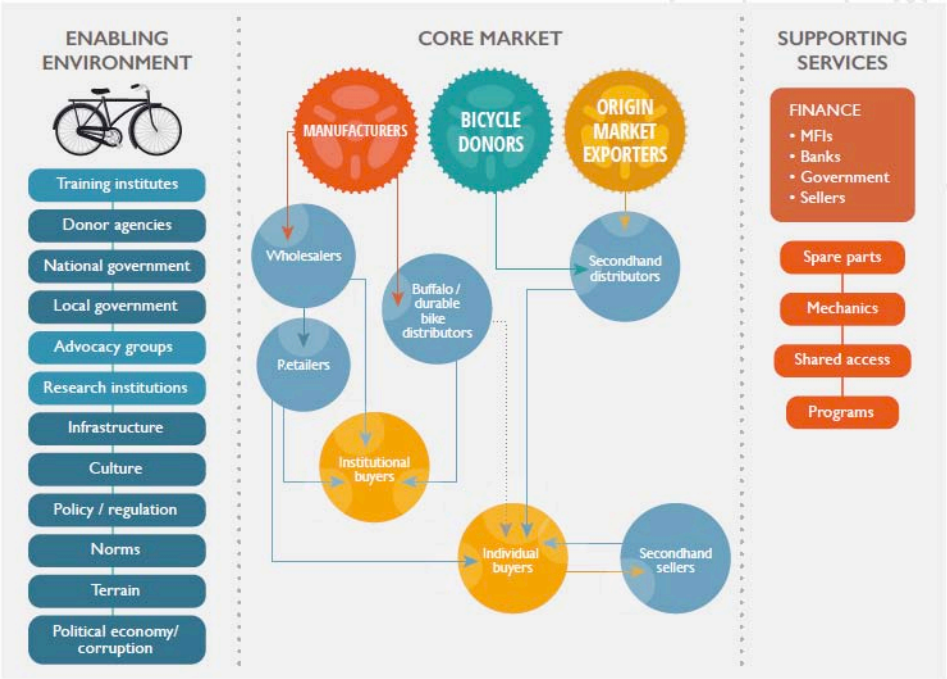
Research into the use of bicycles as a mode of transport in Sub-Saharan Africa (SSA) typically considers either (i) the 'demand' side of a bicycle market system – barriers and challenges to increased individual use, from a cost, road safety, acceptability, capability, and preference perspective, or (ii) the enabling environment – infrastructure and policy gaps (Behrens *et al.*, 2016; Jennings, 2021a; Sagaris *et al.*, 2021; Benton *et al.*, 2023).

This research instead takes an entire bicycle market system approach, which considers the enabling environment, demand factors, supply, supporting services and systems (Campbell, 2014, 2016; Springfield Centre, 2015; Thorpe, 2017). Key to the market systems approach is understanding why the market fails to meet the needs of the vulnerable, by using research evidence to engage with market actors on the barriers affecting functionality of the market and interventions that could facilitate change. A market system is dynamic and includes actors who have diverse objectives and motivations. To improve a market system, there is need to state the desired change and undertake a systemic inquiry of constraints, then engage actors who can achieve the change. An inclusive market system requires one to ask 'who is excluded, and why' and 'who can help make the required change'.

A market system includes 'demand', who uses, buys, or owns a product or service; 'supply', the channels through which the product or service reaches users; and 'systems', entities that support, enable, or facilitate demand and supply. In a bicycle market system, the market actors include individual and institutional purchasers (demand); importers and resellers (supply); and mechanics, spare parts sellers, government departments, training institutes, financiers, advocacy organisations, and international agencies (systems). In a functional bicycle market system, the needs of users and suppliers are both met.

2.2 Method

Data was collected in-country in 2022 using a combination of desktop research and primary data, through key informant interviews, focus group discussions, and a survey. Interviews and meetings were with individuals representing demand, supply, and systems (including importers, retailers, institutional buyers, national and local government officials, donor agencies, donor projects, NGOs, community leaders, microfinance institutions, spare parts sellers, mechanics, logistics providers, and researchers. Focus group discussions collected insights from users – especially women – and bicycle-based businesses. See Appendix 1, Data Collection, for details.



Source, BFG authors, and Lemonade Design

Figure 1: Bicycle market system: enabling environment, core market, and supporting services

2.3 Objectives of the Full Bicycle Market System Study

1. Establish the key purposes for the use of bicycles.
2. Identify the status quo of the bicycle market system and the key actors within the bicycle market system.
3. Identify key challenges faced by market actors, including consumers, suppliers, national and local governments, donors and civil society groups, and financial institutions among others.
4. Identify the roles and contributions of market actors to the functionality of the bicycle market system.
5. Explore the primary intersections between the bicycle market system and people's socioeconomic outcomes.

This paper reports primarily on objectives 2, 3 and 4, above.

3. FINDINGS: DEMAND

3.1 Bicycles and Rural Mobility

The surveys confirm findings from existing literature (Vanderschuren & Jennings, 2017; ITDP & UNEP, 2018; ITDP, 2019; UNHABITAT & Walk 21, 2021) that have shown that non-motorised transportation (walking and cycling, also referred to as NMT) are the main modes of travel for the majority of people living in SSA. Motorised transportation is less commonly used, likely due to cost. In all countries, at least two thirds of those surveyed walked or cycled to work or market. In Rwanda, more than 90% of those surveyed reported using NMT. Walking is more common than bicycle use in Rwanda and Uganda, where more than half of people relied primarily on walking to travel to their places of work or markets. Nevertheless, bicycles are the most affordable mode of travel after walking. This is the main reason why a notable share of people report using them for travel

(Figure 2); except for Uganda, bicycles were used as a main mode of transportation to work or market by at least 40% of the respondents.

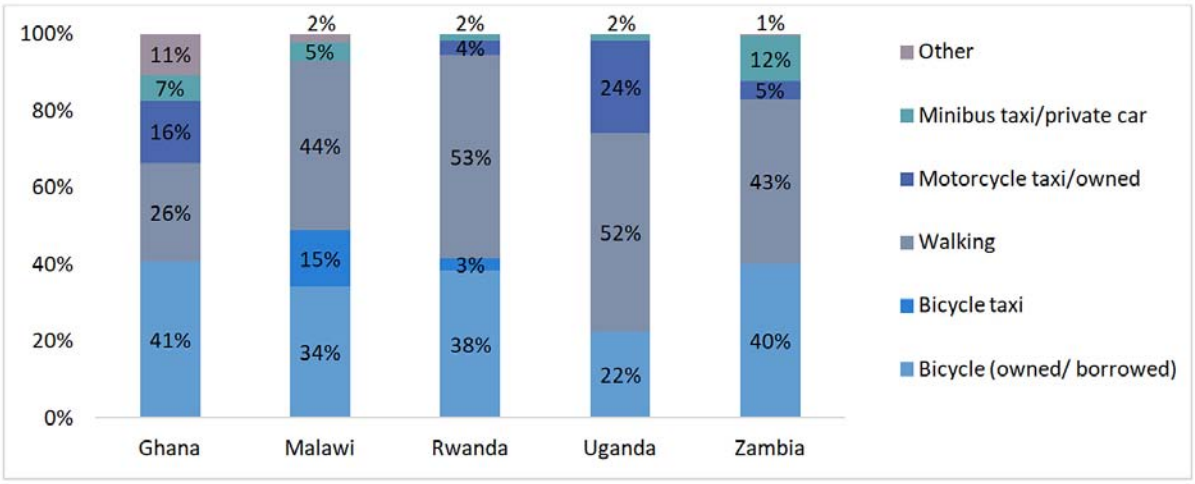


Figure 2: Main mode of travel to work or market

3.2 Bicycle Ownership

Individual bicycles ownership rates range between 32% and 54%. In Ghana, nearly 60% of those surveyed owned bicycles. The trip purposes of bicycles (see the next section) offer insight as to why bicycles are popular in these peri-urban and rural settings. Findings show significant gender and age dynamics around ownership.

In all countries, bicycle ownership rates are lowest among women. In Zambia for example, the percentage of men with bicycles was more than four times that of women. Across age groups, bicycle ownership rates were low among youths (18-24 years) in all countries, except for Rwanda where the reverse was observed, and youths had the highest bicycle ownership rates. The findings in Ghana, Malawi, Uganda, and Zambia are likely due to low incomes and low asset accumulation among young people, particularly with the fairly high cost of living. In Rwanda, this could be due to the involvement of youths in the bicycle service industry, including transport of people (bicycle-taxis) and goods. While the same can be said about Malawi, it is likely that bicycles are too expensive for the youth, who then rent the bicycles at a cost.

Table 1: Bicycle ownership rates among survey respondents

	Ghana	Malawi	Rwanda	Uganda	Zambia
Number of survey respondents	**382**	**330**	**386**	**335**	**331**
% of all respondents with bicycles	**54%**	**32%**	**43%**	**35%**	**36%**
By gender					
% of men with bicycles	70%	45%	66%	48%	57%
% of women with bicycles	36%	15%	18%	22%	13%
P-value (differences across gender)	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
By age groups					
% of 18-24 years-olds with bicycles	40%	11%	57%	30%	14%
% of 25-34 years-olds with bicycles	52%	38%	46%	28%	33%
% of 35-44 years-olds with bicycles	59%	41%	43%	37%	43%
% of >=45 years-olds with bicycles	66%	43%	30%	52%	65%
P-value (differences across age groups)	*0.005*	*0.000*	*0.001*	*0.010*	*0.000*

3.3 Bicycle Users

Findings suggest a high unmet need for bicycles. In all countries, the share of those using bicycles for travel, either regularly (*daily or several times per week*) or infrequently (*at least once or month or infrequently*), was at least 70%; this is greater than the share of people reporting owning bicycles (Table 1). In fact, in all countries, the share of frequent bicycle users is either at par or greater than the share reporting owning bicycles. Bicycle owners are the most frequent users of bicycles in all five countries, suggesting that owning bicycles is highly correlated with frequent use. However, most non-owners also reported using bicycles. In Malawi, no respondent reported not using a bicycle, while in the other four countries, the share of non-owners reporting not ever using bicycles is small. Across demographic groups, younger age groups (18-24 years) were the least frequent users of bicycles, with the exception of Rwanda and Malawi where they are the most frequent users of bicycles.

Women are the least frequent users of bicycles, in line with the findings that they are least likely to own bicycles; as one focus group participant in Malawi explained: '*My husband uses it alone. If I try so hard to confront him about not letting me use the bicycle, he gets angry and tells me that the bicycle belongs to only him, sometimes we end up quarrelling, this could even lead to failure of my marriage. I just mostly borrow bicycles from others to avoid quarrels with my husband' (BFG, 2022b).*

Table 2: Frequency of bicycle use

Category of Respondents	Frequency of Usage	Ghana	Malawi	Rwanda	Uganda	Zambia
% of all respondents using bicycles	Never	19%	-	14%	20%	27%
	Infrequent	28%	48%	25%	36%	33%
	Frequent	**53%**	**52%**	**61%**	**44%**	**40%**
% of bicycle owners using bicycles	Never		-	1%	6%	2%
	Infrequent	15%	13%	24%	25%	24%
	Frequent	**85%**	**87%**	**75%**	**69%**	**74%**
% of bicycle non-owners using bicycles	Never	41%	-	25%	28%	43%
	Infrequent	43%	64%	25%	43%	38%
	Frequent	**16%**	**36%**	**49%**	**30%**	**19%**
% of men using bicycles	Never	9%	-	10%	14%	19%
	Infrequent	23%	35%	21%	38%	24%
	Frequent	**68%**	**65%**	**69%**	**48%**	**56%**
% of women using bicycles	Never	29%	-	19%	26%	36%
	Infrequent	33%	65%	29%	34%	43%
	Frequent	**38%**	**35%**	**52%**	**40%**	**21%**
% of 18-24 years-olds using bicycles	Never	24%	-	10%	18%	28%
	Infrequent	24%	34%	25%	37%	52%
	Frequent	**51%**	**66%**	**65%**	**46%**	**20%**
% of 25-34 years-olds using bicycles	Never	19%	-	9%	20%	35%
	Infrequent	31%	34%	22%	38%	23%
	Frequent	**50%**	**66%**	**69%**	**42%**	**42%**
% of 35-44 years-olds using bicycles	Never	18%	-	14%	24%	26%
	Infrequent	28%	31%	24%	28%	26%
	Frequent	**54%**	**69%**	**62%**	**48%**	**49%**
% of ≥45 years-olds using bicycles	Never	12%	-	21%	18%	11%
	Infrequent	29%	47%	27%	42%	34%
	Frequent	**60%**	**53%**	**52%**	**40%**	**55%**

3.4 Bicycle Trip Purposes

The use of bicycles for economic purposes is one of the most important trip purposes of bicycles in all the countries surveyed (Table 3). In Malawi, for example, nearly three quarters of respondents reported using bicycles for economic purposes, which typically

includes travel to work (e.g., markets), farm activities, and transport of people and goods. In Ghana, Uganda, and Rwanda, bicycles are used for the school commute, and in Ghana focus group discussants mentioned purchasing bicycles for their children to use for school travel. Bicycle use is also often tied to household chores, such as shopping, and accessing water and energy. In Uganda, the most common use of bicycles was for fetching water, likely because the majority of people (more than two thirds) rely on public water sources such as boreholes and public taps, forcing them to walk long distances (UBS, 2016). Bicycles are particularly useful in these cases as they allow people to ferry heavy water-filled containers in a shorter period of time, relative to walking, subsequently reducing physical fatigue.

Travel to health facilities and for other emergencies are another key use for bicycles: *'Our communities are located far away from maize mills or hospitals. In cases where one fall[s] ill unexpectedly during the night, we will have to carry each other. If the bicycle is in bad condition, then that household would face some problems. So, all these just explain how important it is for our household to own at least a bicycle*' (BFG, 2022b).

Table 3: Key purposes for which bicycles are used

	Ghana	Malawi	Rwanda	Uganda	Zambia
Economic	49%	72%	54%	39%	40%
Health facility	9%	53%	17%	19%	23%
School commute	65%	35%	57%	41%	23%
Shopping	19%	24%	5%	5%	2%
Accessing energy	29%	19%	14%	6%	0%
Fetching water	21%	12%	34%	68%	11%
Exercise	8%	5%	2%	4%	19%
Other	14%	11%	4%	41%	14%

3.5 The Drivers and Inhibitors Underlying Demand for Bicycles

3.5.1 Affordability – Bicycle Cost and Transport Expenditure

'Bicycles are very important for us the people of the North, because we are not well to do and the bicycle is less expensive than cars and motorbikes so it is easy to buy it and use it for our movement. Students use it to go to school and come back home on time. We also use it to transport goods to other villages to sell and it also serves as a means of exercising. Fuel is very costly now but the availability of bicycles has reduced our purchase of fuel' (BFG, 2022a).

In rural communities where money is scarce, the lower cost of acquiring bicycles relative to motorised modes of transport is a key driver of demand. Across the five countries, the average price paid for bicycles ranged from US$40 (Ghana) to Malawi (US$55), Rwanda (US$58), Uganda (US$70), and Zambia (US$94). While bicycles are relatively inexpensive, the cost is still unaffordable in rural settings where poverty and unemployment levels are high, and the majority of people rely on personal savings to purchase bicycles. The cost of a bicycle is the most common barrier to ownership. In Malawi, for example, more than 90% of those without bicycles reported cost as the main reason for lack of ownership. Access to affordable bicycles was also the most cited factor that would contribute to more regular usage of bicycles (Table 4).

Besides ownership, bicycle travel is cheaper than motorised travel. In all the countries we surveyed, the average transport expenditure (30-day period) was significantly lower

among those using bicycles primarily to travel to work or market, compared to those using motorised transportation. In Zambia and Malawi, motorised transport users reported the highest average spend on transportation (US$25.61 and US$18.22 respectively) compared to bicycle users (US$8.48 and US$9.8 respectively). In Uganda and Rwanda, motorised transport users spent significantly higher (US$22.05 and US$10.90 respectively) than bicycle users (US$12.63 and S$6.40 respectively). Similarly in Ghana, bicycle users on average spent much lower (US$9.50) than those using motorised transport (US$27.75).

Table 4: Factors underlying lack of ownership of bicycles

	Ghana	Malawi	Rwanda	Uganda	Zambia
Cost of acquisition	40%	93%	69%	63%	65%
Cost of ownership	11%	2%	11%	9%	2%
Disabled/ physical	1%		2%	0%	1%
Not interested	17%	2%	17%	12%	17%
Unsafe	14%			1%	6%
No place to ride			1%		0%
Lack of bicycles available near me		0%	1%	2%	1%
Don't know	16%	2%		13%	6%
Other	40%	93%	69%	63%	65%

3.5.2 Source of Livelihood

The fact that bicycles can be used for a variety of purposes, including income generation, is another advantage respondents cite as a reason for acquiring them. In all countries, at least three quarters of respondents said that the use of bicycles would improve their income: Ghana (84%), Malawi (93%), Rwanda (91%), Uganda (84%), and Zambia (78%). Some of the most common income-generating activities that bicycles are used for include transportation of goods (including to and from markets), ferrying people (bicycle-taxi businesses), for farm-related activities and, to a lesser extent, for bicycle rental businesses.

3.5.3 Suitability for Travel

In all countries, survey respondents expressed high levels of satisfaction with bicycle travel; 87% of bicycle owners in Ghana, 62% in Malawi, 68% in Rwanda, 73% in Uganda, and 86% in Zambia reported that bicycles met their transportation requirements: '*A bicycle transports people from one place to another, it takes children to school, it is also used in the urgent long journey, used to take patients to hospital especially in the rural area like this one of ours, it transports luggage and it facilitates to carry beer during wedding ceremony from one place to another: nowadays, we are no longer carrying them on head. Besides…. these, it is also used in the harvesting of different crops and even in transportation of organic manure from home to the farm*' (BFG, 2022c).

4. FINDINGS: BICYCLE SUPPLY

4.1 Availability, Quality and Design

Bicycle availability is not the most important driver of bicycle uptake; across all countries, the share of the respondents who reported lack of availability of bicycles as the main reason for not acquiring bicycles is less than 2%. This finding suggests that bicycles are either accessible within communities or in neighbouring locations. Within communities, bicycles are sold by retailers (or other shops such as hardware stores) who acquire them

from wholesalers in cities or large towns. They also acquire them from individual sellers who sell pre-owned bicycles. In all cases, bicycles are not produced locally but are imported, with Japan, China and India contributing the largest share of imports. Bicycle services (taxis and goods transportation) are also easily available and accessible, and convenient. As such, they are in high demand. Both new and pre-owned bicycles are widely available in markets. In all countries except Zambia, the majority of bicycle owners acquired pre-owned bicycles; in Rwanda and Ghana, at least 70% of bicycle owners reported acquiring pre-owned bicycles. Pre-owned bicycles are popular because they tend to be cheaper than new bicycles.

One of the key issues that emerged from the surveys is the quality of bicycles available in the market. Roadster bicycles are most commonly purchased because they are affordable, but they are often not necessarily well-suited for the poor roads in these settings and the needs of the typical rural rider who uses bicycles to transport heavy loads to and from markets or farms. Heavy duty and highly durable bicycles are generally absent, and where they exist, the cost is significantly higher than the price of ordinary roadster bicycles. It is perhaps for this reason that consumers prefer to purchase cheap bicycles and then modify them to meet their needs. In Uganda and Rwanda for example, 60% and 75% of bicycle owners respectively reported making modifications to their bicycles after acquiring them while in Zambia and Ghana, approximately a third of bicycle owners reported doing the same. Some of the most common modifications include strengthening bicycle frames, adding carriers and baskets, and including safety equipment.

In Rwanda, nearly half of survey respondents reported that better designs would lead to increased usage. It is likely that the hilly terrain in Rwanda may be the reason underlying the greater need for more affordable bicycles with lower gearing.

Across all countries, a weakness in the supply side is that bicycle retailers seldom report back to wholesalers about what users are looking for in a bicycle or accessories, which means that the bicycles imported and sold are not always ‘fit-for-purpose’. Retailers also have limited working capital or savings, which means that they cannot take risks with stock holding, or be innovative in testing the market. Further, bicycles are becoming more and more expensive globally.

4.2 Maintenance Costs and Spare Parts

The surveys found that access to spare parts is not necessarily an inhibitor to bicycle ownership. Instead, the main issue is the cost of spare parts. Respondents reported needing to replace spare parts regularly, mainly due to the poor quality of bicycles available in the market. In Uganda, for example, 40% of bicycle owners reported that their bicycles were not in working order, likely an indication that bicycle quality is not only poor, but that repair and spare parts costs are prohibitive.

5. FINDINGS: ENABLING ENVIRONMENT

The systems side of the bicycle market system is the least functional across SSA, particularly when considering the high bicycle use and the relatively competitive supply side of the market.

Table 5: Factors that would increase bicycle use

	Ghana	Malawi	Rwanda	Uganda	Zambia
Bicycle paths	45%	30%	37%	20%	29%
Cheaper bicycles	78%	52%	67%	63%	56%
Better road safety	41%	47%	70%	36%	43%
Secure bicycle parking/ storage	21%	19%	33%	16%	8%
Improved bicycle repair accessibility	23%	3%	31%	20%	14%
Better bicycle design	30%	8%	45%	12%	6%
I have no need to increase my bicycle usage	10%	10%	2%	8%	6%
Other	3%	8%	3%	13%	10%

5.1 Road Safety

When asked about the factors that would increase bicycle use, road safety emerged as a key issue across all countries. In Rwanda, nearly three quarters of respondents reported that they would use bicycles more if there were better road safety measures.

5.2 Infrastructure

The existence of bicycle infrastructure, such as bicycle paths and secure bicycle parking/storage, was also commonly cited across all five countries as a factor that would drive increased bicycle usage. Across countries, bicycle uses reported that sharing gravel roads was preferable to sharing asphalt roads as motorised traffic speeds were slower, but that dust, corrugations, and stones, damaged their bicycles. Rwanda is an exception with high-quality urban bicycle infrastructure.

5.3 Finance

In a fully functional bicycle market system, financial institutions, especially micro-financers, could help individuals who do not have savings by enabling them to pay for bicycles over time, or help small retailers with loans to overcome the challenges of no working capital.

However, in none of the countries under study were there substantial opportunities for individuals or small retailers to borrow money to purchase a bicycle, stock their repair store, or expand the range of bicycles in a retail outlet: '*It's hard to earn enough money to buy a bicycle these days, additionally nowadays bicycles have become more expensive than before. If we had an opportunity to buy on loan it would be easier otherwise paying with once off cash is not easy*' (BFG, 2022b).

5.4 Policy

Across all countries, NMT policy implementation is poor or non-existent, and road designers are more likely to be skilled in highway engineering than in designing for all road users. Transport policy and infrastructure favours motorised transport, and where cycling is considered as a mode, it is mostly situated within an urban context and intended primarily to mitigate road traffic congestion. Proposed infrastructure interventions are more appropriate to urban environments, but even there do not routinely take local contexts and needs into consideration. Further, policies (RoU, 2012; RoM, 2015; RoZ, 2019; MoWT Uganda, 2020; RoG, 2020; RoR, 2021) see infrastructure interventions through a reactive lens – preventing road deaths rather than positively intervening to develop a functioning market system.

In Malawi, transport policy has the stated intention to improve safety, legitimacy, affordability, and comfort. In practice, however, road infrastructure and motorised travel have priority where financing and capability resources are limited. While bicycles in rural areas are a crucial transport mode, neither the government nor development partners direct sufficient resources to improve policy implementation to improve the bicycle market system. Policy regarding bicycle infrastructure is also not necessarily fit for the Malawi bicycle context.

In Rwanda, bicycle transport is part of the country's Green City/Green Economy initiative. Here, bicycle policy is driven by the need to improve road safety, to promote equitable spending and provision for all road users, to reduce road congestion, and to reduce greenhouse gas emissions and reliance on fossil fuels. Bicycle travel must also show evident positive economic impact. Encouraging a shift from motorised travel to walking and cycling are seen to be among the most cost-effective ways in which to reduce emissions from the transport sector.

In Ghana, general transport policies explicitly recognise walking and cycling as modes able to relieve congestion, cut travel time, increase mobility at low cost, promote fitness, and have minimal impact on the environment. However, NMT policy itself is scattered across several policy documents. A range of agencies and ministries are responsible for NMT implementation and delivery, but specific roles are not clear. Stakeholders cite institutional fragmentation and complex administrative frameworks as obstacles to creating better walking and cycling facilities in Ghana.

Uganda's official transport narratives state that walking and cycling are important for reducing the country's carbon emissions and contributing to sustainability objectives, in addition to improving social, health, and economic opportunities and reducing costs of travel over short distances. However, this official standpoint is not necessarily the view of all decision-makers, where walking and cycling are still seen as low-status modes to be eradicated, and where climate mitigation is seen as a developed world responsibility. While 'political will' may exist for NMT interventions, some stakeholders note a lack of 'political commitment', which translates into a lack of funding.

In Zambia, fragmentation of authority is a challenge to developing and facilitating an improved NMT environment, although the National Transport Policy aims to harmonise the various road classifications, mandates, and pieces of legislation that result in overlapping authority and coordination challenges. Like with the other countries of study, Zambia's proposed NMT interventions focus on the development of urban walking and cycling infrastructure.

5.5 Advocacy

Other than in Uganda and Zambia, civil society does not play a significant role in the bicycle market system. In Zambia, sustained advocacy led by World Bicycle Relief obtained a reduction in the import duty rate applied to bicycles, while in Uganda, sustained advocacy by individuals and organisations has led to pilot infrastructure projects (Mobycon, 2020; Kigozi, 2021).

6. CONCLUSION

The BFG project takes a development approach to a market system. Such an approach provides a strategy for intervening in a market, so that it functions more efficiently and

sustainably to meet the needs of vulnerable or marginalised people. A developmental approach addresses the root causes of markets failing to meet people's needs and preferences. Bicycles, in and of themselves, present a transport solution for a variety of sector specific market systems.

Key findings are that the bicycle market system across SSA is weak, and that the robust demand for bicycles is not met by similarly robust supply-side systems or 'pillars' of a market system.

Challenges and pain points in the bicycle market system include: i) (demand), the inequitable access to mobility resources among women, the high cost of bicycles, and the high cost of spares coupled with the frequent need for maintenance (poor quality road conditions); ii) (supply), the disjunct between what people need from a bicycle with what is available (bicycles therefore require modification before they are fit for purpose); and iii) (systems), few options to borrow to finance the purchasing of bicycles or spares, and a lack of accountability for policy commitments when compared to implementation.

Women make up a key segment of the unmet need for bicycles. In general, women are less likely than men to be owners and primary users of bicycles within their households. Bicycle ownership and usage by women is widely accepted across most of the locations, however, and in most cases the survey participants overwhelmingly agreed that women would benefit from owning and using bicycles. The striking exception is central Uganda, where it is culturally unacceptable for women to ride because riding is viewed as unfeminine, could cause damage to reproductive organs or reduce dependence on men. In other locations where there are no cultural constraints, ownership of assets (including bicycles) is vested in the male household head who determines access and usage. Additionally, assets such as bicycles tend to be used primarily by the household member engaged in income generating activities, who is more likely to be male.

The research findings presented here, which investigate where the bicycle market system is not functioning, are being used to develop and implement pilot projects to identify scalable pathways to support a locally owned, more functional, sustainable system. To improve the bicycle market systems in each country under study, the project has brought together committees of key market actors, to identify desired change from the constraints matrix development by the project, and work to achieve this change. Priority interventions are likely to include access to bicycle financing, policy support and commitment, advocacy for supportive import taxation regimes, and support for strong advocacy networks.

7. ACKNOWLEDGEMENTS

This paper shares a subset of findings from the Bicycles for Growth (BFG) project, a five-year USAID-funded initiative that aims to reduce poverty by improving sustainable uptake of affordable, fit-for-purpose bicycles in sub-Saharan Africa.

The BFG project team was jointly led by World Bicycle Relief (WBR) and J.E. Austin Associates (JAA), and conducted bicycle market system assessments in 2022 in Malawi, Ghana, Rwanda, Uganda, and Zambia. Full reports and summaries can be downloaded at https://worldbicyclerelief.org/impact-reports/ under Bicycle Market System Profiles.

Unless otherwise noted, all references to survey data in the report refer to the survey conducted by BFG.

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APPENDIX 1: DATA COLLECTION

Malawi: 55 interviews and meetings; nine focus group discussions; survey collected information from individual demand side actors at eight rural and peri-urban market sites in four districts (Mzimba, Mchinji, Salima and Zomba).

Uganda: 65 interviews and meetings; ten focus group discussions; the survey collected information from individual demand side actors at an urban market site in one pre-test district (Kampala), and eight rural and peri-urban market sites in four districts (Isingiro, Lira, Mityana and Tororo).

Zambia: 65 interviews and meetings; eight focus group discussion; the survey collected information from individual demand side actors at nine rural, peri-urban, and urban market sites in four districts (Chipata, Kaoma, Kasama and Monze).

Ghana: 24 interviews and meetings; eight focus group discussions; the survey collected data from 383 respondents in ten districts – Savelagu and Tolon in the Northern region, East Mamprusi and West Mamprusi in the North East region, Nadowli and Wa Municipal in the Upper West region, Ejura Sekyedumase and Ejisu Municipal in the Ashanti region, and lastly, Shai Osudoku and Ga West Municipal in the Greater Accra region.

Rwanda: 26 key informant interviews (KIIs) and 8 focus group discussions; the survey collected data from 417 respondents in five districts – Kayonza in the Eastern province, Rubavu, Ngororero in the Western province, Huye in the Southern province and Gasabo in the City of Kigali.