Democratise and decolonise to decarbonise: how to reap health and climate benefits of transport infrastructure in Africa

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Tolu Oni and colleagues argue that building healthy low carbon transport infrastructure in Africa's rapidly growing cities requires addressing historical contexts, confronting power imbalances, and claiming transport as a social good

Africa is undergoing rapid urbanisation while facing growing climate vulnerabilities and a rising burden of non-communicable diseases. With global urban growth expected to be greatest in Africa and Asia,[1] addressing the interlinked issues of health, climate, land use, and pollution is crucial for sustainable development. By 2030, the number of African cities with over half a million people is estimated to increase by 80%,[2] putting pressure on housing, transport, and energy sectors.

The transport sector is important for development and economic progress, influencing environmental (noise and air pollution, green and blue spaces), economic (employment, household income), and social (education, social network) factors. It can facilitate access to livelihoods, education, and social connectedness but has historically been associated with negative impacts on health and climate.

Positive changes are emerging across the African region towards healthier and low carbon transport systems, with increasing emphasis on safe non-motorised travel such as walking and cycling, alongside robust mass transport systems. Although transport has a crucial role in facilitating mobility for human and economic development, conceptualisation of efficiency needs to move away from the extractive and exploitative movement of goods and people to prioritise health and climate resilience. This reframing should consider the historical context, power dynamics, and the unique characteristics of the continent's mobility ecosystem.

Health and climate effects of the transport sector

Despite having the lowest car ownership per capita, Africa has the highest traffic related deaths in the world.[3] Motor vehicle emissions account for 90% of urban air pollution in sub-Saharan Africa, causing ill health and death.[4] The transport sector in Africa is estimated to cause more deaths than AIDS, tuberculosis, and malaria combined.[5] The transport sector produces 22% of global energy related carbon emissions and is a rapidly growing source of emissions in Africa.[6] Access to safe, inclusive, and affordable transport remains a challenge, exacerbating social and environmental inequalities[7] across the continent's rapidly growing cities.

Beyond enhancing mental health through increased social cohesion, the transport system can help improve population health and climate resilience. The 2023 Pathfinder report on health co-benefits of climate mitigation found that the transport sector had the most substantial evidence linking mitigation actions to health outcomes. Health co-benefits arise from reductions in air pollution and injury risk as well as increased physical activity.[8]

These impacts highlight the need to rethink investment in transport infrastructure. Encouraging examples include mass transport projects such as bus rapid transit systems in Lagos, Nigeria,[9] Dar es Salam, Tanzania,[10] and Johannesburg, South Africa, and a light rail system in Addis Ababa, Ethiopia.[11] Kenya has also increased investment in electrification of motorcycle taxis, which are used by a substantial proportion of the population in urban areas.[12] Yet these investments must also protect and promote health, such as limiting air pollution on buses and trains and linking these systems to a comprehensive network of non-motorised transport infrastructure to encourage active travel and reduce injuries. In recognition of the often aspirational nature of car ownership, it is also crucial that investments in transport infrastructure are equitably deployed while appealing to all, irrespective of socioeconomic status, to avoid mass transport being perceived as only for those unable to buy a car.

With two thirds of planned investments in African cities up to 2050 still pending,[13] there is an opportunity to use large scale urban infrastructure development in Africa to move away from the legacy of urban colonial design and promote health and climate resilience.

Power imbalances and colonial legacies

For most parts of the African continent, the urban design and planning that informed the form and experience of cities occurred during a colonial era. Cities were designed for the ruling imperial powers and optimised to improve the efficiency of extraction of resources and colonial administration.[14] As a result, the present and future needs of the majority population were neglected. This legacy of colonial urban design persists today, notably in the forms of knowledge and financial power asymmetries that emerge in efforts to contemplate, implement, finance, and govern health and climate inefficiencies of the transport system.

Knowledge asymmetry manifests as knowledge sources, rooted in the west, that perceive urban “informality” as inferior and perpetuate the notion that development requires a total transition away from informal structures and systems. This extends to how subsequent generations are trained, perpetuating the notion that western ideas of transport development and policy are universally applicable and reinforcing historical structures of exclusion and marginalisation. Asymmetries are further compounded by the predominance of global north leadership and participation in global debates about greening transport infrastructure.[15]

Knowledge asymmetry also manifests as lack of data: the health effects of transport are still largely unknown across much of Africa because of limited data on noise and air pollution, injuries, and travel patterns,[16] exacerbated by limited financial capacity. A recent State of Global Air Quality Funding report found that Africa received only 5% of all air quality funding during 2017-21, despite having some of the world’s most polluted countries.[17] This financial power imbalance is effectively replacing the influence of historical colonial powers with

development driven global market interests, often at the expense of the needs of city residents.

Importance of community and connectedness

Social infrastructure generates social capital, ensuring residents can access and sustain social interaction and forge bonds. The physical and mental health benefits are well documented,[18] but optimising such social connections in Africa is often neglected and poorly understood. The importance of social infrastructure is highlighted by today's climate reality, characterised by increasing extreme weather events such as floods and extreme heat. In such conditions, good social infrastructure can improve health outcomes.[19]

For many people in the global north, urban living can increase social isolation and loneliness.[20] By contrast, in many African countries, urban life maintains a focus on community and connectedness. However, with the threat of rapid urbanisation and growing urban sprawl, this dynamic is at risk. To avoid the isolating features seen in much of western Europe and North America, transport infrastructure must be deliberately planned to serve a social purpose by first seeking to understand and build on existing components of the mobility ecosystem that foster a sense of place and social connection.

Urban design for healthy and equitable mobility

Not all low carbon transport infrastructure is healthy, so there must be a focus on health when planning for a low carbon future. This requires reassessing what "healthy" and "low carbon" mean given the global trend of car centric urbanisation. Mass motorisation began later in Africa than in higher income regions, but dependence on motor vehicles (including those with two or three wheels) and pro-motorisation policies are rapidly gaining traction. Many countries in Africa are adopting car centric strategies at the expense of other mobility options such as cycling and walking that most urban dwellers rely on.[4] Urban formations centred around car use feature longer distances, lower density, increased sprawl, and separation from amenities, creating environments where lack of access to a car worsens conditions for vulnerable groups. Such designs not only fail to meet current health needs but also disadvantage non-car owners, currently the majority of the population, and particularly older people and those with disabilities or children.[21]

Public space and transport as social infrastructure

Instead of a car centric focus, roads should be considered as public space and transport infrastructure as social infrastructure. Achieving this requires that transport infrastructure is decolonised and democratised as part of broader spatial reform.

This approach goes beyond the economic view of transport as merely a means to move resources and the workforce. An asset based, decolonised approach acknowledges that many components of the mobility ecosystem evolved to meet social needs and recognises the legitimacy of existing structures, actors, and uses. Often labelled as "informal" these elements, such as informal taxis and community organised communal school transport, are typically ignored or displaced in favour of "formal" infrastructure. However, we argue that adaptive components, which meet important population connectivity needs by reaching underserved areas and catering for locally specific mobility needs, should be included in efforts to create safer and healthier transport infrastructure.

A decolonising approach also fosters inclusivity by considering the needs of populations typically excluded from formal planning processes. For example, when decision makers and transport planners—who are often middle aged, educated men using cars—assume that most people move about in the same way as themselves, they may prioritise solutions for private vehicles and traffic lanes over pedestrian pathways. As walking is the primary mobility option for many, car centric systems limit the ability of certain social groups to participate fully in society, leading to further social exclusion and conflict.

If roads are considered a public space, transport infrastructure must genuinely service the public. This requires recognising the value of the current high levels of walking as a starting point.[22] However, to make active travel safer and healthier, walking and cycling infrastructure must be developed alongside measures to reduce the impact of climate hazards, such as tree cover for heat protection and flood resilient pathways. The covid-19 pandemic highlighted unmet demand for safe public space for leisure related activities, with roads repurposed for physical activity as movement restrictions made them safer and improved air quality.[23] Central questions such as, "Who are we building for? Is this inclusive? Are the people we are building for part of the decision making process?" can guide the democratisation process to achieve health and climate benefits from transport systems.

This democratised approach promotes participatory decision making by engaging diverse stakeholders, from street traders to drivers of informal mass transit. This inclusivity helps to protect existing structures that provide crucial services for the city's social infrastructure. By taking a planetary health lens,[24] it also considers the human and environmental costs of transport infrastructure, focusing on the social purpose of mobility, and supporting safe non-motorised travel alongside a robust mass transport system.

The importance of an inclusive participatory approach, along with the potential for tension and polarisation, is illustrated by Johannesburg's efforts to address spatial inequalities through a bus rapid transit system (**box 1**). While the process and outcomes of the Johannesburg initiative may not be perfect, they demonstrate the need for such an approach. However, a more effective democratised approach would emphasise proactive participation rather than merely responding to conflict and push back.

Box 1. Engaging diverse actors in transport infrastructure development: Johannesburg's Rea Vaya bus rapid transit system

Bus rapid transit (BRT) is a "high-quality bus-based transit system that delivers fast, comfortable, and cost-effective services at metro-level capacities."[25] Several cities are implementing these systems, which comprise dedicated lanes with busways and iconic stations typically in the centre of the road, off-board fare collection, and fast and frequent services.

Johannesburg's 2007 city transport plan included having 85% of the people living within 1 km of a BRT corridor or its feeder route.[26] The BRT is called Rea Vaya, which means "we are going." Phase 1 was established in 2009 linking Soweto and the city centre in an attempt to reverse the exclusion that was created by the apartheid system. Diverse groups and views affected implementation of Rea Vaya.

City of Johannesburg—The aim of Rea Vaya, which was also designed to be a legacy project for the city for the 2010 football world cup in South Africa, was to deliver a better and reliable mass transit service to city residents in a manner that is affordable for residents with low incomes.

Taxi drivers and minibus operators—Minibus taxis emerged to fill a public transport gap in townships like Soweto. Their operators dominate the public transportation, and any plans to improve or change public transport in the city becomes a source of conflict with the city authorities. Several taxi strikes related to the

introduction of the Rea Vaya system took place in 2009-10. Taxi operators who worked closely with the city on Rea Vaya were targets of shooting. The first Rea Vaya buses to be commissioned on the streets were shot at, and the Johannesburg police had to maintain a heavy presence on all buses and stations after people were wounded and some allegedly killed. After extensive negotiations between the city authorities and taxi unions, a participation framework agreement was signed in which over 300 minibus taxi operators agreed to remove 585 minibuses from the BRT Corridor 4 and hand them to the city in exchange for compensation money and becoming shareholders in Rea Vaya operating company.[26] The company was bound to employ drivers and 80% of its unskilled staff from a database containing selected candidates drawn from the affected minibus operators.[26]

Johannesburg commuters—Johannesburg was designed with a predominantly car based mode of transportation. The residents supported Rea Vaya because it provided a much needed public transport that people could afford and rely on, particularly lower income residents who often reside in distant places with few transport connections.

Private car owners—The goal of Rea Vaya was to reduce private car use thereby improving air quality, reducing carbon emissions, and minimising traffic congestion. In a culture where driving is a symbol of status and using a bus is associated with poverty, this goal has proved challenging despite efforts (such as luxurious interiors) to attract private car owners. The need for additional spatial interventions such as housing and mixed land use has been identified as an impediment to greater uptake.[27]

Relying solely on public transport systems is unlikely to achieve spatial justice. Given the significant pressures of rapid urbanisation, it is critical that the democratisation of transport infrastructure is integrated into broader spatial transformations, including mixed land use, equitable urban development, housing, and coordination with existing modes of mass transport.[27]

Strengthening regulation and financing

To institutionalise democratisation and decolonisation approaches, the governance of urban infrastructure development must be updated. Both local and national levels require a stronger focus on health and climate based outcomes. As many health and climate benefits manifest in the medium and long term, local authorities also need to be empowered, both financially and politically, to make decisions that extend beyond short political cycles.

Upgrading governance structures and regulations can enhance health and climate action within the transport sector. The regulation of used cars serves as an important example: controlling their import can help to mitigate air pollution and reduce global greenhouse gas emissions. A 2020 UN Environment Programme report found that African countries imported the highest number of used vehicles globally in 2015-18, yet most had minimal or no regulations guiding these imports.[28] Notable exceptions include Kenya and Mauritius, which have established age limits on imported vehicles—eight years and three years respectively—resulting in cleaner fleets compared with neighbouring countries.

Only a few exporting countries had regulations on used car exports. For example, over 80% of vehicles exported from the Netherlands to West Africa in 2019 met the 2006 Euro 4 standard (European legislation that limits pollutants in the exhaust emissions of new vehicles), with many lacking valid roadworthy certificates.[28] This illustrates the need for local regulations that both govern the quality of motorised vehicles used locally and exported globally (mostly from high income countries) to avoid perpetuating inequity.

Efforts to reduce emissions must be complemented by measures that promote access to low carbon technology and infrastructure. This requires striking a balance between economic and

social ventures, such as financial subsidies for public bus operators, establishing tax regulations for private cars, and investing in pedestrianisation programmes. Achieving this balance is more challenging in settings with limited public finance and where policy makers struggle to balance regulation and service provision. In such situations, development finance institutions have an important role in promoting and advocating for financial instruments that include social, health, and climate considerations alongside economic factors.

Putting our proposed approach into practice will require updating the training for the next generation of professionals. This includes equipping diverse stakeholders, such as public decision makers, financiers, engineers, and urban planners, to embrace the decolonised and democratised approaches outlined here. It is critical that health and climate goals become central guiding principles of the significant investments in transport infrastructure that lie ahead in Africa.

Key messages

Alongside rapid urbanisation, Africa faces increasing climate vulnerability and a rising burden of non-communicable diseases

Growing cities in Africa offer a key opportunity for joint action on climate and health

Investment in the transport sector can drive healthy, low carbon infrastructure in Africa, but efforts to achieve this must align with contextual realities

Africa's transport infrastructure must be decolonised, democratised, and reimagined as social infrastructure to protect health and the climate

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Footnotes

- Contributors and sources: The authors work at the intersection of health and urbanisation from different disciplinary backgrounds and with a strong focus on Africa. TO is a public health physician with a planetary health focus on meso and macro-level determinants of diet and physical activity in the contexts of urbanisation and climate change worldwide. MT has expertise on environmental health exposures related to urban transport systems. She developed the first policy-oriented health impact assessment model for urban and transport planning in Africa. HC's background in economics, cities and environmental diplomacy and experience contributed to the framing of the contextual realities that cities in Africa face today. All authors drew on their practical experience and their collective knowledge and research or practice endeavours. The paper was conceptualised by TO, who wrote the first

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