

Transportation for the People: A Well-Being Policy Framework for Urban Tanzania

I. Introduction

As global population growth has stagnated, Africa stands out as the last major region seeing significant population increases, especially in its urban areas.¹ Tanzania is one of the largest and fastest-growing countries in Africa, and thus improving development patterns in its urban areas is critical to protecting the well-being of humans and the planet.² As the original home of humankind³ and a significant reserve of biodiversity⁴, Tanzania has enormous real and symbolic significance to the fate of humanity.

This paper proposes to shift development patterns in Arusha, one of Tanzania's fastest-growing urban areas and key tourism hubs, centering well-being components such as human and environmental health, equity and justice instead of economic growth as key values. It proposes the establishment of pedestrian pathways, bicycle lanes, urban green spaces and improvements to public transit reliability, administered by local community groups in coordination with the regional government, in order to support sustainable transportation and development patterns.

Section II describes the nature of current development patterns and conditions in Arusha through a critical lens. Section III illustrates the human impacts of an economic growth-centric policy framework on Arusha residents through a hypothetical scenario. Section IV discusses the overlapping aspects of well-being that make up the framework for better transportation policy in Arusha. Section V distills the framework into goals and creates metrics for assessment. Section VI outlines concrete policy proposals and assesses the roles and interests of various people and institutions involved. Finally, the conclusion suggests areas for improvement and further research, and makes a final recommendation on the establishment of this well-being policy.

II. Urban Life & Development Patterns in Arusha

Arusha is a city of around 500,000 people, located in northern Tanzania near Mount Meru.⁵ With an international airport and close location to Tanzania's most famous national parks such as the Serengeti and Mount Kilimanjaro, it is one of Tanzania's major tourism hubs and therefore a site of significant migration and economic development.⁶ Indeed, from 2000 to 2019, its urban footprint roughly doubled; 73 square kilometers of land in the vicinity was converted to urban area, making it one of the fastest-growing cities in Tanzania.⁷ Lush foliage and stunning mountain ranges surround the city, and the calls of tiny monkeys in the trees and quiet banana farms along the backroads provide a distinctive and charming character.

Unfortunately, visitors and residents will quickly note that walking in Arusha is often dangerous and difficult. Taking the most direct route on foot usually includes crossing or walking along the side of the region's two major highways. Motorcyclists, trucks, and SUVs carrying tourists whizz by, creating a cacophony of noise and air pollution while making it risky to cross the road. Paths and crossings are inconsistently maintained and often come dangerously close to the road; despite this, the sides of roads are usually quite busy with people walking, as they have little other choice. While many of the city's winding back roads are lined with farms and pockets of vegetation, their maze-like, stop-and-start organic structures makes it quite difficult to get from point A to point B in an efficient way, and often necessitates crossing main roads.

Indeed, development in Arusha is described by some urban planning experts as "strongly aligned with development of major roads, forming linear strips or ribbon developments," a phenomenon that is leading to "leapfrog growth" in a sprawling, low-density style rather than more sustainable infill growth.⁸ This fragmented growth is problematic from an economic perspective, as it creates high costs for infrastructure and service provision, increases encroachment into ecologically sensitive lands and makes it difficult for far-flung residents to access jobs.⁹ Car-centric development also poses significant health risks for locals by increasing the risk of accidents, spreading pollution (air, noise and light) and destroying the environment that many locals depend on for livelihoods and places of respite. While the growth of the economy surely offers new opportunities to impoverished communities in the area, rapid urban growth of this type also poses new health hazards and questions about sustainability.

Although Tanzania remains quite a poor country by global standards – its real GDP per capita is only about \$2,600 USD, 200th out of 229 countries,¹⁰ and 26.4 % of citizens live below the poverty line¹¹ – recent decades have seen an increasing integration into global markets and noticeable GDP growth.¹² Some might argue that the country’s scarce financial resources are best spent on continuing to invest in “proven” investments like further developing highway networks and upgrading tourism facilities in the hope of increasing visitor numbers.

However, these status quo, growth-at-all-costs approaches fail to adequately consider the long-term negative effects of these policies on the well-being of Arusha residents and the planet. The following section attempts to clarify the consequences of these policies by telling the story of a hypothetical family in Arusha and their experiences with transportation in daily life.

III. Transportation Policy in Everyday Life

The Afya family used to live in a village, but a drought in their region pushed them to move to Shangarai, a town located about 10 kilometers away from the center of Arusha along the side of the main highway. The Afya family lives in an informal settlement without effective provision of municipal services or urban planning. The father has a fairly successful business selling propane to heat people’s homes and power electric generators, but the family is not rich.

The son, Aziz, is attending school, but he must walk four kilometers every day to get there, most of the journey along the side of the highway. The pathway is not well maintained, and at certain points he is forced to walk in the road itself, putting him at risk of the many cars speeding past. Aziz also breathes in exhaust fumes and dusty particles from the traffic every day, which makes it hard for him to breathe sometimes. When it rains, the roads get flooded and Aziz can’t make it to class. Sometimes he looks at the Jeeps carrying strange people and the SUVs with tinted windows and wonders why their trips are so important, but his walk to school isn’t. Recently, the road has been flooding more and more often, and Azis has stopped going to school. Instead, he prefers to hang out in the neighborhood drinking beers with other adolescents.

The daughter, Zuri, graduated but has been unable to find a job, so she stays at home and helps her mother with the housework. Zuri misses her friends, but she doesn’t have many opportunities to see them because they don’t live near her. One day, she learned that a restaurant

in downtown Arusha was hiring waitresses, so she took the bus there to try her luck. She was accepted and began working that very day. Although the work was hard, several other young people were working there, and she became excited about making new friends and working in the city. However, when Zuri's shift ended, the sun had already set, and she was almost 10 kilometers from home. She waited for more than half an hour, but no bus showed up. It was too far to walk at night, so she had to pay a young man on a motorbike to give her a ride home.

When Zuri's parents found out, they were very upset with her and worried for their daughter's safety. They forbade Zuri from going back to work at the restaurant. She tried to convince her father to let her use his car, but he firmly refused. He explained that he needed it to carry his propane cargo from place to place; besides, Zuri couldn't see well and didn't even know how to drive. As Zuri looked out from her window that night, she gazed at the headlights on the road, feeling like the whole city of Arusha was conspiring to undermine her. She tried to listen for the sounds of birds calling at night, which always soothed her. When they first moved to Arusha, there was a lush forest not far from the house, and the birds and even monkeys in the trees reminded her of the village she grew up in. But Zuri couldn't hear any of them that night, just the dull roar of traffic.

Although fictional, this story illustrates the challenges that a growth-at-all-costs mindset for growing cities in the world poses for its residents. When we focus on the transportation element of urban development, four main areas of concern for well-being jump out: health, social connections, justice and the biosphere. In order to improve the well-being of Arusha residents, a framework that connects these elements and offers guidance for progress needs to be established. The following section examines these concepts and their interplay in more detail, as well as establishing goals and metrics to evaluate successful outcomes.

IV. A Framework for Urban Tanzania

A. Protecting Human Health

The story of Aziz's walk to school illustrates the significant influence of transportation policy in Arusha on human health. Walking and biking, rather than driving or being driven, have enormous health benefits overall for humans, especially in terms of reducing obesity and heart

disease.¹³ In Tanzania, citizens with access to bicycles also report lower physical strain and an increased feeling of security while traveling.¹⁴ On a broader scale, noise and air pollution from major roads are also known to have significant harmful health impacts on populations living nearby, even increasing rates of dementia and Parkinson's disease.¹⁵ Infrastructure improvements that make walking safer are therefore likely to have the dual benefit of immediately improving health outcomes in terms of lower injury rates, as well as incentivizing a long-term shift towards reduced vehicle traffic that lessens the burden of air and noise pollution on city residents. These benefits suggest that placing active transportation means at the center of any health-based transportation strategy is essential.

While global walking rates are declining, walking is still the most common mode of transportation in Africa; roughly 78% of people in Africa travel by walking every day, for an average of almost an hour per day on foot.¹⁶ Unlike countries in the developed world which face the challenge of increasing the share of active transportation trips among citizens who are more accustomed to driving, African countries such as Tanzania have the benefit of an existing high share of habitual pedestrians. Unfortunately, despite high rates of pedestrianism, walking infrastructure in Africa is severely underprovided, resulting in huge risks for the public. Africa has the highest levels of road fatalities and crashes in the world, even though vehicle ownership is much lower than in other regions.¹⁷ Indeed, the World Road Association's catalog of design safety measures estimates that investment in pedestrian facilities could reduce crashes by up to 90%.¹⁸ Similarly, studies have shown that cyclists in sub-Saharan Africa avoid busy streets with fast-moving vehicles, as they are not respected in traffic and are at risk of accidents when they share the road with cars.¹⁹ Therefore, investing in separate pedestrian and bicycle paths from roads with high car traffic could have significant positive health impacts both at an individual level, by decreasing crash risk and improving the subjective experience of active transportation, and on a collective level, by maintaining a high share of trips taken using active transportation and thus reducing pollution from vehicles. Altogether, transportation policy which focuses on making pedestrian and bicycle trips safer and more pleasant is critical for protecting human health in Arusha.

B. Enjoying Social Bonds

While minimizing risk factors like car crashes and air pollution is important for human health, it is not the entire picture. Positive social relations and quality bonds between people is an essential part of human health; longitudinal studies have shown that the most important factor to determine long-term happiness and life expectancy was the quality of social relations.²⁰ Social relations are intimately shaped by institutions like school, workplaces, and religious communities, as well as through more informal networks like extended families, neighborhoods and recreational sites (like soccer fields or playgrounds, for example). Transportation policies have an important impact on the ability of people to maintain social relations and the ways that formal and informal social networks develop; people are more likely to participate in social organizations when it is easy for them to do so. For example, the street flooding which deters Azis from building social connections at school has led him to seek community among the neighborhood hoodlums instead, likely a detrimental decision for him in the long run. Aziz's story is an example of transport-related social exclusion, defined as the "process by which people are prevented from participating in the economic, political and social life of the community because of reduced accessibility to opportunities, services and social networks, due in whole or in part to insufficient mobility in society and environment, built around the assumption of high mobility."²¹

Combatting transport-related social exclusion is possible by identifying areas of low mobility and access to social networks and offering better mobility options. Transportation policies should make it as quick and comfortable as possible for people to travel from their homes to social hubs like schools, markets, soccer fields, and religious centers; therefore, it is imperative that not just the safety and subjective experience of walking and biking is improved, but additionally that these networks are effective at connecting even distant areas of settlement with social hubs, often found in the centers of the urban environment. As cities like Arusha continue to grow, often through sprawling unplanned settlements, walking and biking alone will not be sufficient to serve the transportation needs of the local population who may live far from centers of employment, shopping, or recreation. Additionally, less mobile populations, such as people with physical disabilities and elderly people, require alternative modes of transportation. Increasing access to public transit is critical to better serve the needs of these populations, as well as reducing the need for personal vehicles with all their associated health costs.

Today, these niches are filled by informal modes of public transit including motorcycles, rickshaws and, most crucially, large vans called *daladalas*. While these modes are a crucial source of income for numerous drivers and an indispensable form of transportation for many riders, public transit users report poor experiences when using these services, citing overcrowding and long waiting times among other issues as the most serious drawbacks.²² Frequencies, hours of operation, and routes are not standardized and are often constrained by profitability, which leads to an unpredictable user experience and a difficult service to rely on, exemplified in Zuri's story. Studies show that one of the most significant variables to incentivizing public transit usage is frequency and reliability; furthermore, improving reliability may also attenuate issues such as overcrowding and reckless driving which have direct health impacts on public transit users. Therefore, improving *daladala* reliability is an essential policy to foster social inclusion for Arusha residents by connecting distant residents with social hubs.²³

C. Achieving Equity and Justice

In Arusha, transportation systems are unjust, under the definition of "justice" advanced by Amartya Sen. In this framework of justice, known as the capabilities approach, Sen argues that individuals have a set of fundamental capabilities representing the valuable activities and states they can achieve; for example, having access to healthcare or education, or participating in political processes. Justice is the ability of an individual to exercise these capabilities and contribute to society; therefore, justice can be achieved to various extents by removing barriers which prevent humans from exercising their fundamental capabilities.²⁴ We can see through the stories of Aziz and Zuri how inequitable transportation systems hold them back from exercising their fundamental capabilities at school or serving at a restaurant, reproducing injustice and harming their well-being.

Given the injustice and unfavorable health and social outcomes of Arusha's transportation system, one may wonder what the root causes for Arusha's current development patterns are. If most Africans walk, why is so much space and money dedicated to road infrastructure and so little for pedestrians? The answer is in the city's dramatic inequities. Inequities in Arusha could not be more evident: Tourists pay thousands to fly to Tanzania from other continents, where they are picked up in huge off-road vehicles and driven directly on highways to gated safari reserves or even areas for wild game hunting ("game parks"), then back to walled hotel compounds.

Tourists are chauffeured by locals in vehicles most Tanzanians can't afford to natural reserves which are off-limits to most locals. They sleep in hotels with private electric generators while access to electricity is non-existent or inconsistent for most locals. Some hotels have large swimming pools while many Arusha residents still lack access to clean drinking water. Indeed, there are essentially two parallel but largely separate systems of infrastructure to serve locals and tourists, and tourists may never really interface with the actual city of Arusha except through the windows of an SUV. Considering these inequities, it is not surprising that local infrastructure for safe walking and cycling is so lacking; economic incentives are to develop road infrastructure for the wealthy being driven from place to place, rather than for the urban poor without cars.

A just transportation system, therefore, is only likely to arise when the needs of all residents and visitors are taken into consideration, rather than relying on economic incentives which largely reproduce existing inequities. First, procedural justice is critical to improving decisions about transportation policy. Currently, urban planning in Tanzanian mid-size cities like Arusha is largely governed via top-down “master plans” which specify land use and development patterns at a very detailed level; however, actual conformity to these plans has been very low outside of core urban areas, and actual urban growth has far outpaced the provision of infrastructure and services.²⁵ These problems could be partially remedied by changing the systems of governance to include communities at the hyper-local level in the land management decisions and giving them a sense of ownership over the urban landscape, as well as making them partially responsible for maintaining and upholding the urban fabric itself. If the Afya family had been included in the decision-making process about their neighborhood, they could have raised the issues of an unsafe walking path to school and the lack of reliable transportation and worked with the local community to develop alternatives, for example building a wooden path for walking or arranging for a scheduled daladala services to the neighborhood. Crucially, it is important to include a diverse group of participants in the urban planning process, not just local power-brokers – the father of the Afya family, for example, may have given a very different response that favored increasing parking for automobiles, in comparison to the priorities of Aziz and Zuri.

By shifting power over decisions about urban planning from central “master plans” to hyperlocal communities within Arusha and changing the evaluation of policies from an economic growth framework to instead emphasize improving health and social relations, future decisions

about transportation priorities will be more balanced in accounting for the needs of the entire population rather than just wealthy visitors or local elites with personal vehicles. While fundamental inequities in Tanzania are not going to disappear, procedural justice in transportation policy can help tackle the root causes of the unjust conditions many Arusha residents find themselves living in.

D. Protecting the Biosphere

So far, justice and health have been discussed in the context of Arusha's human residents; however, justice for the biosphere and healthy ecological systems need to be considered as well through the "full health nexus." In this framework, the "full health" of the entire planet's ecosystem is the core foundation of human prosperity and well-being, meaning that preserving biological systems goes hand-in-hand with preserving human health and flourishing.²⁶ This connection is very evident when we consider the core reasons behind Arusha's economic growth. Visitors aren't flying to East Africa to see highways and stay in fancy hotels; they're coming to see natural landscapes and the giraffes, elephants, monkeys and more which are so carefully protected by Tanzania's national parks system. Even from a purely economic perspective, Arusha's prosperity is directly tied to the health of the local environment.

The connections between the health of the biosphere and the health of humans can be seen at the micro level, where urban tree cover has been shown to have important effects on cooling cities during heat waves²⁷ and providing drainage when it rains to prevent flooding.²⁸ Indeed, more land left for natural growth along the road could have mitigated the effects of flooding on the road Aziz uses to walk to school. Humans also derive emotional and mental health benefits from being in contact with nature; contact with nature has been associated with improved cognitive function, blood pressure, mental health, and more.²⁹ These benefits can be seen in Zuri's story as she seeks solace in nature from humanity's injustice. Preserving natural ecology and integrating the biosphere into the built environment in Arusha is therefore critical to ensuring the full health of the region.

Additionally, Arusha's development patterns have broader implications for the entire planet, as adopting systems which are sustainable in terms of minimizing greenhouse gas emissions and preventing ecological degradation is crucial. The impacts of the global environmental crisis are illustrated in the story of the Afya family through the drought which pushed the Afya family out

of their traditional home into Arusha in the first place. An Arusha, and by implication more broadly an Africa, which contributes to a growing climate crisis by a dependency on fossil fuels and the destruction of key ecosystems will harm not only its own inhabitants but the entire planet. If transportation systems continue to prioritize private vehicles and sprawling growth, the region's greenhouse gas emissions and contributions to biodiversity loss will be immense. A transportation strategy which includes the health of the local and global biosphere by incorporating biodiversity areas into the urban fabric and looks for ways to minimize or mitigate greenhouse gas emissions is thus crucial.

V. Evaluating Success

Overall, a well-being transportation policy in Arusha must address overlapping factors which contribute to the full health of individual and the community, which can be broadly separated into four broad aspects: protecting human health, enjoying social bonds, achieving equity and justice and protecting the biosphere. These aspects of well-being are represented visually in the poster as different intersections in the urban environment; the poster can be taken literally, as a physical example of what an Arusha with a well-being policy could look like, as well as a symbolic map of the concepts addressed earlier. For instance, “protecting human health” is at the intersection of healthy active transportation corridors (the pedestrian areas and the bicycle lanes) and also near an urban banana farm, which already exist in Arusha but could be further institutionalized as important sources of nutrition for the local community. As the concepts are all interrelated and self-reinforcing, the connections are visualized as various forms of urban transportation pathways – bus lanes, bicycle pathways, pedestrian walkways with various degrees of width, commercialization and green space depending on the circumstance required.

These four well-being aspects are also targets to be achieved through policy. To measure the success of transportation policy changes in Arusha, a dashboard of metrics to assess each category is displayed below (Table 1).

Aspect	Goal	Metric
Protecting human health	Reduce risk of injury or death by car crash	Transportation-related injuries per capita
	Promote healthy active transportation (walking and bicycling)	Active transportation mode share ³⁰
	Reduce air pollution	Ambient concentration of PM2.5 particles in sampled neighborhoods ³¹
	Reduce noise pollution	Ambient decibel levels in sampled neighborhoods ³²
Enjoying social bonds	Increase access to key services	Percentage of population with reliable access to key services including schools and hospitals
	Make public transit more effective and accessible	Perceived frequency, coverage and reliability of daladala service (assessed via surveys)
Achieving equity and justice	Include locals in decision-making process	Percentage of locals who feel their community's voice is heard in decision making processes (assessed via surveys)
	Ensure services with broad public benefits are prioritized	Percentage of new development whose services are inaccessible to local populations
Protecting the biosphere	Benefit from urban vegetation	Tree coverage in Arusha
	Provide access to green space for locals	Percentage of public green space in Arusha
	Minimize greenhouse gas emissions	Total regional greenhouse gas emissions
	Protect biodiversity	Percentage of protected natural land in wider Arusha region

Table 1.

VI. Proposal & Implementation

To re-center well-being as defined above in Arusha's transportation policy, this paper proposes a set of policy redesigns for urban development in Arusha. While these principles should apply to all urban planning decisions going forward, priority should be applied to high-traffic transportation corridors where locals are accustomed to traveling, such as along major roads (especially those with high foot traffic). Future projects should also prioritize connecting

important centers of employment and high-density residential areas with key social gathering points like stadiums, schools, and regional transportation hubs like intercity bus depots.

First, walking and biking conditions must be improved; this can be done by dedicating a high proportion of funding for pedestrian and bicycle paths rather than road construction, and requiring the implementation of pedestrian and bicycle-friendly infrastructure running parallel to major roads. Second, at least one street in each major neighborhood of the city and each major pedestrian route should be designated as pedestrian-only (banning motorized vehicle traffic), in order to improve the safety and walking conditions for the majority of Arusha residents who walk. These streets should also have at least one side dedicated to tree cover. Residents living along these streets should be organized into hyperlocal councils where responsibilities of rules enforcement and maintenance of pedestrian and bike infrastructure and tree maintenance are assigned. Third, each pedestrian-only street should set aside one portion of the land bordering it as a “green” region, dedicated to either native plants, green recreational space, or urban farming.

Fourth, public transit can be improved by organizing a reliable minimum level of service, schedules, and predictable routes for intracity daladalas, to be posted at various pickup points in the city. The content and administration of these services should be overseen by municipal government officials in collaboration with a committee of local daladala drivers and local transit users. Finally, an annual citizen’s town hall on transportation should be organized, where regional urban planners and officials explain development plans to randomly selected citizen representatives from different segments of Arusha society. The representatives will have small-group discussions to share their thoughts and desires for transportation improvements in the city and will present questions and ideas to local officials. Local officials and representatives will then work together to find common ground on priorities for future spending and urban designs.

The biggest roadblocks for implementing this program are cost, effective local governance, enforcement, and community buy-in. Currently, most of the Arusha region’s urban development outside of the small central district does not align closely with proposed land uses in urban master plans, and development is led by a variety of private actors.³³ All of these administrative challenges would be a heavy lift for a local government in a city which is not even Tanzania’s capital and require a significant level of community buy-in. Nevertheless, the local Arusha region government would need to oversee these changes to be effective and get strong buy-in and

ownership from locals who can enforce the regulations on the ground. Decisions made by this council would then be codified legally and enforced by both the community and the local government, as further improvements are made and programs on other streets are begun.

If they are effective at connecting important parts of town, these changes will offer a safer and more pleasant alternative to walking along the side of the highways for the majority of Arusha residents who do not have motor vehicles. The lack of wear and tear from motorized vehicles would make them cheaper to maintain in the long run and decrease community reliance on fossil fuels by making walking more appealing. The green spaces provided would help decrease urban heat island effects and have a positive effect on community health and well-being. Creating pleasant and safe walking spaces would incentivize tourists to actually visit the city, spend money, and interact in a more organic way with the community, creating a virtuous cycle where infrastructure investments are designed to benefit all.

V. Conclusion

While managing Arusha's urban development is a massive and complex task with significant challenges, the city's relatively small current size and lack of deep institutional planning offers an opportunity to re-orient development goals in this fast-growing region to focus on well-being instead of economic growth. Rather than aiming to be a panacea for every issue that Tanzania faces, the policies proposed are relatively practical, low-cost proposals that have great potential to improve the daily quality of life for thousands of Arusha residents who traverse the city every day. Moreover, the proposal attempts to shift long-term socio-political trends in the region to promote the health of the community, protect the environment and foster equitable development. If successfully implemented, it could have a powerful influence on Arusha's identity and landscape, even potentially serving as a model for other growing Tanzanian and African cities and easing Tanzania's transition into a new future where health and justice, rather than profit and exploitation, are highly valued.

Works Cited

-
- ¹ IMF. "Changing Demographics and Economic Growth – IMF F&D." Accessed October 15, 2023. <https://www.imf.org/en/Publications/fandd/issues/2020/03/changing-demographics-and-economic-growth-bloom>.
- ² "Population Growth Rate." Accessed October 15, 2023. <https://www.cia.gov/the-world-factbook/field/population-growth-rate/country-comparison/>.
- ³ "Olduvai Gorge | Archaeological Site, Tanzania, Human Evolution | Britannica." Accessed October 15, 2023. <https://www.britannica.com/place/Olduvai-Gorge>.
- ⁴ "Biodiversity in Tanzania | United Republic of Tanzania Biodiversity." Accessed October 15, 2023. <https://tz.cbm-cbd.net/en/biodiversity-tanzania>.
- ⁵ "Arusha, Tanzania Metro Area Population 1950-2023." Accessed October 13, 2023. <https://www.macrotrends.net/cities/22893/arusha/population>.
- ⁶ "About Arusha City – AMRS Tanzania 2019." Accessed October 13, 2023. <https://www.africanmrs.net/tanzania-2019/about-arusha-city/>.
- ⁷ Leon, Huang, Chyi-Yun, Namangaya, Ally Hassan, Lugakingira, Marygrace, Cantada, Isabel Margarita De. "Translating Plans to Development : Impact and Effectiveness of Urban Planning in Tanzania Secondary Cities." Text/HTML. World Bank. Accessed October 14, 2023. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/300731546897829355/Translating-Plans-to-Development-Impact-and-Effectiveness-of-Urban-Planning-in-Tanzania-Secondary-Cities>, p. 35.
- ⁸ Ibid., p. 35-40.
- ⁹ Ibid., p. 42.
- ¹⁰ "Real GDP per Capita." Accessed October 15, 2023. <https://www.cia.gov/the-world-factbook/field/real-gdp-per-capita/country-comparison/>.
- ¹¹ "Population below Poverty Line - The World Factbook." Accessed October 15, 2023. <https://www.cia.gov/the-world-factbook/field/population-below-poverty-line/>.
- ¹² World Bank. "Overview." Text/HTML. Accessed October 15, 2023. <https://www.worldbank.org/en/country/tanzania/overview>.
- ¹³ Mizdrak, Anja, Tony Blakely, Christine L. Cleghorn, and Linda J. Cobiack. 2019. "Potential of Active Transport to Improve Health, Reduce Healthcare Costs, and Reduce Greenhouse Gas Emissions: A Modelling Study." *PLOS ONE* 14 (7): e0219316. <https://doi.org/10.1371/journal.pone.0219316>.
- ¹⁴ Räber, Nikolai. 2014. "Measuring the Impact of Bicycles in Tanzania." https://velafrica.ch/wp-content/uploads/2020/11/Velafrica_Studie_Nikolai-Raeber_2014_Access-to-transport-for-the-base-of-the-pyramid-Measuring-the-impact-of-bicycles-in-Tanzania.pdf
- ¹⁵ Yuchi, Weiran, Hind Sbihi, Hugh Davies, Lillian Tamburic, and Michael Brauer. 2020. "Road Proximity, Air Pollution, Noise, Green Space and Neurologic Disease Incidence: A Population-Based Cohort Study." *Environmental Health* 19 (1): 8. <https://doi.org/10.1186/s12940-020-0565-4>.
- ¹⁶ Benton, Jack S., Gail Jennings, Jim Walker, and James Evans. 2023. "'Walking Is Our Asset': How to Retain Walking as a Valued Mode of Transport in African Cities." *Cities* 137 (June): 104297. <https://doi.org/10.1016/j.cities.2023.104297>.
- ¹⁷ Ibid.
- ¹⁸ Ibid.
- ¹⁹ Mendieta, Classio Joao, Alphonse Nkurunziza, Julio A. Soria-Lara, and Andres Monzon. 2022. "Cycling in Sub-Saharan African Cities: Differences and Similarities with Developed World Cities." *IATSS Research* 46 (3): 398–410. <https://doi.org/10.1016/j.iatssr.2022.05.003>.
- ²⁰ Waldinger, Robert, and Marc Schulz. 2023. "What the Longest Study on Human Happiness Found Is the Key to a Good Life." *The Atlantic* (blog). January 19, 2023. <https://www.theatlantic.com/ideas/archive/2023/01/harvard-happiness-study-relationships/672753/>.
- ²¹ Lucas, Karen, Gail Jennings, Mark Zuidgeest, Roger Behrens, Christo Venter, Winnie Mitullah, and Bronwen Thornton. 2019. *Transport Social Exclusion Five African Cities*, p. 8.

-
- ²² Ochoa, Maria Catalina, Juliana Aguilar-Restrepo, Jesse Harber, and Daniel Turk. 2021. *Shifting the Mobility Paradigm of Intermediate Cities in Tanzania*. Other Urban Study. World Bank. <https://doi.org/10.1596/35927>, p. 45.
- ²³ Pulugurtha, Srinivas, Raunak Mishra, and Sravya Jayanthi. 2022. "Does Transit Service Reliability Influence Ridership?" University of North Carolina at Charlotte. https://scholarworks.sjsu.edu/mti_publications/425/.
- ²⁴ Kumari, Pallavi. 2023. "AMARTYA SEN'S THE IDEA OF JUSTICE - Legal Vidhiya." July 3, 2023. <https://legalvidhiya.com/amartya-sens-the-idea-of-justice/>.
- ²⁵ Leon, Huang, Chyi-Yun, Namangaya, Ally Hassan, Lugakingira, Marygrace, Cantada, Isabel Margarita De. n.d. "Translating Plans to Development : Impact and Effectiveness of Urban Planning in Tanzania Secondary Cities." Text/HTML. World Bank. Accessed October 14, 2023. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/300731546897829355/Translating-Plans-to-Development-Impact-and-Effectiveness-of-Urban-Planning-in-Tanzania-Secondary-Cities>.
- ²⁶ Laurent, Eloi. "From Welfare to Farewell : The European Social-Ecological State Beyond Economic Growth." In *From Welfare to Farewell : The European Social-Ecological State Beyond Economic Growth: Laurent, Eloi*. [S.l.] : SSRN, 2021. <https://doi.org/10.2139/ssrn.3873766>.
- ²⁷ Sung, Chan Yong. 2013. "Mitigating Surface Urban Heat Island by a Tree Protection Policy: A Case Study of The Woodland, Texas, USA." *Urban Forestry & Urban Greening* 12 (4): 474–80. <https://doi.org/10.1016/j.ufug.2013.05.009>.
- ²⁸ BERLAND, Adam, Sheri A. SHIFLETT, William D. SHUSTER, Ahjond S. GARMESTANI, Haynes C. GODDARD, Dustin L. HERRMANN, and Matthew E. HOPTON. 2017. "The Role of Trees in Urban Stormwater Management." *Landscape and Urban Planning* 162 (June): 167–77. <https://doi.org/10.1016/j.landurbplan.2017.02.017>.
- ²⁹ Jimenez, Marcia P., Nicole V. DeVille, Elise G. Elliott, Jessica E. Schiff, Grete E. Wilt, Jaime E. Hart, and Peter James. 2021. "Associations between Nature Exposure and Health: A Review of the Evidence." *International Journal of Environmental Research and Public Health* 18 (9): 4790. <https://doi.org/10.3390/ijerph18094790>.
- ³⁰ Modal share is the percentage of people using a particular mode of transport within the overall transport usage of an urban area. For more information on modal share meaning and assessment, see "Modal Share | Eltis." <https://www.eltis.org/glossary/modal-share>.
- ³¹ UNEP. "How Is Air Quality Measured?," September 22, 2022. <http://www.unep.org/news-and-stories/story/how-air-quality-measured>.
- ³² Envira. "What Is and How to Measure Noise Pollution?," May 24, 2023. <https://enviraio.com/measure-noise-pollution/>.
- ³³ Peter, Linda Lazaro, and Yuzhen Yang. "Urban Planning Historical Review of Master Plans and the Way towards a Sustainable City: Dar Es Salaam, Tanzania." *Frontiers of Architectural Research* 8, no. 3 (September 1, 2019): 359–77. <https://doi.org/10.1016/j.foar.2019.01.008>.