

Harnessing Urbanisation for Development: Roadmap for Tanzania's Urban Development Policy

A REPORT BY THE TANZANIA URBANISATION LABORATORY



COALITION FOR URBAN TRANSITIONS

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About this paper

This report was collated by Anton Cartwright, based on the proceedings of Tanzania Urbanisation Laboratory (TULab). TULab was chaired by the Ministry of Finance and Planning (MoFP) and comprised ministries, civil society, and private sector representatives. This work is the product of everyone who lent their time and energy to the TULab process, but particular recognition is due to Dr Lorah Madete of MoFP, who ably chaired TULab in Dar es Salaam and Dodoma; Mussa Martine of the Economic and Social Research Foundation, who performed the role of TULab secretary; and Reshian Kanyatile, who served as TULab Outreach Coordinator. Anton Cartwright is grateful for comments on earlier drafts submitted by Hastings Chikoko, Sarah Colenbrander, Nick Godfrey, Manisha Gulati, Catlyne Haddaoui, Mukuki Hante, Robin King, Alfonse Kyessi, MaryGrace W. Lugakingira, Nidhi Mittal, Edgar Pieterse, Karen Press, Andrew Tucker, Ivan Turok, and Alma Viviers.

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Disclaimer

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Select Acronyms

BRT	Bus rapid transit
DART	Dar Rapid Transit Agency
EWURA	Energy and Water Utilities Regulatory Authority
FYDP	Five Year Development Plan
GDP	Gross domestic product
GHG	Greenhouse gases
GoT	Government of Tanzania
GW	Gigawatt
ICT	Information communication technology
ISO	Independent system operator
LGA	Local government authority
LGLB	Local Government Loans Board
LNG	Liquefied natural gas
LUCF	Land Use Change and Forestry
MKURABITA	Property and Business Formalisation Programme
MLHH	Ministry of Lands, Housing and Human Settlements
MoE	Ministry of Energy
MoFP	Ministry of Finance and Planning
MoWTC	Ministry of Works, Transportation and Communication
MW	Megawatt
NAPA	National adaptation plan of action
NCE	New Climate Economy
NUP	National urban policy
PO-RALG	President's Office – Regional Administration and Local Government
PSMP	Power system master plan
SAM	Social accounting matrix
SDG	Sustainable Development Goal
SEZ	Special economic zone
SOE	State-owned enterprise
TANESCO	Tanzania Electric Supply Company
TANROADS	Tanzania National Roads Agency
TARURA	Tanzania Rural and Urban Roads Agency
TOD	Transit-oriented development
TRA	Tanzania Revenue Authority
TULab	Tanzania Urbanisation Laboratory
UDP	Urban development policy
UNFCCC	United Nations Framework Convention on Climate Change
WTP	Willingness to pay



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Executive Summary

Tanzania's national Five Year Development Plan 2016/17–2020/21 (FYDP II) sets the goal of facilitating the transition to an industrial middle-income country by 2025, a goal that requires gross national income per capita to increase from US\$905 (as of 2017) to at least US\$1,026 by 2025. Current domestic and regional conditions make this ambition realisable: Tanzania has experienced gross domestic product (GDP) growth of over 5% per annum, which outstrips the rate of population growth over the past 10 years, thereby improving dependency ratios; while liquid natural gas finds have transformed Tanzania's balance of payments, freeing up the budget to invest in a fiscal stimulus programme that delivers large-scale energy and transport infrastructure.

Tanzania is also urbanising. The urban population has grown by an average of 5.2% per annum over the past decade, and it is estimated that over half the population will live in urban areas by the middle of the century. Urbanisation has the potential to be a powerful enabler of cost-effective service delivery, structural reform of the economy, and development. At present, however, Tanzania's urban expansion is proceeding without any definitive urban policy in place and remains detached

from government-led programmes for industrialisation and development. The result is unplanned and uncoordinated cities, leading to congestion, sprawl, and low economic multipliers that make infrastructure finance unsustainable.

In order to address this, Tanzania requires an urban development policy (UDP) to clarify roles and responsibilities in what is a multi-actor process. The policy, ideally to be implemented by the President's Office – Regional Administration and Local Government (PO-RALG) and supported with budget allocations from the Ministry of Finance and Planning (MoFP). It will facilitate the streamlining of the existing layers of often overlapping and contradictory urban policy, land classification, and investment, while bringing coherence to the investments of ministries, state-owned enterprises (SOEs), and the private sector within a new framework of sustainable urbanism.

Harnessing Urbanisation for Development: Roadmap for Tanzania's Urban Development Policy is a product of Tanzania Urbanisation Laboratory (TULab), which convened a cadre of Tanzanian urbanists from government, SOEs, academia, civil society, and business in a two-year coproduction process.

The process relied on an innovation competition, interviews, and four intensely deliberated background papers documenting challenges and opportunities for Tanzanian cities. The roadmap it has produced will act as an aid to the promulgation of a UDP.

The medium-term goal for a Tanzanian UDP is well-capacitated and accountable local government authorities (LGAs) in its seven largest cities and towns. Each of these will raise at least 40% of their revenue themselves, while investing a minimum of US\$90 per person per year in infrastructure and services. Within the shorter timeframes of FYDP II, the government will need not only to work towards this medium-term goal, but also to coordinate leadership, regulatory influence, and budgets, ensuring Tanzania's cities grow in a planned, inclusive, and sustainable manner. The roadmap for a UDP details the options currently available to MoFP, PO-RALG and supporting ministries, while at the same time highlighting the new institutions and policy innovations that will be necessary if the growth of Tanzania's urban spaces is to drive national development. These innovations and institutions include:

- consolidating the land classification systems applied by PO-RALG, the Ministry of Lands, and the Tanzanian Bureau of Statistics into a single cadastre. This cadastre should demarcate distinctions between residential, industrial, commercial, and conservation land in cities, while marshalling investments in infrastructure and mobility that will ensure connectivity between people and goods on the respective land types. The demarcation of urban conservation land is essential for the retention of rainwater and the reduction of urban flooding during heavy precipitation events.
- radically accelerating the upgrading of tenure security through land surveying and titling that draws on new technology and partnerships with civil society. This is a prerequisite for the collection of property tax, the financing of urban services, and for enabling private investment in properties. A newly mandated land tribunal would play an important part in the swift resolution of tenure disputes currently clogging the system.
- increasing significantly the proportion of national budget transferred to urban LGAs, as well as improving reliability in the timing of these transfers, to enable local planning and the

application of fiscal strategy at the city scale. Establishing the requisite trust between LGAs and central government requires oversight capacity (the equivalent of South Africa's Finance and Fiscal Commission) that not only enables communication between the different tiers of government, but also oversees the budget allocation in a transparent manner. Once Tanzania's cities have fiscal capacity, SOEs will be able to sell them bulk services, creating the scope for tariff-setting and revenue collection by LGAs. This will both enhance revenue collection and accelerate service delivery.

- restoring ministerial governance of SOEs. SOE investment is crucial to urban development and has a lasting impact on urban spatial form and the trajectory of economic growth in Tanzanian cities. Coordinated urban development requires that SOEs align their investments with the plans of their respective ministries, and that these ministries design such plans with the growing number of urban citizens in mind. Given recent technological innovations and associated shifts in economies of scale, vertically integrated electricity and water monopolies currently lack the requisite innovation and agility to supply urban demand at least cost. Ministries therefore have to oversee a process of SOE reform while maintaining supply of services.
- increasing electricity supply five-fold between 2017 and 2025 in order to ensure that urbanisation becomes an engine of growth and sustainable development. This increase needs to be accompanied by the displacement of charcoal (with its adverse health, ecological, and climate impacts), and therefore requires an updated power system master plan that harnesses recent price shifts in electricity generation while embedding low-carbon electrification as an imperative for competitive urban industries. The plan also needs to be clear about the relative importance over time of gas, coal, renewable, and geothermal energy to the Tanzanian energy mix. Clarity is necessary to provide public and private investors with certainty, and to avoid the projected US\$30 billion (60% of Tanzania's GDP in 2017) investment in generation capacity over the next five years becoming stranded due to excessive greenhouse gas content.

- creating new capacity within government to better understand and partner with the informal sector. The size of this sector renders it an essential component of any national UDP and, while not uniformly productive, both the informal economy and the networks of community-based organisations operating in Tanzania's cities contain diverse skills and technologies that are crucial to accelerating service delivery and rendering cities liveable. The Tanzanian government, like many other governments on the continent, has so far struggled to harness fully this capacity, despite its potential for creating urban work and reducing the burden of service delivery on the state.
- tailoring the upcoming industrial strategy in FYDP III (2021/22–2025/26) to link up Tanzania's manufacturing sector with the steady growth in demand for goods, services, and clean technologies from cities in the region. Macroeconomic analysis conducted for this roadmap suggests such an industrial strategy would be capable of generating growth and employment, as well being an important complement to the current strategy based on special economic zone (SEZ), in terms of rural–urban linkages and providing employment for poorer households in rural areas. An urban-based industrial economy holds strong potential for anticipating the impact of climate change on the global economy, which would insulate Tanzania's balance of payments against associated commodity price fluctuations and macroeconomic risks.

As such, the UDP must go beyond updated master planning and instead provide a template for collaboration between multiple actors, allowing them to work together to unlock thriving, economically productive, and sustainable urban futures for Tanzania's citizens. The UDP should further guide shifting linkages between rural and urban sectors, and the dynamic investment balance that needs to be struck between large cities and their smaller counterparts in the hinterland.

Money spent early in the development of Tanzania's cities will help to avoid more complicated and costly investments required to address entrenched, risky, and inefficient patterns of urban development. Even so, however well-mapped the UDP is, it will only be implementable if accompanied by: (i) a political commitment to cities as places of innate opportunity; (ii) qualitative and quantitative data on Tanzania's

cities that allow investors to operate with confidence and the public to hold authorities to account; and (iii) a nationally determined social justice framework that enables the peaceful resolution of conflicts and trade-offs as cities expand, ensuring that 'no one is left behind'.

Drawing on inferences made in the background papers used for this roadmap, the implementation of the UDP could potentially generate a suite of interlocking benefits. These include an additional 8.8% in GDP by 2022, as well as 212,000 additional jobs, many of which would be taken up by poorer households as industrial strategy shifts to support urban growth. It could also increase GDP per metric ton of greenhouse gas emitted to roughly US\$12,000 per metric ton, up from US\$3,800 per metric ton (excluding emissions from land use change and forestry).

Designing cities that encourage safer and healthier lifestyles (particularly for commuters), coordinating the supply of clean energy, potable water, and sanitation around the needs and affordability of citizens, and aligning industrial strategy to meet the rising urban demand for locally produced food and materials could together reduce the urban burden of disease and cut the infant mortality rate to 30 per 1,000 live births. Similarly, better-coordinated urban mobility and flood mitigation measures could reduce the cost of congestion in Dar es Salaam by US\$700,000 (41%) per annum, while prioritising improved road quality and pedestrian safety could account for 1,500 fewer road deaths per annum between 2018 and 2030.

By combining surveying technology, a mandated land tribunal, and contributions from land-focused NGOs, the UDP could reduce the average time taken to transfer land title to 90 days (the current figure is 380 days), increase the extent of titled land from 5% to 50% by 2022, and improve tenure security for non-titled residents.

The UDP outlined in this roadmap presents a pathway whereby Tanzanian cities can drive the country to middle-income status, unlocking in the process the complementarity between urbanisation, industrialisation, and climate-resilient development. In short, the roadmap provides Tanzania with the means to deliver on both domestic and international obligations, forging new development pathways and providing crucial and much-needed leadership to the region.



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'Roadmap' [noun]: strategic plan that defines a desired outcome and includes the major steps or milestones needed to reach it. It also serves as a communication tool, a high-level document that helps articulate the strategic thinking – the 'why' – behind both the outcome and the plan for getting there.

1. Introduction

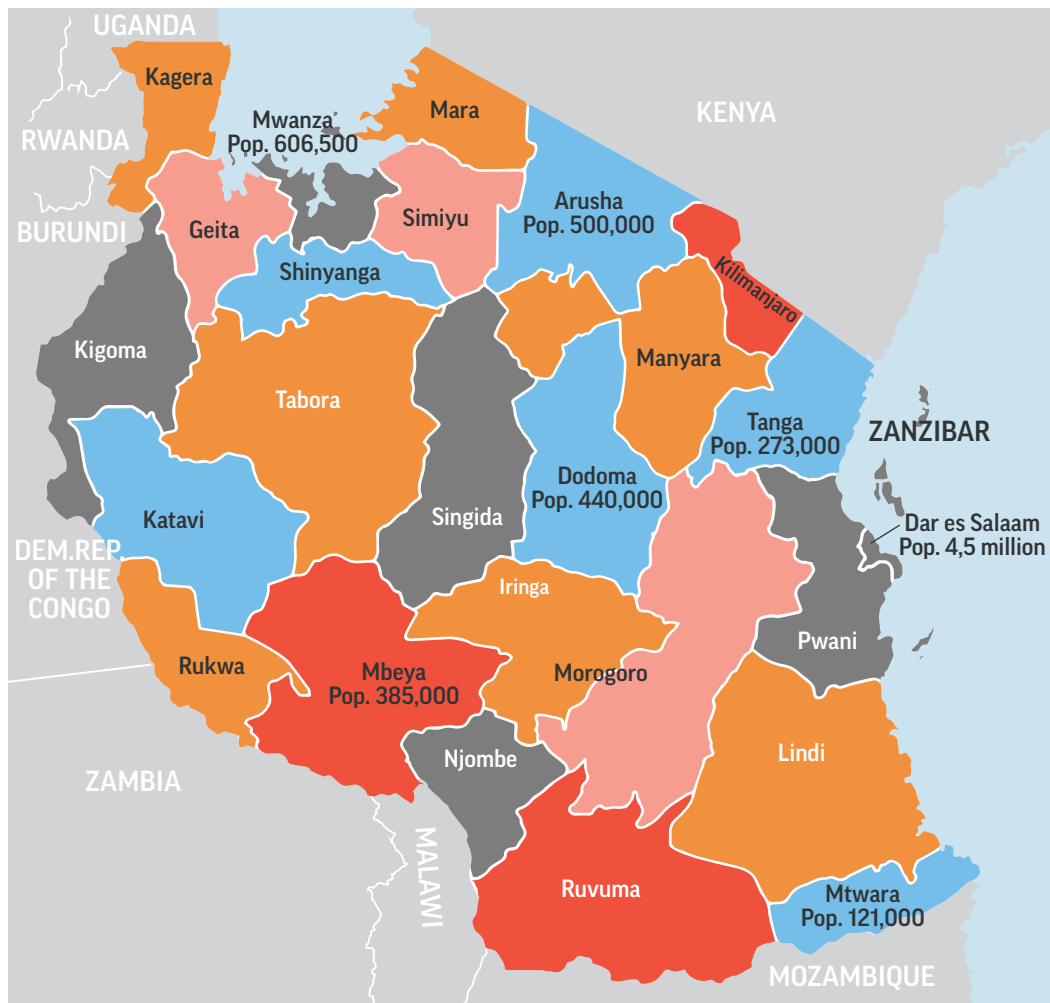
Tanzania has a celebrated postcolonial cultural heritage, striking natural beauty and abundant resources (Askew 2002; Adam et al. 2017). Since independence in 1961, a number of domestic and international conditions have combined to render the current period one of hope: the economy is growing, dependency ratios are improving, the country has access to global communication and energy technologies, and there is public confidence in a government that has demonstrated its intention to invest in the country's future (NBS 2016a). Furthermore, Tanzania's renewed confidence is shared by many of its neighbours and trading partners, as captured in the African Union's *Agenda 2063: The Africa We Want manifesto* (AU 2015).

Tanzania is also one of the few countries in the world to have a positive 'adjusted net savings' – savings that

take into account not just finances, but the impact of fixed capital consumption, education, depletion of natural capital, and pollution (World Bank n.d.a). This status stems from Tanzania's extensive natural environment, low levels of greenhouse gas emissions (0.22tCO₂ per capita per annum) from its transport, energy and industrial sectors (World Bank 2017), and declining emissions levels (5.48tCO₂ per capita per annum) once land use, deforestation, and charcoal burning are included (Gütschow et al. 2016). These attributes provide Tanzania with strategic potential at a time when climate change and ecological degradation have become escalating global concerns (IPCC 2018; IPBES 2019).

Within this generally positive context, Tanzania is urbanising rapidly. Driven mainly by population growth rather than migration to cities, Tanzania's urban population has increased by an average of 5.2% per annum over the past decade

Figure 1
Regions of Tanzania



Source: Alma Viviers/African Centre for Cities.

(NBS 2016b; UN 2017). The proportion of Tanzanians living in cities increased from 18.8% in 1990 to 33% in 2016, and by some estimates Tanzania will be majority urban by the middle of the century (NBS 2016a). Dar es Salaam, a city experiencing both growth within its population and through inward migration, is expected to become a megacity of some 10 million people before 2035 (UN 2017).

In Europe, North America, Latin America, as well as in some parts of Asia, urbanisation was strongly correlated with economic development. In these regions, higher wages earned by urban sector workers relative to rural sector workers (regardless of education), cheaper service delivery per capita in cities, easier revenue collection, and

the agglomeration advantages for business-to-business trade and innovation that manifest in cities, all ensured that the proportional growth of urban populations drove industrialisation and development (Spence et al. 2009; OECD/AfDB/UNDP 2016; NCE 2018). Since 1990, Tanzania has grown, developed, and urbanised (Table 1), but has yet to harness fully the mutually reinforcing power of these changes (Turok 2013; OECD/AfDB/UNDP 2016; Worrall et al. 2017). On the contrary, Tanzanians are urbanising at lower levels of per capita income (US\$905) than their counterparts in Asia and Latin America (Lall et al. 2017). Furthermore, development in Tanzania has historically had a rural focus, leaving much urban growth unplanned and uncoordinated.

Table 1
Tanzanian Development Indicators 1990–2017

Indicator	1990 (unless specified)	2017 (unless specified)
GDP (current US\$)	4.2bn	50.0bn
Gross national income per capita (Atlas method)	200	905
School enrolment %	69.6	80.8 (2015)
Human Development Index	0.37	0.53
Urban population % of total	18.9	33.0
Urban access to improved water		86.0
Life expectancy at birth	52.5	67.5
Infant mortality (per 1,000 live births)	92	38
Human-inequality coefficient		25.4% (2015)
Maternal mortality rate per 100,000 births	578 (2004)	530 (2016)
Dependency ratio	95.18	92.73
Secondary school enrollment rate	5% (1991)	26%
CO ₂ e per capita excluding LUCF*	0.09	0.22
CO ₂ e per capita including LUCF*	10.9	5.5 (2014)
Total MtCO ₂ e emissions*	280	290

*Climate Watch 2019

Source: NBS 2016a/b; World Bank Data 2018; OECD/AFD/UNDP 2016; UN 2017.

Tanzania is halfway through a 15-year planning process, which is due to end in 2026. The second phase of this process, implemented through the National Five Year Development Plan 2016/17–020/21, emphasises the importance of urban areas and industry for national development. Harnessing the synergies between urbanisation and industrialisation

requires policies and programmes that enable rapidly growing urban systems to become thriving, inclusive, and climate-resilient engines of economic growth (GoT 2016; OECD/UN-Habitat 2018). Given the centralised nature of budgeting and decision-making in Tanzania, it is central government that will have to take the lead with regard to urban policy.

National urban policies (NUPs) emerged as a key global policy instrument from the Habitat III conference in 2016, while in the same year an update of the Ministers (Discharge of Ministerial Functions) Act of 2010 (Chapter 299) in Tanzania mandated that President’s Office – Regional and Local Government (PO-RALG) compile an urban policy. Though a rural development strategy has been in place for some time, the rate of urban population growth makes a NUP crucial if Tanzania is to transition to a globally competitive middle-income country.

This roadmap was prepared by Tanzania Urbanisation Laboratory (TULab) as an aid to the development of an Urban Development Policy (UDP) – a Tanzanian NUP – ideally implemented by PO-RALG, and supported with budget from MoFP. The roadmap approaches urban development as a multi-actor process that is not merely the sum of sectoral plans and projects (Shields 2013) but requires a UDP to coordinate the investments and programmes of various actors – most notably ministries, state-owned entities (SOEs), local government authorities (LGAs), donors, and the private sector – in support of urban development. The roadmap identifies ‘leadership’, ‘fiscal’, and ‘governance and regulation’ options available to the Tanzanian government for this coordination (Figure 2).

Based on the analysis conducted for this roadmap, a UDP has the potential to unlock numerous interconnected benefits associated with urbanisation in Tanzania. These include:

- an additional 8.8% in gross domestic product (GDP) by 2022, relative to baseline without industrial stimulus, generating at least 212,000 additional jobs, many of which would be taken up by poorer households as industrial strategy shifts to support urban growth (Cloete et al. 2019).
- an infant mortality rate brought down to 30 per 1,000 live births as a result of coordinating access to clean energy, urban water, and sanitation, strengthening links between industry and urban demand for food and other livelihood resources, and designing cities that encourage safer and healthier lifestyles.
- a reduction in the average time taken to transfer land title to 90 days (down from the current

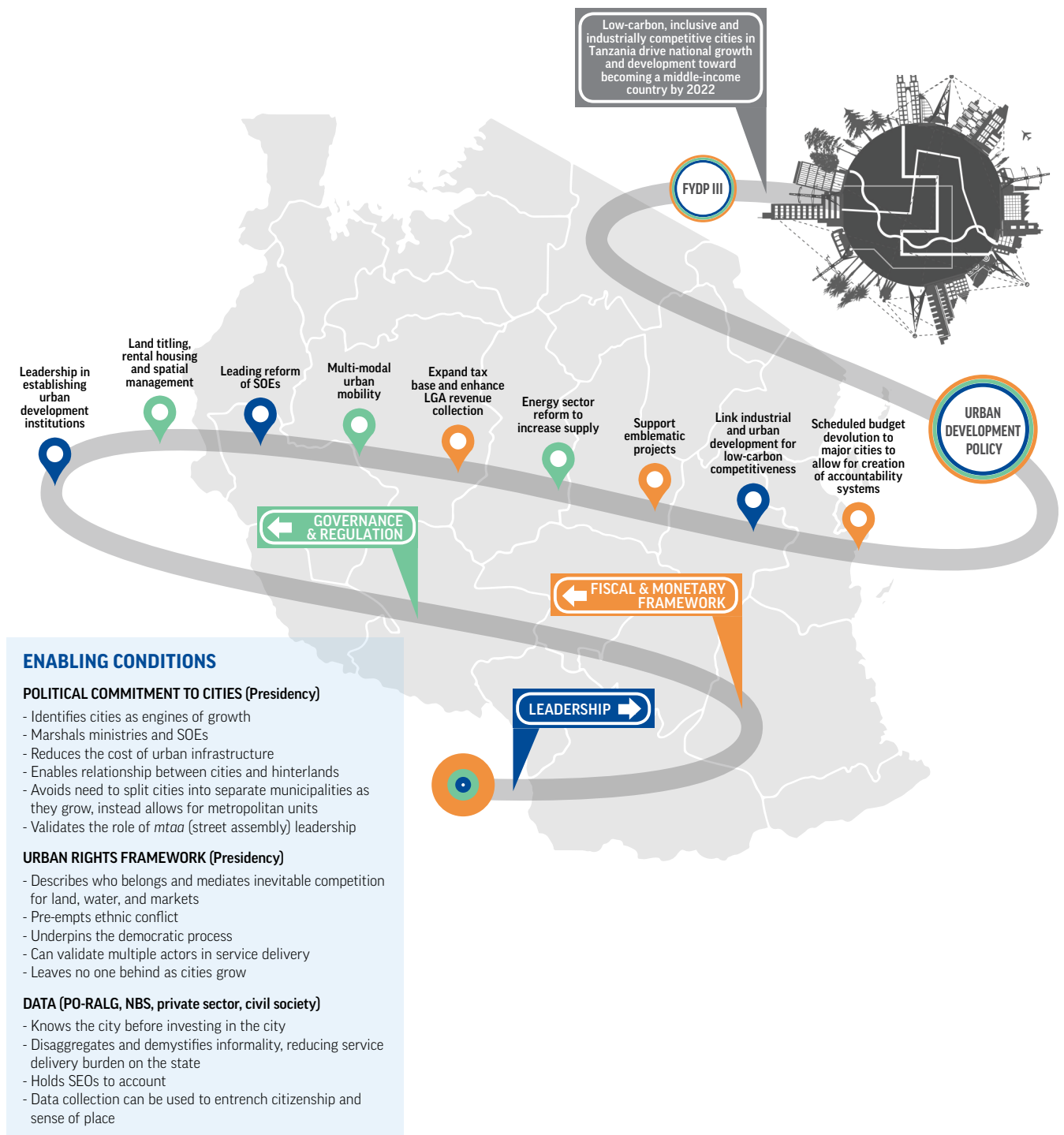
average of 380 days) as a result of a central cadastre supported by surveying technology, land-focused NGOs, and a mandated land tribunal. There would also be an associated increase in titled land from 5% to 50% by 2022, and improved tenure security for non-titled residents.

- a US\$ \$700,000 (41%) per annum reduction in the cost of congestion in Dar es Salaam due to better-coordinated urban mobility and better-managed urban flooding.
- 1,500 fewer road deaths per annum between 2018 and 2030 due to safer pedestrianisation and improved road quality.
- an increase in GDP per tonne of greenhouse gas (GHG) emitted to roughly US\$12,000 per tonne, up from US\$3,800 per tonne, excluding Land Use Change and Forestry (LUCF) emissions. This will also mean 0.87MtCO₂e less in GHG emissions per annum between 2018 and 2050 relative to business-as-usual urban development of roughly 10MtCO₂e per annum (Cloete et al. 2019; Jean-Baptiste et al. 2019; Lameck et al. 2019). This GHG saving will increase dramatically (up to 40MtCO₂e) if sustainable urbanisation accelerates the phasing out of charcoal dependence.

It should be noted that the mode of sustainable urban development outlined in this roadmap is not the default and it will not ensue unless ministry, SOE, and private sector projects come together in coordinated fashion. In the absence of a UDP, piecemeal urban expansion, compounded by climate change, will continue to put a strain on public budgets, built infrastructure, and human health, undermining Tanzania’s quest to become a middle-income country by 2025. It will also make it difficult for Tanzania to honour its commitment to the United Nations Framework Convention on Climate Change (UNFCCC) to reduce emissions by 10% to 20% by 2030, reduce climate-related disasters, and enhance access to clean and safe water from 60% to 75% of the population. Putting a UDP in place, however, would allow Tanzania’s cities to contribute to international priorities while allowing Tanzanians to define development on their own terms – something envisaged by Mwalimu Julius Nyerere at independence (Grant 2015).

Figure 2

Stylised roadmap showing options for consideration in an urban development policy



Source: Alma Viviers/African Centre for Cities.



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2. Ideas, Policy, Impact: Coproducing a UDP Roadmap with TULab

While policy approval is the responsibility of the Government of Tanzania (GoT), policy formulation can be supported by drawing on a range of opinions and stakeholders. The interdisciplinary TULab, which prepared this report, provided a ‘safe place to ask difficult questions’ and a forum to collate the knowledge necessary for navigating the implications of Tanzania’s rapid urbanisation.

Facts are important for guiding an urban transition, but equally important is who holds these facts, and the integrity of the process generating them (Anderson et al. 2013; Castan Broto and Neves Alves 2018; Perry et al. 2018). In order to collectively define Tanzania’s urbanisation challenges and opportunities, TULab convened 11 meetings of government officials, private businesses, local researchers, academics, and NGOs. The results were written up in four background papers, which explored:

1. the functional relationships between different tiers of government in Tanzania (Lameck et al. 2019).
2. how people without access to formal water and sanitation secure these services in Dar es Salaam, Dodoma, and Mwanza (Jean-Baptiste et al. 2019).
3. the money available for infrastructure and services in seven Tanzanian cities, including conducting a household survey of ‘willingness to pay’ (WTP) (Amani et al. 2019).
4. a comparison of the macroeconomic implications of an industrial strategy focused on special economic zones (SEZs), and one that caters specifically to the demand for climate-resilient goods and services likely to emerge from Tanzania’s cities (Cloete et al. 2019).

A diagnosis based on these background papers and their collective review by TULab is summarised in the appendix. This diagnosis, together with stakeholder interviews, an innovation competition (Box 1 in Appendix A3.3), and a literature review, formed the basis on which this roadmap was written. Both the background papers and the appendix provide essential context for the recommendations of the roadmap. While much of this diagnosis is familiar to Tanzania’s policymakers, the process of researching and reviewing the background papers was used to bring to the surface known and subconscious policy assumptions, as well as create new urbanisation policy ideas. Across all TULab proceedings, the emphasis was on identifying root causes, rather than on jumping to premature conclusions or expedient policy prescriptions (Levy 2014). Through a process of peer review, deliberation, and ideas-sharing, the insights that emerged found their way into local institutions, as well as the discourse and imaginaries of the 60 TULab members (Figure 3).

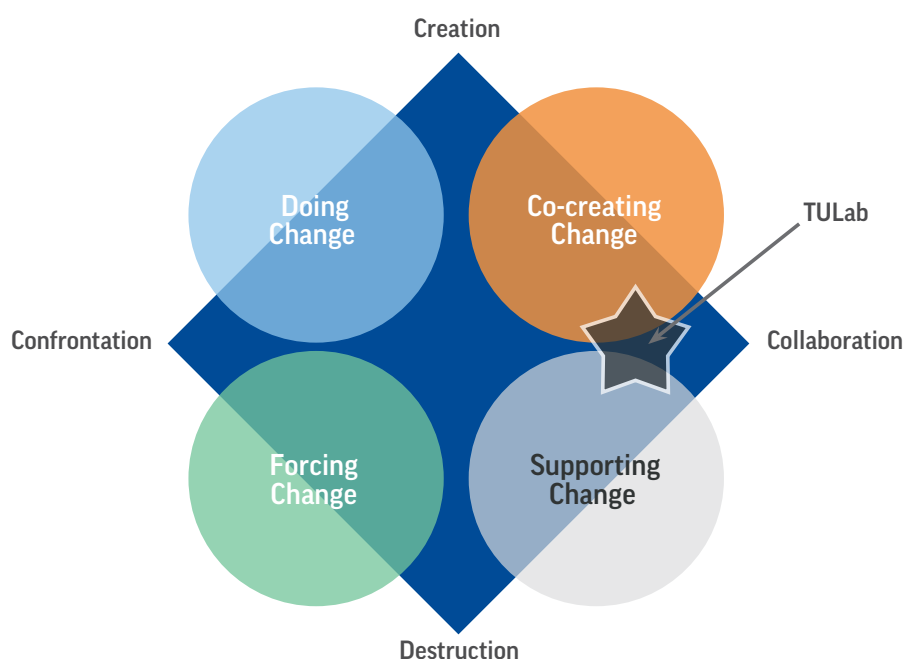
These are Tanzanians who ‘know about urbanisation’, ‘care about urbanisation’, ‘have influence’ over the urbanisation processes, and, crucially, will live with the consequences of their decisions and interventions (Lorenzoni et al. 2007; Adam et al. 2017, p. 3; Dentoni et al. 2018; Hibbert 2017).

TULab was chaired by MoFP, coordinated by Tanzania’s Economic and Social Research Foundation, and represented between meetings by an in-country outreach coordinator. As a ‘deliberative space’, TULab accommodated a wide variety of people, opinions and perspectives, and made efforts to resist the global customisation of urban policy, challenge hierarchy and patriarchy, and bridge the generational divide between Africa’s leaders and the majority ‘youth’ population residing in cities (Grant 2015). Most TULab meetings were chaired by a woman and included an artistic performance. In an expression of the ideal that ‘all citizens can shape their urban futures’, youth entrepreneurs, creative artists, senior and mid-level government officials, members of civil society, and political dignitaries participated equally in TULab deliberations (ESRF 2019).

While most of TULab’s work relied on evidence gathered by members, the notion that Tanzania’s urban development was exposed to climate change was taken as a given (Rozenberg and Hallegatte 2015; Kiunsi 2016). The legitimacy of this assumption stems

from projections of an additional 130–180 days with temperatures above 35 °C per year by 2100, as well as the possibility of intense rainfall becoming more frequent (IPCC 2014; World Bank 2017). Tanzania is ranked 125 out of 180 countries in terms of climate risk, with a lower ranking indicating higher risk (WRI n.d.a.). In acknowledging the influence of climate change, TULab remained mindful of the critique that recent ‘climate smart’ and ‘green urban development’ policy prescriptions have often repeated normative biases frequently found in development work related to Africa (Wachsmuth et al. 2016; Solecki et al. 2017). Instead, climate change was cast as both a risk to the institutions and assets (financial, ecological, and human) on which urban development depends, and also the type of global disruption that could result in new urban development options that might in turn benefit Tanzania. Tanzania has committed to pursue development pathways that will reduce GHG emissions by 10% to 20% relative to the projected 2030 business-as-usual emissions (GoT 2015). The TULab assumption, therefore, was that the process of decarbonisation and resilience building could support, and be supported by, urban development. Seen through this lens, a thriving, low-carbon urban future is not something that Tanzania needs to ‘find’ or ‘adopt’, but rather something that can be crafted through the coordination of policies and decisions – some of them mundane and routine – in a multi-level governance process that is already underway.

Figure 3
Locating the TULab process in a theory of change



Source: Adapted from Dentoni et al. 2018.



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3. A Roadmap for Urban Development in Tanzania

The diagnostic compiled by TULab and summarised in Appendix A forms the basis for the recommendations made in this section. As a rapidly urbanising country with a high degree of central planning, Tanzania requires a countrywide UDP to coordinate the centrally driven sectoral approach to urban service delivery and development. Evidence from the 18 (at least) other African countries that have an NUP reveals that national oversight can be very enabling for cities, particularly where national governments are able to mobilise budgets and coordinate the efforts of ministries and SOEs to meet the needs of rapidly growing cities (Cartwright et al. 2018; OECD/UN-Habitat 2018).

The need is to go beyond updated master plans promulgating new urban LGAs and instead marshal public and private investment in line with a vision of how cities can contribute to development (Todes 2015). Of necessity, this vision must incorporate urban spatial form, infrastructure, services, finances, and the linkages between cities and rural areas.

Even more critical, though, is the need to describe who does what in the process of urban development. This coordination is the role of a UDP implemented by PO-RALG, budgeted for by MoFP, and supported by all other relevant ministries and SOEs. Specific courses of actions, identified by TULab, that a UDP must follow, include:

- establishing greater clarity regarding roles and responsibilities in the multi-actor process of urban development to avoid duplication and deficits.
- ensuring PO-RALG support for the Tanzania Rural and Urban Roads Agency (TARURA), and the working groups overseeing cooperation between MoFP, SOEs, the Ministry of Works, Transportation and Communication (MoWTC), and LGAs so that budget wastage in urban infrastructure construction and delivery of services is avoided.
- allowing urban programmes, such as the ‘20,000 plots’ initiative, to interact with and complement the bus rapid transit (BRT) investment of Dar Rapid Transit Agency (DART) in order to deliver transit-oriented development (TOD).

- enhancing capacity for partnerships with civil society, *mtaa* (inadequately translated as ‘street assembly’) leaders, and what is loosely termed the informal sector to accelerate land titling, service delivery, and revenue collection.
- increasing revenue collection by the Tanzania Revenue Authority (TRA) through a coordinated and consistent tax net applied to the private sector, and by leveraging LGA capacity to collect household revenue.
- repurposing the Ministry of Water so that it can gain control over the abstraction of water and destruction of water resources in Tanzania’s cities.
- consolidating land classification and administration systems in order to enhance tenure security, as well as restoring state agency in allocating land parcels according to spatial plans.
- linking investment by SOEs and the Ministry of Lands, Housing and Human Settlements (MLHH) with master plans in order to curtail urban sprawl and protect conservation land on the urban periphery that plays a crucial role in flood reduction.
- ensuring the urgent pursuit of urban energy security aligns with the National Climate Change Committee’s UNFCCC commitment to reduce emissions by 10%–20% by 2030, and its goal of reducing indoor air pollution.
- coordinating, through the Prime Minister’s Office and PO-RALG, the efforts of donors working on urban programmes so that they complement GoT investments.
- activating the linkages between Tanzania’s National Adaptation Plan of Action (NAPA), written in 2007 but never implemented, and the master planning process intended to guide urban development. This is so that all cities retain green public spaces for flood retention, recreation, and biodiversity.
- linking budget support for industrial strategy with growing demand for goods and services in Tanzania and the wider region’s cities. This requires both the demarcation of urban industrial land and concerted efforts to connect domestic value chains with industry investments, using transport infrastructure and other rural–urban linkages.

Essentially, there is a need to establish the institutional architecture for urban development, something that, due to Tanzania’s rural past, was not previously a priority. Coordinating the many actors influencing urban outcomes is an ambitious undertaking, and even the best-laid plans of a UDP will only be effective if implemented within an enabling environment. This environment is the responsibility of national leaders, and includes:

- **a political commitment to cities** that identifies urbanisation as an engine of growth, employment, and development. Such a commitment should guide linkages between industrialisation and urban development in a UDP, addressing public perceptions that cities amplify socio-economic risks, or that people ought to remain in rural villages. It should also aim to allay concerns regarding how urban growth will impact on rural hinterlands, ensuring that the allocation of resources is balanced between existing large cities and the numerous small towns and rural villages still seen by many in Tanzania as a development priority (Pelling et al. 2015; van Noorloos 2017).

A commitment from national government to support cities is politically prudent given that this is where most employment is being created in the country (Diao et al. 2016) and where the majority of voters will reside in the future. As explained by Breetz et al. (2018), it is also economically important in terms of reducing the cost of planning and building infrastructure, and effecting the transitions required by sustainable cities.

The need to split cities into smaller LGAs as they grow (as in Dar es Salaam and Mwanza) can be avoided by a political commitment that celebrates the opportunities arising from governing cities with a metropolitan mindset. The aim of this is a consolidated infrastructure connecting people and resources in the city with those in the hinterland and smaller towns. Finally, a political recognition of urban opportunities would legitimise new collaborations between national and city authorities and Tanzania’s unique *mtaas* as well as encouraging partnerships with civil society players (such as the Association of Local Authorities) that are capable of reducing the state’s operational burden of land administration and service delivery (Levy et al. 2018).

- **an urban rights framework** that determines how, and how well, people with diverse interests and backgrounds live in Tanzania’s cities (Sen 2009; Shields 2013). These cities aggregate overlapping identities that are ethnic (often linked to language, religion, and territory), national (imposed after the Berlin Conference of 1884/5), and pan-African (forged during the anti-colonial struggle for liberation) in nature. A UDP can offer a ‘right to the city’ framework that transcends these and other identities, in the process reprising Mwalimu Julius Nyerere’s social justice values (Shields 2013; Lavers 2018; Schofield and Gubbels 2019). Such a framework would reiterate natural rights (to water, sanitation, and shelter) and legal rights (to citizenship, suffrage, and peaceful protest), informing how the inevitable competition for land, budgets, and markets is managed as cities expand (Sen 2009; Hibbert 2017; O’Loughlen and McWilliams 2017; Starmans et al. 2017). Furthermore, a UDP would provide a framework for managing conflict, while speaking to Sustainable Development Goal (SDG) 16 (peace, justice and strong institutions) and the broader Agenda 2030 pledge to ‘leave no one behind’. Uganda’s relatively successful assimilation of over one million refugees from South Sudan drew on the International Refugee Rights Initiative and the Comprehensive Refugee Rights Framework, providing an example of how such frameworks can be applied to avoid the negative repercussions of conflict (Hovil 2018).
- **data** that will allow decision-makers and investors to anticipate a city’s needs before building long-term urban infrastructure. Though data availability and quality have improved exponentially in Tanzania over the past decade, many financiers and ratings agencies continue to approach the country with a sense of unfamiliarity, and ‘informality’ in cities such as Dar es Salaam remains poorly understood and often stigmatised (Stampini et al. 2011; Brown and McGranahan 2016). The informal economy, which so many urban dwellers and workers in low- and middle-income countries depend upon, is seldom considered. This paper examines the opportunities and barriers that the urban informal economy pose for making economies greener, and the risks that such attempts present for vulnerable informal dwellers and workers.

In contemplating how this group can be included in the transition to a greener economy, the different schools of thought on informality are reviewed, with a focus on recent thinking that relates urban informality to conflicting processes of inclusion and exclusion. The paper then considers a set of action areas aimed at leveraging the positive contributions that informal dwellers and workers can make in the transition to an economy that is not only greener but also more inclusive. Leveraging these contributions will require recognising and supporting women’s unpaid productive work (including community organising and strategising around environmental improvements).

Inadequate data lead to infrastructure resources being misplaced and a lack of accountability regarding public expenditure. They also permit financiers to charge a premium based on an unfamiliarity that is presented as riskiness (Boothe 2014; Schofield and Gubbels 2019). New urban data and satisfaction surveys, combined with evidence-based analysis and debate, would assist investors and public sector officials to meeting urban needs and unlocking opportunities (as it did in Rwanda (GoR 2017)). In Tanzania, there are no reliable data on the ‘capital output ratios’ that are crucial to understanding the performance of investment in different sectors. Without this evidence base, it is impossible, for example, to gauge whether the financial losses incurred by SOEs in Tanzania are justified by the public benefits of their operations. Similarly, reported per capita GHG emissions varied considerably, ranging from 0.22tCO₂e (World Bank 2017) to 5.4tCO₂e (WRI 2018) with profoundly different implications for urban policy at either end of the range.

Digital software, mobile phones, and drones (such as those run by Uhurulabs and Hyina Digital in Dar es Salaam) now render data collection cheap and fast, and have the potential to demystify every aspect of the city, including informal settlements. These technologies can shed new light on the connections between, for example, land use and flooding, thereby informing planning and disaster relief efforts. Moreover, the process of data collection, where it draws on local efforts, can enable the development of urban identities and a sense of place (GoR 2017; OpenStreetMaps 2019)

Once the enabling environment for cities has been strengthened by political commitment, an urban rights framework, and enhanced data, the task of the UDP involves coordinating the various plans and investments that impact Tanzania’s evolving urban spaces. The responsibility of government in this regard is to cut through the accreted layers of strategy and planning, applying the three major levers of change available to it – leadership, governance and regulations, and fiscal strategy – in a consistent and concerted manner. While the remit of a UDP is unavoidably broad, there is a particular need to clarify roles and responsibilities related to infrastructure and service provision, most notably in regard to energy and sanitation (Watkins 2015; Worrall et al. 2017).

3.1 LEADERSHIP

Effective leadership requires both foresight and peripheral vision. In Tanzania, where urbanisation is taking place alongside digitalisation and climate change, leadership involves assessing these megatrends while guiding investments, SOE reform, and industrial strategy to take advantage of urban opportunities (Berrisford and McAuslan 2017). Currently, however, the absence of a centrally coordinated urban plan means the prevailing approach is that cities are built through the discrete projects of ministries, SOEs, and the private sector. Leadership, therefore, is needed in a number of areas.

3.1.1 Urban development institutions

Leadership is necessary to create new institutions, complete with a cadre of urban professionals, that will allow both central and local government to hold each other to account, while building trust (Roberts 2016; OECD/UN-Habitat 2018). This includes:

- an intergovernmental agency that oversees budget transfers between central government and LGAs – the equivalent of South Africa’s Financial and Fiscal Commission – thereby enabling more predictable transfers and better urban planning.
- platforms through which urban LGAs, *mtaa* leaders, and civil society can engage SOEs, ensuring that their investments align with city plans and are delivered in partnership with local communities.
- a land tribunal, located in the Presidency, that can mediate and resolve land disputes between property users and the Commissioner of Lands.

Such a tribunal is crucial to accelerating the rate of titling, as well as reconciling the land titles issued by different tiers of government within a single, consolidated cadastre.

Leadership is also required to destigmatise Tanzania’s significant urban informal sector, providing legitimacy and representation to those operating within it. This would involve discerning the constructive aspects of what is termed informality, reconciling the ‘formal versus informal’ bifurcation of urban services, and encouraging service delivery partnerships that both reduce the burden on the state and make urban development more inclusive. The current administration’s non-criminalisation of *wamachinga* and water *fundis* is an example of the type of leadership necessary to convert emerging tensions into functional collaborations and new service delivery hybrids (Jean-Baptiste et al. 2019). If Tanzania’s leadership can harness the creativity, opportunism, and ‘hustle’ (Thieme 2018) residing within the informal sector, as well as the civil society networks that support these positive aspects, it will be in a position to balance the complementary benefits of catalytic infrastructure with community-based urban upgrading (Grant 2015; Schofield and Gubbels 2019). It is this balance that will ensure infrastructure is appropriate to citizens’ needs, that payments for services are forthcoming, and that infrastructure finance is sustainable (Behuria and Goodfellow 2018; Amani et al. 2019).

3.1.2 SOE reform

Given Tanzania is committed to expanding its road, water, and energy infrastructure as part of a fiscal stimulus strategy, the capital created by SOEs must align with the agreed vision for urban development, connecting city-dwellers with services, goods, and economic opportunities.

Energy and water utilities are nominally regulated by the Energy and Water Utilities Regulatory Authority (EWURA) and governed by the relevant ministries. In practice, though, they tend to operate as autonomous, vertically integrated entities with internally formulated investment plans (Appendix A3). Only senior leadership in the Ministry of Energy (in the case of energy) or the President’s Office (in the case of other utilities) realistically have the means to ensure Tanzanian SOEs participate in LGA councils and co-design service offerings to meet the requirements of urban end-users (Eberhard et al. 2016; Nganyanyuka

and Martinez 2018; Lameck et al. 2019). Reform of SOE culture is necessary to provide safeguards against the monopoly/monopsony power held by energy, water, and road utilities undermining incentives for innovation and cost-efficiency. With the help of their ministries, SOEs in Tanzania must embrace ‘mission-oriented innovation’ – innovation focused on cost-effective, climate-resilient urban services that will ensure the competitiveness of the country’s economy (Jacobs and Mazzucato 2016; UNEP 2017; Castan Broto and Neves Alves 2018).

Similarly, it is the role of national leadership to ensure SOEs forge the partnerships with LGAs and local communities necessary to accelerating citizen-oriented service delivery (Brown and McGranahan 2016; Eberhard et al. 2016; Philip 2018). These collaborations, evidenced in Mwanza’s ‘simplified sewerage system’, are crucial to the sixfold acceleration of service delivery required to keep pace with growing urban demand (Eberhard et al. 2016). The work of the Ardhi Clinic, the Women’s Advancement Trust, and the Policy Forum (representing 79 Tanzanian NGOs) provide examples of the benefits that can be realised when the technical aspects of service delivery are complemented by local processes attuned to the nuances of tenure security and community relationships (Shields 2013; Grant 2015; Behuria and Goodfellow 2018). Partnering with informal entrepreneurs and civil society is not the current default for SOEs and therefore requires new types of capacity (Shields 2013). The involvement of an active and articulate civil society is indispensable to ensuring services are appropriate and valued by end-users, which in turn is critical for revenue collection and infrastructure maintenance (Rigon 2014; Brown and McGranahan 2016; Munene and Thakhathi, 2017).

3.1.3 Link industrial and urban development

Tanzania’s industrial strategy is the centrepiece of FYDP II, and therefore crucial to Tanzania’s attainment of middle-income status by 2025. The current strategy is focused on SEZs, each with bespoke energy and logistics infrastructure, as a means of securing exports in the absence of networked transport infrastructure. However, the long-term viability of Tanzania’s industrial strategy rests on the extent to which it supports domestic value chains beyond SEZs, harnessing the productive potential of Tanzania’s people through work creation.

While the mutually reinforcing link between urbanisation and industrialisation has been a feature of development in other regions (UNECA 2017), in Tanzania this link requires strengthening. Effective leadership has the potential to steer industrial development towards supplying the food, energy, construction material, and services required by Tanzania’s urban expansion. This approach that holds the potential for growth in excess of 20% in the ‘trade’ sector (Cloete et al. 2019). Given that the trade sector accounts for the greatest sectoral contribution of businesses in cities such as Dar es Salaam, Mwanza, and Arusha, linking industrialisation and urbanisation would structurally reform Tanzania’s economy, while ensuring the sustainability and liveability of the country’s rapidly growing cities (OECD/AfDB/UNDP 2016). It would also provide a low-risk complement to the current SEZ strategy, which relies on export goods and is subject to commodity price fluctuations and global trade agreements (Sutton and Olomi 2012).

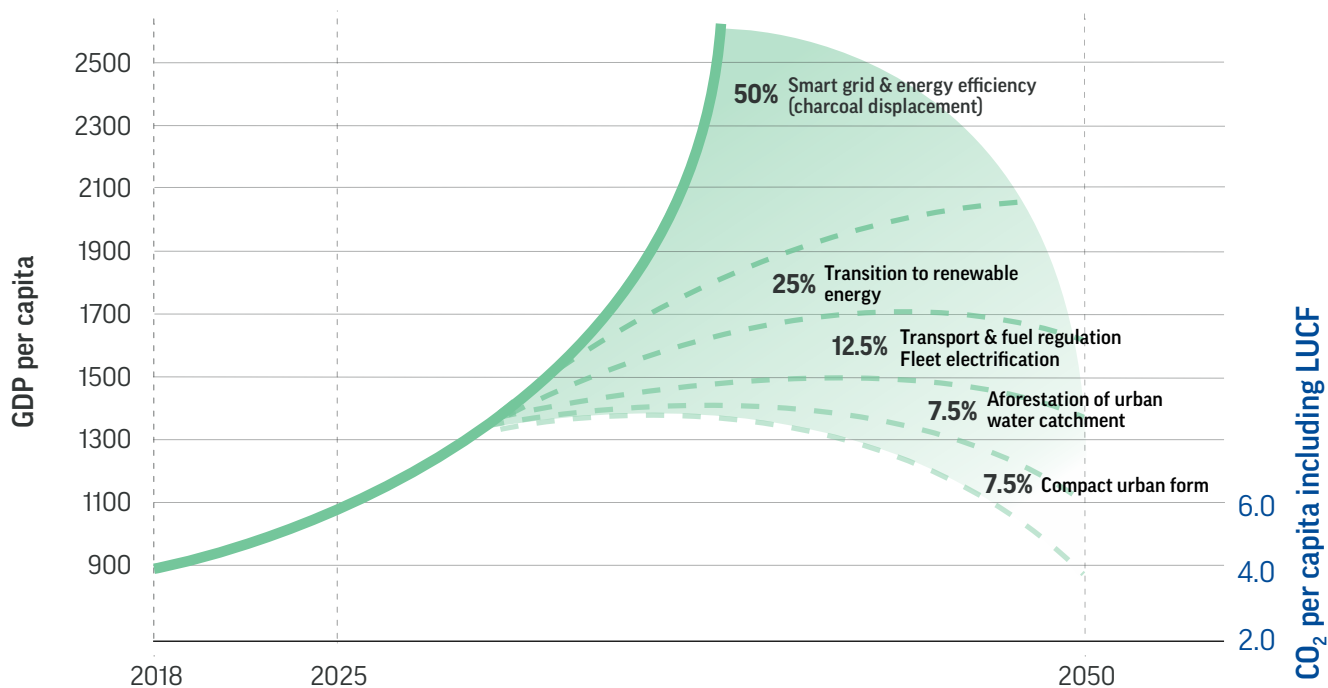
Linked industrialisation and urbanisation will not be delivered by the market alone. Rather, it requires the marshalling of industrial support provided by the Ministry of Industry, Trade and Investment, MoFP, and LGAs, as well as coordinated efforts by public-sector leaders to demarcate industrial land in and around cities, service these sites with water and clean energy, and connect them to markets with transport infrastructure (UNECA 2016).

3.1.4 Low-carbon jobs, investment, and competitiveness

Tanzania has long recognised that, in the absence of a coordinated response, climate change will strain the financial, infrastructural, social, and ecological assets on which development depends. The country has had a NAPA since 2007, and is committed to meeting its nationally determined contributions as a signatory to the Paris Agreement and a member of the UNFCCC. In addition, the current administration is discussing European Union support for a new National Energy Efficiency Strategy. Following through on these commitments requires leadership in repositioning climate responses as a means of securing the competitive advantage, employment, and investment that will accrue to countries leading the global transition to a low-carbon economy. It also requires concerted leadership to dismantle the vested interests that resist change to the current energy and industrial systems.

Figure 4

Potential decoupling of the Tanzanian economy from greenhouse gas emissions to ensure growth



Source: Alma Viviers/African Centre for Cities, based on Gütschow et al. 2016; World Bank 2017; Cloete et al. 2019.

The opportunity open to Tanzania, as a late industrialiser, is that by stitching together multiple climate responses an alternative economic development pathway can be constructed – one that generates jobs, attracts investment, and secures competitive advantage in a carbon-constrained global economy (Figure 4) (UNECA 2016). Realising the synergies between decarbonisation, climate resilience, and urban development requires sending a clear message to investors and SOEs about how Tanzania will confront the future of its coal, oil, gas, and charcoal-based industries (Thomson and Newman 2016). It also requires that infrastructure and services be designed and provided in ways that take climate change risks into account. Tanzania is already planning to harness rapidly falling renewable energy costs through projects such as the Miombo Hewani windfarm, financed jointly by Australia and Japan. Attracting more of this type of investment will secure the many benefits of renewable energy – including more affordable urban electricity, charcoal displacement, improved air quality, and decentralised work creation – while also providing Tanzania with a competitive advantage in a carbon-constrained global economy (Cloete et al. 2019).

3.2 GOVERNANCE AND REGULATIONS

In Tanzania, as in many other African countries, policies and regulations were not developed with rapid urbanisation in mind, with statutes applying to urban development yet to exert significant influence over where people and enterprises locate or the materials, technology, or modes of transport they consume (Floater and Rode 2014; Berrisford and McAuslan 2017). To address this, new modes of governance, regulations, and bureaucratic behaviour are needed to coordinate urban development and shape its outcomes.

3.2.1 Land titling, rental housing, and spatial management

Rapidly growing cities create opportunities for policy interventions that influence urban form. This is only possible, however, where an accepted tenure system is enforced, and where land zoning and infrastructure investments are aligned (Todes 2015). This has so far proven difficult under Tanzania’s complex tenure system and sector-driven investment.

The prevailing land surveying and titling process, involving 11 steps and taking an average of 380 days for title transfer (Appendix A2), is a major cause of informal urban settlements in Tanzania. Accelerated and simplified tenure upgrade programmes are therefore a prerequisite for planned urban development, and in particular compact, connected, and coordinated cities (Floater and Rode 2014; Collier and Jones 2015; Lall et al. 2017; Castan Broto 2017).

Removing the fear of arbitrary eviction (especially for women, who appear to face greater challenges than men when seeking secure tenure) is important to enable service delivery and construction (Ayelew et al. 2013; Hallegatte et al. 2016; Aikaeli and Markussen 2017; Oxfam 2018; Schofield and Gubbels 2019). Despite the complicated and lengthy processes, demand for more secure tenure in Tanzanian cities remains high, yielding both private and public benefits (Ayelew et al. 2013; Collin et al. 2012). For example, households with documented title invest three times more in repairs and improvements than those without, and more than 20 times the amount of those who are renting (Rentschler 2013).

A UDP needs to outline the processes by which PO-RALG and MLHH build on the legal efforts of the *Property and Business Formalisation Programme (MKURABITA)*, consolidating the tenure and titling process currently being played out through different agencies and illegal land vendors. The resulting cadastre needs to be one that all tiers of government and all Tanzanians trust and uphold. This will enable the demarcation of residential and industrial land, a distinction crucial to service delivery and the enforcement of master plans. It will also permit the demarcation of green urban space, which is critical for mediating water run-off, as well as reducing the flooding that impedes urban mobility during rainy seasons. Examples of how this can be achieved are already available. Using a combination of mobile and drone technology, MLHH, Uhurulabs, and the World Bank have significantly reduced the cost and time required for land surveying (World Bank 2016). Similarly, the involvement of *mtaas*, the Ardhi Clinic, and the Women's Advancement Trust in resolving titling disputes has radically accelerated the rate and scale of tenure upgrades (Collin et al. 2012).

Housing is a crucial asset for urban citizens. While MLHH does not provide private housing, it does

demarcate land for development. This demarcation, together with affordable, well-located rental housing stock with access to transport routes and economic (or educational) opportunity, is not only needed as part of the urban tenure portfolio but, as has been shown in Mbeya, presents revenue-generating options for LGAs (Amani et al. 2019). By bundling well-located land for human settlement, rental housing stock and urban services, GoT will be able to exert considerable influence over urban form (Collin et al. 2012). For the same reasons, MLHH, working with LGAs, has to wrest responsibility for striking the appropriate balance between greenfield sites and upgrading existing urban areas back from the private sector (Watson 2015; Grant 2015; Berrisford et al. 2018).

3.2.2 Energy sector reform

Energy is a requirement for urban development in Tanzania (Appendix A3.2). Peri-urban households with access to electricity enjoy a 109% premium on their non-farm income relative to those without (Lanjouw et al. 2001). Despite similar population sizes, Tanzania currently consumes just 3% of the electricity that South Africa does. If urbanisation is to be an engine of growth and development, the supply of energy to urban centres will require a five-fold increase between 2017 and 2025, and will include the displacement of charcoal, with its adverse health and ecological impacts (MEM 2016). How GoT generates and distributes this energy will influence the nature of the country's urban development (Castan Broto 2017). A UDP has to strengthen energy governance to the Ministry of Energy (MoE), allowing it to set out how the country will utilise its multiple feedstock options, while at the same time expanding its energy sector in the knowledge that the world will have to be net carbon neutral by 2050 to avoid the catastrophic impacts of global warming in excess of 1.5 °C above pre-industrial levels (IPCC 2018).

Tanzania's rapidly growing cities require energy sector reform that, while retaining the country's low-carbon status, increases the reach, innovation, and financial viability of the sector. Though some backlash may be faced from those with vested interests in the energy sector, MoE can sustain its reforms by taking the following steps.

Updating the power system master plan (PSMP) to distinguish between generation, transmission, and distribution, and take advantage of recent price drops

Tanzania has multiple untapped options for electricity generation: 500 billion metric tons of proven coal reserves, newly discovered gas reserves, 4.7 gigawatts (GW) of hydropower, an average 200 watt per square metre (W/m²) of solar irradiation, numerous sites that regularly experience wind speeds of between 5 and 9 metres per second, and uranium deposits.

The 2016 PSMP, which relies on coal and gas, does not take account of recent price drops in renewable energy nor the increasingly binding constraint of GHG emissions on energy sector finance (IPCC 2018). Given that the US\$46.2 billion required to implement the 2016 PSMP (80% of it for generation) is unlikely to come exclusively from Tanzania's fiscus (MEM 2016), it is the newly formed MoE, rather than Tanzania Electric Supply Company (TANESCO), that has to provide potential energy sector financiers with clear signals on which electricity feedstocks will be utilised, and how these will align with Tanzania's UNFCCC commitment to reduce emissions by 10%–20% by 2030. Fortunately for Tanzania, technological innovation means the generation of electricity is no longer a natural monopoly and, provided the signals are clear, private sector investment in the country's electricity generation is likely to be forthcoming (Newman et al. 2017; Westphal et al. 2017). In 2017, global investment in new renewable energy capacity totalled US\$279.8 billion, more than the fossil fuel and nuclear industries combined, with the Middle East and Africa securing US\$11.2 billion of this (REN21 2018).

To secure investment on favourable terms for the best technologies, the independent system operator (ISO)* envisaged in the Energy Act (2008) is required. An ISO, operating under the regulation of MoE (rather than TANESCO's monopoly/monopsony regime), would enable competitive contributions from multiple actors (public, public–private, and 'prosumers' – households and companies that both consume electricity from and produce electricity for the grid) while restoring control of the generation mix to the democratically elected government (Sioshansi 2014). Globally, technological innovation has removed economies of scale and the 'natural monopoly' status of electricity generation. Were MoE to introduce competition to Tanzania's

electricity generation sector through an ISO, both economy and society would benefit from the precipitous price drops in wind and solar energy since 2010 (REN21 2018; SACREE 2018). It would also create new energy sector jobs as, on average, renewable energy employs 70% more people per unit of investment than the fossil fuel industry. In 2017, the renewable energy sector employed 62,000 people in Africa (NEF 2017).

In contrast to electricity generation, electricity transmission – which relies on high-voltage overhead and underground cables – remains a natural monopoly well suited to TANESCO. In order to contribute to the expansion of Tanzania's transmission network, MoE and TANESCO will have to draw on the fiscus and revenue from electricity sales to ensure safe, reliable, countrywide electricity access, with a particular focus on rapidly growing LGAs.

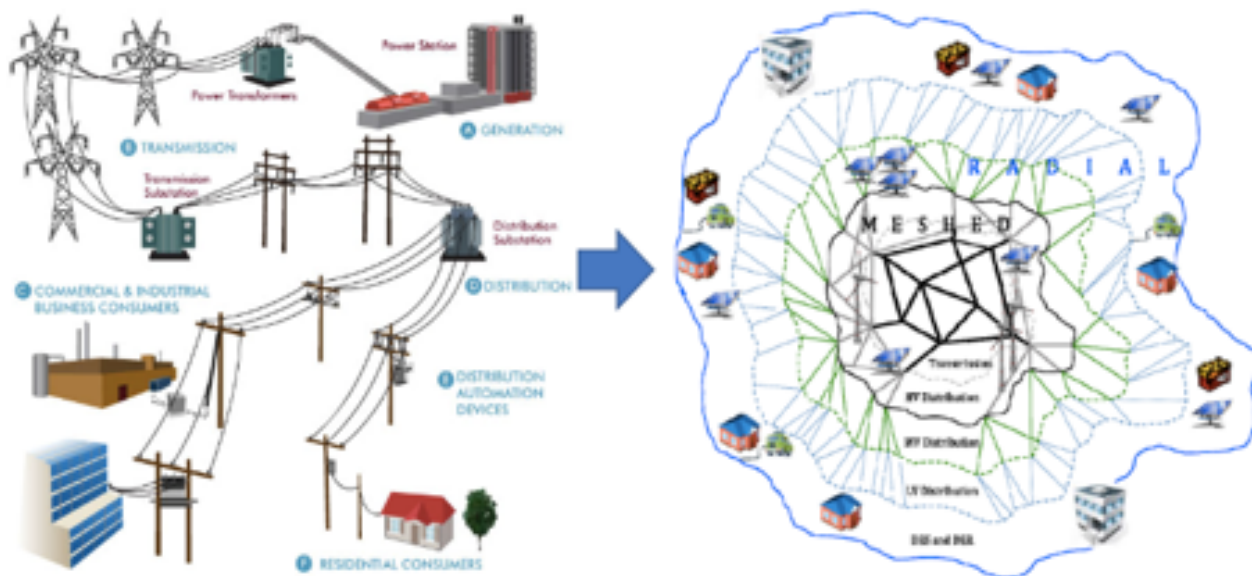
Electricity distribution interfaces with end-users by converting high-voltage electricity into the safe electricity used by households and industry. The UDP vision for electricity distributors in Tanzania should be twofold. Firstly, the integration of electricity already generated by households and companies (Tanzania already has nine million off-grid solar households (REN21 2018)) into the national grid, thereby eliminating the need for emergency power producers and ensuring the transition away from charcoal does not jeopardise local jobs. Secondly, making LGAs in Tanzania's larger cities responsible for distribution, tariff-setting, and paying TANESCO for bulk electricity. Financing the expansion of the urban electricity network would be greatly aided by TANESCO being able to sell electricity directly to major urban LGAs, with MoE holding these LGAs responsible for the distribution, maintenance of the local grid, tariff-setting, and revenue collection.

Both innovations would support the transition from a 'linear' (generation–wires–customers) electricity system to one that is locally networked, permitting customer-to-customer transactions and the opportunity to feed in to the national grid (Figure 5). In Tanzania's major cities, therefore, an LGA-controlled electricity network involving multiple suppliers is best placed to create localised energy sector jobs in manufacturing, grid construction, and maintenance while managing the complex transition away from charcoal, paraffin, and diesel generators (Watkins 2015; IPCC 2018; NCE 2018).

1 Sometimes called an independent transmission system operator (TSO) in Tanzanian documents.

Figure 5

Stylised transition from a linear grid with central generation to a circular-smart grid with multiple generation sites



Source: Perez-Arriaga, I. (2016) The utility of the future. MIT Report.

Strengthen Ministry of Energy governance of the energy sector

The proposed disaggregation of electricity generation, transmission, and distribution, and the establishing of an ISO as per the Energy Act (2008) is essential to delivering the affordable and safe electricity Tanzania’s cities and urban industries so desperately require. This should not be confused with privatisation, which has a poor track-record in Tanzania. On the contrary, the rapid expansion of the country’s electricity grid will only deliver on its urban development potential if the outlining of roles and responsibilities set out in a UDP allows MoE to reclaim control of the sector. In doing so, the ministry will be able to ensure that TANESCO, independent power producers, and grid managers uphold the public interest while retaining financial solvency, as outlined in the *Electricity Supply Industry Reform Strategy and Roadmap 2014–2025* (MEM 2014). It is this governance that will allow:

- alignment of energy sector (particular TANESCO) investments with desired spatial form and industry linkages at the city scale.
- harnessing of technical innovations, and associated cost and emissions savings, currently occurring in energy sectors across the world (GoT 2016; Geels et al. 2017).
- inclusion of partnerships between TANESCO, urban LGAs, and independent power producers, thereby ensuring that the expansion of the urban electricity grid includes the cross-subsidisation required for universal urban access.
- signalling to investors of whether the 1,200 million metric tons of coal in Tanzania (of which about a quarter is ‘proven’) will be used as an energy feedstock.
- clarity on the integration of gas, biofuel, and geothermal feedstocks into an energy resource plan. The liquefied natural gas (LNG) produced from the estimated 57 trillion cubic feet of off-shore natural gas at Mnazi Bay and Songo Songo has displaced more expensive heavy furnace oil, diesel, petrol, jet fuel, and other feedstocks used by ‘emergency power producers’. This displacement saved Tanzania US\$4 billion

between 2014 and 2018, radically improving the country's balance of payments (TPDC 2018). However, full gas-related efficiencies will only be unlocked if gas is used in urban mobility, and if gas infrastructure is used to provide a bridge to a renewable-energy-based economy. To serve this role, MoE, using an updated PSMP, will be required to guide investors (China EXIM, the African Development Bank, and private investors are already involved) to ensure that new investments in gas, as well as smaller ongoing investments in biofuel and the geothermal resources in the Ngozi steam fields, form part of an energy system that is compatible with the biofuel, hydropower, wind, and solar energy of the future.

3.2.3 Plan for multi-modal urban mobility

Avoiding economically damaging congestion within Tanzania's urban mobility system involves a combination of small iterative changes in fuels, public transport vehicle standards, safer pedestrian thoroughfares, and improved road maintenance, in concert with mega-infrastructure projects such as BRT, light rail, and new road infrastructure. For reasons outlined in the Appendix A3.1, this will become critical as national car ownership rises above 10% of the total population in the next decade (Grant 2015; Asher et al. 2016.).

Most urban Tanzanians rely on a combination of public transport and privately operated *bajajs*, motorbikes, bicycle taxis, *daladalas*, and bicycle couriers such as Fasta Cycles, which featured in the TULab competition. Through ambitious investment in more efficient urban public transport, Tanzania has the opportunity to limit private vehicle use (as opposed to ownership) and the economic burden of using private vehicles. This includes capitalising on the convenience of existing public transport (including *daladalas* and *bajajs*) through better enforcement of vehicle safety standards and the regulated switching to electric vehicles or vehicles that can accommodate flex-fuels or LNG, as demonstrated by Nopia taxis in Nairobi (NCE 2018).

At the other end of the transport spectrum is Dar es Salaam's BRT system, the first phase of which cost US\$150 million and is reported to save 200,000 daily users both money and an average of

16 commuting days per year (Chengula and Kombe 2017; World Bank 2017). The BRT system is due to be complemented by an urban rail-tram system and, provided these projects can be linked to enhanced productivity and revenue collection, both will support the urban economy and drive growth.

Pedestrianisation and non-motorised transport will remain a feature of urban mobility in Tanzania's cities. These can be made both safer and more supportive of the urban economy by allocating a greater portion of road budgets to safer sidewalks, pedestrianised streets, and corridors of safe pedestrianisation linked to street traders. In Dar es Salaam, the NGO Amend's School Area Road Safety Assessments and Improvements (SARSAI) project demonstrates how safe pedestrianisation for children can be realised with minimal resources (WRI 2019).

In order to harness the numerous technological, behavioural, and infrastructural innovations available, the UDP should outline new partnerships between MoWTC, Tanzania National Roads Agency (TANROADS), the Surface and Marine Transport Authority (SUMATRA), and consolidated urban transport authorities that embrace multi-modal transport, including pedestrianisation and the registration of bicycle couriers. In secondary cities and rapidly growing towns, opportunities exist to construct safe, energy-efficient public transport, linking economic hubs and street traders at transport interchanges in ways that influence urban form (Adam et al. 2017). This too will require PO-RALG to convene new planning partnerships between TANROADS, MLHH, MoWTC, LGAs, and *mtaa* leaders.

3.3 FISCAL STRATEGY

How countries raise and spend their public money is an expression of what they value; that is, how Tanzania pays for urban development should be of central concern to its UDP (Appendix A4). Central government holds many fiscal and monetary responsibilities necessary to support urban development in Tanzania: setting monetary and exchange rate policy, underwriting cross-border hydroelectric power and transport projects, establishing guidelines for foreign investors, improving currency fungibility and exchangeability in foreign exchange markets, and increasing the funds managed by local institutional investors.

In the context of Tanzania's urbanisation, it is essential that these and other more tailored fiscal and finance strategies bridge the gap between the estimated US\$959 million per year that is required for urban infrastructure and services, and the US\$111 million that is currently spent (World Bank n.d.b). This bridging will require transformational, rather than incremental, gains in revenue collection, finance, and investment. These are achievable through the following measures.

3.3.1 A scheduled programme of fiscal devolution with appropriate safeguards

A dependence on central government and SOEs for urban infrastructure in Tanzania contributes to weak fiscal strategy at the city scale. The seven largest urban LGAs in Tanzania have just US\$23.7–US\$157 per capita to spend once own revenue collection, central government transfers, and donor contributions are aggregated (Figure 6) (Amani et al. 2019). Relative to the city of Johannesburg, for example, which has US\$950 per capita to spend, the budget range in Tanzania makes it difficult to invest adequately in master plans, service delivery or curtail urban sprawl. In Dar es Salaam, only US\$11.75 of the per capita budget is available for infrastructure and development (Amani et al. 2019), while own revenue collection is conspicuously low in all Tanzania's other cities (Figure 6).

Expedient devolution to poorly equipped local authorities does not provide a solution in the Tanzanian context (Mollel and Tollenaar 2013; Hulst et al. 2015). Rather, a schedule for increasing the budgets and decision-making authority available to LGAs should be outlined and prioritised in a UDP. PO-RALG should also improve information-sharing between TRA, MoFP, LGAs, and *mtaas*, and allow sub-national decision-makers the discretion and budget to plan their own futures over the medium term (Smit and Pieterse 2014). If given capacity and held accountable, local authorities are best placed to

invest in enhancing productivity, generating work, and linking the rich history of places such as Dar es Salaam and Arusha with the aspirations of young urban residents (Treisman n.d.a.; Honwana 2012; Mollel and Tollenaar 2013; Fukuyama 2018).

Tanzania already has a number of fiscal accounting and project management systems in place. The digitally enabled Local Government Revenue Collection Information System, for example, has been used to enhance revenue collection from select cities (Franzsen et al. 2018). The need, however, is for all LGAs to graduate onto a system that consolidates revenue collection, budgets, investments, planning, and maintenance in ways that achieve transparency and build trust between LGAs, SOEs, and central government. This can be done through new technologies that link budgets, progress reports, photographs, and locations, thereby enabling citizen-centric governance (CISL 2017).

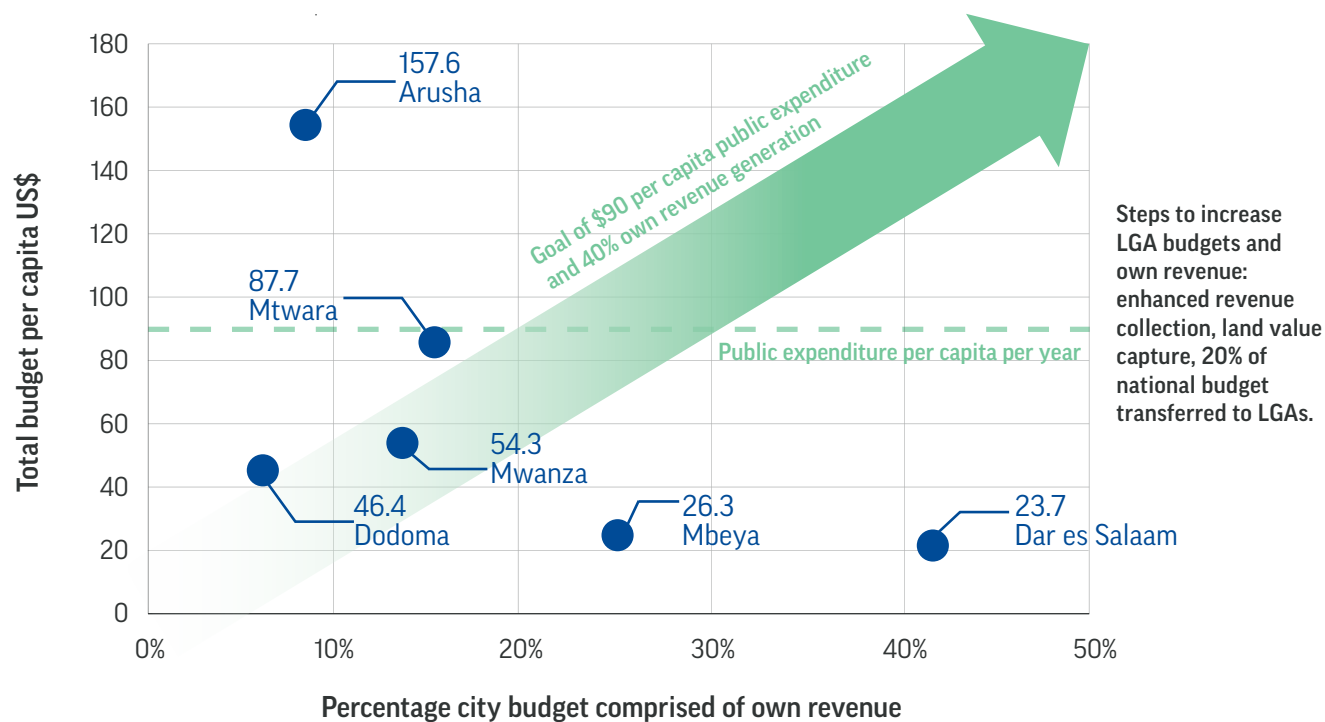
3.3.2 Enhancement of own revenue collection and access to blended finance at the city level

Tanzania's ambitious fiscal stimulus programme is the product of leadership vision, but will have to yield higher revenue collection if it is to avoid ceding national development to international creditors. While TRA has made progress in capturing elite and corporate taxes, further revenue-earning opportunities are available through a broadening of the tax base and 'taxation of the urban boom' through development charges and land levies (Curtis and Ngowi 2017; GIZ 2019).

Most cities in Tanzania collect less than 20% of their total revenue (Amani et al. 2019). The UDP should therefore outline how new TRA and LGA partnerships will enable cities to collect more money, generate their own revenue, and access the debt market so that all LGAs can spend at least the US\$90 per capita on infrastructure and development in 2022 (Figure 6) required by FYDP II.

Figure 6

Total LGA expenditure per capita and percentage own-revenue generation



Source: Diagram by Alma Viviers, based on data from Amani et al. (2019).

The required shift can be achieved by:

- providing households with the services they want in exchange for fair rates and taxes, thereby harnessing the US\$130 million per annum in ‘willingness to pay’ (WTP) revealed in field studies (Figure 7) (Amani et al. 2019).
- allowing cities to set their own tariff structures for the sale of bulk water and electricity purchased from SOEs to end-users. Under this arrangement, cities would be responsible for distribution, maintenance of urban distribution networks, and the collection of revenue for these services. LGAs are better placed to establish the trust required by households before they will accept ‘pay-as-you-go’ electricity meters, which contribute significantly to revenue collection and the financial viability of SOEs (MEM 2014).
- supporting value capture. Land tariffs in Tanzania have not kept pace with increases in land value and in many instances have not even been adjusted for inflation (Haas and Collier 2017). Equally, neither private nor public sector property developers pay development charges proportionate to the cost imposed on society and the fiscus. Effective land value capture must be preceded by the accelerated

land-titling programme advocated in Section 3.2, and will ultimately require the function of property tax collection to be returned to large urban local authorities that are capable of accounting for and reinvesting revenue collected from citizens.

- underwriting local government balance sheets with guarantees enabling access to debt finance on favourable terms. As revenue-raising capacity for services increases, MoFP will have to work with LGAs and the Local Government Loans Board (LGLB) to create a conducive environment for sustainable LGA borrowing. The city of Mbeya has used debt (and donor) finance to invest in revenue-generating hostels and conference facilities, and in the process has increased its source revenue from US\$264,000 to US\$3.2 million per annum (Amani et al. 2019). Once MoFP and PO-RALG have improved the strength of LGA balance sheets and revenue collection, municipal infrastructure bonds offer one means by which Tanzanian cities can break the prevailing ‘low investment–low growth–low revenue collection’ equilibrium. Municipal bonds are only likely to be accessed at reasonable rates, however, when underwritten by MoFP. This implies the need for new partnerships between the ministry, LGLB, and LGAs.

- drawing on blended finance to create blended outcomes. The urban infrastructure backlog in Tanzania likely means that most LGAs will remain reliant on 'blended finance' involving public-private partnerships with the private sector, SOEs, and through LGLB, even as local revenue improves. The benefits of blended finance, however, hinge on the capacity to blend the outcomes of that finance. LGAs require MoFP and PO-RALG support to bring together the necessary parties without defaulting to the privatisation of public assets that has caused regulatory and financial problems in the past (Budds and McGranahan 2003; Gratwick et al. 2006; Eberhard et al. 2016; Hallegatte et al. 2016). For example, the benefits generated by plastic recycling – including work creation, fewer stormwater drain blockages, less pollution of coastal amenities, and a reduced reliance on imported plastic – are shared across multiple stakeholders, creating an incentive for them to invest in the process. This collaboration is unlikely, though, without PO-RALG and MoFP convening the relevant parties to discuss proportionate contributions.
- obtaining climate finance, as outlined in Chapters 5 and 6 of the Paris Agreement. With MoFP support, Tanzanian cities stand to benefit from

new funding sources and financiers (most notably China's EXIM Bank), as well as new finance channels offering innovative options regarding the terms on which money is lent to African countries (Asomani-Boateng 2011; Pelletier et al. 2014; CISL 2017; Ismail 2017). Much of the new finance is tailored to precisely the climate-resilient technologies and infrastructure Tanzanian cities require (Revi et al. 2014; Kennedy et al. 2015; Dodman et al. 2017; Lwasa 2017; Newman et al. 2017). The challenge for MoFP is to ensure this finance is accessed on reasonable terms, and that it supports, rather than undermines, existing plans for sustainable urban development.

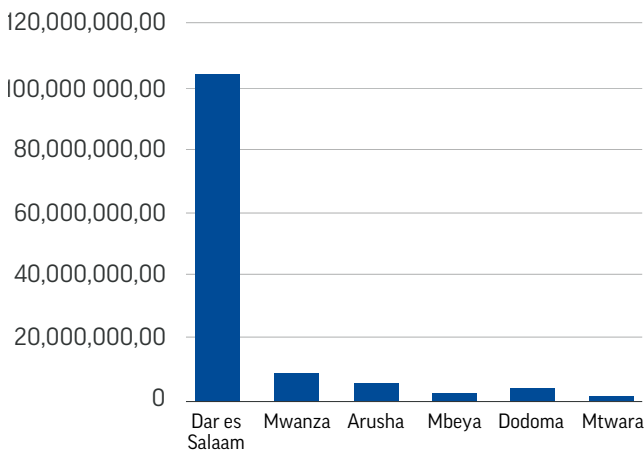
3.3.3 Budget support for emblematic projects

The enduring impact of Tanzania's current fiscal expansion will be determined by what public money is spent on, how much private sector investment it attracts, and how the collective investment improves productivity.

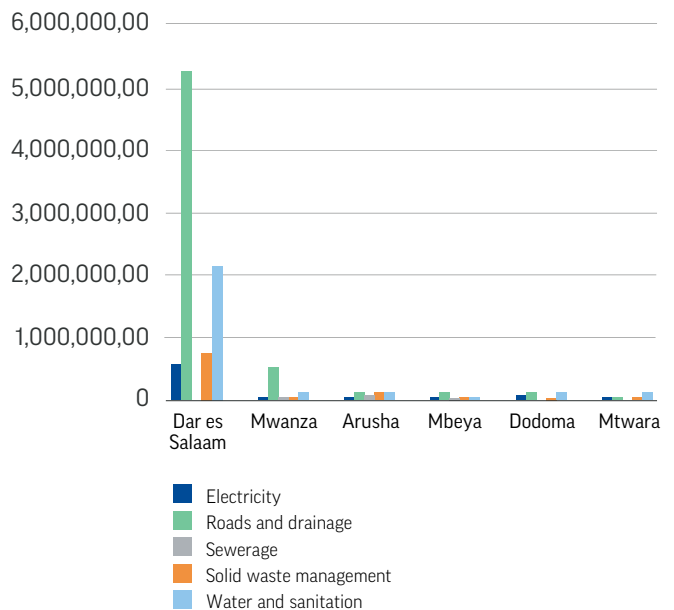
Budget support for projects emblematic of Tanzania's urban vision have the potential to draw the attention of development partners and financiers to the country's fiscal strategy (Pieterse 2019). Rwanda is internationally acclaimed for its Smart City Master

Figure 7
Willingness to pay (WTP) in six Tanzanian cities, 2018

Total WTP in six cities (US\$ per annum)



Composition of WTP across five service delivery sectors in six cities (US\$ per annum)



Source: Adapted from Dentoni et al. 2018.

Plan, as well as its clean and green cities; Malawi has received recognition for its 85 solar-powered health facilities; and Ethiopia is celebrated for its commitment to renewable energy (ESI Africa 2019). The positive profiling of these successes has attracted international attention to the more general progress of these countries. The competition run by TULab (Box 1 in Appendix A3.3) revealed a cadre of urban entrepreneurs with remarkable and underacknowledged capacity for research, design, testing, and implementation of innovations addressing Dar es Salaam's service delivery needs. Identifying and supporting such entrepreneurs that have emerged in the absence of formal services in Tanzania has the ability to assist government in the task of service delivery, particularly where they can be included in partnerships between SOEs, LGAs and *mtaas*.

While Tanzania's catalytic mega-infrastructure projects (including Rufiji Hydro Power, Julius Nyerere International Airport's Terminal Three, Mfugale Flyover, the light rail line to Dodoma, and Selander Bridge) are important in their own right, their economic benefits can be complemented by community-based upgrades and environmental protection projects that create the type of work unemployed people can access, impart a sense of place, and offer solutions to growing transport, waste, and energy challenges (Grant 2015; Pieterse 2019). Table 2 lists programmes and projects that have the potential to complement the mega-infrastructure focus and secure international attention, while at the same time generating jobs and competitiveness in a carbon-constrained global economy. They include:

- public employment programmes aimed at addressing labour market failures in Tanzania's cities. While Tanzania has a proud history of self-employed entrepreneurs and street vendors, the urban labour market remains a difficult place in which to gain traction, particularly for urban youth, who comprise 55% of the population (NBS 2016b). Community work schemes involving, for example, collecting and recycling plastic or afforesting water catchment areas denuded by charcoal burning create work while imparting dignity. They also address wider public risks such as stormwater drain blockage and flooding. If efficiently run, and especially when they are designed collectively by local authorities and communities, such schemes can reduce public expenditure (Philip 2018). Crucially, the work created is not easily threatened by geopolitical

flux or trade wars, does not require high levels of skill or long commutes, and transforms people's relationship with the space in which they live, encouraging new urban identities and a 'sense of place' (Philip 2018; Cartwright and Savage 2019).

- the use of recycled plastic in road construction. Given the extreme heat and more intense rainfall Tanzanian roads will potentially experience under changed climates (IPCC 2014; Appiah et al. 2017; Underwood et al. 2018), as well as the burden of plastic waste pollution in the country, new road material is both necessary and desirable. The change required for this innovation is, however, unlikely to happen without fiscal support and MoWTC taking leadership of the road-building agencies. Arena Recycling has shown how recycled plastic can be used to manufacture cheaper bricks, but as is the case with many entrepreneurs operating in Tanzania's circular economy, the value contained in their proposition has yet to be recognised by MoWTC, SOEs, or large construction companies.
- a scaling up of Hyina and Uhurulab's existing work with drones. Drawing on rapidly improving drone technology, the project uses drones and trained technicians to survey land and provide flood warnings, as well as to quickly and affordably deliver medicines and other critical goods to hospitals that are either remote or in difficult-to-access urban areas. There is therefore an opportunity to create work and business through supporting a hub that manufactures and services drones while also providing expertise in collating the data these drones collect.
- LGA-operated 'reverse-vending' programmes that enable the recycling of waste plastic to be used as payment for public transport, schools, or mobile phone airtime. Budapest, Beijing, Curitiba, Lagos, and Johannesburg already support such schemes, exemplifying the idea of an urban circular economy in which economic multipliers outstrip the extractive economy (Villarroel Walker et al. 2014; Lewandowski 2016).
- a scaling up by MoE of schemes offering off-grid urban energy. Simusolar, which raises its own funds for energy services while maintaining strong links with the digital economy with regard to raising finance and payments for services, offers one part of the solution required to provide urban citizens with clean, safe, and affordable electricity.

Table 2

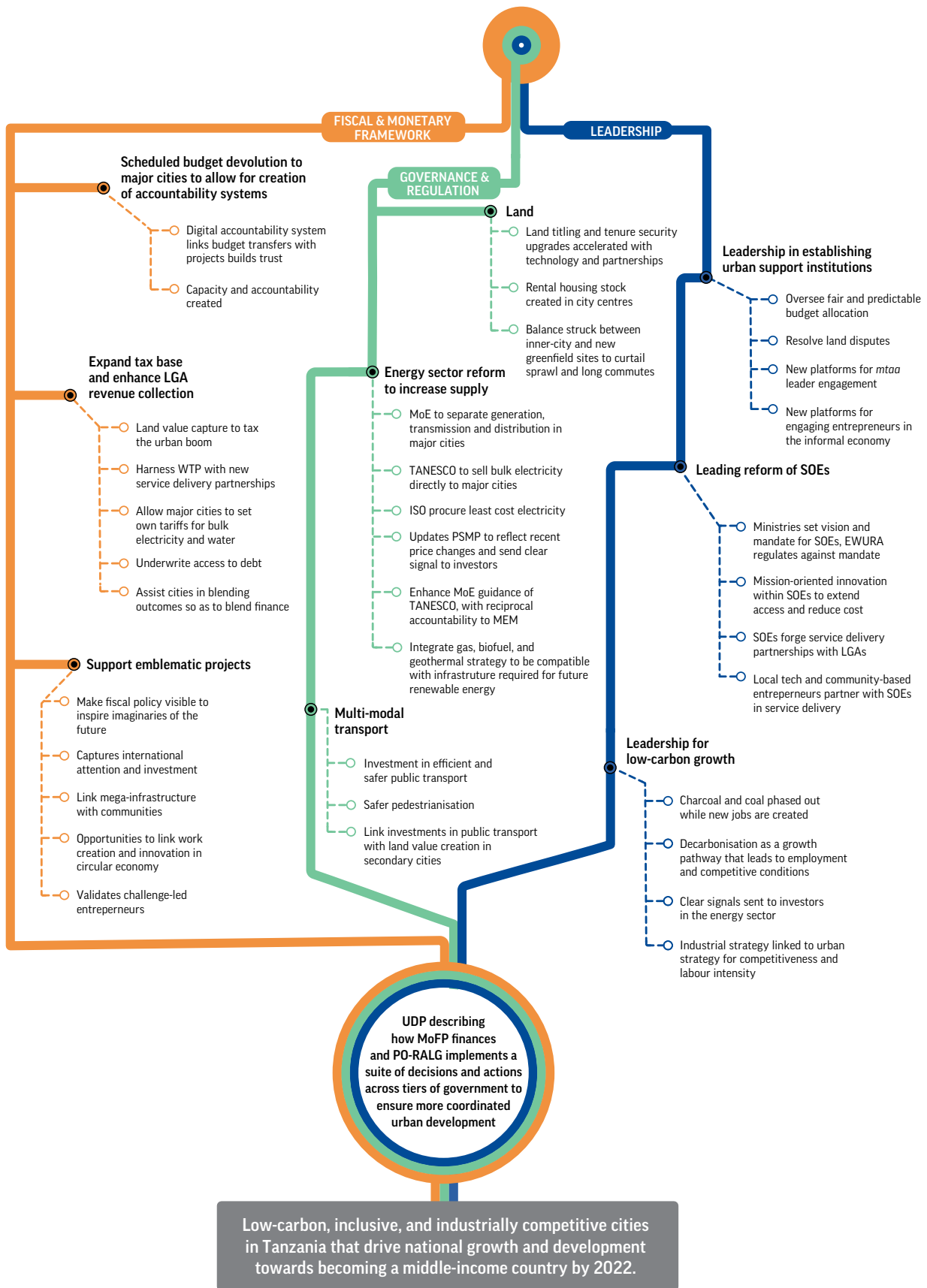
Illustrative examples of emblematic projects that could gain fiscal support*

Innovation	Signal that fiscal support transmits	Precedent or reference
Landscape management and afforestation to manage flooding in Dar es Salaam and ensure a 'sponge city'	Tanzania adopts labour-intensive and systemic approaches to urban flooding and the green economy.	'Sponge city' concept emphasises built environments and urban forms that can cope with heavy rainfall through a combination of permeable surfaces, green spaces, catchment management, and drainage infrastructure. Sponge cities in China, Vietnam, and the Netherlands require coordination of government efforts at all levels, and are able to reuse water retained within the city.
Plastic waste reverse-vending machines in exchange for airtime or BRT vouchers	Tanzania is committed to resource-efficient urban development that links environmental quality with day-to-day public services.	Being applied in many cities already (see Beijing and Budapest). Machines receive plastic in exchange for airtime or public transport vouchers. Encourages plastic waste recycling.
Drone hub	Tanzania's limited urban road infrastructure makes transporting goods and people difficult, especially when roads are flooded.	Hyina Digital and Uhurulabs are existing businesses in Tanzania taking advantage of the ability of drones to make deliveries within a 200 km radius, even when roads are congested or flooded. Rwanda already has a hub that services drones. The World Bank has been supporting Tanzania's drone hub initiative to map flooding impacts, support.
Off-grid urban energy	Tanzania understands the changing nature of the energy sector and is committed to combined technical and financial innovation in order to support energy access.	Simusolar is already active in Tanzania. It has raised its own money for energy services. Strong links with the digital economy in regard to raising finance, payments for services, and ensuring services.
Mobile gulper manufacturing and servicing for emptying pit latrines to avoid sewage spills	Tanzania prioritises urban sanitation issues and supports locally adapted solutions to difficult service-delivery problems. Gulpers reduce the 'vomiting' method of emptying pit latrines into an adjacent hole, which undermines the ability of urban settlements to densify.	Center for Community Innovation (CCI), the Slum/Shack Dwellers International (SDI) affiliate in Tanzania, has retrofitted a gulper to service communities that are without access to reticulated sewerage and neighbourhoods with restricted road access due to infilling of spaces.
Upcycling of plastic into fuel or construction material	Tanzania embraces the circular economy and is committed to converting the plastic pollution problem, which contributes to blocked stormwater drains and detracts from tourist attractions, especially beaches, through the repurposing of valuable plastic material.	Arena Recycling is just one example of a business paying people to collect plastic before turning it into a valuable product – in this instance bricks.
Safe non-motorised transport	Given only a minority of its urban citizens own cars, Tanzania emphasises the need for safe pedestrianisation and bicycle lanes that can ensure easy commutes, connecting commuters to inner-city retail opportunities.	Fasta Cycles is a digitally supported bicycle courier company that, despite congestion in Tanzania's cities, connects goods and people.

*Many of these ideas emerged from the TULab competition held in November 2018 to elicit and recognise urban service delivery innovations and the entrepreneurs that were driving the innovations (Text Box 1 in Appendix A3.3).

Figure 8

Government of Tanzania's detailed roadmap to sustainable urbanisation



Source: Alma Viviers, African Centre for Cities.

Notes: MoE = Ministry of Energy



Photo credit: GranTotufo/Shutterstock.com

4. Evaluating Economic Development Pathways

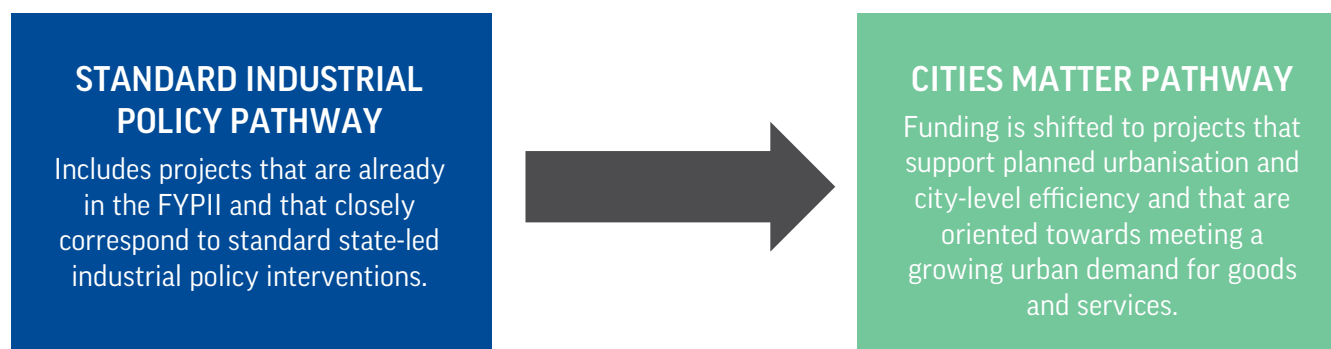
The roadmap contained within this report outlines the role of central government in coordinating Tanzania's multi-actor urban development. In a context of centralised governance, rapid and irreversible urbanisation, increasing climate impacts, and the need to compete in a carbon-constrained global economy, this plan is essential to realising development opportunities while avoiding liabilities. Climate-resilient urban development has the potential to deliver both a viable development path and macroeconomic benefits to Tanzania, but would also require a budget reallocation relative to the priorities contained in FYDP I and FYDP II. Any reallocation contains transition risk that should be understood in advance; it is important to be clear that the benefits associated with urban development do not come at an untenable macroeconomic cost, one that risks insolvency and the foregoing of development options.

Recognising this need, TULab commissioned a background paper that applied a social accounting matrix (SAM) to compare the macroeconomic implications of an industrial strategy tailored to the goods and services required by growing cities (a pathway the modellers labelled 'Cities Matter', which aligns with the recommendations in this roadmap) with a more conventional industrial strategy based on SEZs (labelled the 'Standard Industrial Pathway') (Cloete et al. 2019). The intention was twofold: firstly, to demonstrate that pursuing the roadmap does not risk macroeconomic collapse; and secondly, to gain insights into the links between urban development and the current flagship industrial strategy involving SEZs in order to support budget allocations and planning in the forthcoming FYDP III.

The SAM contained 68 activity sectors and 70 commodity sectors, and developed the linkages between them based on 2015 data. The model explored the implications of investing the same amount of public funds (14% of the money earmarked for investment in FYDP II) under both the Standard

Figure 9

Depiction of two industrial pathways modelled



CORE FYDP II PROJECTS AND INTERVENTIONS

Projects that would be compatible with both industrial development approaches, and therefore would not lead to different outcomes. These projects and interventions are not considered as part of the multiplier analysis.

Source: Cloete et al. 2019.

Industrial Policy pathway and the Cities Matter pathway (Cloete et al. 2019). The modelling relied on the following assumptions:

- While new investment will create a localised stimulus, the reallocations required to make this new investment have an economic cost. Accordingly, the model imputes the opportunity cost of capital.
- Lasting economic impact is more significant than short-term impacts resulting from fiscal spend. The SAM multiplier analysis aims to look beyond the capital expenditure phase, which tends to be dominated by short-term 'construction' expenditure impacts.
- Many investments remain unchanged regardless of industrial strategy. Only 14% of FYDP II budget allocation is different in the two scenarios, with investments in education and housing, for example, assumed to be the same in both pathways.

- Based on past experiences, the 'capital leverage ratio' of SEZs was modelled at 60%, reflecting the efficacy of public investment in SEZs attracting matching private sector investment. The figure might in reality be higher (in Bagamoyo, for example) or lower, as is the case in poorly managed or less attractive SEZs.

The actual investments modelled under the two scenarios are shown in Tables 3 and 4 below. As a sectoral model of the Tanzanian economy, the SAM applies fiscal stimuli to different sectors as a proxy for the difference between the two pathways.

Table 3

Investment allocations modelled under Standard Industrial Policy pathway, based on 14% of budget allocation in FYDP II (US\$ converted from Tanzanian Shilling (Tsh))

Project	Capital investment (million)	SAM sector allocation	Rationale
SEZ logistics centre, industrial park	\$693	Other manufacturing and assuming 60% leverage ratio	
Airport transport strategic choices	\$825	Transport and storage	Airport transport operations will fall within the broader transport sector
Mining subsector strategic choices	\$45	Mining	
Iron and coal strategic choices	\$17	Mining	
Energy generation strategic choices	\$812	Electricity, gas, and steam	
Total	\$2,393		

Table 4

Investment allocations modelled under Cities Matter pathway, based on 14% of budget allocation in FYDP II (US\$ converted from Tsh)

Project	Capital investment (million)	SAM sector allocation	Rationale
Renewable PV	\$812	Renewable energy	
Water and sanitation	\$790	Water supply and sewerage	Recycling operations falls within the broad water and sanitation sector
Recycling	\$395	Water supply and sewerage	
Small-scale/informal sector	\$395	Trade – 25% Transport and storage – 50% Education, health & other – 25%	Small-scale operations are likely to be cross-sectoral in nature but service-oriented (including trade- and transport-related services, and services related to small-scale repair, which fall under the other services sector)
Total	\$2,393		

Source: Cloete et al. 2019.

Table 5 shows the modelled percentage change in GDP by sector under the two pathways. As expected, government investment stimulates growth, even when the opportunity cost of the stimulus is accounted for, leading to significant additional GDP growth under both

the Standard Industrial Policy pathway (8.3%) and the Cities Matter pathway (8.8%). Given that the modelled investment represents only 14% of planned investment under FYDP II, the results hint at the growth potential possible through a full allocation of the FYDP II budget.

Table 5

Percentage change in GDP for the two industrial development pathways (nominal)

Commodity sector	Standard Industrial Pathway	Cities Matter Pathway
Cereals	0.2%	0.3%
Fruit and vegetables	0.1%	0.1%
Other crops	0.2%	0.2%
Livestock and livestock products	0.3%	0.5%
Forestry and fishing	0.2%	0.1%
Mining	8.3%	0.9%
Food, beverages, and tobacco	0.4%	0.4%
Textiles, clothing, and leather	0.8%	0.8%
Wood and paper	7.0%	1.6%
Petroleum	14.2%	6.7%
Chemicals	10.3%	6.4%
Minerals and metals	4.2%	2.3%
Equipment and machinery	1.1%	19.0%
Vehicles	2.3%	8.3%
Other manufacturing	1098.4%	7.9%
Electricity, gas, and steam	168.6%	4.3%
Renewable energy	0.0%	3372.3%
Water supply and sewerage	1.4%	389.0%
Construction	1.2%	0.7%
Trade	4.3%	27.6%
Transport and storage	34.4%	8.2%
Accommodation	2.4%	1.8%
ICT	2.9%	3.6%
Finance	8.0%	6.1%
Real Estate	6.6%	11.7%
Business services	8.4%	7.0%
Public administration	0.0%	0.0%
Education, health and other	0.9%	6.0%
Total GDP	8.3%	8.8%

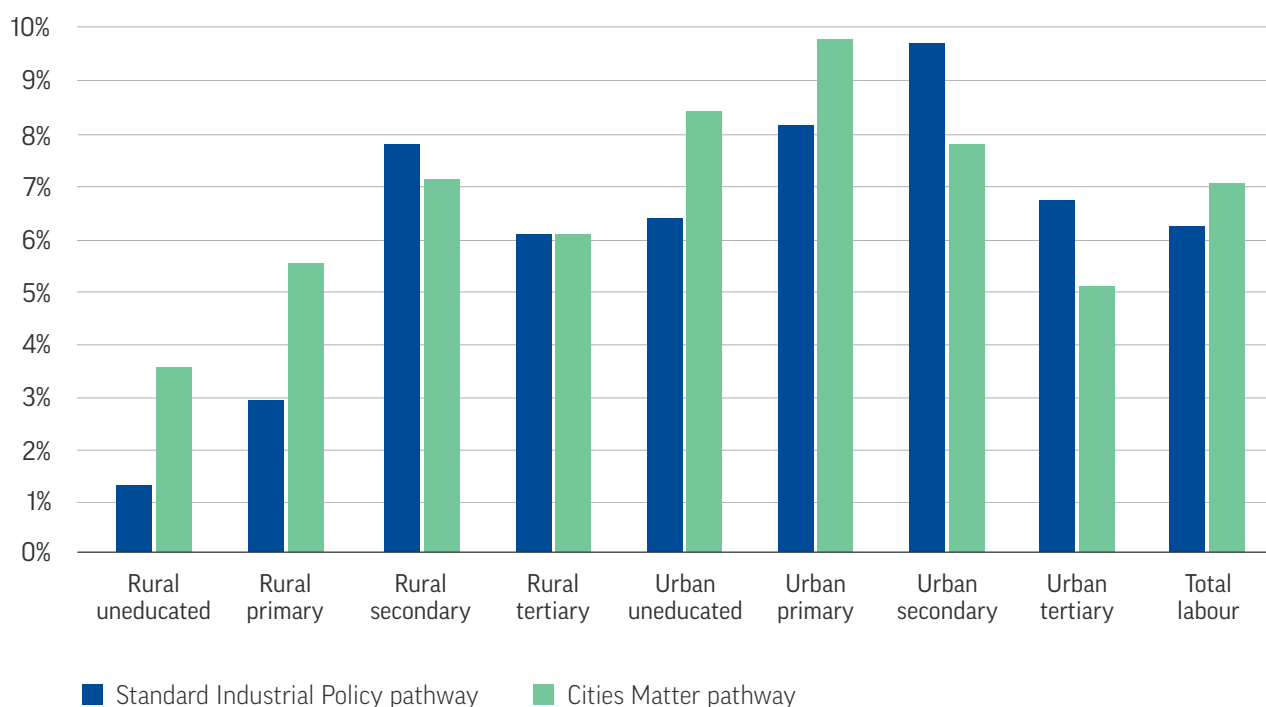
Source: Own calculations based on: Randriamamonjy J and Thurlow J, 2017. *2015 Social Accounting Matrix for Tanzania: A Nexus Project SAM*. International Food Policy Research Institute, Washington D.C. Available at: <http://ebrary.ifpri.org/cdm/singleitem/collection/p15738coll2/id/131509>. Source data from: IFPRI (International Food Policy Research Institute), 2018. "2015 Social Accounting Matrix for Tanzania. Harvard Dataverse, V1. DOI: 10.7910/DVN/PPXXD9.

The greatest difference in impact between the two industrial pathways appears in employment, with the Cities Matter pathway creating more primary sector employment than the Standard Industrial Policy pathway. This is due to the former's stronger linkages with Tanzanian value chains, including agricultural value chains that hold benefits for the rural economy. Furthermore, the greatest employment gains under the Cities Matter pathway apply to some of the poorest households, confirming what is commonly known: SEZs tend to employ skilled technicians, while an industrial strategy designed around domestic value chains and urban demand employs poorer, lower-skilled workers.

Modelled GHG emissions remain similar under the two pathways given that the SAM is not particularly discerning of land use changes that, through the charcoal industry, account for over 80% of Tanzania's emissions. In the model, the significant GDP growth that is generated by the two investment strategies leads to a small (1.08%) increase in GHG emissions under the Standard Industrial Policy pathway and an even smaller (0.8%) increase under the Cities Matter pathway. The lower emissions per unit of economic growth in the Cities Matter pathway is based on sectoral shifts in the composition of the Tanzanian economy, but excludes the impact of displacing charcoal through electrification.

Figure 10

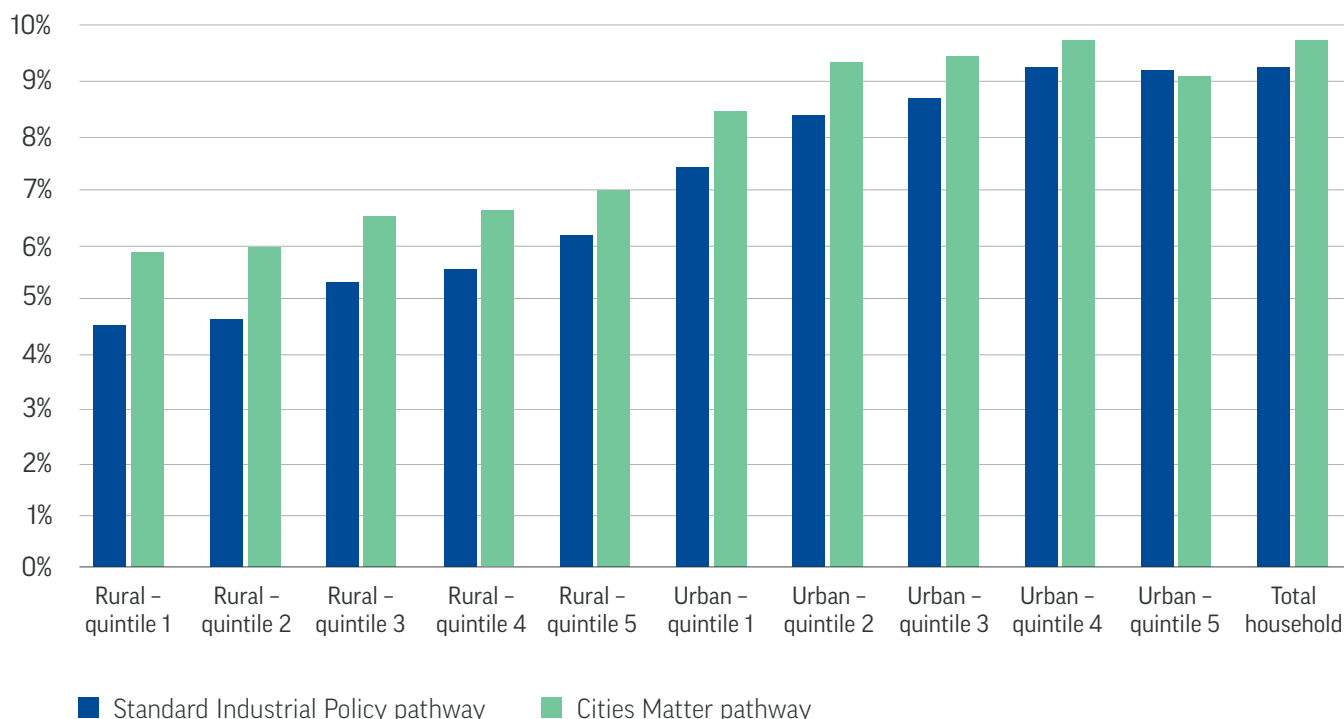
Percentage change in labour income (nominal) under the two pathways, per socio-economic group



Source: Cloete et al. (2019) based on: Randriamamonjy and Thurlow, 2017. 2015 Social Accounting Matrix for Tanzania. Source data from: IFPRI, 2018. 2015 Social Accounting Matrix for Tanzania.

Figure 11

Percentage change in household income under the two pathways, per socio-economic group



Source: Cloete et al. (2019) based on: Randriamamonjy and Thurlow, 2017. 2015 Social Accounting Matrix for Tanzania. Source data from: IFPRI, 2018. 2015 Social Accounting Matrix for Tanzania.

As a sectoral model, the SAM is unable to impute emissions reductions that occur directly from discrete technologies such as biogas, recycling and photovoltaic energy that comprise the Cities Matter pathway.

While the focus of the model is Tanzania’s national economy, a key outcome is the transformational growth that could occur in the country’s cities. The Cities Matter pathway predicts growth of over 20% in Tanzania’s trade sector (Cloete et al. 2019), which, with regard to the country’s urban economies, contains by far the greatest number of businesses. The rapid growth of this sector under the Cities Matter pathway would ensure that the country’s cities underwent employment-intensive growth that could potentially transform the national economy (OECD/ AfDB/UNDP 2016).

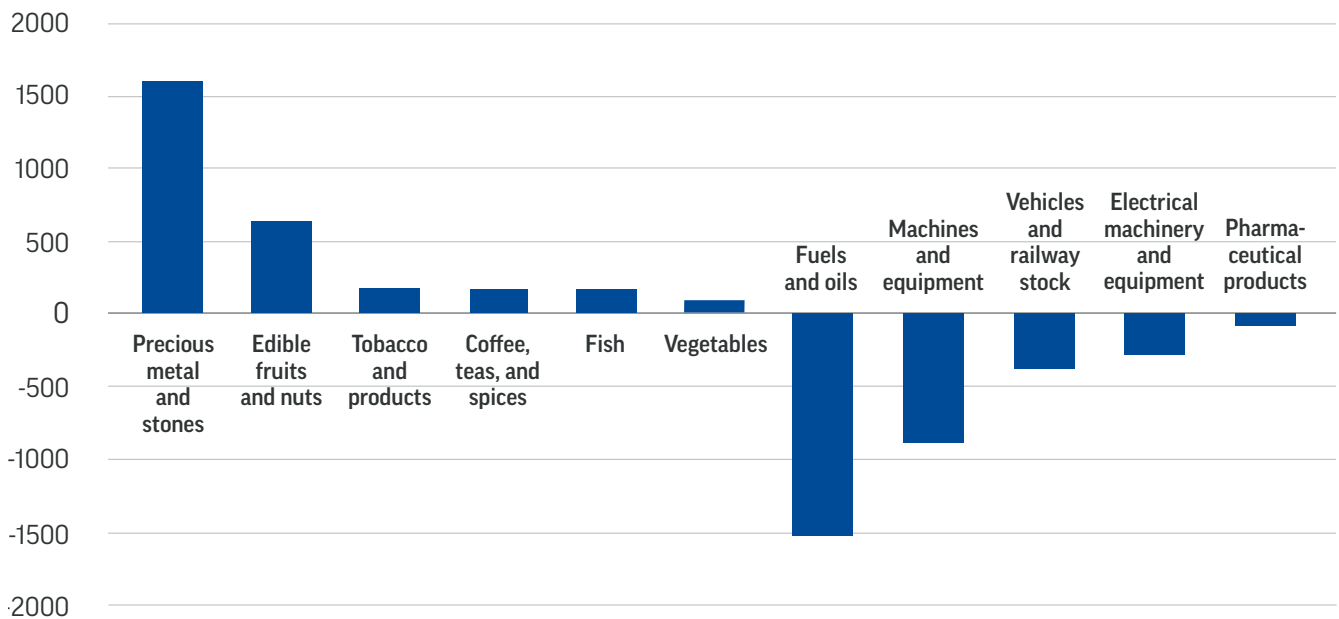
The model does not suggest that either of the industrial strategy approaches should displace the other outright. What the SAM exercise does demonstrate, however,

is that industrialisation can be expected to support growth and development, as well as the fact that linking industrialisation to urban development will not only deliver on more liveable and prosperous cities, but the macroeconomic risk relative to an SEZ-based industrial strategy is very low. This is a reassuring finding, both for the roadmap and for the officials tasked with implementing the UDP.

While the model establishes that a transition to urban development would be macroeconomically safe, it is not able to impute the risk that climate change and the global shift towards a low-carbon economy presents to Tanzania’s current balance of payments. Figure 12 shows that Tanzania’s balance of payments rests on exporting minerals, precious stones, and agricultural products in order to be able to import manufactured goods as well as fuels and oils. This portfolio of exports and imports is not unduly exposed to a low-carbon global economy, especially when compared with countries reliant on coal exports.

Figure 12

Percentage change in household income under the two pathways, per socio-economic group



Source: World Bank data 2019, own calculations.

However, an industrial strategy that provides Tanzania’s agricultural sector with agri-processing options, and which displaces the importing of manufactured goods by urban consumers, holds clear balance of payments benefits for Tanzania (UNECA 2016). To the extent that Tanzania’s urban economy is more likely to be climate resilient than a commodity-based economy, it is highly probable that the Cities Matter pathway would drive emissions and resilience co-benefits that go beyond those reported in the SAM.

Industrial strategy can accommodate a wide variety of actions and investments, but the underlying goal involves shifting domestic labour and resources from low productivity to high productivity sectors (McMillan and Rodrik 2011; Mazzucato 2015). While FYDP II recognises that both industrialisation and urbanisation are capable of driving this shift, it is less clear about how the synergies between the two – which have been a feature of the shift towards middle-income status in Asian and Latin American countries – will be realised (Duranton 2015). More specifically, it does not spell out how the transition from ‘consumption cities’ to ‘production cities’ will be overseen to ensure that Tanzanian industries can

compete successfully in domestic and international markets (Gollin et al. 2016). Though Tanzania has managed to grow its manufacturing sector at 4%–8% per annum over the past decade (McMillan et al. 2017), it has not yet fully unlocked the mutually reinforcing trends of urbanisation and industrialisation. Most people in Tanzania transition straight from primary industry in rural areas to tertiary activity (much of it informal) in cities. Since 2004, 90% of employment growth in Tanzania has been informal, which has proven difficult to harness from a taxation, regulatory, or spatial perspective (Diao et al. 2016; World Bank 2018). The challenge for the second half of the development planning phase, ending in 2026, is to sustain the growth and employment created by establishing competitive urban industries (Adam et al. 2017; IGC 2018). The SAM suggests that linking industrial activity to the demand for goods and services in the region’s cities is a viable means of achieving this. More than this, it takes advantage of the opportunities available to late industrialisers, while contributing to liveable and sustainable cities in the process (UNECA 2016; Cloete et al. 2019).



Photo credit: Travel Stock/Shutterstock.com

5. Conclusion

This roadmap is intended to serve as a source of ideas and information for a Tanzanian UDP. At present, the Tanzanian economy is growing under the influence of strong fiscal stimuli enabled by tight budgetary controls, technology transfers, the displacement of emergency power producers, and demand for the country's commodities. Tanzanian society is also developing through education investments, technological innovation, improving dependency ratios due to declining fertility rates, and a government commitment to social inclusion. Simultaneously, the country is urbanising, with its young, economically ambitious people moving to towns and cities in pursuit of work.

Despite Tanzanian cities accounting for the bulk of the country's financial, intellectual, and technological capital, trends in urbanisation and socio-economic progress have been largely independent of each other to date. Urban expansion has been largely

unplanned and uncoordinated, leading to costs associated with traffic congestion, urban sprawl, contradictory and duplicated investments, and a failure to harness the value created by public investments and agglomeration (Appendices A1, A2, A3, A4). Coordinated public investment in Tanzania's rapidly growing cities is needed urgently. Money spent in advance of, or early on in, their process of growth will avoid the need for more complicated and costly investments should risky and inefficient patterns of urban development become entrenched. In FYDP II, GoT recognises implicitly that towns and cities will determine Tanzania's future prospects for development. This recognition should now be made explicit in a UDP that clarifies roles and responsibilities. While the long-term goal is towards Tanzanian cities having the capacity and resources to marshal their own development, the current state of governance requires partnerships and national leadership on sustainable urban development. It is incumbent on the government that, through a UDP overseen by MoFP and implemented by

PO-RALG, vision and coherence is brought to bear on the various contributions required for sustainable urban development.

In the mid-twentieth century, Mwalimu Julius Nyerere's notion of *Ujamaa* shaped regional economic policy and inspired countries seeking to end colonial rule. A similar opportunity exists for GoT to provide fresh regional leadership on how city-dwellers can be placed at the centre of climate-resilient industry and national development (Barnett and Parnell 2016; GoT 2016; UNECA 2017).

This is not a trivial undertaking for a country that has a long history of rural-focused development and few of the urban institutions that are typically associated with thriving cities. It can be done, however, through a combination of leadership and fiscal and regulatory support for cities. Should this be achieved, Tanzania will not only deliver more-liveable cities, but will also secure higher GDP growth and increased employment and income levels for some of the country's poorest households, including rural households (Cloete et al. 2019). This, in turn, will provide Tanzania with the basis for increased revenue collection, debt servicing, and a sustained ability to pursue development on its own terms.

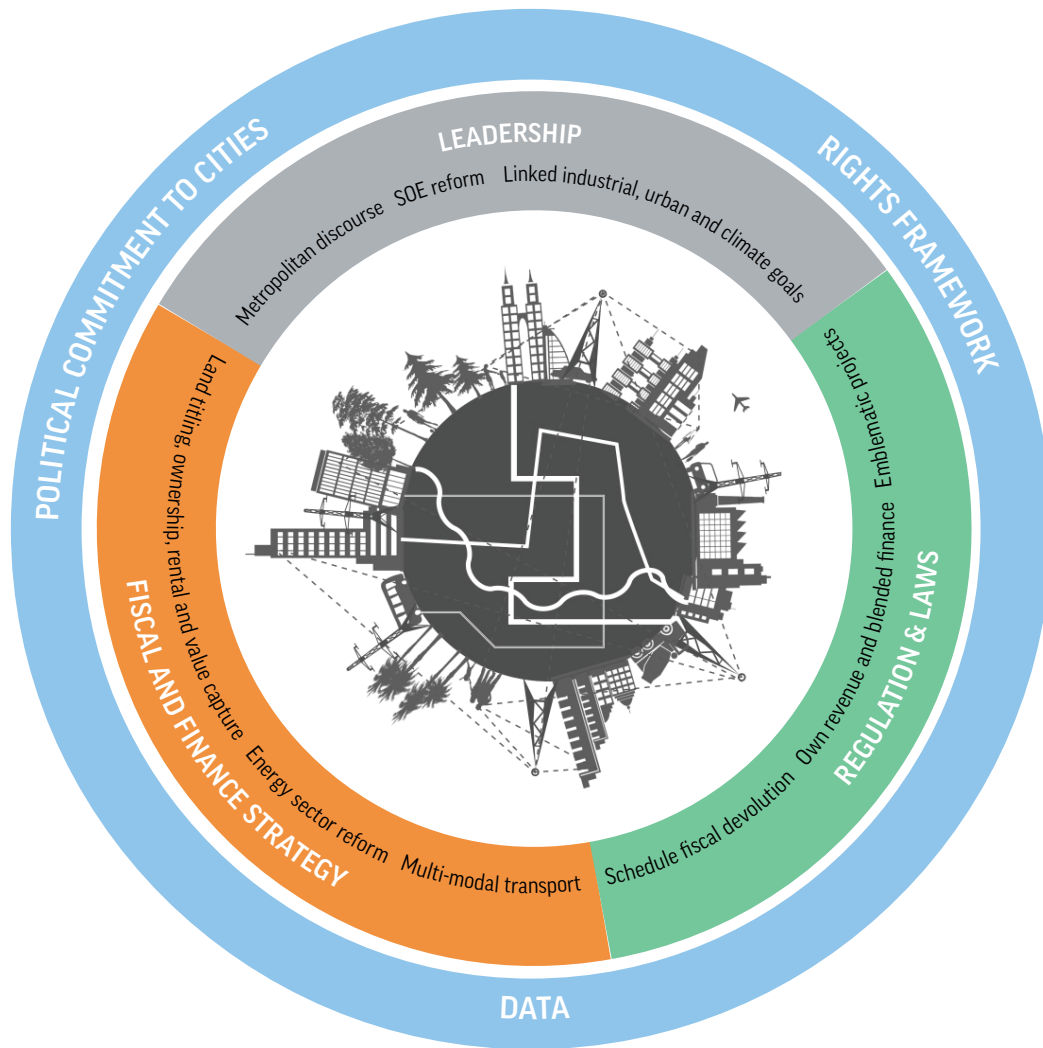
Tanzania has the rare opportunity to plan in concert its cities and industrial strategy, with full knowledge of climate change in mind. Government, businesses and civil society already have programmes and projects involving new infrastructure, enhancing mobility, electrification, and social inclusion programmes – these can be adjusted easily to reflect the changing climate and secure the advantages of a low-carbon economy. In so doing, Tanzania will be able to access the foreign direct investment and international development assistance that is increasingly being allocated to low-carbon, climate-resilient projects.

This roadmap presents the government with options for creating multi-level and multi-actor governance, complete with legally mandated supporting institutions and smart digital technology. This will allow city authorities to be held to account, while at the same time providing them with the means and tools to hold other tiers of governance, as well as SOEs and *mtaas*, similarly accountable. A UDP must go beyond merely coordinating urban development and actively enable new approaches to engaging 'squatting' and the 'informal economy', new capacity for mission-oriented innovation and partnerships in SOEs, and fresh perspectives on industrialisation that will ensure manufacturing meets the needs of the region's rapidly growing cities. None of this will be possible unless the UDP broadens the revenue base, radically increasing revenue collection in exchange for urban services and development.

Since it falls under its mandate, PO-RALG has a critical role in spearheading the formulation of UDP, and then implementing it. Experience with NUPs elsewhere on the continent suggests that the UDP's influence will be greatly enhanced where it is supported by budget allocations (Cartwright et al. 2018). For this reason, MoFP oversight of the UDP is recommended. Indeed, it was MoFP that convened in TULab the cadre of urbanists whose knowledge and expertise were central to producing this roadmap. Provided budget allocations are made available to support the UDP, TULab's multi-disciplinary community is well placed to assist Tanzania in responding to the opportunities that will emerge as climate change re-orders the global economy, thereby ensuring that urbanisation becomes a force for the country's development. In this way, Tanzanians will be able to 'run while others walk'.

Figure 13

Key elements of the roadmap for a UDP in Tanzania



Source: Alma Viviers/African Centre for Cities.

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Appendix: Urban Governance and Service Delivery in Tanzania

Drawing on the background papers, this section highlights the key features of Tanzania's governance, urban land management, urban service delivery, and urban finance that an urban development plan (UDP) will be required to engage. In doing so, it provides the context from which the recommendations contained in the roadmap were drawn. While this context is familiar to Tanzanian policymakers, it is important that development partners, urban networks, investors, and policy advocates from outside the country are made aware of it in order to avoid the misunderstandings and missed opportunities that accompany the mass commodification of urban development. Though the roadmap outlines an ambitious future for Tanzanian cities, it is inevitably informed by past circumstances and the prevailing institutional landscape. Thus, the success of Tanzania's urban future will be built on the back of existing programmes and policies.

A1. GOVERNANCE OF CITIES

At the core of Tanzania's urban development challenge are the questions of 'how', 'through which agency or tier of government', and 'with what money' will infrastructure and urban services be delivered. While there are numerous government and donor programmes that seek to support cities and towns, these are not yet guided by a Tanzanian metropolitan mindset, and their respective contributions tend not to complement each other.

In keeping with the 1977 constitution, Tanzania's urban areas are governed by three parallel systems: a nationally appointed regional commissioner; a nationally appointed district executive director; and an elected municipal government. Each local government authority (LGA) is comprised of a 'development ward', with elected ward councils and *mtaa* leaders. Planning, regulatory authority, and service delivery is shared across central-, urban-, and street-level representatives (Table 2), in accordance with the Local Government Reform Programme (1998).

The appropriate allocation of mandates across tiers of government will change over time as populations shift

geographically and in age composition, the economy changes, and new technologies and capacities emerge. Typically, though, national governments are best placed to oversee the coordination of policy and regulatory frameworks, the demarcation of municipal boundaries, the stewardship of water basins, the functioning of regional power grids, and the intercity transport routes. By contrast, housing, sanitation, waste management, and urban transport benefit from local negotiation and coordination (Cartwright et al. 2018). As a general rule, proximity between citizens and local government is advantageous when discerning citizen preferences, engaging traditional leaders, negotiating contested tenure, and monitoring development outcomes (Crook and Manor 2000; Treisman et al. 2002; Grindle 2009).

Tanzania recognised the value of local governance at independence. In the Azimio la Arusha (Arusha Declaration) (1967), Mwalimu Julius Nyerere advocated for the '*mtaa*' system of street committees that remains today. Since then, Tanzania's governance has been through periods of decentralisation and recentralisation (Tidemand et al. 2010). While formal policy since 1998 has promoted 'decentralisation for development', devolution responsibilities faltered due to a lack of coordination between the President's Office – Regional Administration and Local Government (PO-RALG), and President's Office - Public Service Management and Good Governance. Where devolution was actually practised in the past, it saw personality and patronage exert undue influence over local election outcomes and resource allocations, typically at the expense of minorities and inclusive urban development (Mollel and Tollenaar 2013; Hulst et al. 2015). While FYFP II commits to urban development, central government has been cautious about devolving budget and responsibilities in the absence of accountable institutions at the local scale. The Public Services Act (2004), the 2007 revision of the Local Government Reform Programme, the 2016 centralisation of property tax collection by TRA, and the centralisation of land titling and teacher appointments, each returned key aspects of control to central government (Tidemand et al. 2010; Lameck et al. 2019).

The centralisation of urban planning has not yet, however, managed to coordinate at the city scale the various projects and programmes planned and financed by national ministries, state-owned

Figure 14

Roles and responsibilities across respective tiers of government in Tanzania, showing shared (green) and exclusive (orange) functions

	Central government	Urban councils	Mtaas
GENERAL ADMINISTRATION (Prime Minister's Office, Ministry of Home Affairs)			
Police	Shared	Shared	Shared
Fire protection	Exclusive	Exclusive	
Civil protection, criminal justice	Exclusive		
Civil status register	Exclusive	Exclusive	
Statistical office and electoral register	Exclusive		
EDUCATION (Ministry of Education, Science and Technology)			
Pre-school (kindergarten & nursery) and primary school		Exclusive	
Secondary			
Vocational & technical, higher education, adult education	Exclusive		
SOCIAL WELFARE (Ministry of Health, Community Development, Gender, Elderly and Children)			
Family welfare services, welfare homes, social security		Exclusive	
PUBLIC HEALTH (Ministry of Health, Community Development, Gender, Elderly and Children)			
Primary care			
Hospitals and health protection	Shared	Shared	
HOUSING & TOWN PLANNING (Ministry of Lands, Housing and Human Settlements)			
Housing and town planning		Exclusive	
Regional planning	Exclusive		
TRANSPORT (Ministry of Works, Transport and Communications)			
Roads	Shared	Shared	Shared
Transport	Shared	Shared	
Urban roads		Exclusive	
Urban rail	Exclusive		
Ports and airports	Shared	Shared	
ENVIRONMENT & PUBLIC SANITATION (Ministry of Water, Ministry of Natural Resources and Tourism, and Vice President Office)			
Water, sanitation, solid waste collection & management		Exclusive	
Cemeteries & crematoria		Exclusive	
Environmental protection and slaughter houses		Exclusive	
Consumer protection		Exclusive	
CULTURE, LEISURE & SPORTS (Ministry of Information, Culture, Arts and Sports)			
Theatre, concerts, museums, libraries		Exclusive	
Parks, open spaces, sports, religious facilities		Exclusive	
UTILITIES (Prime Minister's Office, President's Office – Regional Administration and Local Government, and relevant Sector Ministries)			
Gas services and water supply		Exclusive	
District heating			
Electricity	Shared	Shared	
ECONOMIC (Ministry of Industry, Trade and Marketing, Ministry of Livestock and Fisheries Development, Ministry of Agriculture, Food Security and Co-operatives, Ministry of Natural Resources and Tourism)			
Agriculture, forests & fisheries	Shared	Shared	
Local economic development/promotion			Shared
Trade & industry	Shared	Shared	
Tourism	Shared	Shared	Shared

utilities, and donors. Tanzanian cities are sometimes referred to by locals as ‘just large villages’. As in other African cities, private property developers have taken advantage of regulatory gaps and contributed to piecemeal housing estates, student accommodation, and commercial buildings, often harnessing the language of ‘urgency’, ‘innovation’, and job creation (Watson 2015; Berrisford et al. 2018). Such developments are not always networked into existing urban service and transport systems.

This centrally coordinated, project-based approach to urban development makes it difficult to harness the synergies, spatial heritage, and connectivity that drive flourishing cities (Grant 2015; Rode et al. 2017; OECD/ UN-Habitat 2018; Berrisford et al. 2018). Dar es Salaam’s bus rapid transit (BRT) system, the first phase of which cost US\$150 million, illustrates this point. Despite BRT transporting 200,000 commuters each day and significantly enhancing commuter convenience, there is limited scope to shape transit-oriented development or land value capture around it due to the absence of a supporting land and infrastructure policy (Mchomvu 2018).

While centralised coordination comes with limitations, there are examples in Tanzania of programmes that make effective use of centralised governance to provide local services. The ‘simplified sewerage system’, implemented by the Mwanza Urban Water Supply and Sanitation Authority, but involving intense collaboration between the regional utility, the LGA, and households in order to find workable and affordable sanitation solutions, provides lessons in this regard (Jean-Baptiste et al. 2019; Lameck et al. 2019)

A2. LAND

All Tanzanian land is legally owned by the President. Formal access to urban land is controlled through the issuance of Certificates of Right of Occupancy, 99-year leaseholds that are transferable and usable as collateral (under the Land Act of 1999). However, parallel titling programmes run by LGAs and traditional authorities are not uncommon. Official land zoning distinguishes between residential, commercial, industrial, and conservation land at the local scale, but in practice these distinctions are seldom upheld. Officially, the minimum plot size is 300 square metres, in part to allow a ‘safe’ distance between dwellings and pit latrines, but local governments and banks recognise smaller plots in urban wards (Berrisford and McAuslan 2017).

Since 2001, accelerated land-titling programmes have been prioritised, but tenure upgrades in towns and cities have proven difficult and been contested (Grant 2015). The formal titling process in cities requires 11 steps, 5 different application forms and 2 levels of government, and can require hundreds of dollars in private investment (Ali et al. 2012). It takes an average of 380 days to transfer title, and up to eight years for formal surveying, valuations, and titling (World Bank n.d.a.). Retrospective analyses suggest that applications by women take longer to process than those by men (Oxfam 2018).

The result is that most people seeking urban livelihood opportunities settle on unsurveyed land without secure tenure (Collin et al. 2012; Berrisford and McAuslan 2017). Programmes such as Dar es Salaam’s ‘20,000 plots’, which began in 2003 and surveyed 40,000 plots, are part of an ongoing effort to address this challenge (Wolff et al. 2018). Despite this, more than 60% of land in Tanzania remains unsurveyed (Oxfam 2018), and only 5% of land is registered to an owner (World Bank 2017). What Tanzanians refer to as ‘squatting’:

- contains the constant risk of eviction and undermines incentives to invest in upgrading the home, workplace, or neighbourhood.
- complicates the planning of public infrastructure and makes providing this infrastructure more expensive (GoT 2016). By some estimates, 60% of the public budget for urban infrastructure is spent on ‘negotiating and sorting out what we find on the ground in occupied urban spaces’ (Hante, pers. comms. 2018).
- blocks access roads, hinders mobility, and complicates the construction of new public infrastructure (The Citizen 2017).
- precludes most forms of land value capture (Smolka 2013), which in turn makes the financing of public electricity, water, sanitation, and transport infrastructure more difficult (Lameck et al. 2019).

Despite the difficulty of securing formal titles, Tanzanian cities are undergoing a real estate expansion, complete with the construction of new homes, gated communities, and hotels. The boom is attracting substantial private investment and driving construction sector growth in excess of 10% per annum. Demand for cement, gravel, stone,

iron, and steel is even higher – cement production increased almost fourfold between 2001 and 2016 (NBS 2018). The challenge lies in marshalling urban demand for property in order to secure livelihoods, functional urban forms, and public revenue collection. Frustrations with securing formal title have seen both public and private urban development efforts favour greenfield land on the urban edge, which can be more easily surveyed and titled. While this avoids the cost of tenure disputes, and has enabled the creation of small satellite towns and new connectivity between villages and urban centres, it is driving sprawl – what Mkalawa calls ‘peripherisation’ (Mkalawa 2016; Chengula and Kombe 2017) – which in turn imposes a ‘hidden cost’ on households and utilities, as articulated by a Dodoma water utility official:

... I don't have the budget to take water there, but they will tell me it is my duty to take water there. It is true it is my duty but also I depend financially from the central government and I just meet the operation costs, so you find we blame for each other. But if we were working together we could plan together. (Lameck et al. 2019, respondent 42)

Master planning provides the official instrument through which local authorities in Tanzania anticipate growth, demarcate new land for development, conservation, and industry, and coordinate the provision of services by departments and state-owned enterprises (SOEs). Dar es Salaam’s 2012–2032 Master Plan is still awaiting approval, leaving only the 1979 plan officially in place. In Tanzania, as elsewhere on the continent, the ability of master plans to marshal the respective investments of SOEs, ministries, and the private sector in a spatially coherent manner has proven limited. As a result, they have had little influence on urban form (Todes 2015), as explained by an official in Dodoma interviewed for one of the TULab background papers:

Generally, ... there are many institutions that plan for themselves [at the city scale]. For instance, here in Dodoma there is DUWASA, there was CDA, municipal, TANROADS, and TTCL. There is not any coordination because everyone makes his or her own plan. ... Everyone reports to a different organ, on my side I report to the water authority, council director reports to PO-RALG, TANROAD reports to the Ministry of Work, Transportation and Communications, CDA report to the Prime Minister. (Lameck et al. 2019, respondent 42)

A3. BASIC SERVICES

Simply keeping pace with demand for basic urban services (water, sanitation, roads, electricity, and solid waste management) will require a sixfold acceleration of historic delivery rates in Tanzania (Collier and Jones 2015). Financing this acceleration is a challenge in a context where per capita income is just US\$905 per annum and revenue collection is low. Cities concentrate demand, potentially reducing the per capita cost of providing services (Turok 2013; OECD/AfDB/UNDP 2016), and investments in infrastructure can increase productivity, income, and government revenue. Even so, this still requires the financing the initial catalytic infrastructure, as well as ensuring that it is located and constructed in a manner that enables productivity gains (Grant 2015).

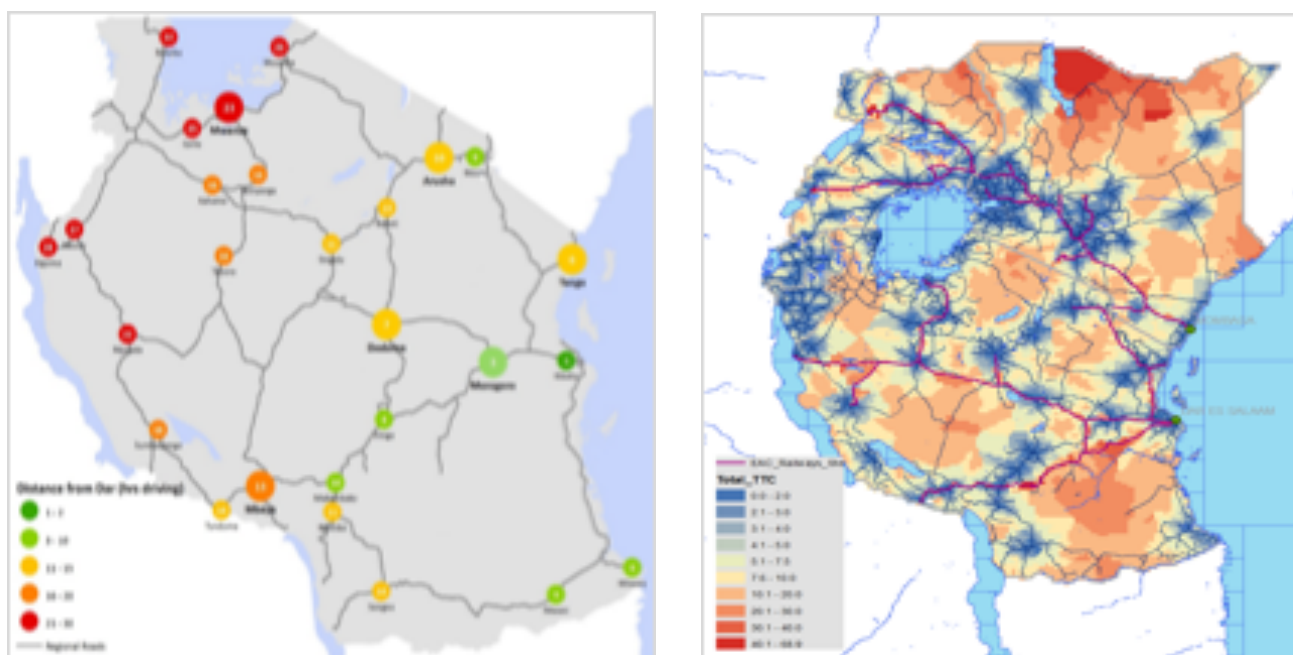
A3.1 Roads and transport

Urban households participating in a ‘willingness to pay’ survey identified improved roads and road drainage as a priority (Amani et al. 2018). However, the urban road network in Tanzania is expanding slowly, constrained by budget and protracted processes for securing access to land for the public interest (Table 3).

Road construction is the joint responsibility of the Tanzania National Roads Agency (TANROADS) and district councils, with the available budget shared between the entities. Since 2017, the Tanzania Rural and Urban Roads Agency (TARURA) has managed connections between rural areas and urban centres, with an emphasis on the central corridor connecting Burundi, the Democratic Republic of Congo, Rwanda, and Uganda to the Port of Dar es Salaam.

Privately operated fleets of *bajajs*, motorbikes, bicycle taxis and *dala dalas* complement public sector buses in ferrying Tanzania’s urban population to and from work with remarkable flexibility. Even so, congestion and road safety concerns remain a feature across all Tanzanian cities. Citizens in Dar es Salaam, only 11% of whom use private vehicles, spend an estimated one-third of their income on transport (World Bank 2017), with the local transport authority estimating that US\$1.7 million is lost daily as a result of sprawl and congestion (DART 2017). In addition, poor road quality accounted for 14% of accidents in 2016 (The Citizen 2016).

Figure 15
Road network and travel times in Tanzania, 2017



Source: Weber (2016); Iimi et al. (2017).

Table 6
Road coverage and budget in Tanzanian cities relative to Cape Town (South Africa)

City	Population	Roads (km)	Paved roads (km)	Mean road expenditure per capita (2013–2017)
Dar es Salaam	4.5 million	2,170	411	US\$0.88
Dodoma	440,000	1,524	50	US\$2.00
Arusha	500,000	334	87	US\$2.00
Cape Town (SA)	3.8 million	11,000	9,836	US\$44.60

Source: Amani et al. 2019, City of Cape Town Budget 2018.

The unit cost of road construction doubled between 2004 and 2014, raising the spectre of anti-competitive behaviour by contractors. This drained the available budget, as well as highlighting a lack of oversight (Adam et al. 2017; Asher et al. n.d.a.).

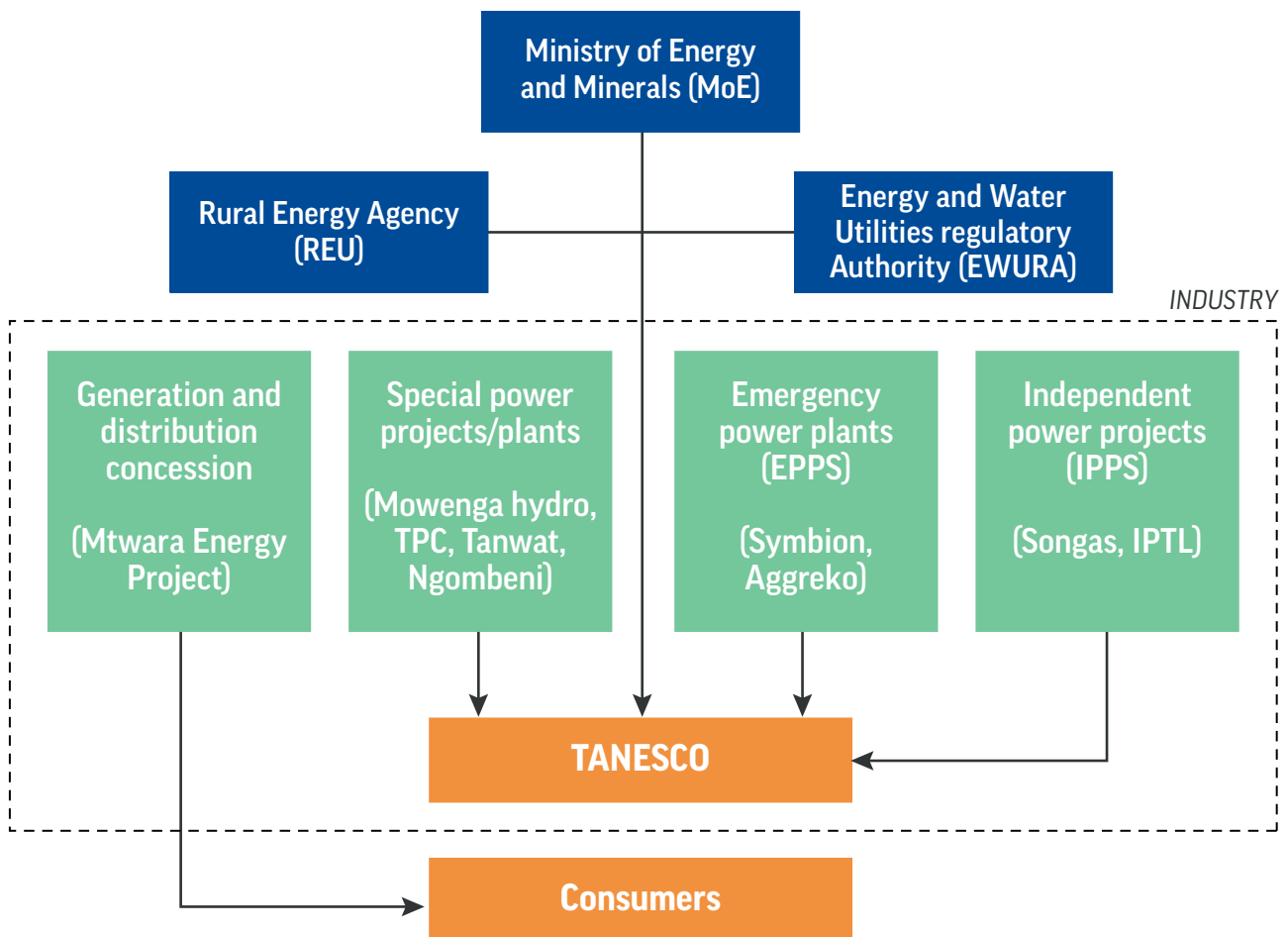
The BRT and the wider public transport fleet has the potential to be linked to renewable energy feedstocks, or to be powered by domestic gas and biofuel resources. The BRT is complemented by a series of new bypasses, bridges, and a rapid rail link being built to Dodoma, collectively forming part of the country's economic stimulus efforts. The BRT has not yet contributed to transit-oriented development (TOD)

or significant land value capture, though discussions on how to ensure this are underway.

A3.2 Energy

Tanzania's energy sector is planned and governed by the Ministry of Energy, which mandates Tanzania Electric Supply Company (TANESCO) with overseeing electricity generation and most distribution in line with the Electricity Act (2008). While the Energy and Water Utilities Regulatory Authority (EWURA) is the sector's legal regulator, in practice it tends to focus on liquid-fuel imports and fuel price setting, leaving electricity planning decisions to TANESCO.

Figure 16
Structure of the Tanzanian energy sector



Source: Authors' own elaboration, Alma Viviers, 2018.

Fulfilling Tanzania’s commitment to SDG 7 (energy access for all) represents an acute challenge for the country’s rapidly growing cities (Watkins 2015). Urbanisation, coupled with economic growth in Tanzania, has seen demand for all forms of energy increase by 9%–10% per annum, outpacing supply (Mwema and Shabbir 2011).

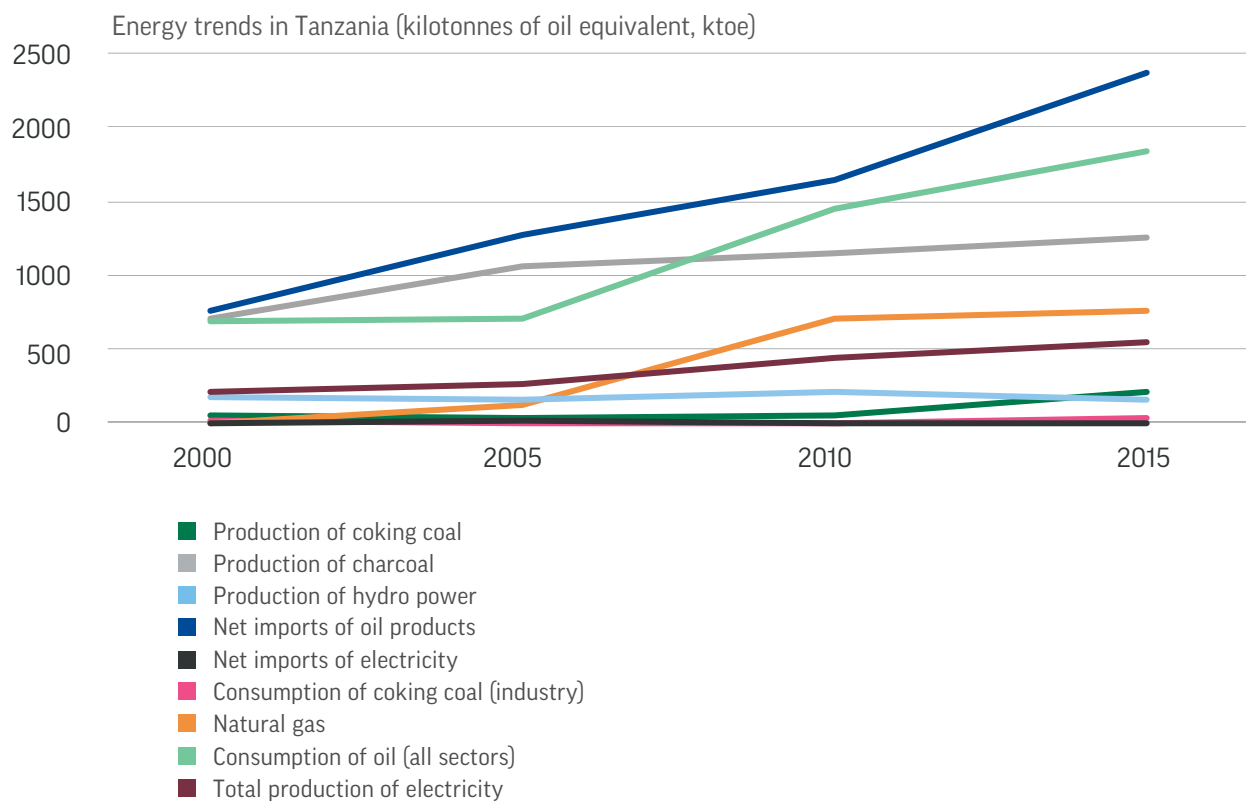
As of 2017, Tanzania’s total installed electricity generation capacity was 1,754 megawatts (MW), just 3% of that of South Africa’s, which has a similar population. Tanzania’s electricity is currently supplied by roughly equal portions of hydropower, liquefied natural gas (LNG) and liquid-fuel power plants. The country is integrated into both the East African and Southern African Power Pools, and is currently a net importer of electricity (AfDB 2013).

Tanzania emits just 9.7 million tons of CO₂ per annum (0.22t CO₂ per capita per annum) if emissions from

Land Use Change and Forestry (LUCF) and charcoal burning are excluded, and emissions per unit of GDP have fallen sharply over the past decade.

While the recent Intergovernmental Panel on Climate Change Special Report makes the case that every metric ton of emitted CO₂ matters (IPCC 2018), Tanzania has the advantage of being able to increase its energy supply without having to tackle an excessive reliance on fossil fuels. Instead, it can choose to support urban development by drawing on newly discovered gas resources, cost-effective wind and solar energy, and technological improvements in energy storage. Should it do so, Tanzania would improve its balance of payments on imported and exported goods and services and, provided electrification continues to displace charcoal burning, be able to position its urban economies favourably in a global economy that will inevitably become more carbon-constrained.

Figure 17
Growth in Tanzanian energy production and consumption per feedstock, 2000–2015



Source: Afrec 2015, own analysis.

The Electricity Act (2008) envisaged an independent systems operator (ISO) that would develop a power system master plan (PSMP) and procure least-cost electricity. While an ISO has not been created, the 2016 PSMP update emphasised hydroelectric and coal feedstocks alongside smaller contributions from renewable energy (GoT 2015; Eberhard et al. 2016; Bhati and Koshy 2018). Current energy sector focus is on the construction of Rufiji Hydro Power (2,115 MW) that will more than double Tanzania's electricity generation capacity. US\$308 million was allocated to the project in the 2018/19 budget, and a further US\$2.9 billion is required for its full implementation (BoT 2018). The Rufiji Hydro Power financing challenge is mirrored across the 2016 PSMP, which if implemented would require US\$46.2 billion by 2040 (MEM 2016).

In the past, private finance has helped address some of the public sector investment shortfall in Tanzania's energy sector. Almost half of the 643 MW capacity installed since 2000 was privately financed, and half of this capacity was procured through 'emergency power' agreements with the private sector that relied on imported liquid gas and diesel feedstocks (MEM 2012). Paying for this electricity cost TANESCO between US\$0.30-0.43 per kilowatt hour (kWh) and undermined the utility's ability to invest in new generation capacity (Eberhard et al. 2016).

The utility sells electricity directly to end-users, with the price set nationally. Cities are not involved in price setting, revenue collection, or the cross-subsidisation of electricity to poorer households. Over the past decade, TANESCO has recouped less than 80% of its operating costs – a shortfall exacerbated by the high cost of emergency power. The financial deficit has made the utility circumspect about connecting new urban households, as a TANESCO respondent noted:

We only connect services in the areas people are settled. There must be houses and we do a survey to know the demand of our services before deciding to connect our infrastructures. The aim is to know the possibilities for our return and this is our policy. (Lameck et al. 2019, respondent 62).

It was central government that developed the new LNG fields in 2014, displacing many emergency power producers and, over the ensuing four years, leading to savings of US\$4 billion for TANESCO (ESI Africa 2018). Cost-effective LNG and fiscal support has seen TANESCO's grid connected reach improve from 12% of the population in 2010 to 56% in 2017. Even so, electricity remains unreliable and expensive. In Dar es Salaam, a city that contains 40% of Tanzania's manufacturing capacity and contributes 83% of the national tax revenue, per capita consumption of electricity was just 948 kWh in 2015 – 10 times more than the national average, but just a quarter of the global average (University of Ontario n.d.a.).

The available supply is intermittent due to Tanzania's hydropower dependence and rainfall flux. Back-up diesel-powered generators are used by 42% of companies, and almost all manufacturing plants, hotels, and food retailers (GoT 2016), while 88% of poorer households in both rural and urban Tanzania still rely on biomass as their primary energy source. Tanzania is the fifth largest consumer of charcoal on the African continent, and 80% of that charcoal is burnt in cities (UNEP 2017).

The production and trading of charcoal in Tanzania comprises a US\$650 million per annum industry, self-delineated into traditional, alternative, and 'sustainable' (Peter and Sander 2009). The charcoal value chain provides 1.9 million 'people-years' of work every year, as well as readily available energy. Furthermore, the belief that 'food tastes better with charcoal' is widespread in Tanzania. The associated air pollution, however, kills 21 people per 100,000 and accounts for 46,000–75,000 hectares of annual deforestation in woodlands adjacent to cities (GoT 2015), exacerbating drought and flood risks (Peter and Sander 2009; Boylan 2010; van Beukering et al. 2019).

Those harvesting wood for charcoal are meant to apply for a permit under the Forest Law (14 of 2002), but this is weakly enforced and the charcoal industry will not, and should not, be dismantled overnight. Increased grid access and the wider availability of liquid petroleum gas, which enjoys VAT exemptions and is now three to five times cheaper than charcoal once the initial canister has

been purchased, has begun to displace charcoal and deliver development gains linked to reduced indoor air pollution, better lighting, improved health, and reduced rates of deforestation (World Bank 2017).

As with electricity, urban demand for liquid fuel is growing rapidly in Tanzania's cities, driven by increased vehicle and generator ownership. Bulk imports of oil remain the single biggest ledger item on Tanzania's balance of payments, despite Tanzania Petroleum Development Corporation's efforts since 1984 to find local oil. In addition, the country's newly discovered gas reserves could be converted into liquid fuel, while Tanzania is the only country in the East African Rift System not currently drawing on geothermal energy.

New technologies and financial support mechanisms such as the African Development Bank's Climate Investment Funds, which provided Tanzania with US\$21.7 million for geothermal development in 2016, and the Green Climate Fund, could assist in financing the country's energy sector expansion (Solecki et al. 2017). Accessing this finance will require actively embracing renewable energy and reimagining the ways cities in Tanzania produce and consume electricity, in order that they can be more efficient, less environmentally damaging, and more developmental (Baker 2015). Should Tanzania be successful in this transition, it will be able to add to the 62,000 jobs created in the African renewable energy sector in 2016, deliver on SDG 7, and create a globally competitive low-carbon economy (Castan Broto 2017; UNEP 2017). Tanzania's Southern African Development Community (SADC) partners have already taken advantage of the renewable opportunity, installing 22 GW of capacity by

mid-2018 (a third of the region's power capacity), with another 17.3 GW having already attained financial closure (SACREE 2018).

A3.3 Water and sanitation

While water governance, bulk water storage, and water resource management is a national responsibility in Tanzania, at the city scale, local water utilities are responsible for treatment plants, reticulation, and connections.

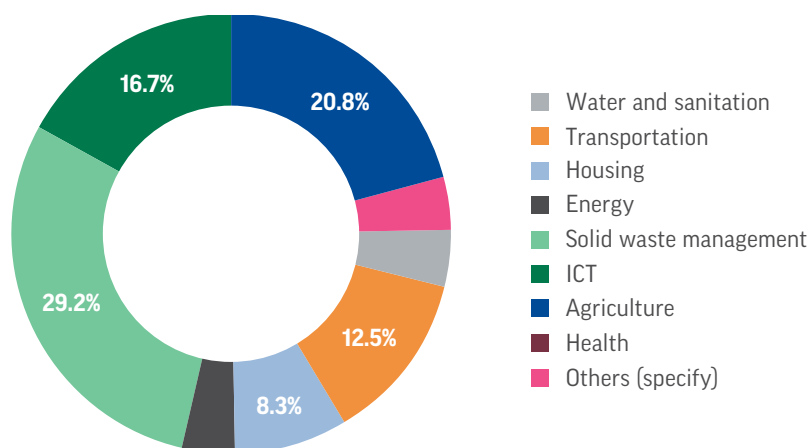
While the proportion of the population in Tanzania's 19 urban districts with access to reticulated water close to their homes has been stable at roughly 86% since 2009 (GoT 2016; NBS 2016), only 25.6% of households receive reticulated water and only 35% of households receive sewerage (Worrall et al. 2017; Jean-Baptiste et al. 2019). To complement the reticulated water systems, a network of 'informal' water salespersons and well-diggers (*fundis*) as integral to water access have emerged (Jean-Baptiste et al. 2019). Very few *fundis* or well-owners operate with the required groundwater abstraction licences, but licensing is loosely enforced (Jean-Baptiste et al. 2019; Lameck et al. 2019). Groundwater accounts for 50% of water consumed in Dar es Salaam, but the interchange between the water systems and the sanitation system has led to outbreaks of water-borne diseases (McGranahan et al. 2016). While data remains limited, water-borne diseases are referenced as one of the causes of high infant mortality rates and staff absenteeism in Dar es Salaam (UNICEF 2015; UN 2017).

Box 1

TULab competition to elicit service delivery innovations

TULab conducted a competition to gauge the extent and nature of informal sector service delivery innovation in Dar es Salaam. The results confirmed the view that households and entrepreneurs have devised numerous ways of obtaining goods and services they are not yet able to secure from the state.

The competition was limited to Dar es Salaam and despite only having two months to run its course, elicited the interest of 150 entrepreneurs, of whom 26 submitted applications. Applications spanned all sectors (see chart).



Three-quarters of applicants were under 30 years old, while a third of the proposals were led by women. Based on six criteria, 10 applicants were shortlisted. The criteria applied in the shortlisting were:

- Provides a critical urban service.
- Overcomes a 'wicked' urban service delivery challenge.
- Draws on technical, economic, or social innovation.
- Has a track-record of success in the past five years, with a minimum of one year's implementation activity.
- Demonstrates systemic benefits – that is, it does not lead to maladaptation or the transfer of risk to the environment or adjacent communities.
- Is scalable to at least 1,000 houses and is not specific to a single-household problem.

The judges – including academics, think tank members, government officials, and civil society staff – were uniformly impressed by the quality of the applications.

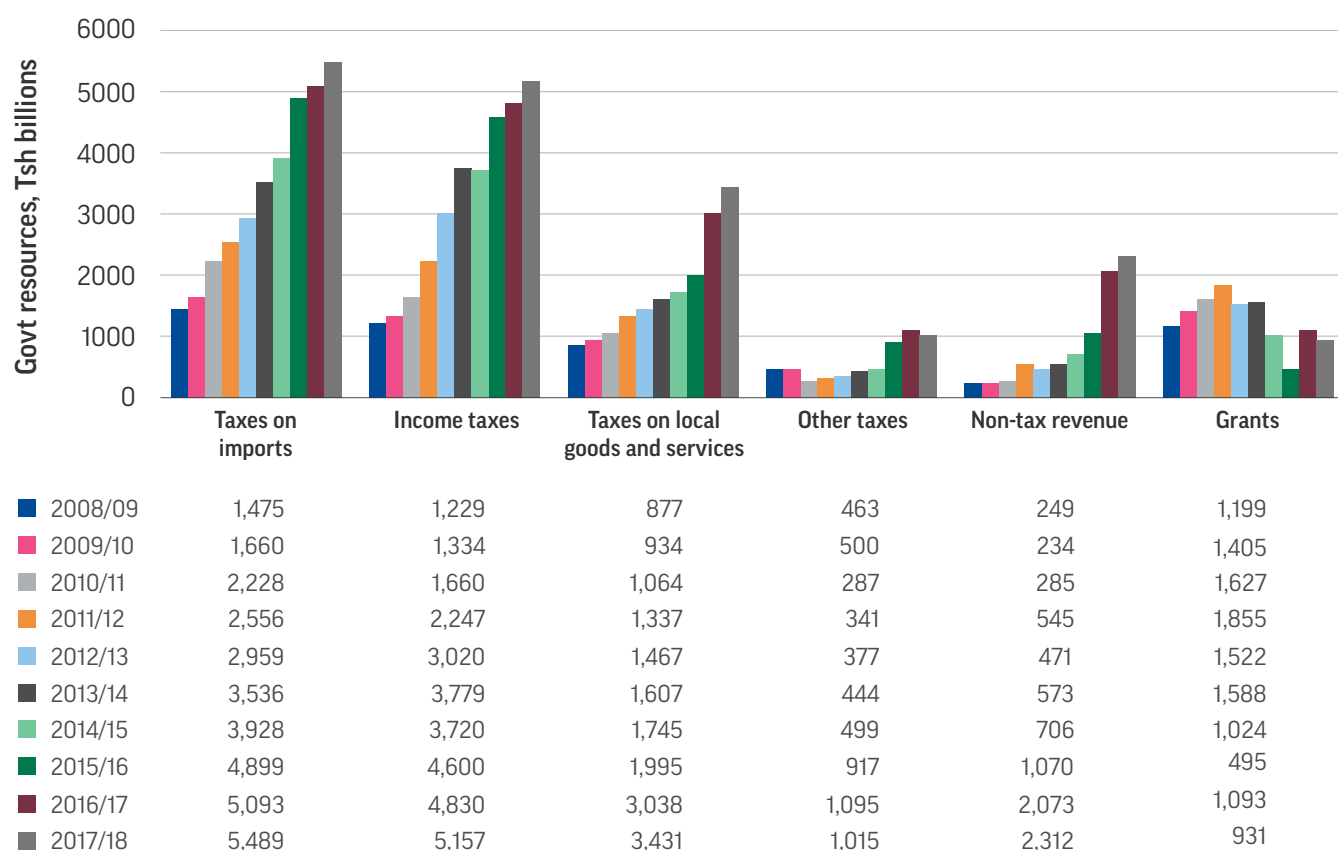
The 10 shortlisted applicants included businesses that: recycled plastic from beaches and river estuaries into construction bricks that were cheaper than cement bricks (Arena Recycling); linked artisans with work through a mobile phone app (Toolboksi); recycled eggshells from fast-food outlets into agricultural, cosmetic, and medicinal calcium (Divine Recyclers); diverted material from landfill by using it in the production of laptop bags (Remedy Textiles); used drones to transport medicines from a military hospital to clinics, thereby avoiding congestion; deployed bicycle couriers to deliver parcels across town during periods of traffic congestion (Fasta Cycle Messengers); and converted abattoir waste into agricultural compost (Victory Roland). The quality of applicants bears testimony to the innovation and ingenuity that exists in Dar es Salaam's informal economy – both government and the private sector could greatly reduce their service delivery burden through partnerships with these and other informal economy entrepreneurs.

A4. FINANCE

How to pay for the infrastructure and services that urban residents require to live productive and healthy lives is at the core of Tanzania's urban development challenge. To achieve the development outlined in FYDP II, Tanzania requires a fourfold increase in investment (to US\$5.9 billion) between 2017 and 2021 (NBS 2018). While this is possible given revenue collection is improving steadily (Figure 18) and development expenditure has increased 75% between 2015 and 2018, FYDP II assumes that public investment will crowd-in near equal proportions (US\$20.8 billion) of private sector investment, which so far has not happened (Cloete et al. 2019).

The impressive fiscal stimulus since 2015 has, in part, been enabled by a freeze on salaries and other 'recurrent expenditure' (BoT, 2018), and remains constrained by a national per capita income of less than US\$1,000 per annum and associated limitations of conventional 'user-pays' financing models. The available funding for infrastructure, services, and development programmes in six of Tanzania's major cities, once all sources are included, ranges from US\$134 million in Dar es Salaam to US\$10 million in Mtwara. In Dar es Salaam, the total budget for infrastructure and development, averaged over the past four years, was US\$11.75 per capita out of a total city budget of US\$23.70 per capita per annum (Amani et al. 2019).

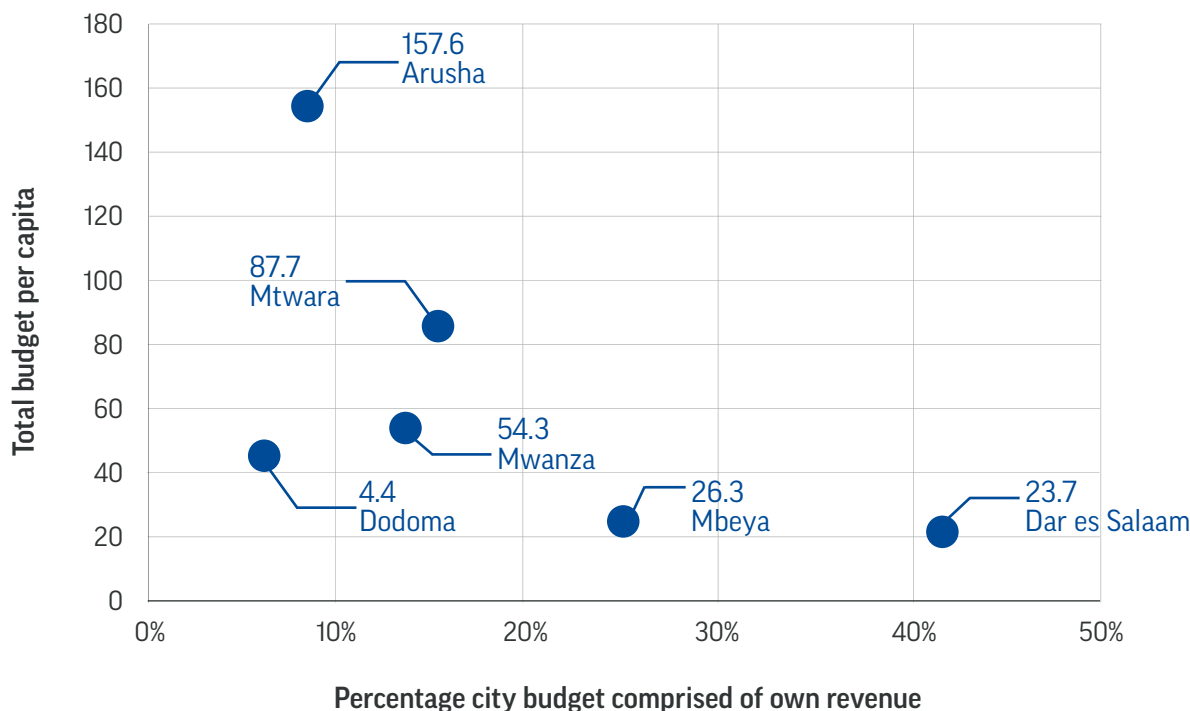
Figure 18
Sources of Tanzanian tax revenue, 2008–2018



Source: Bank of Tanzania.

Figure 19

Relationship between projected revenue per capita (2017–2020) and historical % of own revenue in Tanzanian cities



Source: Amani et al. 2019; own diagram.

Dependence on donors has declined steadily from 40% of the 2005/6 budget to 18.7% in 2016/17 (NBS 2018), meaning the financing of Tanzania’s urban future rests with the type of improved services that will enable a broadening of the tax base, more effective collection of existing taxes (including land value capture), and more predictable transfers from central government (Fjelstadt and Katera 2017; Amani et al. 2019).

Progressively simplified tariff and tax classes since 2003, as well as the application of electronic fiscal devices and the Local Government Revenue Collection Information System in programmes such as Tanzania Strategic Cities Programme, have already increased

the proportion of households paying for services to 56% (Amani et al. 2019), demonstrating that households are prepared to pay for services that meet their needs (Pelletier et al. 2014). A 2018 ‘willingness to pay’ survey of 354 households in six cities revealed that an additional US\$130 million per annum could be forthcoming from households were they to be provided with adequate services, particularly with regards to roads, drainage, water, and sanitation (Table 7). In the case of Dar es Salaam, the US\$109.9 million in foregone revenue is roughly equivalent to the current city budget (Amani et al. 2019).

Table 7

Projected sources of revenue available to respective cities in Tanzania based on past six years (\$US million)

Source of revenue (US\$ million)	Dar es Salaam ¹	Mwanza ²	Arusha	Mbeya	Dodoma	Mtwara
Intergovernmental transfers of capital development funds	5.8	1.2	0.40	0.9	2.6	0.57
MDAs transfers of capital development funds ³	1.8	0.2	0.24	0.3	0.04	0.28
Own sources	56.4	6.2	6	2.9	1.3	1.50
Development partners regular support funds	1.8	1.8	1	0.5	0.7	2.21
Donor soft loans and grants	43.7	25.3	59	2.3	10.8	3.77
TARURA funds	4.4	1.2	5	0.8	1.1	0.57
Urban water supply and sanitation authorities	23.3	8.5	4	3.7	4.6	1.19
Total expected funds to be available each year (including donor soft loans and grants)	137.1	44.5	75	11.4	21.1	10.10
Per capita budget (actual)	23.7	54.3	157.6	26.3	46.4	87.70
Total expected funds to be available each year beginning 2021/2022 (excluding donor soft loans and grants)	93.4	19.1	16	9.1	10.3	6.33
Total government transfers as a percentage of funds available (including soft loans and grants)	5.6%	3.1%	0.8%	10.9%	12.6%	8.5%
Own source as a percentage of total funds available (including soft loans and grants)	41.1%	13.9%	7.5%	25.6%	6.1%	14.9%
Loans and grants % of budget	31.9%	132.3%	8.8%	20.1%	51.3%	37.3
Willingness to pay	109.9	9.2	5.8	2.5	4.8	1.51

¹ Including all five municipalities.

² Including Mwanza CC and Ilemela MC

³ This figure is derived from taking averages computed from recent time series data

Source: Amani et al 2019.

Historically, property tax collection in Tanzania has been low, and in June 2016 responsibility was transferred from LGAs to TRA in an attempt to boost collections and clamp down on a perceived lack of accountability (Haas and Collier 2017). The immediate result was a 30% drop in total property tax collected, with only Arusha able to contribute more under the centralised system (Amani et al. 2019). While TRA has made effective use of technology to improve monitoring and capture of the elite's taxes, it does not have the intimate knowledge of properties that LGAs hold and is essential to efficiently and fairly collecting property taxes (Curtis and Ngowi 2017; GIZ 2018).

Moreover, property tax centralisation removed a key fiscal instrument from LGAs, increasing their dependence on central government transfers (Figure 19) (Lameck et al. 2019; NBS 2018) and limiting the scope for locally marshalled taxation and investment in public infrastructure. Unreleased funds, coupled with the unpredictable timing of transfers, have made LGA planning extremely difficult, contributing to the 36% of allocated capital grants left unspent by LGAs in 2016/17, despite these allocations being insufficient (Amani et al. 2019; Lameck et al. 2019).

Fiscal centralisation has enabled the continued cross-subsidisation of rural LGAs (which on average receive 21% more per capita from the national fiscus than urban LGAs), as well as centrally coordinated investment in infrastructure mega-projects (rail, airports, aeroplanes, roads, hydropower, bridges, and gas-fired electricity) aimed at breaking the current low-level economic equilibrium (Peter and Sander 2009, p. 76; Amani et al. 2019).

Much of the capital budget spent in cities is channelled through utilities, but the allocation and spatial alignment of this investment has proven difficult to coordinate from central government. TULab discussed accounts of urban roads being constructed, only to then be dug up in order for water pipes to be inserted, and then dug up again to allow the installation of electricity cables. The lack of investment coordination at the city scale is an impediment to the economic growth, continued productivity gains, and revenue collection that are crucial to ensuring the doubling of public debt between 2011 and 2018 can be financed in a sustainable manner (GoT 2016; BoT 2018).

Local governments in Tanzania can mobilize finance through investing in partnerships with utilities or the private sector, and may access loan finance from the Local Government Loans Board (LGLB). Mbeya is one LGA that has effectively utilised these channels to borrow money and build student accommodation and a conference centre. Revenue from these assets has contributed to Mbeya's own source revenue (Amani et al. 2019).

A5. URBAN INFORMALITY IN TANZANIA

'Informality' in Tanzania spans urban governance, service delivery, and finance, creating an administrative reality that cannot be ignored (Förster and Ammann 2018; Schofield and Gubbels 2019). The majority of the economically active population in cities work in unregistered small- or micro-enterprises (Collier and Jones 2015). Some of these, such as the extensive network of charcoal-makers, destroy public goods. Others, such as sanitation *fundis*, waste-pickers, and drone operators, can offer insight and innovation to planners and utilities, and are a legitimate part of the green economy (Eaton 2015; Grant 2015; Brown and McGranahan 2016; Lwasa 2017). What the public sector lacks is the capacity to distinguish between the multiple aspects of what is termed informality, still less the ability to forge constructive partnerships with those elements that can reduce the service delivery burden of the state and SOEs. While informal trade accounts for the majority of enterprises in Tanzania's urban areas, they currently experience few linkages with public investment in industrialisation or special economic zones.

In terms of human settlement, Tanzania does not contain 'slum urbanism' in the same way as Kenya or South Africa; there is no equivalent in Tanzania of Kibera (Nairobi) or Khayelitsha (Cape Town) (Parnell and Pieterse 2014). However, the slow pace of land surveying and titling has resulted in more than 60% of Tanzanians living on unsurveyed land that is difficult to service (Oxfam 2018). A significant portion of urban land is accessed through contested tenure and land administration processes, some of which GoT refers to as 'illegal'. In the absence of enforceable spatial plans or the capability to meet demand for urban service delivery, Tanzanians

have forged private networks overseeing tenure and service provision, thereby actively engaging the opportunities found in cities. While what is referred to as ‘squatting’ in Tanzania includes low-, middle-, and high-income groups, as well as a diversity of shelter types (Jean-Baptiste et al. 2019), it is also associated with tenure insecurity and low levels of household investment in housing infrastructure.

Though solutions vary, what is not contested in Tanzania is that the scale and contribution of urban ‘informal’ settlements render them a crucial part of urban development – one that urban policy must actively engage.

A6. CONCLUSION

The appendix to this roadmap has described the governance landscape that provides the setting for any proposed UDP, placing particular emphasis on ‘how’, ‘through which network, agency, tier of government, or ministry’, and ‘with what money’ the harnessing of urbanisation as a development opportunity might take place. The coordination of these roles and responsibilities represents an acute need in Tanzania and should form the principal focus of a UDP.

The appendix draws from the four background papers commissioned by TULab, TULab deliberations,

interviews, a literature review, and a celebrated competition eliciting service delivery innovations in Dar es Salaam. While crucial to the crafting of appropriate policy, much of this content is known to Tanzanian policymakers, which is why it has been placed in an appendix. What the content of the appendix cannot do, however, is do justice to the rich dialogue, deliberations, and forging of new ideas and partnerships that took place in the 11 TULab meetings. It is this in-country capacity that will shape Tanzania’s urban future.

For development partners, global city networks, and investors not familiar with Tanzania, the granularity of Tanzania’s governance context is essential to avoiding the misallocation of capital and human resources resulting from the global commodification of urban development knowledge. In supporting Tanzania’s urban development, efforts must be tailored to the governance landscape, as well as the many ways in which the country is already trying to harness the megatrends of urbanisation, digitalisation, industrialisation, and climate change.

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