Investing in Tomorrow's Labour Force

Socioeconomic implications of the demographic transition in Mainland Tanzania

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September 2023

Acknowledgements

The research for and drafting of this report were led by Sandra Berger, Katharina Bollig and Nard Huijbregts from the Economic Policy Research Institute, in close collaboration with the National Bureau of Statistics (NBS).

We gratefully acknowledge the support and guidance of colleagues at NBS, including Philbert Mrema, Hellen Hilary, Omary Mdoka, Phausta Ntigiti, Seif Kuchengo, Ruth Minja, and Albina Chuwa, the Government Statistician; at the Ministry of Finance and Planning, Mbuane Kilindo; and colleagues at the United Nations Children's Fund (UNICEF), including Diego Angemi, Luisa Natali and Mlemba Kamwe. We are also grateful to all stakeholders – academia, development partners, civil society organizations and government departments and agencies – who contributed to the analysis contained herein.

Handmade Communications provided editorial input and designed this publication and its associated advocacy materials.

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Appendices 1–4 referred to in this publication can be found online at https://www.unicef.org/tanzania/

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Abbreviations and acronyms

DemProj	Demographic Projection
DRC	Democratic Republic of the Congo
GDP	gross domestic product
GER	gross enrolment rate
ILO	International Labour Organization
IT	information technology
MoEST	Ministry of Education, Science and Technology
MoFP	Ministry of Finance and Planning
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
NBS	National Bureau of Statistics
OCGS	Office of the Chief Government Statistician
OECD	Organisation for Economic Co-operation and Development
SDGs	Sustainable Development Goals
TFP	total factor productivity
T Sh	Tanzanian shilling
UHC	universal health coverage
UNDESA	United Nations Department of Economic and Social Affairs
UNICEF	United Nations Children's Fund
URT	United Republic of Tanzania
USAID	United States Agency for International Development
US$	United States dollar
WASH	water, sanitation and hygiene
WHO	World Health Organization

Foreword

On the back of persistently high population growth rates, the United Republic of Tanzania is also experiencing an unparalleled increase in its working-age population. This historic increase in the country's labour force provides a unique opportunity to unlock unprecedented economic growth.

With a view to reaping the full benefits of the demographic transition, the Government of the United Republic of Tanzania will be required to make significant public investments in the education, health, infrastructure and social development sectors. This will entail ensuring that all citizens, especially children, have access to quality public services, as envisioned in the Sustainable Development Goals and The Tanzania Development Vision 2025.

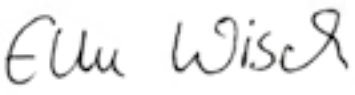
To determine just how much investment would be required to meet these targets, the National Bureau of Statistics (NBS), with the support of the United Nations Children's Fund (UNICEF) Tanzania, commissioned this assessment – *Investing in Tomorrow's Labour Force: Socioeconomic implications of the demographic transition in Mainland Tanzania*. With the support of the Economic Policy Research Institute, in-depth analyses were conducted by sector, drawing on comprehensive qualitative and quantitative data.

The assessment juxtaposes public investment required to retain current levels of progress in social sectors vis-à-vis the attainment of nationally identified goals in education, health, infrastructure and social development for two established population growth scenarios. This analysis points to the careful calibration of policies aimed at reducing the country's total fertility rate over time (for example, family planning programmes), together with sustained investments in education, health, infrastructure and social protection as drivers of inclusive growth and economic transformation. In doing so, it identitfies key challenges and emerging opportunities to invest in Mainland Tanzania's growing child population and their future transition to the labour market.

Our most sincere hope is that this assessment will serve as part of an evidence base to inform policy design and programme implementation with a view to providing quality, inclusive and equitable health-care and education services for all; to provide everyone, in both rural and urban areas, with access to electricity as well as improved water and sanitation services; and to create decent employment opportunities for Mainland Tanzania's growing youth population.

In anticipation of updating this analysis with the 2022 Population and Housing Census data, the government and UNICEF will continue to work with development partners, civil society organizations and the private sector to improve these sectoral outcomes, thereby ensuring that all children are supported to reach their full potential and positively contribute to Mainland Tanzania's socioeconomic transformation.

Albina Chuwa
Statistician General, NBS



Elke Wisch
Representative, UNICEF

Executive summary

1 Introduction

Young and fast-growing populations, as a result of high fertility rates, are seen in many African countries. However, this trend is slowly changing given underlying economic and social improvements. With falling fertility rates, many countries are presented with an opportunity for economic growth, as the size of the working-age population (those aged 18–64 years) becomes increasingly larger than the dependent population (those aged 0–17 years, and 65 years and older). The extent of the projected growth, however, is highly context specific, and is influenced by factors such as the age structure of the population and the make-up of the country's economic output and labour market, as well as the nation's level of socioeconomic development.

This opportunity for growth is also present for Mainland Tanzania. However, given the country's relatively young population, changes to the government's investment choices to foster a healthy, well-nourished, well-educated and empowered child/youth population, while also creating opportunities for decent employment, are required. Without such changes, the country runs the risk that inadequate socioeconomic progress for the country's children may lead to insufficient economic growth once its youth bulge begins to enter the labour force, resulting in a nationwide poverty trap.

To contribute to the growth opportunity, this assessment aims to develop a comprehensive analysis of the implications that the demographic transition, as well as the status of service delivery and its associated public investments, have on the journey of children and adolescents to adulthood. The assessment will be instrumental in helping Mainland Tanzania turn the unprecedented demographic transition into an opportunity to effectively invest in its children and youth, as well as add value to its economic performance and economic transformation.

2 Demographic context and trends in Mainland Tanzania

Over the past six decades, Mainland Tanzania's population has grown at a high rate, above those of its neighbouring countries and sub-Saharan Africa as a whole for the last 15 years. With an average annual population increase of 3.6 per cent in 1967 and 3.2 per cent in 2021, Mainland Tanzania's population grew from 11.96 million citizens to approximately 57.84 million during this period (NBS and OCGS, 2018; UNDESA, 2019). Changes in mortality and fertility have also impacted the country's population growth rate, leading to significant changes in Mainland Tanzania's age structure. While the total fertility rate fell from 6.6 children per woman in 1967 to 4.9 children in 2017, the mortality rate fell to less than half from 16 deaths per 1,000 persons in 2000 to 6.2 deaths in 2020 (NBS, 2006; NBS and OCGS, 2013 and 2018). Combined, this has led to a rise in life expectancy as well as a reduction in infant and child mortality. From 1967 to 2020, life expectancy at birth has risen from 40 years to 66 years, with further increases expected over the coming 15 years, allowing for life expectancy to reach 74.4 years by 2035. Simultaneously, Mainland Tanzania is likely to see a decline in its infant mortality rate from 170 infant deaths per 1,000 live births in 1967 to 13.4 deaths per 1,000 live births in 2035 (NBS and OCGS, 2018). As a result of fewer births and lower mortality, Mainland Tanzania's child (0–17 years) and youth (18–24 years) population has decreased as a percentage of the total population since at least 1988, while the proportion of its working-age population (18–64 years) is expanding – thereby decreasing the country's overall dependency ratio. This demographic transition is expected to continue to be evident in the future with the proportion of children (0–17 years) as a share of the total population expected to decline from approximately 49.8 per cent in 2020 to 34.3 per cent in 2060. In contrast, the share of the working-age population (18–64 years) is expected to increase from 47 per cent in 2020 to 59.4 per cent in 2060.

With this increase, the overall dependency ratio of Mainland Tanzania will decline from 112.7 in 2020 to 68.4 in 2060.[1]

Consequently, it will become increasingly important for Mainland Tanzania to absorb the growing working-age population into the national labour market – especially since the country will enter its window of opportunity[2] in 2026. However, taking advantage of this opportunity could be hindered by the already high rates of under- and unemployment in the country, especially among the youth. Almost one in ten individuals is unemployed, with the number rising to one in seven among the youth. In addition to this, the creation of employment has risen only marginally in the past, resulting in many individuals looking for work in the informal sector. In 2021, 29.1 per cent of the total number of people employed were in the informal sector, the majority of whom were women. This is detrimental to Mainland Tanzania's development, as the informal sector is predominantly composed of agrarian micro, small and medium enterprises, and low-skilled employment. The combination of low wages and the prevalence of underemployment, especially among the youth, means that little added value is created.

Together, these factors represent a waste of human potential. Such potential could significantly contribute to the economy of Mainland Tanzania if adequate formal-sector employment was created in the productive sectors of the country. Without adequate investments and with a growing working-age population, the present challenges, including a current youth unemployment rate of 14.7 per cent, will worsen, and may place the country at risk of falling back to its low-income status.

3 Methodology

The assessment uses a combination of qualitative and quantitative data collection and analysis methods. Qualitative information was based on secondary data obtained through structured desk research and consultations (key informant interviews), while quantitative information was based on an adapted methodology used previously by the World Bank (2021). Overall, the adapted methodology quantifies the challenges and opportunities that Mainland Tanzania has as it moves through its demographic transition. This includes, more specifically, the transition's impact on service delivery and fiscal space in the education, health, infrastructure and social development sectors. As such, four respective submodels were devised, each of which quantify the impact of Mainland Tanzania's demographic transition across two population growth scenarios – one where population growth resembles the most likely path that the country will take in the future, and one in which the government makes deliberate choices to reduce the future population growth rate in the country. Each of these two scenarios was assumed to interplay with two possible levels of public investment – i.e., a low level of public investment and a high level of public investment.

A low level of public investment models the implications of population growth, assuming that the current (i.e., 2021) access and quality of identified components within the sector remain constant over time. In other words, this public investment level presents how much a government would need to invest to finance the system if the current level of sectoral indicators were to be maintained between 2021 and 2060 in light of a rising population. A high level of public investment models the implications for government given a gradual improvement in key sector parameters that are related to access and quality. These are in line with targets set by international guidelines, The Tanzania Development Vision 2025 (Planning Commission, n.d.), as well as corresponding sectoral strategies.[3]

1 Author's own projections based on underlying assumptions retrieved from the National Population Projections report (NBS and OCGS, 2018).

2 This is defined as a period where Mainland Tanzania's age structure has changed advantageously, thereby favouring economic development.

3 These include the National Five Year Development Plan 2021/22–2025/26 (MoFP, 2021b), Education Sector Development Plan 2016/17–2020/21 (MoEST, 2018), Education and Training Policy 2014 (MoEST, 2023), Health Sector Strategic Plan July 2021–June 2026 (HSSP V) (MoHCDGEC, 2021), Electricity Supply Industry Reform Strategy and Roadmap 2014–2025 (Ministry of Energy and Minerals, 2014), and the Water Sector Development Programme 2006–2025 (Ministry of Water, 2006), among others.

Public investment level: High

Most-favourable trajectory: Low population growth with high level of public investment

EDUCATION

- Total nominal investment: T Sh 1,457.2 trillion (US$626.6 billion)
- Total real investment: T Sh 510.7 trillion (US$219.6 billion)
  - » As a percentage of GDP: 3.1% in 2021; 6.1% in 2060
  - » As a percentage of government expenditure: 13.6% in 2021; 17.5% in 2060

	2021	2030	2040	2050	2060
Children of school age (in millions)	18.9	23.0	24.4	26.7	25.3
Enrolled public students (in millions)	15.4	19.9	22.7	24.8	23.4
Public teachers (in '000)	272.6	506.0	671.8	785.8	815.3
Public classrooms (in '000)	210.2	377.4	464.9	541.1	547.5
Public schools (in '000)	36.6	44.5	40.3	37.1	30.6

HEALTH

- Total nominal investment: T Sh 1,434.5 trillion (US$616.8 billion)
- Total real investment: T Sh 497.4 trillion (US$213.9 billion)
  - » As a percentage of GDP: 1.4% in 2021; 5.6% in 2060
  - » As a percentage of government expenditure: 6.3% in 2021; 16% in 2060

	2021	2030	2040	2050	2060
Total population (in millions)	57.0	70.3	86.5	101.9	112.8
Public medical staff (in '000)	48.0	312.7	384.7	453.3	501.9
Public hospital beds (in '000)	49.2	126.5	155.6	183.4	203.0
Public primary health facilities (in '000)	6.0	10.5	9.6	9.0	8.2
Public hospitals	195	343	312	292	268

INFRASTRUCTURE

- Total nominal investment: T Sh 173.5 trillion (US$74.6 billion)
- Total real investment: T Sh 80.9 trillion (US$34.8 billion)
  - » As a percentage of GDP: 2.03% in 2022; 0.36% in 2060
  - » As a percentage of government expenditure: 9.04% in 2022; 1.04% in 2060

	2021	2030	2040	2050	2060
Total population (in millions)	57.0	70.3	86.5	101.9	112.8
Individuals with access to electricity/solar power (in millions)	24.6	48.3	86.5	101.9	112.8
Individuals with access to piped/improved water (in millions)	17.6	70.3	86.5	101.9	112.8
Individuals with access to improved sanitation (in millions)	6.5	70.3	86.5	101.9	112.8

SOCIAL DEVELOPMENT

- GDP per capita: US$1,151 in 2021; US$18,992 in 2060
- Poverty rate: 25.7% in 2021; 6.73% in 2060
- Number of poor: 14,648,465 in 2021; 7,595,986 in 2060
- Number of employed: 24,633,366 in 2021; 62,916,853 in 2060
- Number of unemployed: 2,437,338 in 2021; 8,419,672 in 2060

	2021	2030	2040	2050	2060
Employed (in millions)	24.6	31.5	42.6	54.1	62.9
Unemployed (in millions)	2.4	4.1	4.8	5.1	8.4
Individuals in the labour force (in millions)	27.0	35.6	47.4	59.2	71.3
GDP per capita (T Sh in millions)	2.7	5.2	12.7	28.8	44.2

Public investment level: Low

Low population growth with low level of public investment

See online Appendix 3 for discussion results.

Low

Population growth scenario

Figure 1: Summary results per sector, scenario and level of public investment (2021–2060)
Source: Author, based on author's calculations.

Public investment level

High

High population growth with high level of public investment

See online Appendix 3 for discussion results.

Low

Status-quo trajectory: High population growth with low level of public investment

EDUCATION

- Total nominal investment: T Sh 387.4 trillion (US$166.6 billion)
- Total real investment: T Sh 172.6 trillion (US$74.2 billion)
  - » As a percentage of GDP: 3.1% in 2021; 0.8% in 2060
  - » As a percentage of government expenditure: 13.6% in 2021; 2.2% in 2060

	2021	2030	2040	2050	2060
Children of school age (in millions)	18.9	23.9	27.8	31.6	32.9
Enrolled public students (in millions)	15.4	19.6	22.7	25.8	26.5
Public teachers (in '000)	272.6	349.7	407.0	464.9	488.0
Public classrooms (in '000)	210.2	266.9	310.0	352.7	366.2
Public schools ('000)	36.6	44.8	51.9	58.4	59.1

HEALTH

- Total nominal investment: T Sh 88.9 trillion (US$38.2 billion)
- Total real investment: T Sh 41.2 trillion (US$17.7 billion)
  - » As a percentage of GDP: 1.4% in 2021; 0.2% in 2060
  - » As a percentage of government expenditure: 6.3% in 2021; 0.5% in 2060

	2021	2030	2040	2050	2060
Total population (in millions)	57.0	72.4	91.8	112.3	130.4
Public medical staff ('000)	48.0	61.0	77.3	94.6	109.8
Public hospital beds ('000)	49.2	115.9	146.9	179.7	208.7
Public primary health facilities ('000)	6.0	14.1	17.9	21.9	25.4
Public hospitals	195	459	582	712	827

INFRASTRUCTURE

- Total nominal investment: T Sh 71.1 trillion (US$30.6 billion)
- Total real investment: T Sh 26.9 trillion (US$11.5 billion)
  - » As a percentage of GDP: 0.27% in 2022; 0.22% in 2060
  - » As a percentage of government expenditure: 1.21% in 2022; 0.64% in 2060

	2021	2030	2040	2050	2060
Total population (in millions)	57.0	72.4	91.8	112.3	130.4
Individuals with access to electricity/solar power (in millions)	24.6	33.1	44.5	57.5	70.4
Individuals with access to piped/ improved water (in millions)	17.6	24.5	34.1	45.4	57.1
Individuals with access to improved sanitation (in millions)	6.5	9.3	13.2	18.0	23.0

SOCIAL DEVELOPMENT

- GDP per capita: US$1,151 in 2021; US$1,773 in 2060
- Poverty rate: 25.7% in 2021; 21.1% in 2060
- Number of poor: 14,648,291 in 2021; 27,507,605 in 2060
- Number of employed: 24,633,366 in 2021; 44,532,435 in 2060
- Number of unemployed: 2,437,338 in 2021; 33,146,475 in 2060

	2021	2030	2040	2050	2060
Employed (in millions)	24.9	30.2	35.8	40.9	45.8
Unemployed (in millions)	2.4	5.7	12.7	22.0	33.2
Individuals in the labour force (in millions)	27.3	35.9	48.5	62.9	79.0
GDP per capita (T Sh in millions)	2.7	3.5	3.8	4.0	4.1

High

Population growth scenario

4 Findings

Results are modelled for both high and low population growth scenarios, each of which showcase findings for low and high levels of public investment for the four sectoral submodels. While the education, health and infrastructure submodels provide an overview of the required investments by population growth scenario and public investment level, the social development model identifies the respective impact on gross domestic product (GDP) per capita and on poverty. A summary overview of these findings can be seen in Figure 1.

The results illustrated in Figure 1 indicate that the government will benefit the most, both economically and socially, by implementing policies that allow for the improvement in the underlying sectoral indicators as well as the reduction of the country's total fertility rate over time. This would be the most-favourable trajectory for Mainland Tanzania. Although the costs would be greater than those for maintaining the status quo, Mainland Tanzania will be able to reap the economic benefits of the demographic transition (i.e., higher economic growth rates due to increased productivity), thereby leading to lower future fiscal implications. This will require the government to invest a total of 1,457.2 trillion Tanzanian shillings (T Sh) nominally (T Sh 510.7 trillion at 2020/21 prices) into education, at least T Sh 1,434.5 trillion (T Sh 497.4 trillion at 2020/21 prices) into health, and a total of T Sh 173.5 trillion (T Sh 80.9 trillion at 2020/21 prices) into the expansion of the country's electricity, water and sanitation infrastructure.

> Women with higher levels of education are more likely to participate in the wage-earning labour force, and more likely to have smaller families.

4.1 Education

Investments in education will allow the government to achieve the Education 2030 Framework for Action as evidenced by an education budget that equates to 4 per cent of GDP and 15.9 per cent of government expenditure by 2030, and 6.1 per cent of GDP and 17.5 per cent of government expenditure by 2060. This will improve the country's student-to-teacher and student-to-classroom ratios to the levels identified under international and national policy targets, while also allowing for building more and bigger schools. These developments would require an additional 556,849 teachers to be hired by 2060 and an additional 15,232 schools to be built – all of which are triple in size compared to those built today.

Education is paramount to improving key sectoral outcomes. The successful transition from primary to secondary education is of importance, especially for girls. This, as well as an increase in the prevalence of modern contraceptive methods, helps delay marriage and first pregnancies. Furthermore, women with higher levels of education are more likely to participate in the wage-earning labour force, and are more likely to have smaller families. Lowering of birth rates contributes to changes in the age structure, which over time increases the opportunity for children and youth, especially women, to contribute to Mainland Tanzania's economy, thereby enhancing the potential for economic development.

4.2 Health

Through increased investment in health, Mainland Tanzania will achieve the Abuja Declaration target of allocating at least 15 per cent of the government budget towards health, thereby also transforming its health sector to one that has a Universal Health Coverage (UHC) Index[4] of 90 per cent – up from the present 43 per cent. This will result in the better servicing of the growing and aging population over time, given that the investments will allow for the construction of an additional 5,002 public primary health facilities and 163 public secondary and tertiary health

4 "The UHC service coverage index measures progress towards SDG 3.8.1 and its component tracer indicators, based on the most recently available data and agreed upon methods" (World Bank, 2021). This assumption is based on the UHC Index of Tanzania as a whole given that data was insufficient to calculate the index for Mainland Tanzania specifically (WHO, 2021a).

facilities as well as improving the medical-staff-to-population ratio in line with international standards. Consequently, improvements in key health outcomes are projected to occur in the coming four decades. From 2021 to 2060, neonatal mortality is projected to decline by 15 deaths per 1,000 live births; infant mortality by 19 deaths per 1,000 live births; under-five mortality by 36 deaths per 1,000 live births; and maternal mortality by 56 deaths per 100,000 live births. As a result, mortality rates in 2060 would equate to 5, 17, 14 and 324, respectively. These improvements are paramount to Mainland Tanzania's economic growth as, in addition to social and emotional costs, the death of mothers carries with it significant socioeconomic development losses – both in terms of their contribution to the economy through employment, but especially through their role in raising potentially healthy and educated children.

4.3 Infrastructure

In recent years, the electricity, water and sanitation sectors have been rapidly evolving, especially considering the attention that they have received under the country's development agenda towards poverty reduction and economic growth. Yet, despite these aspirations, the government still faces challenges. While 66.5 per cent of the urban population had access to electricity/solar power in 2021, only 30.1 per cent of the rural population did. In terms of access to piped/improved water, these percentages equate to 58.9 per cent and 15 per cent respectively, while access to improved sanitation was available for 25 per cent of the urban population and 3.7 per cent of the rural population.[5] Therefore, to attain and maintain universality of access, results illustrate that the government will need to invest, on average, T Sh 80.9 trillion (34.8 billion US dollars (US$)) from 2022 to 2060. This equates to a total nominal investment of T Sh 173.5 trillion (US$74.6 billion) in electricity, T Sh 47.3 trillion

5 Author's calculations based on the 2019/20 Household Budget Survey (NBS, n.d.a) and the 2015/16 Demographic and Health Survey (MoHCDGEC et al., 2016).

(US$20.3 billion) in water, and T Sh 98.3 trillion (US$42.3 billion) in sanitation from 2021 to 2060 – equivalent to, on average, 0.88 per cent of annual GDP and 3.36 per cent of annual government expenditure. Compared to maintaining access rates at the present levels, these improvements in access and quality will lead to roughly three times the costs across the 39-year period. Yet these are required to ensure a healthy and productive economy because without electricity, water and sanitation, industries face difficulties operating, and diseases could spread. This not only influences the income of individuals, but also their long-term productivity, thereby impacting economic growth in the long run.

4.4 Social development

Another challenge that the government will face over the coming four decades is to ensure that the growing working-age population, especially the youth, will have access to decent and productive labour-market opportunities. These are of importance to reduce the relatively high level of unemployment and increase the labour-force participation rate, especially of women and youth. Policies are required that reduce the level of informality while improving labour-market flexibility, financial market efficiency and the effectiveness of public institutions.[6] Combined, these would allow the government to reap significant benefits in terms of GDP per capita and economic growth when combined with the improvements in the aforementioned sectors.

In fact, according to results, an improvement in labour-market flexibility, financial market efficiency and the effectiveness of public institutions to the level exhibited by relevant benchmark countries, would allow Mainland Tanzania to sustain its lower-middle income status, while eventually enabling it to attain upper-middle income status by 2037. By doing so, the government will decrease the number of unemployed by approximately 75 per cent in 2060 compared to its current level. This lower level of unemployment implies that more working-age individuals are productively contributing to the economy of Mainland Tanzania. As a result, GDP per capita will increase from a level of T Sh 2.7 million (US$1,151) in 2021 to T Sh 44.2 million (US$18,992) in 2060 – the latter would be T Sh 40 million (US$17,218) higher than if no improvements to the current labour market were undertaken.

Yet, these are not the only benefits that the government will reap. By increasing labour-market opportunities and thereby improving the standard of living of those residing in Mainland Tanzania, the government will also contribute to reducing the level of poverty. While 25.7 per cent of the population was poor in 2021, this will decline to 6.7 per cent in 2060 if Mainland Tanzania implements policies that allow it to curb its fertility rates, raise its expected and mean years of education, improve its family planning methods and progress its economic indicators over time to that of relevant benchmark countries. In terms of the number of poor, this decline will equate to a reduction of close to 7.1 million individuals in the coming four decades.

5 Conclusion

To achieve the results outlined above, it must be emphasized that the government needs to concurrently invest in and improve existing policies in education, health, infrastructure and social development to establish a socioeconomic environment that is conducive to growth. By raising sectoral expenditure and permitting cross-sectoral synergies, Mainland Tanzania can maximize the level of education attained by each child, reduce neonatal, infant, under-five and maternal mortality rates to levels closer to, or at par with, the targets identified under the SDGs, and consequently improve life expectancy.

Furthermore, through the implementation of policies that formalize the economy and generate jobs, the government can achieve the transition of children born in a period of high fertility into the labour market. In combination with high-quality education and health care for all, these children can become productive members of society – allowing them to earn higher wages, consume more and

6 These can take many forms: "robust legal frameworks and representative parliaments with strong capacity for oversight; adept civil services and the timely and quality delivery of public services; efficient judiciaries that uphold the rule of law; vibrant and actively engaged civil societies; and free and independent media" (OECD, 2015).

potentially invest any money that can be saved into business-related activities. Such investments, in combination with an increase in national savings, will in turn fuel economic growth and lead to an increase in Mainland Tanzania's GDP per capita over time.

To achieve this, the government will need to invest a total nominal amount of roughly T Sh 3,065.2 trillion, equivalent to US$1.3 trillion, over the coming four decades; i.e., approximately T Sh 1,089.1 trillion in real terms (i.e., at 2020/21 prices). This is roughly T Sh 2,054.9 trillion (US$883.6 billion) more, in nominal terms, compared to a situation in which the government would continue to spend the same amount as was spent in 2021 for the coming 39 years. If disaggregated by year, the average annual total investment would equal T Sh 27.9 trillion (US$12 billion) at 2020/21 prices – 2.7 times the amount of that spent on the sectors in 2021. Disaggregated by sector, this equals nominal values of T Sh 1,457.2 trillion (US$626.6 billion) for education, T Sh 1,434.5 trillion (US$616.8 billion) for health care and roughly T Sh 173.5 trillion (US$74.6 billion) for an expansion in infrastructure. However, it must be emphasized that these are, at best, conservative estimates of what is in store for Mainland Tanzania.

6 Recommendations

To conclude, this assessment presents five main recommendations based on the findings outlined in this report. They focus on enabling a better transition from childhood to adolescence, specifically on improving the quality and access of individuals to education, health, infrastructure and labour-market opportunities.

6.1 Generate sustainable fiscal space that is invested into essential social sectors

To achieve sustainable and equitable education, health, infrastructure and social protection services, it is vital to not only understand how public expenditure is allocated and used across the sectors, but also how to ensure its sustainability over time. To do so, the government can undertake several actions. It can compare the various fiscal space analyses undertaken for the country, and devise a clear way forward in terms of the country's approach to generating sustainable financing for the social sectors. Once identified, a clear action plan towards implementation is required with any future analyses being based on the agreed-upon fiscal space creation options.

Actions to fight corruption need to be strengthened to ensure that any financing available is not lost through illicit flows.

Additionally, the government can foster sustainable tax revenues that can consequently be allocated towards education, health, electricity, water, sanitation and social protection by:

- Building trust among its citizens by providing them with transparency in terms of public expenditure;
- Enlarging the tax base, but maintaining a simple system; and
- Developing and launching a digital tax payment system once a comprehensive information technology (IT) infrastructure has been developed and implemented in the country.

Lastly, actions to fight corruption need to be strengthened to ensure that any financing available is not lost through illicit flows.

6.2 Improve the number and quality of public sector staff, especially in the essential social sectors

Along with the generation of sustainable fiscal space, the government will need to ensure that enough qualified public staff are present in all public institutions, especially in the essential social sectors (for example, education and health). This can occur across several avenues:

- Allocating higher sectoral budgets so that a sufficient number of public sector staff can be hired that is in line with the demographic trend of the country;

- Strengthening existing policy frameworks for each sector thereby ensuring that the objectives and targets outlined therein are met;
- Adjusting wages in line with annual real wage growth rates and providing incentives to individuals employed in the sector; and
- Budgeting for and carrying out continuous capacity-building activities for public sector staff at national and subnational levels.

6.3 Universal access to essential infrastructure

The demographic pressures that are faced by Mainland Tanzania will require an extension of its essential infrastructure to ensure that the basic human rights of all citizens are fulfilled. This includes, particularly, their access to electricity, sanitation and water. To do so, several actions can be implemented that are in line with the Third National Development Plan's goal of continuously expanding the water supply, the national grid and sanitation infrastructure to all rural and urban locations in the country. These include:

- Updating existing or developing new strategic documents, policy papers and regulations in line with the country's current conditions across each sector;
- Improving interaction with the private sector;
- Improving operational efficiency of the public utility authorities through adequate capacity-building initiatives at all levels of governance; and
- Improving the underlying conditions of each sector to ensure that they are more attractive to national and international investors.

6.4 Generate formal and decent labour-market opportunities

It is recommended that the government builds a more inclusive labour market that provides more and better formal employment opportunities, especially for youth and women. To achieve this, a multipronged approach is required ranging from educational reforms to the implementation of interventions and policies that address the need for gender equality and access to employment opportunities by youth. The government is encouraged to:

- Ensure that labour-market opportunities inform the educational and vocational curriculum of the country to avoid a mismatch of skills and high levels of unemployment;
- Create links between the education sector and employers/businesses through the introduction and/or strengthening of career centres;
- Generate avenues through which the participation of women in the labour market is promoted; and
- Provide initiatives that support youth in their search of income-generating opportunities.

6.5 Establish the political conditions required to sustain social development and poverty reduction

The achievement of national and international targets set out in policy documents will partially depend on the effective implementation of social protection policies, programmes and systems. For this to happen, Mainland Tanzania requires an in-depth understanding of the policy frameworks, financing strategies, programme design considerations, programme implementation as well as monitoring and evaluation tools required for the sound development of a comprehensive national social protection system. The following actions are therefore recommended:

- Build political will regarding social protection;
- Update and implement a national social protection strategy that links to and builds synergies with other sectoral policy areas;
- Establish a ministry that is specifically in charge of social protection, while simultaneously strengthening inclusive development and equitable growth; and
- Formally recognize the Tanzanian Social Action Fund and integrate it into the structure of the aforementioned Ministry of Social Protection.

Introduction

High fertility rates along with low mortality rates among children have led to young and fast-growing populations in many African countries. This coupled with inadequate economic and social improvements, results in the growing youth population having few opportunities to enter the national labour markets, thereby preventing them from adding value to the economy.

This situation is characteristic of Mainland Tanzania, where total fertility rates equated to 4.9 children per woman of reproductive age, with life expectancy being, on average, 66 years, and under-five and infant mortality rates being 79 and 52 deaths per 1,000 live births, respectively (data retrieved from MoHCDGEC et al. (2016), and NBS and OCGS (2018)). The improvements witnessed over time has led to a rise in Mainland Tanzania's overall growth rate, reaching an average of 3.2 per cent annually for the 2013–2021 period. Combined, this implies that Mainland Tanzania has a relatively young population, with roughly 62 per cent of the population below the age of 25.

While this indicates that the country is at the second stage of its demographic transition, it also implies a risk to the country's future if adequate socioeconomic progress, especially for its children and adolescents, is not made. Without development, especially in the areas of health and education, insufficient economic growth may result once the country's youth bulge begins to enter the labour market. This could result in a nationwide poverty trap which would be difficult to escape given the current condition of the country's labour market. In addition to a relatively large informal economy, Mainland Tanzania's labour market is not creating enough employment opportunities for the growing youth population. In fact, roughly 15 per cent of those aged 15–24 years were unemployed in the country in 2021. This equates to 6 percentage points more than the national average. Furthermore, of those who did find employment, 29.1 per cent (the majority of whom were women living in urban areas) were in the informal sector.

Consequently, whether the growing youth population will be able to positively contribute to Mainland Tanzania's economy is largely dependent on the government's investment choices. In order for the country to benefit from its children and youth in the future, the government will need to address many challenges, including:

- Its continued high fertility rates;
- The overconsumption of resources by growing populations that limit social and productive investments;
- Insufficient or mismanaged social sector resources;
- Few and/or low-quality jobs, especially waged employment;
- Limited labour-market opportunities for women; and
- The relatively large informal economy, specifically in urban areas (UNICEF, 2019a).

If the government's financial investments do not effectively support the alleviation of these challenges, while concurrently promoting economic growth and a rise in the number of job opportunities available, then the country's youth will either be unprepared to contribute to the labour market or unable to find decent work. This could lead to rising poverty and inequality, social and political instability, and emigration. However, if the government strategically invests in its children and youth, then the growing population can boost economic growth, improve economic opportunities, and ensure long-term peace and prosperity (UNICEF, 2019a).

This report assesses the implications the demographic transition and the status of service delivery (and associated public investments) has on the journey of children and adolescents transitioning to adulthood and the labour market. Chapter 1 starts by explaining the relevance of the demographic transition and outlining its various stages. It then analyses the socioeconomic context of Mainland Tanzania, placing particular focus on its children and youth. This includes an analysis of the country's

demographic trends, thereby allowing for the identification of the country's current status in its demographic transition. Chapters 2 and 3 outline the macroeconomic model used to estimate the fiscal impact of a country's demographic transition based on two population projection scenarios. While Chapter 2 details the methodology used and outlines the scenarios and the public investment levels, Chapter 3 focuses on the fiscal implications that Mainland Tanzania's demographic transition has on its education, health and water, sanitation and energy sectors. These findings are complemented by outlining how population growth will affect the country's labour market as well as future levels of poverty. The paper concludes with Chapter 4, which provides conclusions and recommendations that could help Mainland Tanzania turn the unprecedented demographic transition into an opportunity to add value to its economic performance and economic transformation.

Box 1: Terminology

Throughout this report, a distinction is made between different concepts used during the modelling process. To clearly identify and clarify these concepts, and their interplay, they are defined below.

Population growth scenarios indicate instances in which the modelling assumed either low or high population growth rates. Consequently, the report speaks to a high population growth scenario and a low population growth scenario. The high population growth scenario assumes total fertility rates that are projected in line with past fertility rates retrieved from Mainland Tanzania's demographic and health surveys, projections outlined in the National Projection Report as well as targets set under The Tanzania Development Vision 2025. The low population growth scenario assumes annual total fertility rates that are 0.5 births below that of the high population growth scenario. For more information see Appendix 4 (online).

Public investment levels indicate instances in which the modelling assumed public investment levels to continue as they are (i.e., low investment level) or are increased to meet international and national policy targets (i.e., high investment level).

Trajectories represent the interplay between the aforementioned population growth scenarios and public investment levels. Consequently, four possible trajectories are possible, of which this report discusses two in detail:

- **The most-favourable trajectory:** The interplay between low population growth rate and high public investment level; and
- **The status-quo trajectory:** The interplay between high population growth rate and low public investment level.

The remaining two trajectories (capturing, respectively, the interplay between high population growth rate and high public investment level and the interplay between low population growth rate and low public investment level) are discussed further in the appendices to this report, which can be found online.

Chapter 1

DEMOGRAPHIC TRANSITION

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1.1 What is demographic transition and how can it benefit countries?

In the mid-twentieth century, the demographic transition theory emerged across the world. It aims to provide a generalized description of a country's fertility, mortality and growth patterns to allow for an understanding of the various global demographic profiles present. Underlying this theory is the assumption that a strong relationship is present between fertility and mortality rates, on the one hand, and industrialization and economic development on the other (Agarwal, 2022). Accordingly, the model provides a framework describing what is expected to occur as a country experiences socioeconomic development.

The positive improvements in child mortality and education, especially among women, do not only allow countries to curb their rapid population growth rates, but also allow them to ensure that their citizens add value to the national economy. This is because a slower growth of the population allows countries to convert a larger share of their technological progress and gains from factor accumulation into higher per capita income (Galor, 2012). In accordance with previous research, this can improve labour productivity and economic growth through three main channels:

1. Slowing down the population growth rate allows for a decline in the dilution of capital stocks and infrastructure, thereby increasing the available resources per capita.
2. Lower fertility rates allow families to increasingly concentrate on their children's quality of life instead of on the number of children they should have, thereby improving human capital development as well as overall labour productivity.
3. The reduction in total fertility allows for a reduction in the number of children being born per cohort, thereby resulting in a larger share of working-age individuals in the future. Together, this lowers the overall dependency ratio (i.e., the ratio of children (0–17) and elderly (65+) to those of working age (18–64)) and increases productivity per capita (Galor, 2012).

For these gains to materialize, a country will naturally transition through five distinct stages – from a level of high dependency to one of low dependency (as described in Section 1.2). Each of these stages requires changes in policies and significantly increased sectoral investments to continue on the path of transition to economic prosperity.

1.2 Stages of the demographic transition

Stage 1: Typically, in the first stage of a demographic transition, both the birth and death rates are high – resulting in a low population growth rate (*see* Figure 2) – a phenomenon that was typically seen in most countries before the Industrial Revolution (UNICEF, 2019a and 2019b; World Bank, 2021). Countries at this stage are usually characterized as underdeveloped, with a high dependency ratio and a stable population, given the stagnant population growth rate. The stagnant growth rate is a consequence of inadequate health care and poor sanitation coupled with a limited diet which lead to disease and malnutrition, especially among children. The high rate of child mortality in addition to the agrarian lifestyle persuades parents to want larger families – thus focusing more on the quantity of children they have instead of the quality of life they provide for each.

Stage 2: With the introduction of modern medicine, improved sanitation and policies that stimulate agricultural productivity, a country begins to experience socioeconomic development, thereby moving into the second stage of its demographic transition. Mortality rates, especially among children and young adults, fall rapidly and life expectancies increase while the birth rate stays high, causing a rapid growth in the country's population (UNICEF, 2019a and 2019b; World Bank 2021).

Stage 3: Over time, the country's economic conditions start to improve even more due to improved family planning methods, access to contraception, less need for large families given more employment opportunities in the industrial

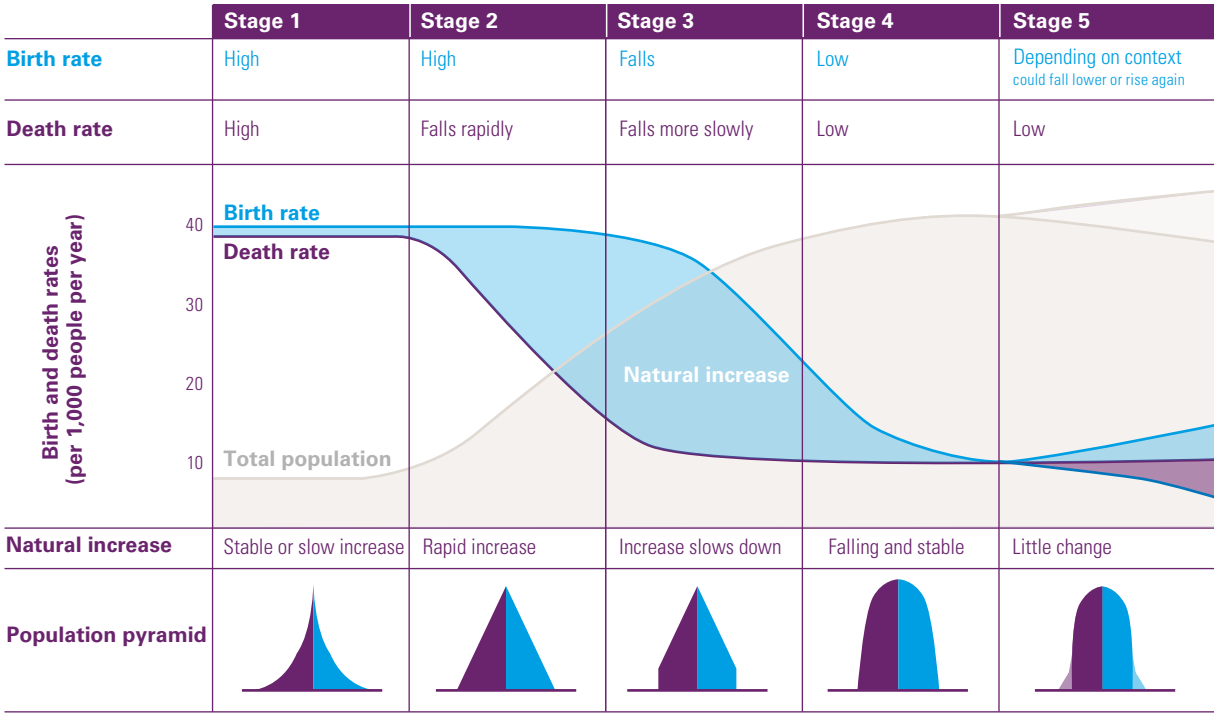

Figure 2: The five stages of the demographic transition
Source: Adapted by author from Agarwal, 2022.

sector, higher wages and an increase in the social status of women. This initiates a reduction in fertility rates that is greater than the decline in the country's mortality rates.

During this third stage of the transition, the country's population continues to grow, but at a lower rate. It is especially the working-age population that sees an expansion, thereby lowering the overall dependency ratio. This creates an opportunity for the children and youth to add further value to the country's economic performance if appropriate policies are implemented that not only foster individual productivity through an increase in their human capital and health, but also generates decent employment opportunities in the formal sector (UNICEF, 2019a and 2019b).

Stage 4: Subsequently, during Stage 4 of the demographic transition, both fertility and mortality rates are low. Consequently, the population stabilizes again, yet at a higher level of socioeconomic development because of higher levels of education, improved health care, the creation of employment opportunities for women and changes in human behaviour. Given the low rates of infant and child mortality, couples will want fewer children, while simultaneously wanting to better the lives of the children they have. While this reduces the number of children, it does so at a slower rate than during the previous stage (UNICEF, 2019a and 2019b). At the same time, more women will gradually enter the labour force rather than staying at home (African Union Commission and Economic Commission for Africa, 2013; UNICEF, 2019a). Thus, Stage 4 of the demographic transition provides an opportunity for strong economic growth, if appropriate policies are implemented.

Stage 5: Following Stage 4, the total fertility rate usually declines to below the replacement level (2.1 children per woman), thereby signalling the start of the last stage of demographic transition, characterized by a shrinking population that grows older. Combined with low mortality rates, the population of the country starts to rapidly age, while the share of the working-age population decreases. Over time, this results in a slow decrease of the total population, a rise in the overall dependency ratio and a slow-down in economic growth (African Union Commission and Economic Commission for

Africa, 2013; UNICEF, 2019a). Without adequate sectoral investments that promote economic growth and productivity, the country will run the risk of falling into the middle-income trap – a concept that characterizes countries that have grown rapidly to achieve middle-income status, but then failed to sustain productivity that would have allowed them to reach high-income status.

1.3 How does demographic transition impact the future of children and adolescents?

From the perspective of a child, demographic transition mirrors a competitive challenge. When moving from Stage 1 to Stage 2 of the transition, a rising population growth rate as a result of a decline in child mortality not only results in an increasing number of children surviving per family, but also an increasing size of birth cohorts (Lam and Marteleto, 2008). Children at this stage are therefore in competition for both national-level as well as household-level resources.[7] For instance, when considering educational attainment, high levels of fertility result in families needing to divide their resources among a larger number of children. If these resources are scarce, families might not invest in their children, or only invest in the basic accumulation of human development, or invest in the human capital of only some of their children, given that children are also needed to work to supplement the potentially low income of their parents (Serra, 2004). With lower levels of educational attainment, children cannot grow to their full potential and contribute to economic development.

At the national level, a rapid rise in the number of children may lead to overcrowded schools if appropriate infrastructure and resources (qualified teachers, textbooks, classrooms, etc.) are not provided. Without investments in these areas, the quality of education among the general population will decline, again affecting prospective productivity. Therefore, for children born during this stage of the demographic transition, it is essential to implement conventional population interventions (family planning programmes, information campaigns, provision of contraception) alongside policies that provide free basic, yet compulsory, education and health care, thereby limiting the potential of child labour, increasing the stock of human capital available and improving the overall well-being of children (Serra, 2004).

With the decline in mortality and the start of the decline in fertility during Stage 2, families become smaller, yet the birth cohort continues to grow as a result of high, yet declining, population growth rates. **While children now have fewer siblings and more resources available within the household, the competition for resources at the national level continues** (Lam and Marteleto, 2008). Consequently, along with sustained and rising investments in education and health, governments at this stage must also implement policies and programmes that aim to augment the skills of its youth and those in early adulthood, while simultaneously generating decent employment opportunities given that children from Stage 1 will now be entering the labour force. At this point, it is of particular importance to focus on generating increasingly more non-agricultural employment opportunities, as these commonly expand with economic development.

Without the skills required to compete in the formal labour market, or with a shortage of decent employment opportunities, many individuals, especially women, will either remain unemployed, underemployed or seek refuge in the informal sector. Such circumstances can lead to social, political and economic instability. It is important to note that conditions in the informal sector are often precarious. Workers do not have adequate protection and earn a low wage. Furthermore, the value added to the economy is often low, thereby contributing less to economic growth than potentially possible.

It is only during Stages 3 and 4 of demographic transition that competition at both the household and the national levels declines. However, while this implies socioeconomic development and improved standards of living for children, they are also faced with unprecedented challenges. It is estimated that,

7 These resources include, among others, parental time, access to public services and nutritional resources.

worldwide, individuals aged 55 years and older will outnumber all children up to 14 years of age by 2035 and all children and youth (0–24 years) by 2080 (Harasty and Ostermeier, 2020). Consequently, the size of the future working-age population becomes smaller, but is required to support an increasing number of dependants, mostly of old age, as the previous cohorts of the high population growth rate stages are now likely to retire and live longer lives (Lee and Mason, 2017).

An ageing society places a larger financial burden on the working-age population, who are the individuals contributing to public services through social security contributions and taxes. The tax base from which revenue could be collected would therefore be smaller and, without an increase in social security and tax contributions, a country would be unable to finance its increased health-care spending obligations. A country might also run into labour shortages in the future given the low rates of fertility. This would adversely impact labour productivity, wages and, ultimately, economic growth (Jimeno et al., 2020). To avoid this outcome, several countries faced with an ageing population have implemented policies that promote fertility increases, immigration or an increase in the retirement age. However, in the case of the latter, caution is required as a country's labour market, especially the formal sector, will need to be able to absorb the increase in the labour force to avoid disadvantaging the youth entering the labour market (Bengtsson and Scott, 2010).

1.4 Mainland Tanzania's demographic situation: now and in the future

Given the relatively high total rate of fertility and the rapid decrease in mortality, Mainland Tanzania can be classified as being in Stage 2 of its demographic transition. From 1986 onwards, Mainland Tanzania implemented socioeconomic reforms with the aim of becoming a middle-income country by the year 2025. It is envisioned that this will be accompanied by high levels of human capital and an economy that has transformed from one characterized by low-productivity agriculture to one that is semi-industrialized, competitive and dynamic. This transformation will provide a high standard of living; peace, stability and unity; good governance; a well-educated society that continues to learn; and competitive and sustained economic growth (Planning Commission, n.d.).

After two decades of sustained economic growth, Mainland Tanzania reached its goal of becoming a middle-income country in 2020. This has led to an increase in GDP per capita as well as significant improvements in social indicators. Mortality rates have decreased from 16 deaths per 1,000 persons in 2000 to 6.2 deaths in 2020 (NBS, 2006; NBS and OCGS, 2013, 2018). As a result, there has been a rise in overall life expectancy and a reduction in infant and child mortality from 170 and 260 respective deaths per 1,000 live births in 1967, to 52 and 79 deaths, respectively, in 2016. At the same time, the use of family planning mechanisms has led to a decline in total fertility rates from 6.6 children per woman in 1967, to 6.5 children in 1988, to 4.9 children in 2017 (*see* Figure 3) (MoHCDGEC, 2017; NBS and OCGS, 2018). By 2035, the National Bureau of Statistics (NBS) and the Office of the Chief Government Statistician (OCGS) estimate that total fertility will have declined further, reaching a level of 4 children per woman during her reproductive lifespan (NBS and OCGS, 2018). This rate of decrease in fertility rate is slower than those in each of Mainland Tanzania's eight neighbouring countries, as well as that of sub-Saharan Africa (*see* Figure 3). At the same time, the crude birth rate has also decreased from 47 births per 1,000 women in 1970 to 37.5 births in 2015/16 (*see* Figure 4; NBS, 2021). If Mainland Tanzania continues to achieve the objectives outlined in its national policy documents (the 2006 National Population Policy, The Tanzania Development Vision 2025 and the third Five-Year Development Plan 2021/22–2025/26),[8] then the crude birth rate is projected to fall even further, reaching a level of 26.3 births per 1,000 women by 2060 (*see* Figure 4).

8 'The Tanzania Development Vision 2025' (Planning Commission, n.d.) is a policy document that sets out the strategic sectoral objectives and targets to be achieved by Mainland Tanzania by the year 2025.

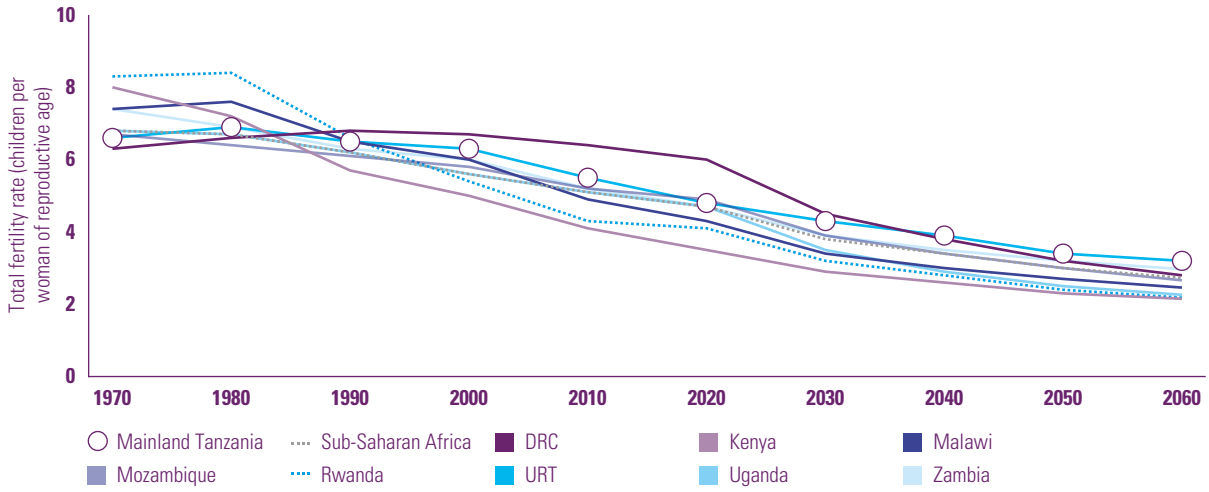

Figure 3: Total fertility rate over time

Source: Author's calculations based on Population and Housing Census data for 1967, 1978, 1988, 2002 and 2012 (NBS, n.d.b) and assumptions in MoFP (2017), NBS and OCGS (2018) and UNDESA (2019).

Note: DRC = Democratic Republic of Congo, URT = United Republic of Tanzania.

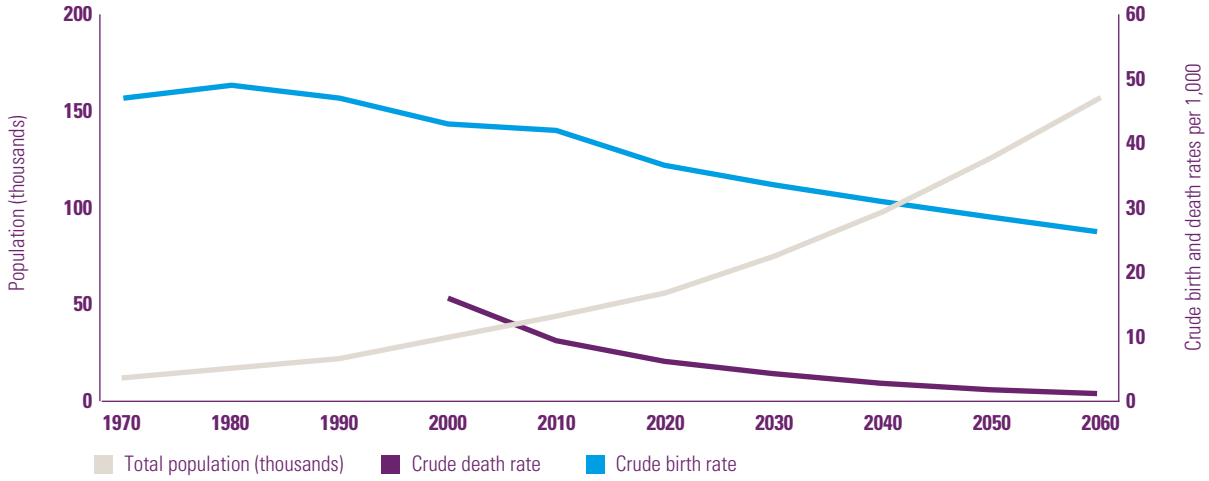

Figure 4: Mainland Tanzania's demographic transition

Source: Author's calculations based on Population and Housing Census data for 1967, 1978, 1988, 2002 and 2012 (NBS, n.d.b) and assumptions in MoFP (2017), NBS and OCGS (2018) and UNDESA (2019).

The combined changes in mortality and fertility have had an impact on the country's population growth rate, which has already led to significant changes in Mainland Tanzania's age structure. This is evidenced in the population pyramids seen in Figure 5. The pyramids illustrate the change in Mainland Tanzania's population structure over time (i.e., the proportion of the gender-disaggregated population per age group over time). In line with a rapid decline in mortality rates and a lower reduction in fertility, Mainland Tanzania's population grew at high rates over the past six decades, equivalent to an annual average growth rate of 3.2 per cent during 1967–1978, 2.9 per cent during 1988–2002, and 3.2 per cent during 2013–2021. In absolute terms, this represents an increase from 11.96 million citizens in 1967 to approximately 57.84 million in 2021. Furthermore, when compared to its neighbouring countries over the past 15 years, Mainland Tanzania has grown at or above the average rate witnessed by these countries as well as the average rate in sub-Saharan Africa (*see* Figure 6).

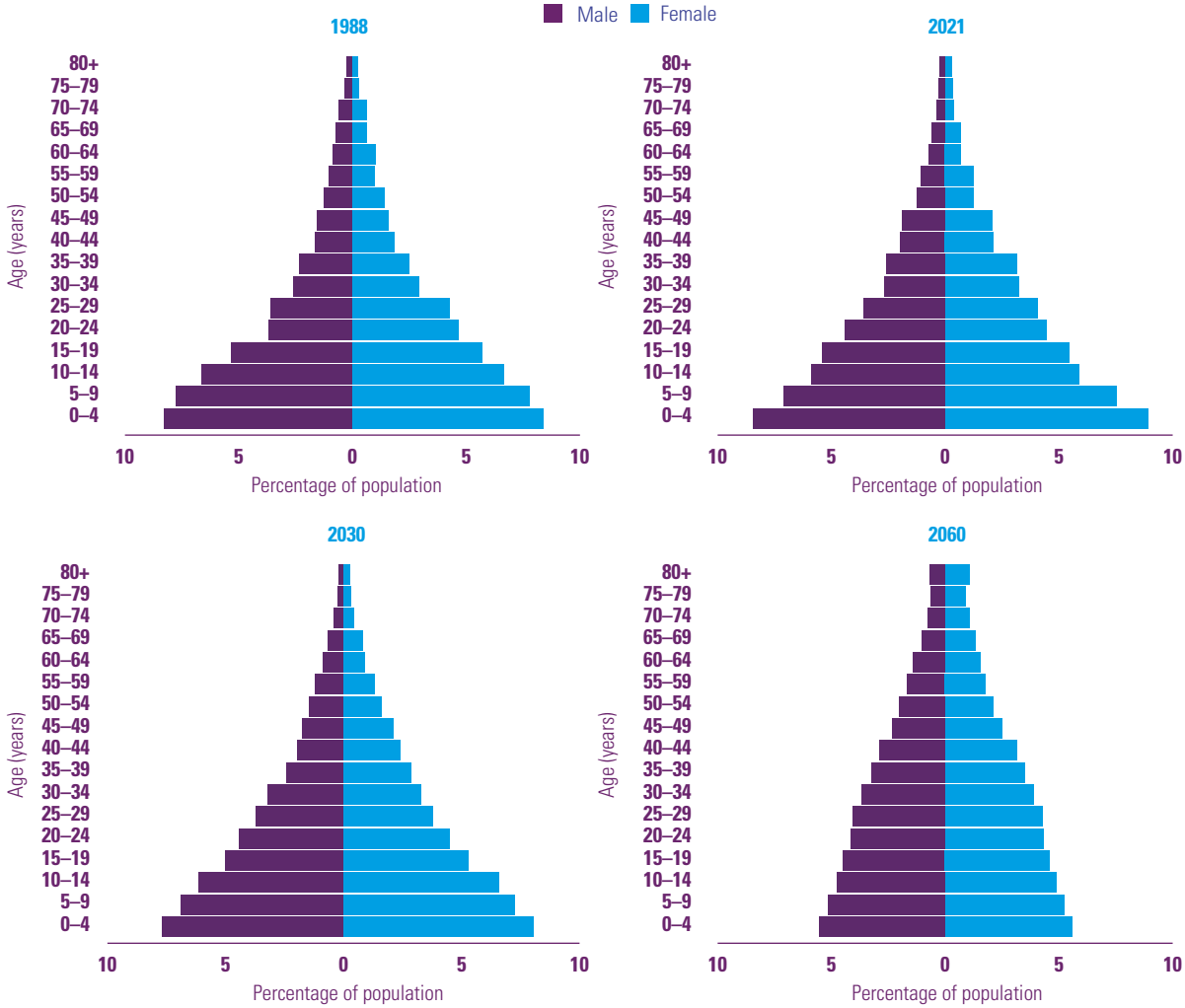

Figure 5: Population pyramids for Mainland Tanzania for 1988, 2021, 2030 and 2060

Source: Author's calculations based on Population and Housing Census data for 1967, 1978, 1988, 2002 and 2012 (NBS, n.d.b) and assumptions in MoFP (2017) and NBS and OCGS (2018).

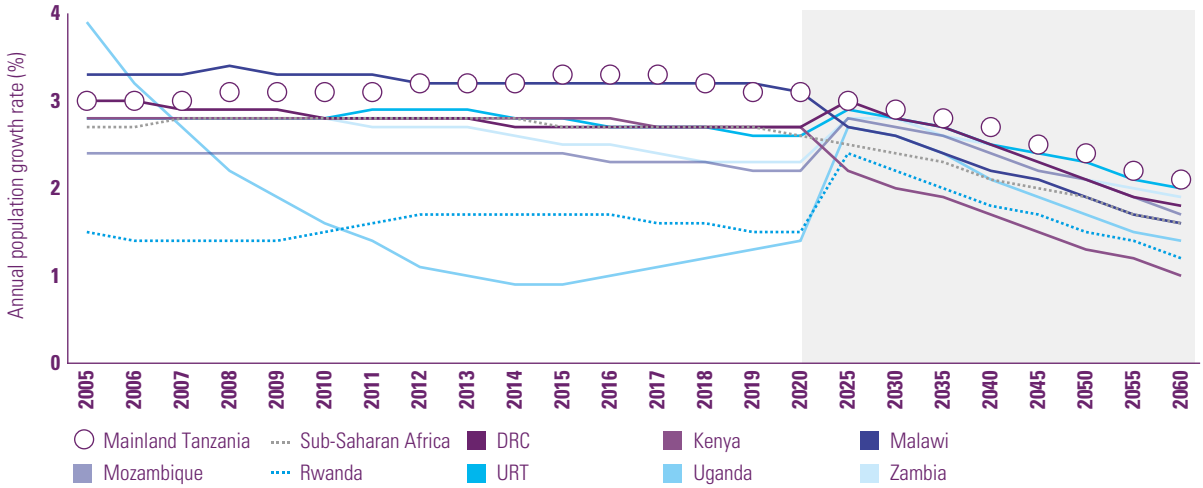

Figure 6: Annual population growth rate, 2005–2020

Source: Author's calculations based on Population and Housing Census data for 1967, 1978, 1988, 2002 and 2012 (NBS, n.d.b) and assumptions in MoFP (2017) and NBS and OCGS (2018).

Note: DRC = Democratic Republic of Congo, URT = United Republic of Tanzania.


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In addition to these changes in mortality and fertility, changes in policies promoting education and health care have resulted in life expectancy at birth to rise from 40 years in 1967 to 66 years in 2020 with further increases expected over the following 15 years to reach 74.4 years by 2035 (Ministry of Planning, Economy and Empowerment, 2006; UNICEF, n.d.b). Disaggregated by sex, this is projected to equate to 71.4 years for men and 77.3 years for women (NBS and OCGS, 2018). Any future increases will be contingent on further progress made towards The Tanzania Development Vision 2025, its third National Five-Year Development Plan (2021/22–2025/26), as well as any subsequent national policies established. Such progress will need to include universal health-care coverage, especially for vulnerable individuals residing in rural areas; universal access to improved sanitation; capacity-building to enable health workers to implement the latest standards of care; a costed health strategy that addresses the shortage of skilled human resources and supplies; and diversified and sustainable health-care financing that allows for the provision of quality services for all individuals in Mainland Tanzania (UNICEF, n.d.b).

With fewer births and lower mortality, Mainland Tanzania's child (0–17 years) and youth (18–24 years) population has decreased as a percentage of the total population since 1988, while the proportion of its working-age population (18–64 years) is expanding, thereby decreasing the country's overall dependency ratio. This demographic transition is expected to continue and the proportion of children as a share of the total population is expected to decline from approximately 49.8 per cent in 2020 to 34.3 per cent in 2060.[9] In contrast, the share of the working-age population will increase from 47 per cent in 2020 to 59.4 per cent in 2060 (*see* Figure 7). With this increase, the overall dependency ratio of Mainland Tanzania will decline.[10] For every 100 individuals aged 18–64 years, the number of dependants (aged 0–17 years and over the age of 65) will decline from 112.7 in 2020 to 68.4 in 2060. Over time, it will become increasingly important for Mainland Tanzania to absorb the growing working-age population into

9 Author's calculations based on Population and Housing Census data for 1967, 1978, 1988, 2002 and 2012 (NBS, n.d.b) and assumptions in MoFP (2017), and NBS and OCGS (2018).
10 Ibid.

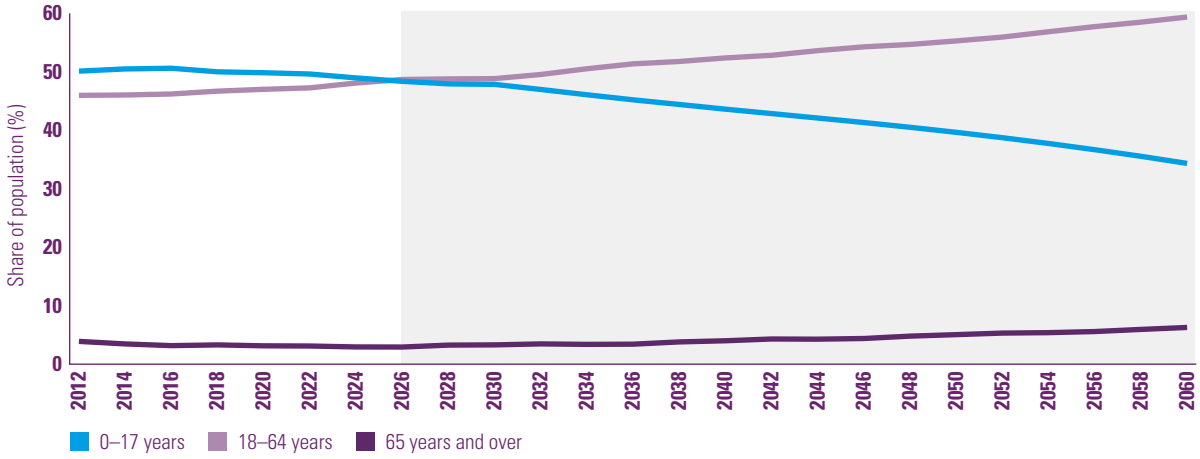


Figure 7: The window of opportunity – age-disaggregated population (%)

Source: Author's projections based on Population and Housing Census data for 1967, 1978, 1988, 2002 and 2012 (NBS, n.d.b) and assumptions in MoFP (2017), and NBS and OCGS (2018).

Note: These numbers are also reflected in Table 3.

the national labour market to avoid an increase in unemployment and to ensure that the working-age population contributes to increasing productivity and economic output, especially given that the country enters its window of opportunity[11] in 2026 (*see* Figure 7).

Taking advantage of this opportunity could be hindered by the high rates of under- and unemployment in the country, especially among the youth. This is the result of the formal sector not creating enough jobs. In 2021, 29.1 per cent of the employed population were in the informal sector, the majority of which were women, and predominantly living in urban areas (NBS and OCGS, 2021). Many people, especially youth, enter low-skill occupations; 59 per cent of which were undereducated, while 9 per cent were overeducated (Danish Trade Union Development Agency, 2022). In addition, many of them are underemployed. In 2021, roughly 11 per cent of the employed worked less than 40 hours per week, even though they were willing and available to do more work (NBS and OCGS, 2021). While this proportion is below the sub-Saharan average of 16.6 per cent (ILO, 2022), it still presents a challenge for the development of Mainland Tanzania. In combination, low wages and low-skilled employment in predominantly agrarian micro, small and medium enterprises in the informal economy, little economic value is added.

Almost one in ten individuals is unemployed in Mainland Tanzania, with the number rising to roughly one in seven among the youth. Compared to 2006, the former represents a decline of 2.7 percentage points, while the latter has increased by 1.5 percentage points (NBS, 2015). Again, women face higher rates of unemployment than men, especially in urban areas. Disaggregated by education level, the majority of the unemployed have completed secondary or tertiary education (34.8 per cent) (NBS and OCGS, 2021). This represents a waste of human potential. This group could contribute significantly to the economy of Mainland Tanzania if adequate formal employment in the productive sectors of the country were created. Given the change in the population's structure, the focus should be on generating productive employment opportunities for the youth, thereby further decreasing the under- and unemployment rates. Without this focus and with the growing working-age population, the present challenges will worsen and may place the country at risk of falling back to its low-income status.

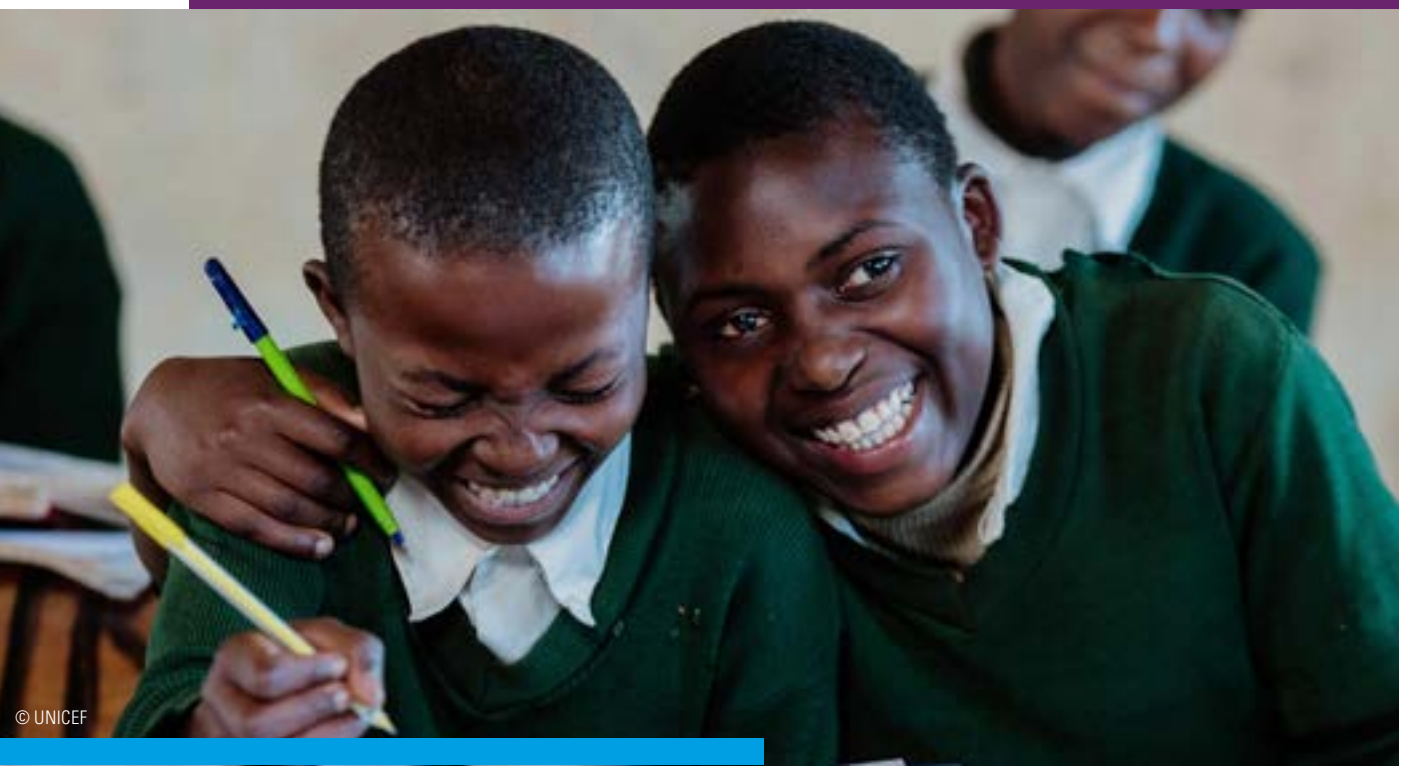
11 This is defined as a period where Mainland Tanzania's age structure has changed advantageously, thereby favouring economic development.

Box 2: A sectoral snapshot

Education sector

In 2019/20, the education sector in Mainland Tanzania was allocated a total of T Sh 4.51 trillion (2.8 per cent less than was allocated the previous financial year), which represents 13.6 per cent of total government expenditure, and 3.1 per cent of GDP (UNICEF, n.d.a). This falls short of the Global Partnership for Education target, which encourages countries to commit at least 20 per cent of the national budget to education. The education budget is managed by two ministries: the Ministry of Education, Science and Technology (MoEST) and the President's Office, Regional Administration and Local Government, of which the majority is allocated to the latter. In 2014, the Education and Training Policy expanded free, compulsory basic education in Mainland Tanzania to include one year of pre-primary, six years of primary and four years of secondary education. This has removed barriers to accessing basic education, and has thereby encouraged student enrolment.

Yet, challenges remain that need to be addressed urgently, considering the growing population. Firstly, Mainland Tanzania does not have adequate teaching infrastructure. To date, the country is short of 27,000 classrooms at primary level and 2,700 classrooms at secondary level (Government of the URT and UNICEF, 2018). Without the construction of the necessary classrooms, current high pupil-to-classroom ratios (i.e., 1 classroom per 76 primary students, and 1 classroom per 40 secondary students [UNICEF, n.d.a]) will soar even higher, thereby adversely impacting the quality of education, which is already below that of its peer countries, such as Kenya and Uganda. Instead, the country should aim for a maximum of 30 students per classroom according to international best practice. Secondly, there is currently a scarcity of adequately trained teachers, which has contributed to the low educational outcomes in Mainland Tanzania. Thirdly, the country is experiencing a shortage of textbooks. It must also be noted that some regions of the country face more challenges than others, with better performance apparent in those that received more resources. Consequently, the fiscal envelope available to the education sector must be increased, to allow the government to achieve the objectives as set out under its commitment with the Global Partnership for Education.



Health sector

In 2019/20, the health sector was allocated a total of T Sh 2.21 trillion (equivalent to US$956 million) – 0.4 per cent less than in the previous financial year. This represented 6.7 per cent of the total national budget and 1.5 per cent of GDP, thus not achieving the Abuja Declaration target of allocating 15 per cent of the national budget to the health sector. Nevertheless, Mainland Tanzania has made progress as evidenced by increased life expectancy, and reduced mortality and morbidity rates. Additionally, during 2015–2018 numerous positive developments were seen in the areas of modern family planning methods; antenatal, delivery and postnatal care; prevention of mother-to-child transmission; and HIV treatment. These improvements can be, in part, attributed to an improvement in the availability of, access to and quality of health services at all levels. In total, the number of health facilities increased from 5,253 in 2007 to 8,967 in 2021, the majority of which is an increase in the number of primary health-care facilities (MoHCDGEC, 2021).

Yet, significant challenges remain, including the persistent inequalities to health-care access related to place of residence, income and region; the shortage of approximately 8,200 health facilities; the shortage of workers at all levels of health care; the shortage of medicine, medical supplies and laboratory equipment; the increasing burden of non-communicable diseases; the deficient decline in neonatal and child mortality rates; high rates of teenage pregnancy; relatively high rates of fertility; and inadequate coverage of improved drinking water sources and sanitation facilities, especially in rural areas (MoHCDGEC, 2021). In addition, a 2014/15 service provision assessment (Ministry of Health and Social Welfare [Mainland Tanzania] et al., 2015) found that Mainland Tanzania's rapid population growth is placing strain on social services including reproductive, maternal, newborn, child and adolescent health services.

Infrastructure sector

In terms of electricity, Mainland Tanzania's sector is governed by the Tanzania Electric Supply Company, a state-owned enterprise that owns most of the country's transmission and distribution network. In 2018, the transmission and distribution system comprised a total of 48 transmission substations interconnected by transmission lines. In that year, 16.4 per cent of total transmission and distribution was lost. While Mainland Tanzania prefers electrification through the grid, off-grid solutions are acknowledged given the rapidly increasing demand for power in the country. Furthermore, Tanzania is envisioning more investment in its high, mostly untapped, renewable energy sources, including bioenergy, wind, solar, hydro and geothermal power. Although abundant resources are available, an insufficient supply is generated for the growing population – especially in urban areas. It has been estimated that by 2025 the country will require an electricity supply capacity of at least 10,000 MW to generate enough power for the entire population – up from 1,500 MW in 2015 (Ministry of Energy and Minerals, 2014; Mokveld and von Eije, 2018). Challenges that have inhibited universal access to electricity include, among others, the mobilization of funds for investment; the attraction of private capital to the electricity subsector; the lack of improvement in access to electricity; the limited diversification of energy resources for power generation; the inefficiency of revenue collection; the unaffordability and unreliability of power supply; and power system losses.

The development of the water and sanitation sectors fall under the Water Sector Development Programme (2006–2025). Its aim is to address the objectives identified under the country's water, health and education policies – all of which are in line with The Tanzania Development Vision 2025 and the national five-year development plans. As part of these policy initiatives, the government aims to improve access to safe water in rural areas to 95 per cent by 2025, and to 100 per cent in regional centres and Dar es Salaam. The share of rural households with improved sanitation facilities is aimed to reach 85 per cent in 2025; while regional centres and Dar es Salaam aim to reach 70 per cent and 60 per cent, respectively (Sanitation and Water for All, 2019). Targets have been set to achieve adequate water management capacity; proper maintenance of water and sanitation systems; and effective water tariff, billing and revenue collection mechanisms for the sector. In addition, the 2019 Water Supply and Sanitation Act guides the

implementation of targets as well as the sector's organizational arrangement. However, despite these concrete policy initiatives, the country still spends 70 per cent of its health budget on preventable diseases related to water, sanitation and hygiene (WASH) given that a large majority of the population does not have access to improved sanitation or access to clean drinking water (UNICEF, n.d.c). This has been particularly detrimental for girls, children with disabilities and those living in rural areas. The sector also faces challenges regarding sectoral dialogue and coordination, capacity at national and local levels, the adequate presence of monitoring and evaluation systems, and integration with other relevant sectors (WaterAid, 2015).

Social development sector

Mainland Tanzania is at Stage 2 of the demographic transition and, as such, one of the main challenges that the government will face over the coming four decades is to ensure that the growing working-age population, especially the youth, will have access to productive labour-market opportunities. This has proven to be a difficult undertaking in the past. With a rapidly expanding population, along with high rates of fertility and a lack of adequate job creation, unemployment has been and continues to be a pressing socioeconomic problem, although it declined from 11.7 per cent in 2006 to 9 per cent in 2021 (NBS, 2007; NBS and OCGS, 2021). In addition, labour-force participation rates have fallen from 89.6 per cent in 2006 to 83.3 per cent in 2021 (NBS, 2007; NBS and OCGS, 2021). Irrespective of the place of residence, men had and continue to have higher labour-force participation rates than women. Yet a significant proportion of the working-age population falls within the informal economy – one that is characterized by less-secure employment conditions and inadequate protection. In 2021, this amounted to 29.9 per cent of working-age women and 28.4 per cent of working-age men. Combined, these factors have impacted the standard of living of individuals in Mainland Tanzania and has resulted in a continuously high rate of poverty, equivalent to 34.4 per cent in 2007 and 25.7 per cent in 2020 (World Bank, n.d.).

For more detailed information on the four sectors, please see Appendix 2 (online).

Chapter 2

METHODOLOGY

2.1 The trajectories and underlying sectoral analyses

The demographic transition in Mainland Tanzania can take one of two paths – one where population growth resembles the most likely path that the country will take in the future (i.e., high population growth scenario) and one in which the government makes deliberate choices to reduce the future population growth rate in the country (i.e., low population growth scenario). **Each of these two population growth scenarios can yield two possible choices**, i.e., low public investment, and high public investment (*see* Figure 8).

Under the choice of low public investment, the methodology models the implications of population growth assuming that the current (2021) access and quality of identified components within the sector remain constant over time. In other words, this choice presents how much a government would need to invest to finance the system *if the current level of sectoral indicators were to be maintained between 2021 and 2060* in light of a rising population. Here, it is of importance to highlight that the government would need to continue to invest in the identified sectors as illustrated by the education example in Figure 9. Although secondary public school enrolment rates remain constant over time (at 46 per cent), a growing population would result in an

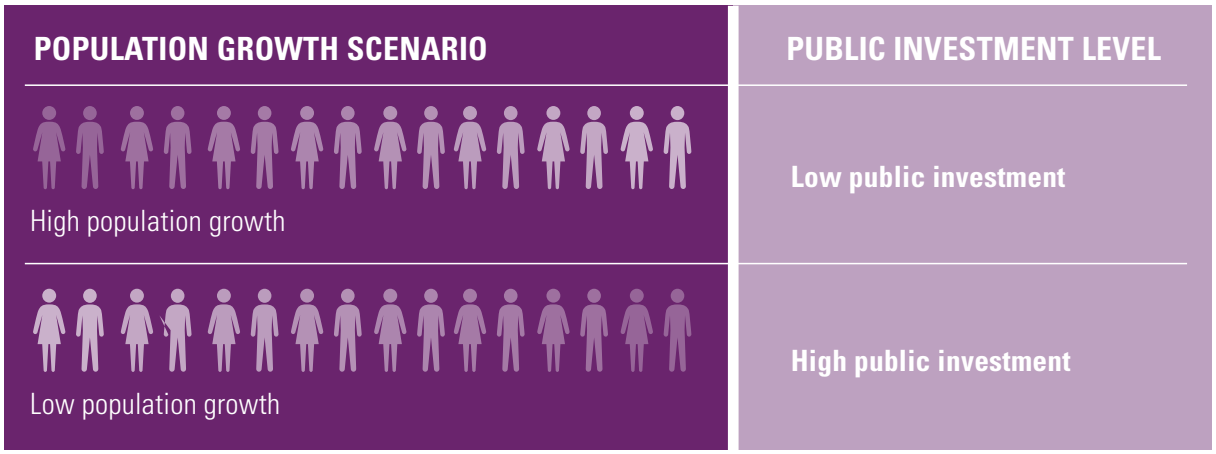


Figure 8: Modelled scenarios and public investment levels
Source: Author.

	2021	2060
Population aged 14–17 years	5,273,725	12,681,912
Secondary enrolment rate	46%	46%
Secondary students enrolled	2,425,914	5,833,680

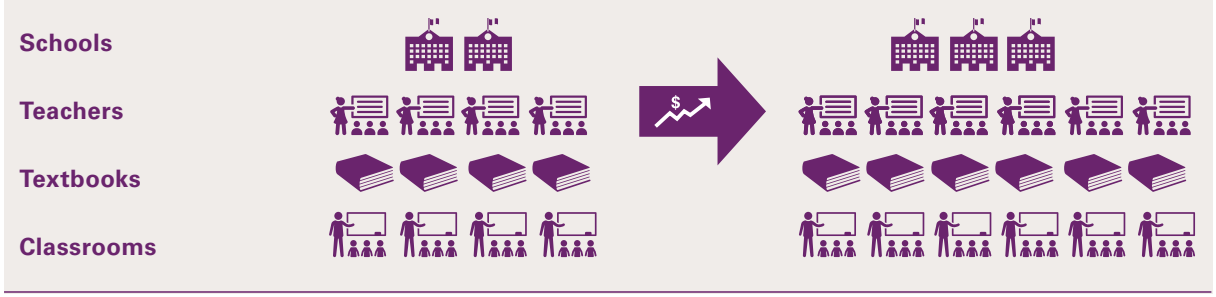


Figure 9: Example of rising government investment in secondary education under low-public-investment choice
Source: Author's calculations based on assumptions in NBS and OCGS (2018).

increasing number of enrolled students – by 140 per cent over the coming four decades. These students need to be catered for by the government through additional textbooks, classrooms, teachers and schools, thereby resulting in an increase in education expenditure over time.

Under the choice of high levels of public investment, the methodology models the implications for government given *a gradual improvement in key sectoral parameters that are related to access and quality* (*see* Table 2, page 36). These improvements are in line with targets set in national and international policy documents – The Tanzania Development Vision 2025, the third National Five-Year Development Plan and the 2030 Sustainable Development Goals (SDGs), as well as other sectoral plans (e.g., the Education Sector Development Plan 2016/17–2020/21, the 2014 Education and Training Policy, the Health Sector Strategic Plan 2021–2026, the Electricity Supply Industry Reform Strategy and Roadmap 2014–2025, the Water Sector Development Programme 2006–2025, etc.).

Each of the two aforementioned population growth scenarios along with their public investment levels were modelled for four specific sectors up to 2060. A specific methodology was devised for the education, health and infrastructure sectors to quantify the fiscal implications that the four trajectories (*see* Box 1, page 18) will have for the government, both in absolute terms (T Sh and US$) and as a percentage of GDP and total government expenditure. The methodology for the social development sector aims to quantify the impact of both high and low population growth scenarios and their public investment levels on Mainland Tanzania's employed and unemployed population, GDP, GDP per capita and poverty rate.

Across each sector and for each population growth scenario, current sectoral proxies for access and quality are assumed to remain constant under low levels of public investment, while they are assumed to gradually improve over time under high levels of public investment, as shown in Table 2 (page 36). The underlying sectoral methodology and specific assumptions made are provided in more detail in Appendix 1 (online).

Box 3: The assumptions underlying the population growth scenarios

When undertaking the projection of fertility across time, it is of crucial importance to use well-tested and well-assessed methodologies, especially given the fact that uncertainty will always exist when doing so. In general, projections assume that any observed long-term trend will continue to be exhibited into the future, and do not aim to predict any sudden or marked shifts in trends (Folkman and Syse, 2020). In the case of Mainland Tanzania, the NBS issued population projections until 2035. Yet, given that this is less than the projection period used for the analysis in this report, which runs to 2060, the projections needed to be extended.

To do so, Spectrum, a software program used for demographic modelling, was utilized. Within this program, the Demographic Projection (DemProj) model projects the population for a country up to 50 years into the future based on assumptions about fertility, mortality and migration. These projections can be disaggregated by age, sex and place of residence. Given difficulties to attain historic time series data for Mainland Tanzania, the underlying data for these projections were supplied by Tanzania's medium-fertility estimates produced by the two-track system of the Population Division of the United Nations (UNDESA's (2019) World Population Prospects). The methodology accounts for the past experience of the country, while also using that of countries under similar conditions to reflect uncertainty about future changes (Folkman and Syse, 2020). In the case of Mainland Tanzania, the underlying assumptions for the projections were then adjusted, where possible, based on the NBS's national population projection report or the targets outlined under The Tanzania Development Vision 2025 (*see* Table 1). The resulting population projections resulted in a high population growth scenario – the most likely population growth scenario that Mainland Tanzania would follow over the coming four decades.

As the report at hand also aims to quantify the benefits of reducing population growth over time, a second projection – a low population growth scenario – was established. This scenario is based on the same assumptions as exhibited under the high population growth scenario, except for the total fertility rate, which was assumed to be 0.5 births below the rates used for the high population growth scenario. The reason for doing so is to be in line with the well-tested and well-assessed methodology of the United Nations Department of Economics and Social Affairs (UNDESA), especially given the fact that the high population growth scenario is, in part, based on the same underlying methodology. This ensured consistency and allowed for the establishment of the low population growth scenario, which infers an additional effort by the government to lower fertility over time, and consequently the population growth rate. It is also feasible given the implementation of effective multisectoral policies, especially when considering education, health, infrastructure and social development.

Table 1: Key assumptions of each population growth scenario

Indicator	Baseline (2021)	2030	2040	2050	2060
High population growth scenario					
Total fertility rates	4.67	4.08	3.42	2.77	2.11
Sex ratio at birth	96.0	97.0	97.8	98.6	99.4
Life expectancy (male, years)	61.4	63.7	66.4	69.0	71.6
Life expectancy (female, years)	65.4	67.7	70.4	73.0	75.6
International migration	-37,661.0	-37,661.0	-37,661.0	-37,661.0	-37,661.0
Urban share of population (%)	36.0	42.8	50.4	58.0	65.6
Low population growth scenario					
Total fertility rates	4.67	3.58	2.92	2.27	1.61
Sex ratio at birth	96.0	97.0	97.8	98.6	99.4
Life expectancy (male, years)	61.4	63.7	66.4	69.0	71.6
Life expectancy (female, years)	65.4	67.7	70.4	73.0	75.6
International migration	-37,661.0	-37,661.0	-37,661.0	-37,661.0	-37,661.0
Urban share of population (%)	36.0	42.8	50.4	58.0	65.6

Source: NBS and ORC Macro, 2005; NBS and OCGS, 2013 and 2018; MoHCDGEC et al., 2016; UNDESA, 2019.

2.2 Limitations

While the methodology proposed comprehensively projects the impact of population growth across several relevant sectors, three main limitations can be identified. The first and second pertain to infrequently computed statistics by the government.

1. A dearth of data for the four sectors analysed in the model has required the use of assumptions for a number of key inputs, (e.g., future education and health budget growth rates, future GDP growth rates, future government expenditure as a share of GDP, future share of the health budget that is used for development purposes, etc.). However, while these assumptions are based on literature and verified with information retrieved from key informants, they may not always reflect the actual situation on the ground precisely.
2. Limited time series data for a number of indicators in the realm of education and health have not allowed for the estimation of correlation between sectoral spending and key sectoral outcomes (e.g., dropout rates, transition rates, infant mortality, maternal mortality, etc.). Instead, assumptions of such correlation needed to be made based on well-established literature in this field. While this does provide for relevant proxies, these may deviate from reality.
3. It must be noted that feedback loops of income generated over time, given improvements in the standard of living, are not endogenously included in the four submodels. It is thus not possible to accurately predict to what extent the

income of individual households will increase as a result of investments in education, health and infrastructure, and how this will affect the various outcome indicators across these sectors. Consequently, any estimates that result from the modelling will, at best, be conservative estimates of a best-case scenario in Mainland Tanzania.

This also pertains to the social development submodel. While the projections will illustrate that improvements in the identified demographic and economic indicators increase GDP per capita, they do not capture the multiplier effect of continuous improvements to the underlying indicators as a result of improved standards of living.

Table 2: Sectoral indicators and their targets across time

Indicator	Actual data	Targets							
	2021	2025	2030	2035	2040	2045	2050	2055	2060
Education									
Pre-primary education									
Gross enrolment rate (%)	78.5	100	100	100	100	100	100	100	100
Public pupil-to-teacher ratio	169	50	25	25	25	25	25	25	25
Public pupil-to-textbook ratio	4	3	2	1	1	1	1	1	1
Public pupil-to-classroom ratio	81	60	57	55	52	49	46	44	41
Inspectors per school	4	4	4	4	4	4	4	4	4
Public share of enrolment (%)	92.8	92.8	92.8	92.8	92.8	92.8	92.8	92.8	92.8
Primary education									
Gross enrolment rate (%)	110.6	100	100	100	100	100	100	100	100
Public pupil-to-teacher ratio	61	50	49	47	46	44	43	41	40
Public pupil-to-textbook ratio	4	2	2	1	1	1	1	1	1
Public pupil-to-classroom ratio	81	60	58	56	54	51	49	47	45
Inspectors per school	4	4	4	4	4	4	4	4	4
Public share of enrolment (%)	95.7	95.7	95.7	95.7	95.7	95.7	95.7	95.7	95.7
Secondary education									
Gross enrolment rate (%)	46	48	74	100	100	100	100	100	100
Public pupil-to-teacher ratio	26	20	20	20	20	20	20	20	20
Public pupil-to-textbook ratio	2	2	2	1	1	1	1	1	1
Public pupil-to-classroom ratio	46	40	40	40	40	40	40	40	40
Inspectors per school	4	4	4	4	4	4	4	4	4
Public share of enrolment (%)	87.8	87.8	87.8	87.8	87.8	87.8	87.8	87.8	87.8
Health									
Number of public hospital beds per 10,000 people	16	17	18	18	18	18	18	18	18
Number of public medical staff (doctors and nurses) per 10,000 people	8	26	45	45	45	45	45	45	45
Share of public health budget that is for development (%)	41	41	41	41	41	41	41	41	41
Share of public health budget that is spent on hospital services, prevention and education (%)	80	80	80	80	80	80	80	80	80

Indicator	Actual data	Targets							
	2021	2025	2030	2035	2040	2045	2050	2055	2060
Infrastructure									
People with access to electricity from national grid or solar power in urban areas (%)	66.5	69.4	73.0	82.0	100	100	100	100	100
People with access to electricity from national grid or solar power in rural areas (%)	30.1	50.0	66.0	82.0	100	100	100	100	100
People with access to piped water within 30 minutes of premises in urban areas (%)	58.9	95.0	100	100	100	100	100	100	100
People with access to improved water within 30 minutes of premises in rural areas (%)	15.0	85.0	100	100	100	100	100	100	100
People using basic improved and not shared sanitation services in urban areas (%)	25.0	30.0	100	100	100	100	100	100	100
People using basic improved and not shared sanitation services in rural areas (%)	3.7	75.0	100	100	100	100	100	100	100
Social development									
Demographic variables									
Expected years of education (female)	9.2	9.8	10.5	11.2	11.9	12.7	13.4	14.1	14.8
Expected years of education (male)	10.1	10.5	11.2	11.6	12.1	12.6	13.1	13.7	14.2
Mean years of education (female)	6.2	7.0	8.0	8.9	9.8	10.7	11.6	12.4	13.3
Mean years of education (male)	6.8	7.1	7.5	7.9	8.4	8.8	9.2	9.6	10.0
Mean years of education (both)	6.5	7.1	7.8	8.4	9.1	9.7	10.4	11.0	11.6
Modern contraceptive prevalence rate (married women)	36.8	40.7	45.6	50.5	55.4	60.3	65.2	70.1	75.0
Traditional contraceptive prevalence rate (married women)	5.7	5.1	4.4	3.7	2.9	2.2	1.5	0.7	0.0
Postpartum insusceptibility (months)	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Sterility (percentage of all women aged 45–49 years)	0.66	0.66	0.67	0.67	0.68	0.68	0.69	0.69	0.70
Economic variables (average from benchmark countries)[12]									
Public institutions	3.6	3.6	3.7	3.8	3.9	4.1	4.2	4.2	4.3
Imports as a percentage of GDP	23.0	23.4	24.2	25.8	28.1	30.5	32.1	32.9	33.5
Labour-market flexibility	4.58	4.59	4.63	4.70	4.81	4.92	5.00	5.04	5.06
Financial market efficiency	3.30	3.34	3.43	3.63	3.91	4.20	4.39	4.49	4.56
Information and communication technology use	1.6	1.7	2.0	2.5	3.2	3.9	4.4	4.7	4.9

12 The targets outlined for the economic variables are assumed to attain the average levels exhibited by specific benchmark countries. These are the targets that are attained by the most-favourable trajectory under the social development sector.

Indicator	Actual data	Targets							
	2021	2025	2030	2035	2040	2045	2050	2055	2060
Economic variables (average from African upper middle-income countries)[13]									
Public institutions	3.6	3.6	3.7	3.8	3.9	4.0	4.1	4.1	4.2
Imports as a percentage of GDP	23.0	24.0	26.1	30.4	36.7	43.1	47.3	49.5	51.1
Labour-market flexibility	4.6	4.58	4.58	4.59	4.60	4.61	4.62	4.62	4.63
Financial market efficiency	3.3	3.32	3.36	3.46	3.60	3.74	3.84	3.89	3.93
Information and communication technology use	1.6	1.7	1.8	2.1	2.6	3.1	3.4	3.5	3.6
Cross-cutting indicators									
Nominal average GDP growth rate (%)	5.2	8.0	7.5	7.0	6.5	6.0	5.5	5.0	4.5
Government expenditure as a share of GDP (%)	22.1	23.7	25.3	26.9	28.6	30.2	31.8	33.4	35.0
Inflation rate (%)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

Source: Author's calculations based on Ministry of Water (2006), MoHCDGEC (2021), Planning Commission (n.d.) and UNICEF (n.d.a and b); assumptions in NBS and OCGS (2018) and MoFP (2017); information provided by the World Bank (i.e., poverty rates, the growth elasticity of poverty), the World Economic Forum's Global Competitive Index; and the United States Agency for International Development (USAID) demographic dividend (DemDiv) model.

13 The targets outlined for the economic variables are assumed to attain the average levels exhibited by African upper middle-income countries. These are the targets that feed into the social development sector modelling as part of a sensitivity analysis of the most-favourable trajectory. Please see Section 3.2.5 for more information.

Chapter 3

RESULTS

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Public investment level

High

Most-favourable trajectory: Low population growth with high level of public investment

EDUCATION

- Total nominal investment: T Sh 1,457.2 trillion (US$626.6 billion)
- Total real investment: T Sh 510.7 trillion (US$219.6 billion)
  - » As a percentage of GDP: 3.1% in 2021; 6.1% in 2060
  - » As a percentage of government expenditure: 13.6% in 2021; 17.5% in 2060

	2021	2030	2040	2050	2060
Children of school age (in millions)	18.9	23.0	24.4	26.7	25.3
Enrolled public students (in millions)	15.4	19.9	22.7	24.8	23.4
Public teachers (in '000)	272.6	506.0	671.8	785.8	815.3
Public classrooms (in '000)	210.2	377.4	464.9	541.1	547.5
Public schools (in '000)	36.6	44.5	40.3	37.1	30.6

HEALTH

- Total nominal investment: T Sh 1,434.5 trillion (US$616.8 billion)
- Total real investment: T Sh 497.4 trillion (US$213.9 billion)
  - » As a percentage of GDP: 1.4% in 2021; 5.6% in 2060
  - » As a percentage of government expenditure: 6.3% in 2021; 16% in 2060

	2021	2030	2040	2050	2060
Total population (in millions)	57.0	70.3	86.5	101.9	112.8
Public medical staff (in '000)	48.0	312.7	384.7	453.3	501.9
Public hospital beds (in '000)	49.2	126.5	155.6	183.4	203.0
Public primary health facilities (in '000)	6.0	10.5	9.6	9.0	8.2
Public hospitals	195	343	312	292	268

INFRASTRUCTURE

- Total nominal investment: T Sh 173.5 trillion (US$74.6 billion)
- Total real investment: T Sh 80.9 trillion (US$34.8 billion)
  - » As a percentage of GDP: 2.03% in 2022; 0.36% in 2060
  - » As a percentage of government expenditure: 9.04% in 2022; 1.04% in 2060

	2021	2030	2040	2050	2060
Total population (in millions)	57.0	70.3	86.5	101.9	112.8
Individuals with access to electricity/solar power (in millions)	24.6	48.3	86.5	101.9	112.8
Individuals with access to piped/improved water (in millions)	17.6	70.3	86.5	101.9	112.8
Individuals with access to improved sanitation (in millions)	6.5	70.3	86.5	101.9	112.8

SOCIAL DEVELOPMENT

- GDP per capita: US$1,151 in 2021; US$18,992 in 2060
- Poverty rate: 25.7% in 2021; 6.73% in 2060
- Number of poor: 14,648,465 in 2021; 7,595,986 in 2060
- Number of employed: 24,633,366 in 2021; 62,916,853 in 2060
- Number of unemployed: 2,437,338 in 2021; 8,419,672 in 2060

	2021	2030	2040	2050	2060
Employed (in millions)	24.6	31.5	42.6	54.1	62.9
Unemployed (in millions)	2.4	4.1	4.8	5.1	8.4
Individuals in the labour force (in millions)	27.0	35.6	47.4	59.2	71.3
GDP per capita (T Sh in millions)	2.7	5.2	12.7	28.8	44.2

Public investment level

Low

Low population growth with low level of public investment

See online Appendix 3 for discussion results.

Low

Population growth scenario

Figure 10: Summary results per sector, population growth scenario and level of public investment (2021–2060)
Source: Author, based on author's calculations.

Public investment level

High

High population growth with high level of public investment

See online Appendix 3 for discussion results.

Low

Status-quo trajectory: High population growth with low level of public investment

EDUCATION

- Total nominal investment: T Sh 387.4 trillion (US$166.6 billion)
- Total real investment: T Sh 172.6 trillion (US$74.2 billion)
  - » As a percentage of GDP: 3.1% in 2021; 0.8% in 2060
  - » As a percentage of government expenditure: 13.6% in 2021; 2.2% in 2060

	2021	2030	2040	2050	2060
Children of school age (in millions)	18.9	23.9	27.8	31.6	32.9
Enrolled public students (in millions)	15.4	19.6	22.7	25.8	26.5
Public teachers (in '000)	272.6	349.7	407.0	464.9	488.0
Public classrooms (in '000)	210.2	266.9	310.0	352.7	366.2
Public schools ('000)	36.6	44.8	51.9	58.4	59.1

HEALTH

- Total nominal investment: T Sh 88.9 trillion (US$38.2 billion)
- Total real investment: T Sh 41.2 trillion (US$17.7 billion)
  - » As a percentage of GDP: 1.4% in 2021; 0.2% in 2060
  - » As a percentage of government expenditure: 6.3% in 2021; 0.5% in 2060

	2021	2030	2040	2050	2060
Total population (in millions)	57.0	72.4	91.8	112.3	130.4
Public medical staff ('000)	48.0	61.0	77.3	94.6	109.8
Public hospital beds ('000)	49.2	115.9	146.9	179.7	208.7
Public primary health facilities ('000)	6.0	14.1	17.9	21.9	25.4
Public hospitals	195	459	582	712	827

INFRASTRUCTURE

- Total nominal investment: T Sh 71.1 trillion (US$30.6 billion)
- Total real investment: T Sh 26.9 trillion (US$11.5 billion)
  - » As a percentage of GDP: 0.27% in 2022; 0.22% in 2060
  - » As a percentage of government expenditure: 1.21% in 2022; 0.64% in 2060

	2021	2030	2040	2050	2060
Total population (in millions)	57.0	72.4	91.8	112.3	130.4
Individuals with access to electricity/solar power (in millions)	24.6	33.1	44.5	57.5	70.4
Individuals with access to piped/improved water (in millions)	17.6	24.5	34.1	45.4	57.1
Individuals with access to improved sanitation (in millions)	6.5	9.3	13.2	18.0	23.0

SOCIAL DEVELOPMENT

- GDP per capita: US$1,151 in 2021; US$1,773 in 2060
- Poverty rate: 25.7% in 2021; 21.1% in 2060
- Number of poor: 14,648,291 in 2021; 27,507,605 in 2060
- Number of employed: 24,633,366 in 2021; 44,532,435 in 2060
- Number of unemployed: 2,437,338 in 2021; 33,146,475 in 2060

	2021	2030	2040	2050	2060
Employed (in millions)	24.9	30.2	35.8	40.9	45.8
Unemployed (in millions)	2.4	5.7	12.7	22.0	33.2
Individuals in the labour force (in millions)	27.3	35.9	48.5	62.9	79.0
GDP per capita (T Sh in millions)	2.7	3.5	3.8	4.0	4.1

High

Population growth scenario

Note: The social development results represent those achieved when assuming that the economic variables reach the average indicators of the benchmark countries (i.e., Malaysia, South Korea, South Africa and Mauritius) identified under the 'Population Dynamics and Demographic Dividend in Tanzania' report (MoFP, 2017) by the end of the projection period. In addition to this, it must be noted that the health sector also analyses the impact that the fiscal investments have on specific social indicators (i.e., neonatal, infant, child and maternal mortality rates). For a more detailed discussion of these impacts, please see sections 3.1.3 and 3.2.3.

This chapter and its respective subsections showcase the results of the quantitative modelling for each of the four different sectors analysed (education, health, infrastructure and social development). Results are modelled for both the high and low population growth scenarios, each of which showcases findings for low and high levels of public investment for the four sectoral submodels. While the education, health and infrastructure submodels provide an overview of the required investments by population growth scenario and public investment level, the social development model identifies the respective impact on GDP per capita and poverty. A summary overview of these findings per population growth scenario and public investment level are given in Figure 10.

For the sake of simplicity, the following two subsections focus on presenting two trajectories that the government could follow in the coming four decades: a status-quo trajectory and a most-favourable trajectory (*see* Figure 10).

The status-quo trajectory assumes high population growth rates along with low levels of public investment to retain the current level of social outcomes. The most-favourable trajectory is characterized by lower population growth rates and high levels of public investment to improve access and quality of sectoral indicators aligned with national and international policies over time.

The results of the remaining two trajectories, i.e., a trajectory characterized by a high population growth rate and high public investment levels and a trajectory characterized by a low population growth rate and low public investment, can be found in Appendix 3 (online).

3.1 The status-quo trajectory: high population growth rate with low public investment

3.1.1 Population projections

As seen in Figure 11, under a high population growth rate, Mainland Tanzania's population will more than double by 2060. While there were approximately 57 million individuals residing in Mainland Tanzania in 2021, by 2060, this number is expected to increase to 130.4 million. Yet, while the absolute population is increasing, the growth rates are projected to decline. In 2021, Mainland Tanzania attained a growth rate of 2.9 per cent, which is expected to steadily decline to 1.3 per cent by 2060 as illustrated in Figure 11. Not only will this increase in population have a considerable impact on the number of individuals per square kilometre (i.e., the population density), but together with increasing rural-to-urban migration rates, it will also affect rural-to-urban distribution. Given Mainland Tanzania's finite area of 942,626 square kilometres,

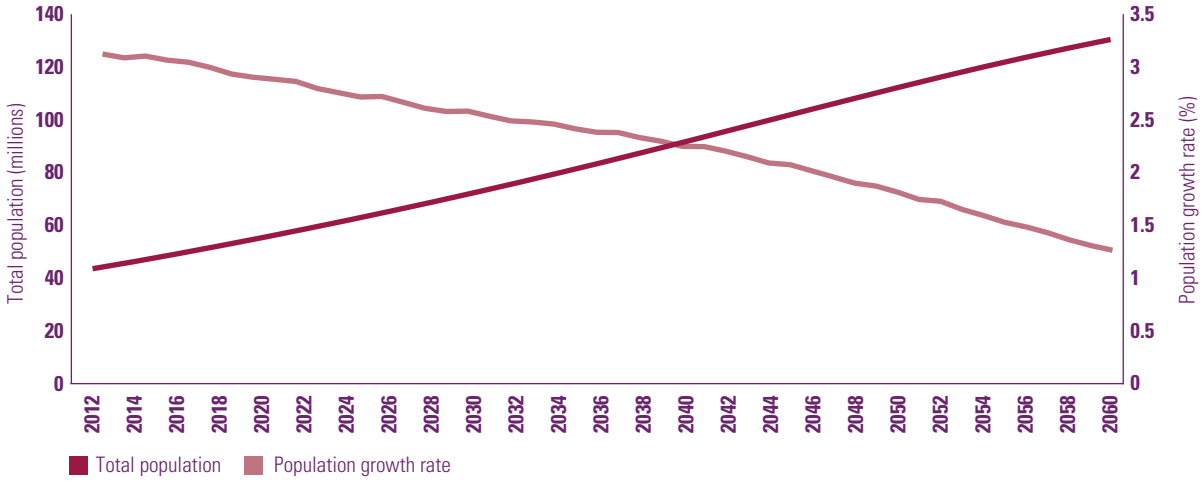

Figure 11: Mainland Tanzania's total projected population and annual projected population growth rate for the high population growth scenario

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

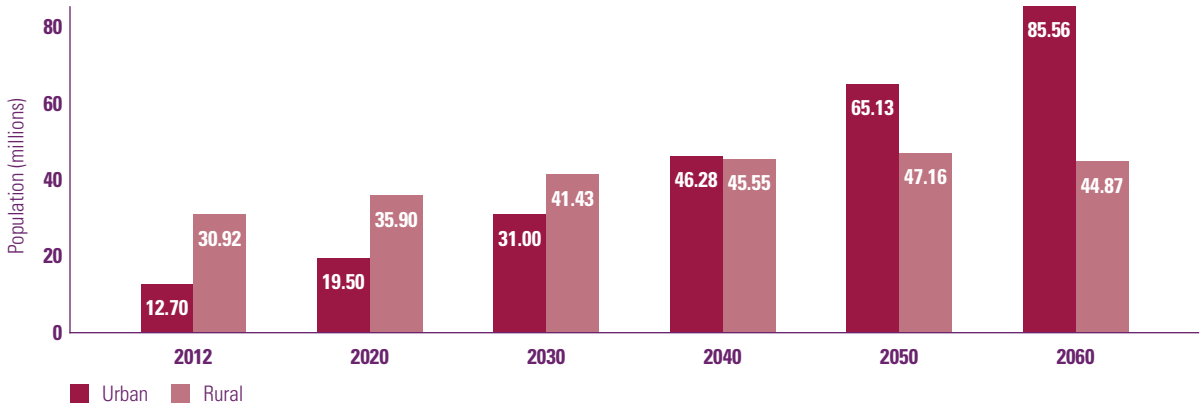

Figure 12: Mainland Tanzania's total rural and urban population projected for the high population growth scenario
Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

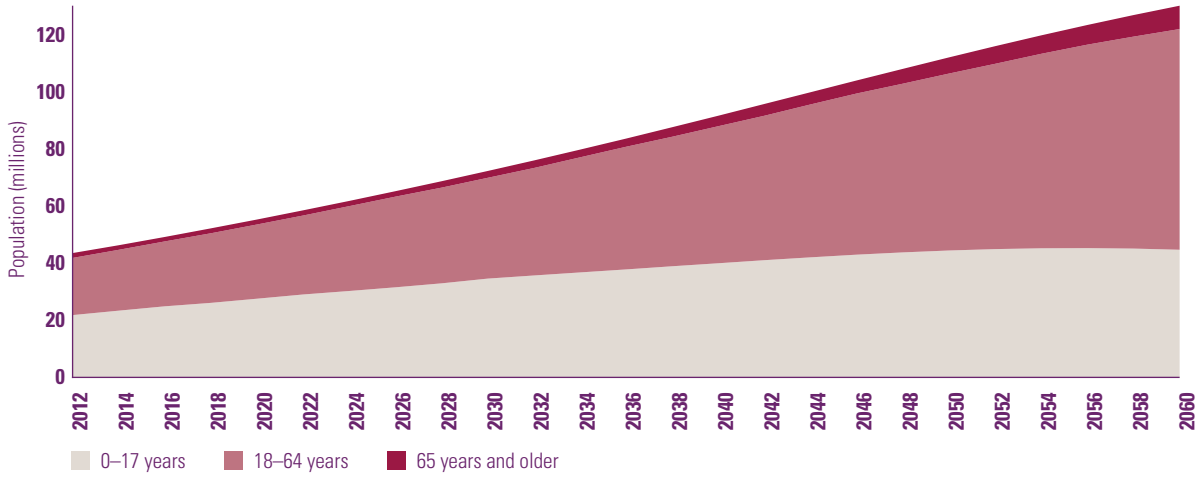

Figure 13: Total projected population by age group for the high population growth scenario
Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

its population density will increase from a current ratio of 61 individuals per square kilometre to roughly 139 individuals per square kilometre by 2060. This increase in density will most obviously be felt in the urban areas. While 6 per cent of the total population was residing in urban areas in 1967, this grew to 29.1 per cent by 2012. This growth has mainly been witnessed in large cities, with Dar es Salaam having been identified as the second-fastest growing urban area in sub-Saharan Africa. In fact, it is on its way to becoming a megacity, that will be inhabited by over 10 million individuals by 2030 (Rosen, 2019; MoHCDGEC, 2021). Population growth rates will average 2 per cent from then onwards and it is projected that more than half of the population will live in urban centres by 2040, reaching a proportion of roughly 65 per cent by 2060 (*see* Figure 12).

When considering Mainland Tanzania's population disaggregated by age, an important shift in its structure is evident which provides an opportunity for economic growth: the increase in the working-age population relative to the child, youth and elderly populations. It is projected that the working-age population (18–64-year-olds) for the high population growth scenario will increase from 26.9 million in 2021 to approximately 77.4 million in 2060 (*see* Figure 13). Over the same period, the child population (0–17-year-olds) is expected to increase, yet at a slower rate than that exhibited by the working-age population, resulting in an increase from 28.4

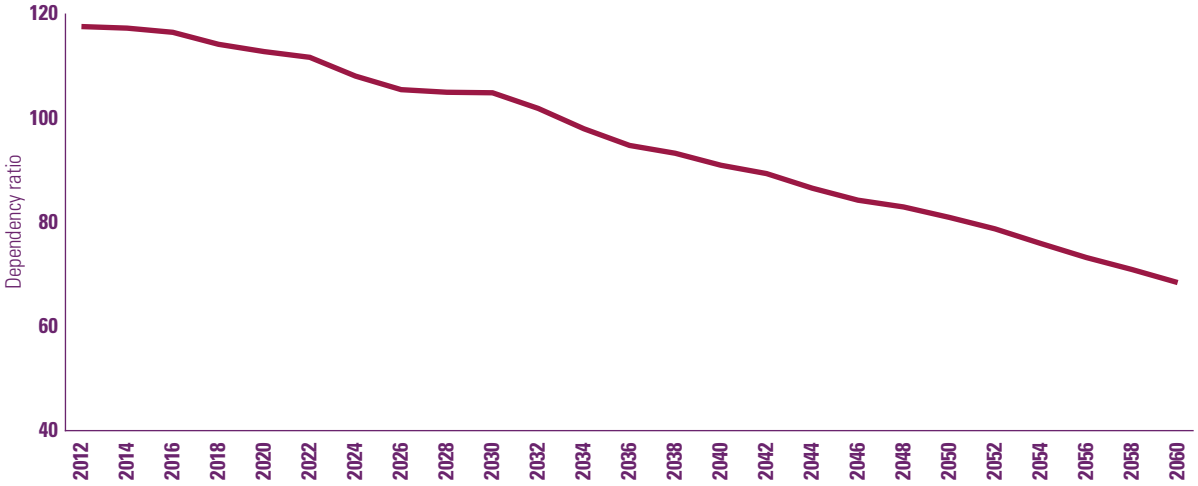

Figure 14: Projected dependency ratio for the high population growth scenario
Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

million in 2021 to 44.8 million by 2060. Furthermore, the elderly population (aged 65 years and older) also grows as a result of increasing life expectancies due to investments in the coverage and quality of health care. However, it should be noted that while the working-age population increases by roughly 188 per cent, the elderly population expands by double that amount.

Together, the child and the elderly populations relative to the working-age population will influence Mainland Tanzania's total dependency ratio. As seen in Figure 14, this ratio will drop by more than 33 per cent of its 2021 value over the coming four decades. As a result, the number of children as a percentage of the entire population will decline by roughly 15.5 percentage points by 2060 (*see* Table 3). Together with the increase in the elderly population, the total dependency ratio would thereby fall from a level of 112.3 in 2021 to 68.4 by 2060 (*see* Figure 14).

Having identified a potential future path of population growth for the high population growth scenario, it must be highlighted again that the subsequent sectoral results reflect the status-quo trajectory that the government could continue to follow in the coming four decades (*see* Figure 10).

This trajectory would imply that population growth rates remain relatively high with little being done to curb them over time – as illustrated in Figure 11. Furthermore, the current levels of social indicators would be maintained given low levels of investment by the public sector. For simplicity and to avoid confusion, the results related to high levels of public investment under the high population growth scenario are depicted in Appendix 3 (online).

Table 3: Projected age proportion of population for the high population growth scenario

Year	Proportion of population		
	0–17 years	18–64 years	65+ years
2020	49.8	47.1	3.1
2030	47.9	48.8	3.3
2040	43.6	52.4	4.0
2050	39.7	55.3	5.1
2060	34.3	59.4	6.3

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).
Note: These numbers are also reflected in Figure 7 (page 27).

3.1.2 Education

Current situation

The right to education for all is enshrined in the Constitution of the United Republic of Tanzania, which is operationalized through different legislations and policies, including the 2010 Research and Development Policy, the 2014 Education and Training Policy, the 2016 Education Act, and the 2018 Tanzania Teachers Professional Board Act, among others (MoEST, 2021). Each of these aims to contribute to developing an effective and efficient

education system that provides universal access and high-quality education/training opportunities to the people of Mainland Tanzania. In line with this, the government, at the end of 2015, expanded free and compulsory education to include a total of 12 years' basic education (allowing a child to benefit from pre-primary, primary and ordinary-secondary education).

In recent years, Mainland Tanzania's schools have witnessed growth, yet more so for the private schools than those financed by the government. In total, there were 16,355 public pre-primary, 16,406 public primary and 3,801 public secondary schools across the country in 2021 (MoEST, 2021). Within these schools, a total of 15.4 million children aged 5–17 years were enrolled according to a 78.5 per cent gross enrolment rate (GER) at pre-primary level, a 110.6 per cent GER at primary level and a 46 per cent GER at ordinary-secondary level – with disparities between regions and between areas of residence (MoEST, 2021). Overall, it can be said that the country exhibits a relatively low coverage of secondary education. Furthermore, although primary completion rates have improved, they have remained stagnant recently with 33 per cent of students who have completed primary education not moving into secondary education in 2020 (MoEST, 2021). Of the students who do transition, only two thirds complete ordinary-secondary education. Furthermore, of the students who do not pass their examination to reach the next level of education, very few repeat the year – meaning that the majority drop out. In 2020, repetition rates averaged 4 per cent in primary education and 1.4 per cent in ordinary-secondary education (MoEST, 2021). **Consequently, Mainland Tanzania's education system is challenged by non-universal access to education, as well as with retention of students both within and between the three basic education cycles** (pre-primary, primary and secondary).

In terms of the sector's quality and learning outcomes, the government has made progress with textbook availability and distribution, and in numbers of qualified teachers. In 2020, the country provided approximately 720,000 textbooks and roughly 42,000 teacher guides to pre-primary education; thereby, reducing the pupil-to-textbook ratio to 4:1 (MoEST, 2021). Yet, to meet the target of one book per pre-primary student, further investment will be needed by the government. This is also the case when considering primary education, while secondary education is characterized by a pupil-to-textbook ratio of 2:1 (MoEST, 2021). Additionally, a recent assessment of the education sector identified that 99.4 per cent of secondary schoolteachers were qualified in 2020. Combined, these two factors have contributed to improved Certificate of Secondary Education Examination pass rates from 69.8 per cent in 2014 to 80.7 per cent in 2019 (MoEST, 2021).

Additionally, disparities among education quality remain when considering the availability of human resources and classrooms. Over recent years, the national pupil-to-teacher ratio has remained at extremely high levels at pre-primary level, equivalent to 169 students per teacher, while seeing a decline when looking at primary and ordinary-secondary education (61 and 26 students per teacher, respectively) (MoEST, 2021). Considering the availability of classrooms, both pre-primary and primary education exhibit pupil-to-classroom ratios that are above the targets stipulated under Tanzania's 2009 basic standards and the 2020 construction strategy. With a public pupil-to-classroom ratio equivalent of 81 students at both pre-primary and primary levels in 2021, the standards of 25:1 and 45:1 have not yet been attained in Mainland Tanzania (MoEST, 2021; MoFP, 2021b; UNICEF, n.d.a). The same holds true for ordinary-secondary education, which has a ratio of 46:1 – six students more per class than is required by standards (MoEST, 2021; MoFP, 2021b; UNICEF, n.d.a). Although shortages in human resources and infrastructure have declined over recent years, they still persist. In light of population growth, this will significantly strain Mainland Tanzania's education system under the current conditions.

Fiscal implications

The consequences, in terms of social outcomes and fiscal responsibilities of maintaining the current rates of enrolment, and teacher-to-pupil, pupil-to-classroom and pupil-to-textbook ratios until 2060, is described in this subsection. Known as the status-quo trajectory, an overview of the sector's future will be provided. Although no improvement in key educational indicators is

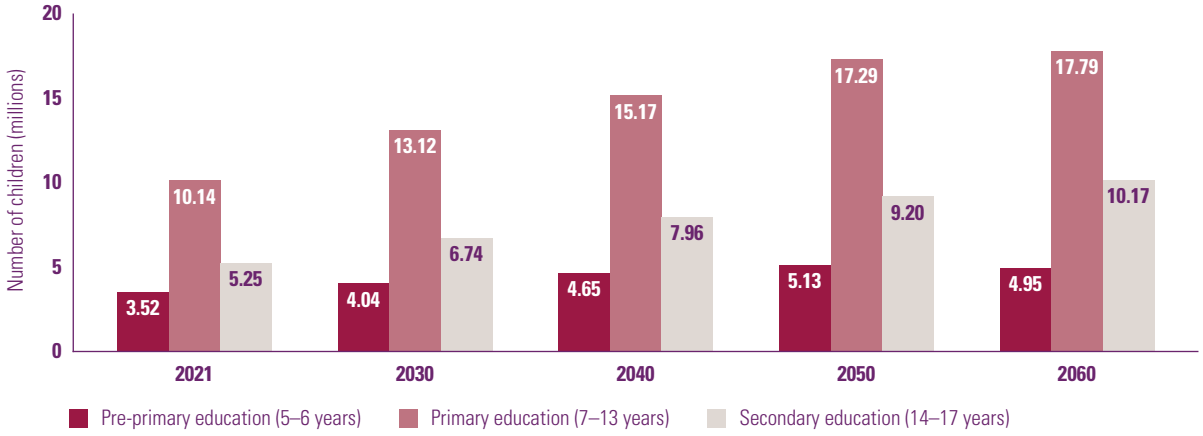

Figure 15: Projections of school-age children by educational level for the high population growth scenario

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), and Government of URT and UNICEF (n.d.a).

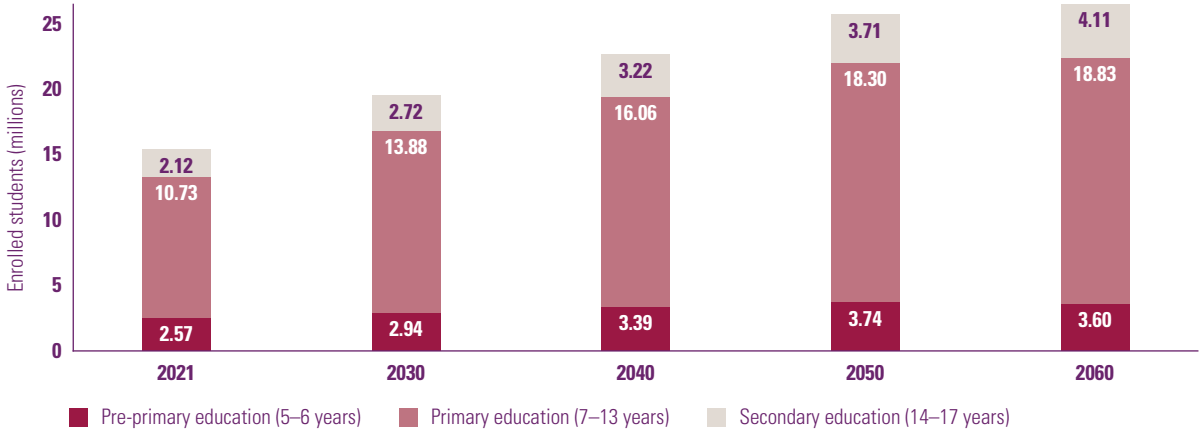

Figure 16: Gross public enrolment rates by education level for the high population growth scenario

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), and Government of URT and UNICEF (n.d.a).

envisioned, the government will still need to invest considerably to keep the education system from deteriorating given the growing population. The magnitude of the challenge Mainland Tanzania will face is shown in Figure 15. Under the status-quo trajectory, the number of pre-primary, primary and ordinary-secondary school-age children will increase by 74 per cent over the coming four decades. The largest increase will be among children of secondary age (94 per cent increase on the levels in 2021), followed by children of primary and pre-primary age (75 per cent and 40 per cent increase, respectively). **On average 285,250 children will enter the public education system each year between 2021 and 2060.**

Across all education levels, absolute national public enrolment rates will increase until 2053. While pre-primary student enrolment will increase by 46 per cent, primary and secondary student enrolment will increase by 74.6 per cent and 82.4 per cent, respectively. It is only after 2053, that pre-primary enrolment declines at an average rate of 0.6 per cent per year. This is followed by primary enrolment, which peaks in 2057. In contrast, ordinary-secondary enrolment grows throughout the four decades, achieving its peak after 2060. In absolute numbers (*see* Figure 16), this equates to a rise in the number of public enrolled pre-primary students from roughly 2.6 million in 2021 to roughly 3.8 million in 2053, and an increase in public primary enrolled students from 10.7 million in 2021 to approximately 19 million in 2057, before declining to 18.8 million in 2060. In contrast, ordinary-secondary enrolment sees a continuous increase from

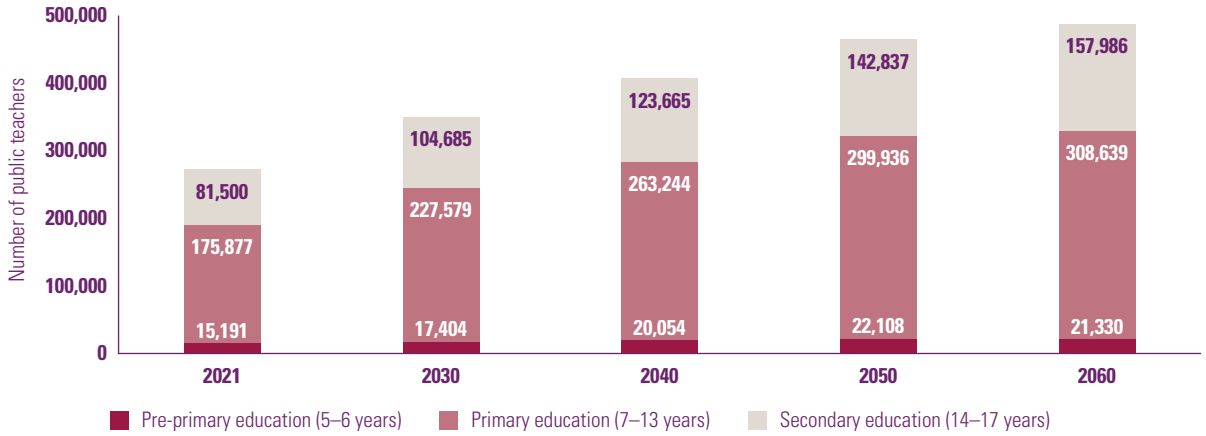

Figure 17: Total number of public teachers by education level for the high population growth scenario

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), and Government of URT and UNICEF (n.d.a).

2.1 million students in 2021 to 4.1 million students by 2060.[14]

Given the overall increase in students, the number of public teachers at each education level will also need to increase to maintain the 2021 pupil-to-teacher ratio. At the pre-primary level, this will require an additional 6,982 public teachers by 2053, summing to 22,172 in total, before declining to 21,330 in 2060. At the public primary and ordinary-secondary levels, a similar trend can be seen. In the case of the former, a maximum of 134,712 teachers will need to be hired in the coming 36 years, while the latter requires, at least, an additional 76,486. **On average, this translates into an additional 179 pre-primary, 3,454 primary and 1,961 ordinary-secondary teachers per year being added to public education and the government payroll between now and 2060.** This is below the annual average of pre-primary teachers who have been hired over the past two years, yet above the annual average of the 535 primary and 1,296 ordinary-secondary teachers who have been hired (MoEST, 2021; UNICEF, n.d.a). If these additional teachers are not hired, then the 2021 pupil-to-teacher ratio will not be maintained, but will instead deteriorate given the growth in overall enrolment at all education levels as a result of the population trend in Mainland Tanzania over time.

To maintain constant public pupil-to-classroom ratios given the growing number of students enrolled, the government will need to construct 14,567 additional pre-primary, 101,450 primary and 43,231 ordinary-secondary school classrooms within the coming four decades (*see* Figure 18). However, given a lack of improvement in access to education over time, the decline in the population growth rate will eventually result in a number of these classrooms becoming defunct. For public pre-primary and primary education, this will happen respectively from 2054 and 2058 onwards if current classroom-to-pupil ratios are maintained. In contrast, ordinary-secondary education does not face this problem within the coming four decades as the population aged 14–17 years will not have peaked by then.

A constant pupil-to-textbook ratio over time will require an increase in the number of textbooks purchased, especially during the first decade, given the higher population growth rates during those years. On average, the annual number of public pre-primary, primary and ordinary-secondary textbooks will need to increase by 9,218; 57,066 and 25,495 books, respectively, until the maximum number

14 It should be noted that these numbers do not match the numbers presented in Figure 15 given that under low levels of public investment, the current enrolment rates are kept constant over time. For pre-primary and secondary education, GERs therefore remain below 100 per cent, while for primary education GER is above 100 per cent. The latter implies that currently and in the long run there are individuals in primary education who are above or below the specified age bracket of 7–13 years.

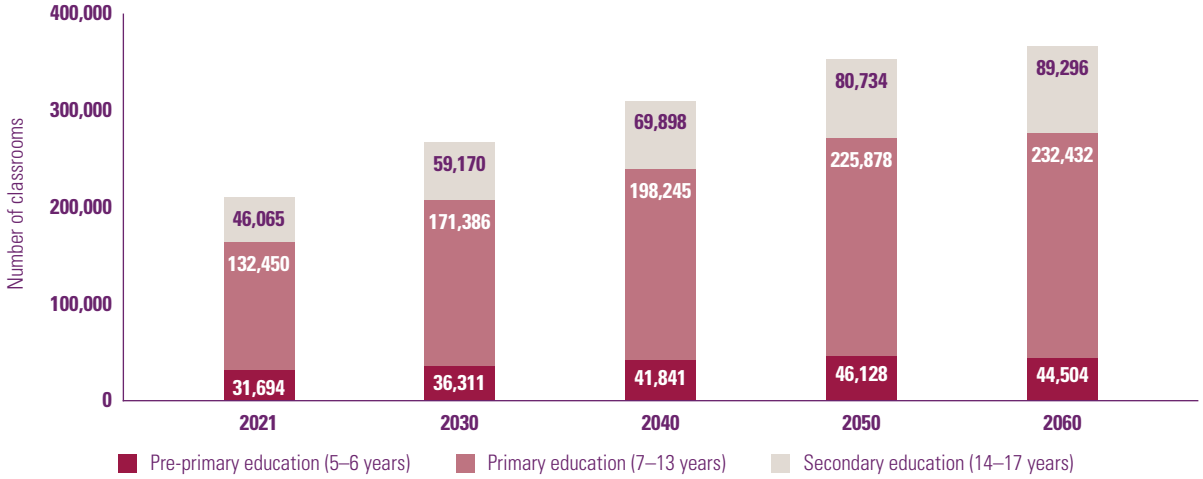

Figure 18: Total number of classrooms by education level for the high population growth scenario

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), and Government of URT and UNICEF (n.d.a).

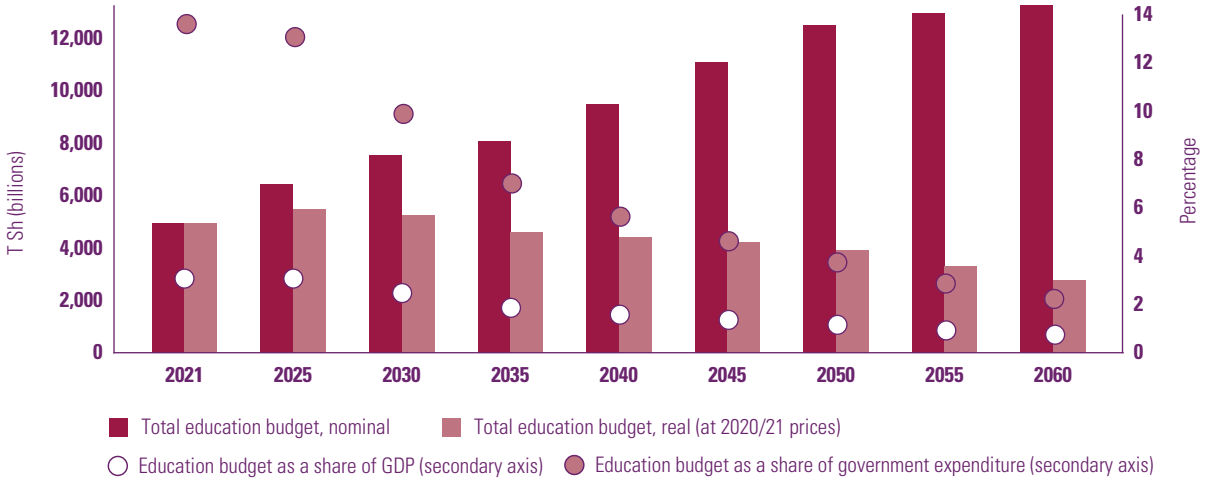

Figure 19: Projected nominal and real education budget, in absolute terms and as a percentage of GDP and government expenditure under the status-quo trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), and Government of URT and UNICEF (n.d.a).

of public enrolled students per education level is attained (in 2053 for public pre-primary, in 2057 for public primary and post-2060 for public ordinary-secondary).

Even though Mainland Tanzania's education access and quality is stagnant and the population growth rate is declining under this status-quo trajectory, the government will still need to invest heavily in the sector to avoid a deterioration in key social outcomes. In nominal terms, this would imply an increase in the education budget from T Sh 4.9 trillion (US$2.1 billion) in 2021 to T Sh 13.3 trillion (US$5.7 billion) in 2060. Yet, when accounting for inflation, the GDP growth rate and the nominal education budget growth rate, the real education budget declines – from T Sh 4.9 trillion (US$2.1 billion) in 2021 to T Sh 2.8 trillion (US$1.2 billion) in 2060. This is because the growth rate of GDP and the inflation rate is projected to remain above the nominal growth rate of the education budget over time.

Combined, this would equate to a total nominal investment of roughly T Sh 387.4 trillion (US$166.6 billion) and a real investment of T Sh 172.6 trillion (US$74.2 billion) over the coming 39 years. In terms of real expenditure

per enrolled student at 2020/21 prices, a similar decline is witnessed, from T Sh 319,851 (US$138) to T Sh 104,158 (US$45) between 2021 and 2060. As a percentage of GDP and government expenditure, this equates to 3.1 per cent and 13.6 per cent in 2021 and 0.8 per cent and 2.2 per cent in 2060, respectively (*see* Figure 19). Yet once again, it is important to highlight that under this status-quo trajectory, Mainland Tanzania would not achieve the targets set out in national and international policy documents. This includes the targets set under the Education Sector Development Plan 2016/17–2020/21, The Tanzania Development Vision 2025, the Global Partnership for Education 2025, and UNESCO's Education 2030 Framework for Action. As a result, the current challenges faced today will remain. These challenges include substandard enrolment rates, low retention rates, high dropout rates, shortages of books, classrooms, schools and teachers, as well as low-quality education, especially at pre-primary level (Government of URT and UNICEF, 2018; MoEST, 2021; UNICEF, n.d.a).

3.1.3 Health

Current situation

In the past, **Mainland Tanzania's investment in health has improved, thereby contributing to the expansion of service provision and improvement in the quality of care – aiding the country's attainment of lower middle-income status in 2020.** Particular achievements have been noted in reproductive health, including the expansion of modern family planning tools; the reduction of maternal, newborn and child mortality; the reduction of childhood malnutrition; and improvements in antenatal, delivery and postnatal care. Furthermore, communicable diseases, such as HIV, tuberculosis and malaria, are also under control (MoHCDGEC, 2021). Efforts have also been undertaken to provide primary health care to every individual in the country – ensuring that each village has a clinic and each ward a health centre. As a result, the number of public primary health facilities increased from 3,421 in 2007 to 8,665 in 2020 (MoHCDGEC, 2021). In addition to this, the government has worked towards enhancing the clinical and specialist care services at regional referral hospitals; national hospitals; and specialized hospitals for obstetrics, tuberculosis, mental health, cancer and cardiovascular issues, while also strengthening access to medicine, medical supplies and medical equipment (MoHCDGEC, 2021). These positive developments occurred in almost all regions of the country, resulting in a continued increase of life expectancy at birth from 51 years in 2002 to 66 years in 2020 (MoHCDGEC, 2021; NBS, 2021).

Despite this significant progress, many of the country's Health Sector Strategic Plan 2015–2020 targets, which are in line with the 2030 SDGs, have not been met (*see* Table 4). Neonatal, child and maternal mortality rates, especially in urban areas, have not been reduced sufficiently to achieve the SDG targets by 2030. Furthermore, the absolute number of children with malnutrition is increasing. At the same time, the country is facing increasing rates of obesity. Additionally, despite adolescent and adult mothers receiving the same health benefits, teenage pregnancy remains high and a source of concern. This may, in part, be due to the fact that modern family planning methods are not adequately provided, resulting in high rates of fertility and unmet family planning needs (MoHCDGEC, 2021). The rates of tuberculosis, HIV and malaria have improved, yet diagnostics and early treatment could be enhanced given the low rates of HIV screening, suboptimal rates of tuberculosis detection, and insufficient malaria prevention mechanisms. Treatment interventions need to be expanded to ensure a larger impact on disease control. The quality of care, although improved, continues to be a challenge given that some citizens must still travel long distances to access specific services, while others do not receive adequate referral services and, even if they do, equipment is often inadequate in the respective hospitals.

These challenges are exacerbated by shortages of health-care workers, especially in remote areas. Although Mainland Tanzania has seen an increase in the number of health professionals per 10,000 individuals from 15.7 to 17.2 in the past decade, the shortfall of human resources is currently estimated at 52 per cent of the actual need (MoHCDGEC, 2021). While training programmes have been put in place to counter this shortfall, the government might not achieve significant progress

Table 4: Some health indicators for Mainland Tanzania

Indicator	Value	International/national targets
Life expectancy at birth (2020)	66 years	–
Infant mortality rate per 1,000 live births (2021)	36 deaths	12 deaths
Under-five mortality rate per 1,000 children (2021)	50 deaths	25 deaths
Maternal mortality rate per 100,000 births (2021)	380 deaths	70 deaths
Wasted children under the age of 5 (2015/16)	4%	Less than 5%
Stunted children under the age of 5 (2018)	32%	20%
Teenage girls (15–19 years) who are pregnant or have given birth (2015/16)	27%	<20%
Newborns with HIV infection (2020)	7.9%	3.0%
Malaria prevalence among children 6–59 months old (2017)	7.5%	<3.5%
Tuberculosis incidence per 100,000 individuals (2019)	273 cases	162 cases
Tuberculosis treatment coverage (2019)	59%	90%
Full immunization coverage among infants (2016)	75%	>90%
Antiretroviral therapy coverage among people living with HIV (2020)	94%	95%
Adults aged 15–59 years with hypertension who are on (successful) treatment (2012)	7.3% (3.1% successful)	>25%
Adults aged 15–59 years with diabetes who are on (successful) treatment (2012)	9.1%	>25%
Households with adequate sanitation facilities (2017)	24%	>50%
Household with safe drinking water source (2017)	60%	>80%
Percentage of hospitals providing essential/comprehensive surgical services with tracer items on the day of the assessment (2017)	5%	>75%
Quality of care: primary health facilities with three stars (% of all facilities 2018)	21%	80%

Source: Infant, under-five and maternal mortality data was obtained from the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC). Remaining data from MoHCDGEC et al. (2016) and NBS (2021).

given a continuous decline in the real health-sector budget over the past decade, as evidenced by the 20 per cent reduction in real per capita health budget from T Sh 52,093 (US$22.4) to T Sh 42,093 (US$18.1), remaining well below the T Sh 200,000 (US$86) to T Sh 260,465 (US$112) per capita range deemed necessary to reach UHC (MoHCDGEC, 2021). The implications that these challenges have, both fiscally and on health outcomes, are analysed in the following subsection.

Fiscal implications and impacts on health outcomes

In the status-quo trajectory, the analysis aims to quantify the fiscal implications of population growth on essential health services, and on overall health services provided. It assumes that Mainland Tanzania will not achieve the target set out in the Abuja Declaration, which stipulates that Member States of the African Union should allocate at least 15 per cent of their annual national budgets to improving their health-care systems. Yet even if it does not achieve this, **the government will still need to invest considerably in a number of physical inputs to maintain the present level of essential and overall health-care coverage, given the addition of, on average, approximately 1.9 million individuals per year between 2021 and 2060.** This represents an increase in the total population from roughly 57 million in 2021 to 130.4 million in 2060 (*see* Figure 11). Consequently, Mainland Tanzania would need to hire an additional 61,828 medical staff over the coming 39 years to maintain the current UHC

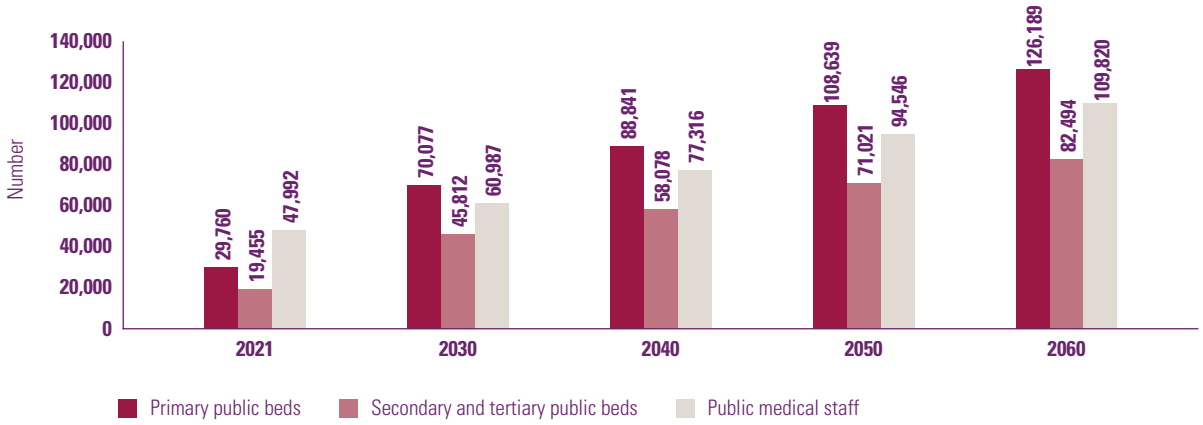

Figure 20: Total number of medical staff and public hospital beds required under the status-quo trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b).

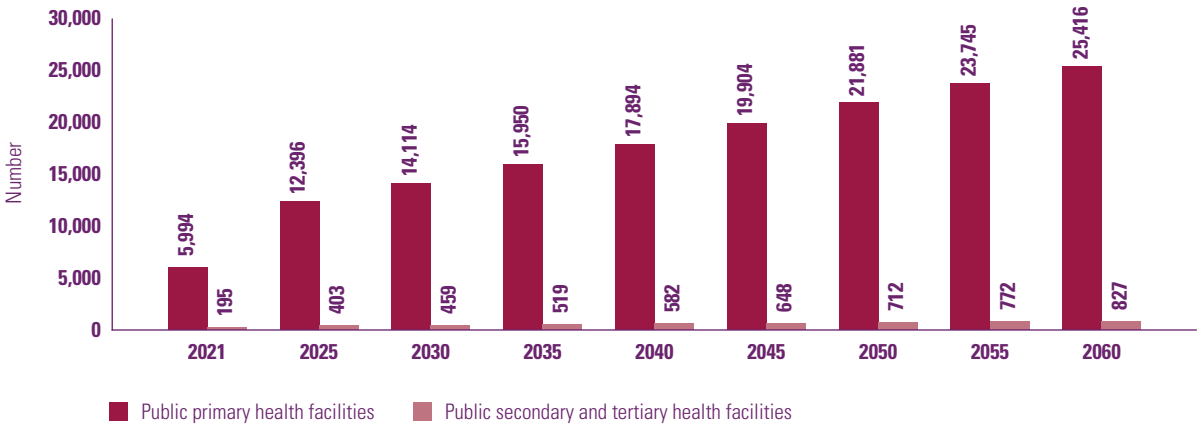

Figure 21: Total number of primary, secondary and tertiary health facilities required under the status-quo trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b).

Index – equating to, on average, 1,585 staff per year (*see* Figure 20).[15]

Furthermore, the analysis projects that an additional 96,429 beds across all primary health facilities, and a total of 63,039 additional beds across secondary and tertiary public health facilities will be needed to maintain the current public bed-to-population ratio (*see* Figure 20). Given the expansion of both beds and medical staff as a result of population growth rates, Mainland Tanzania will need to construct an additional 19,422 primary health facilities and 632 secondary and tertiary hospitals over the coming four decades. This represents over four times the number of facilities compared to the current number of health facilities (*see* Figure 21). This would translate to constructing, on average, 4,855 primary health facilities and 158 hospitals per decade. Both of these lie above the annual average number of facilities constructed in the past decade, which amounted to 408 primary health facilities and 31 hospitals (Planning Commission, 2012). This is the result of an increasing population along with maintaining constant medical staff numbers and beds per 10,000 individuals. Yet, if

15 In comparison, Mainland Tanzania has hired an annual average of 6,673 medical staff, both public and private, in the past six years (MoFP, 2019).

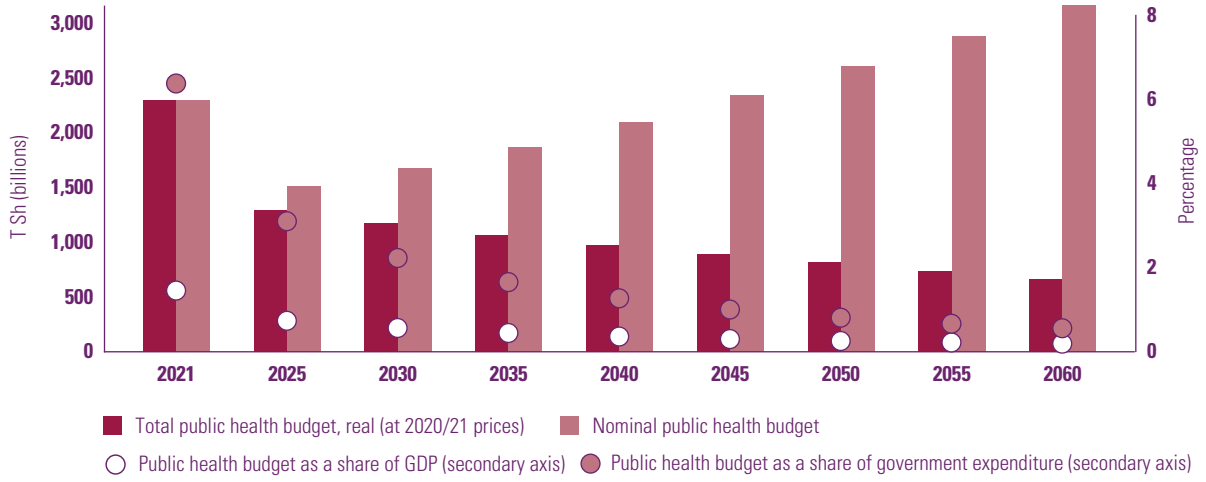

Figure 22: Projected nominal and real overall health budget, in absolute terms and as a percentage of GDP and government expenditure under the status-quo trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b).

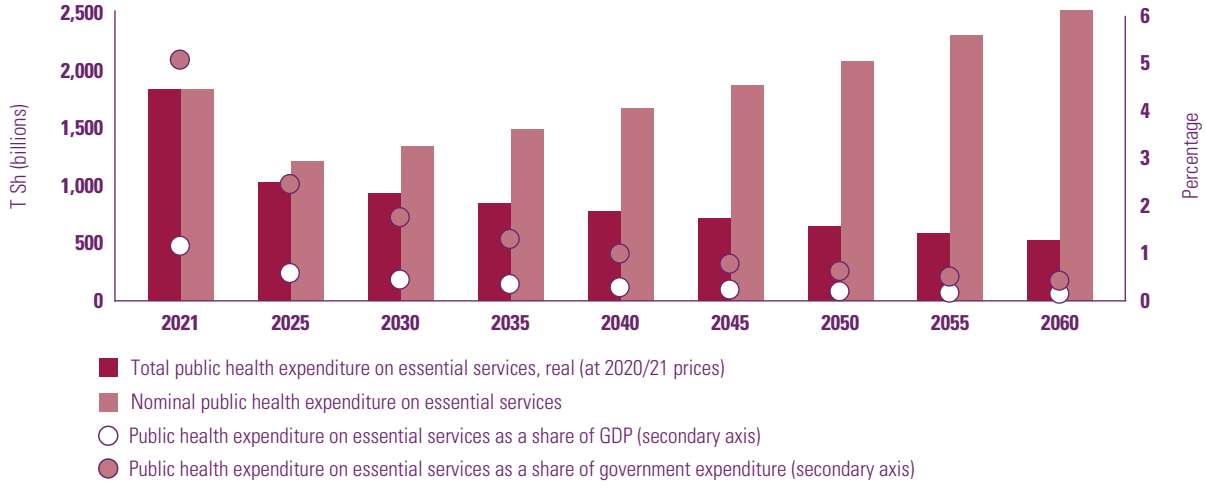

Figure 23: Projected nominal and real health budget on essential services, in absolute terms and as a percentage of GDP and government expenditure under the status-quo trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b).

any future primary health facilities or secondary and tertiary hospitals were to be larger, then this number would be reduced.

To sustain current access and quality levels, the total nominal budget related to overall health care will need to increase considerably from T Sh 2.3 trillion (US$989.3 million) in 2021 to T Sh 3.2 trillion (US$1.4 billion) in 2060. In real terms (2020/21 prices), this equates to T Sh 659.5 billion (US$283.6 million) in 2060 (*see* Figure 22). When considering only public essential services, the total nominal budget will increase from T Sh 1.8 trillion (US$791.4 million) in 2021 to T Sh 2.5 trillion (US$1.1 billion) in 2060. In real terms (2020/21 prices), this equates to T Sh 527.6 billion (US$226.9 million) in 2060 (*see* Figure 23).

Aggregating the nominal essential service expenditure and the overall health expenditure

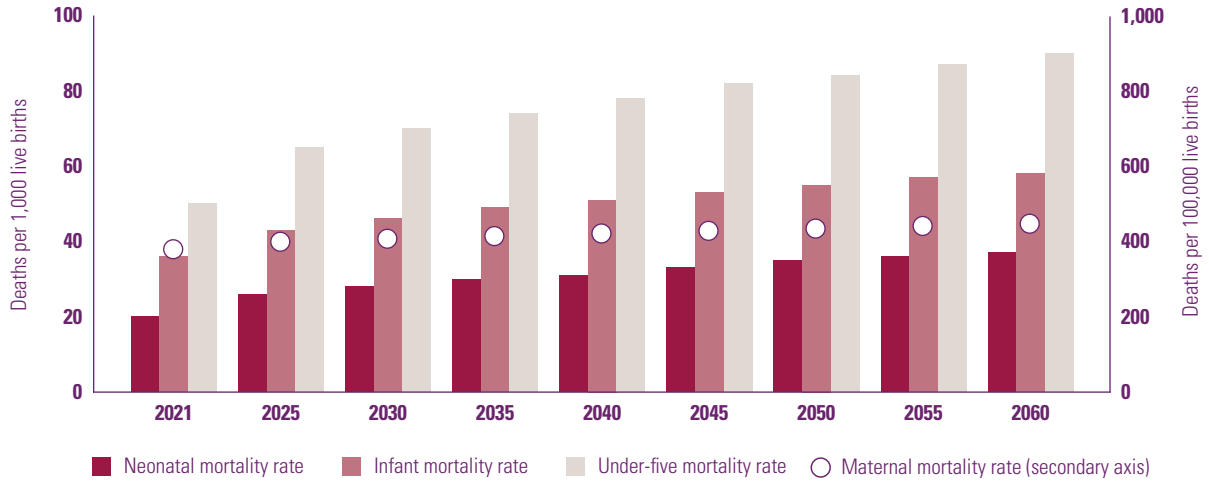

Figure 24: Projections in health outcomes under the status-quo trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b), as well as relevant literature.

over time, this equates to a total nominal investment of T Sh 71.1 trillion (US$30.6 billion) and T Sh 88.9 trillion (US$38.2 billion), respectively. The equivalent in real terms (2020/21 prices), would be T Sh 33 trillion (US$14.2 billion) and T Sh 41.2 trillion (US$17.7 billion), respectively. In terms of the overall real health budget, this equates to a real per capita decrease from T Sh 39,535 (US$17) in 2021 to T Sh 4,651 (US$2) in 2060; a decline as a percentage of GDP from 1.4 per cent (2021) to 0.2 per cent (2060); and a decline in government expenditure from 6.3 per cent (2021) to 0.5 per cent (2060).

In line with the projected spending, the analysis has also been able to generate projections for key health outcome indicators on neonatal, infant, under-five and maternal mortality rates.[16] **In each of the four outcomes, mortality rates will increase given negative growth rates in per capita health expenditure – more so for child mortality than for maternal mortality** (*see* Figure 24). With no change in the current access and quality of health care over time, neonatal mortality will increase from 20 to 37 deaths per 1,000 live births between 2021 and 2060. Similar trends will be seen for infant and under-five mortality, which will increase from 36 deaths and 50 deaths per 1,000 live births in 2021, to 58 deaths and 90 deaths per 1,000 live births in 2060, respectively. **Consequently, an annual average of 238,801 infants and 896,303 children under the age of 5 will die.** Furthermore, maternal mortality is projected to have the lowest increase over that period from 380 to 448 deaths per 100,000 live births, thereby not leading to an improvement in the current challenges faced by the country, but rather to a deterioration.

With no change in the current access and quality of health care over time, neonatal mortality will increase from 20 to 37 deaths per 1,000 live births between 2021 and 2060.

16 The generated projections for key health outcomes are based on two components: i) the correlation between each health outcome and health expenditure, and ii) the projected health expenditure. The first component is an average of the correlations found in literature on African countries. This correlation was then assumed to decline over time. This in addition to the projected real health expenditure allowed the methodology to assess the impact of these projections on the key health outcomes.

3.1.4 Infrastructure

Current situation

In recent years, Mainland Tanzania has prioritized the generation of enabling infrastructure for the development of the energy, water and sanitation infrastructure. However, to universalize access to these services, the government needs to overcome a number of challenges.

In terms of energy, Mainland Tanzania is part of the Scaling-Up Renewable Energy Programme, whose strategy was developed in line with several national policies[17] to generate new economic opportunities, while increasing the production of energy through renewable pathways to showcase the viability of low-carbon development. In 2015, the country's electricity generation equated to 1.55 gigawatts of which roughly 95 per cent is available from the grid. Combined, the installed capacity consists of hydropower (0.553 gigawatts); thermal generation with natural gas (0.501 gigawatts) and oil (0.456 gigawatts); biomass (0.027 gigawatts); and small hydropower (0.013 gigawatts) (African Development Bank, 2015; Ministry of Energy and Minerals, 2015). Yet, like many countries, Mainland Tanzania faces challenges:

1. There is an increasing demand for electricity as a result of accelerations in productive economic investments, as well as an increase in consumption due to a rise in population.
2. The increasing unpredictability of hydropower due to climate change imposes a risk of disruption to generation, including extensive load shedding.
3. The country's size, coupled with a low population density, makes the extension of the grid too expensive for many rural areas.
4. The reliance of households on biomass for cooking can lead to health risks (e.g., respiratory and other diseases) and environmental degradation (estimated at 100,000–125,000 hectares of forest lost per year) (African Development Bank, 2015).

These challenges will need to be overcome to provide the estimated 9 gigawatts of additional demand needed by 2035.

In terms of water supply and sanitation services, Mainland Tanzania has struggled to meet the urban demand for improved services as a consequence of rapid population growth and slow economic development (Jospeh et al., 2017). This can be detrimental because the provision of water and sanitation is of importance for both human and economic development outcomes. Furthermore, it must be noted that significant disparities exist when disaggregating by place of residence. It can be concluded that individuals residing in urban areas will have a higher probability of having access to piped/improved water and sanitation services compared to rural residents. In 2016, 58.9 per cent of urban residents had access to piped water within 30 minutes of their premises, while improved water within 30 minutes of rural premises was available to only 15 per cent of the residents. Similarly, 25 per cent of urban residents had access to improved and unshared sanitation services, while this equated to 3.7 per cent in rural areas.[18] While these numbers have since increased, close to 40 per cent of urban residents and 85 per cent of rural residents do not have access to safe water services, which coupled with unsanitary conditions can have significant health implications for Mainland Tanzania's population.

As a result, the government needs to rethink its focus in these sectors to not only invest in the country's water and sanitation infrastructure, but to also investigate its quality. The latter includes assessing the institutions that provide these services and their investment in water production, water treatment and network maintenance. Specific actions that this would entail "prioritizing their [the government's] ability to enforce stronger regulation of water treatment, acknowledging and working with informal providers; building mechanisms to ensure greater continuity of supply; and improved capacity to operate and maintain the existing network" (Jospeh et al., 2017). In contrast, for

17 These include the Tanzania National Development Vision 2025, the National Energy Policy 2003, the government's strategy for renewable energy development, the National Strategy for Economic Growth and Reduction of Poverty, and the National Climate Change Strategy (African Development Bank, 2015).

18 The access rates are calculated by the author based on the 2015/16 Tanzania Demographic and Health Survey (MoHCDGEC et al., 2016) in alignment with the SDG definitions of improved water and sanitation.

sanitation, the government should place stronger focus on narrowing the inequality of service provision between rich and poor households. Combined, these actions will provide a stronger foundation from which the government can continue to expand coverage of its water and sanitation services, while simultaneously lowering the risk of falling into previous pitfalls (e.g., unreliable provision of services, affordability concerns and safety concerns) (Jospeh et al., 2017).

Fiscal implications

Under the status-quo trajectory, nominal costs of expanding the infrastructure are expected to rise over time given the growing population as well as an increase in urban-to-rural migration rates. If current access rates to electricity, water and sanitation infrastructure remain constant, an annual average of 1.1 million people living in urban Mainland Tanzania will require access to electricity and/or solar power, an additional 982,287 people will need piped water every year, and a little over 416,000 will require improved sanitation systems per year over the coming four decades. In terms of the rural population, less need is predicted – with, on average, an additional 64,808 individuals needing to be connected to electricity/solar power per year, roughly 32,200 needing improved water per year, and approximately 42.3 million needing improved sanitation per year. This can largely be attributed to the significant difference in current access rates, with rural populations currently having rates that are two to seven times lower than those of urban residents (*see* Table 2). The numbers of residents of Mainland Tanzania who will be covered by each of these three services across five-year brackets up to 2060, is shown in Table 5. **Overall, it can be concluded that an additional annual average of approximately 1.2 million individuals will have access to electricity/solar power; 1 million to piped/improved water; and 424,200 to improved sanitation between 2021 and 2060.**

In total, the extension of access to electricity/solar power given current access rates, would total T Sh 16.8 trillion (US$7.2 billion) in nominal terms over the coming 39 years – increasing from a value of T Sh 123.8 billion in 2022 to T Sh 873.4 billion in 2060. In real terms (2020/21 prices), this would equate to T Sh 6.5 trillion (US$2.8 billion) – an average of approximately T Sh 170.1 billion a year given the cost assumptions outlined in Appendix 1 (online). **In terms of water infrastructure, the government will have spent, in real terms, T Sh 11.3 trillion (US$4.9 billion) on the**

Table 5: Urban and rural populations with access to electricity, water and sanitation under the status-quo trajectory, 2021–2060

	Electricity/solar power		Piped/improved water		Improved sanitation services	
	Urban	Rural	Urban	Rural	Urban	Rural
2021	13,651,295	10,990,891	12,085,695	5,460,791	5,121,544	1,349,695
2025	16,504,923	11,691,232	14,612,055	5,808,753	6,192,137	1,435,697
2030	20,624,494	12,482,947	18,259,172	6,202,115	7,737,673	1,532,921
2035	25,375,588	13,169,008	22,465,386	6,542,982	9,520,136	1,617,170
2040	30,789,876	13,722,736	27,258,736	6,818,100	11,551,410	1,685,168
2045	36,831,617	14,095,117	32,607,580	7,003,116	13,818,085	1,730,897
2050	43,328,849	14,209,539	38,359,676	7,059,967	16,255,645	1,744,948
2055	50,100,417	14,024,840	44,354,645	6,968,200	18,796,128	1,722,267
2060	56,923,137	13,518,392	50,394,901	6,716,573	21,355,802	1,660,075

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

extension by 2060 – roughly T Sh 11.1 trillion (US$4.8 billion) on the provision of piped water in urban areas (*see* Figure 25) and T Sh 154.7 billion (US$66.5 million) on the provision of improved water in rural areas (*see* Figure 26). In nominal terms, this would equate to a total of T Sh 30 trillion (US$12.9 billion). **Finally, a total of approximately 23 million individuals will have access to improved sanitation by 2060, costing the government a total of T Sh 9.1 trillion (US$3.9 billion) in real terms** – or T Sh 9 trillion (US$3.88 billion) for urban areas (*see* Figure 25) and T Sh 76.5 billion (US$32.9 million) for rural areas (*see* Figure 26). Combined, the extension of infrastructure for a growing population in current access rates will amount to a total nominal value of T Sh 71.1 trillion (US$30.6 billion) and a total real value of T Sh 26.9 trillion (US$11.5 billion). As a percentage of annual GDP and annual government expenditure, this will equate to an annual average of approximately 0.26 per cent and 0.91 per cent, respectively, across the next four decades (*see* Figure 27) – reaching a maximum of 0.28 per cent of GDP and 1.24 per cent of government expenditure in 2023 before declining as a result of a declining population growth rate and changes in the rural-to-urban composition.

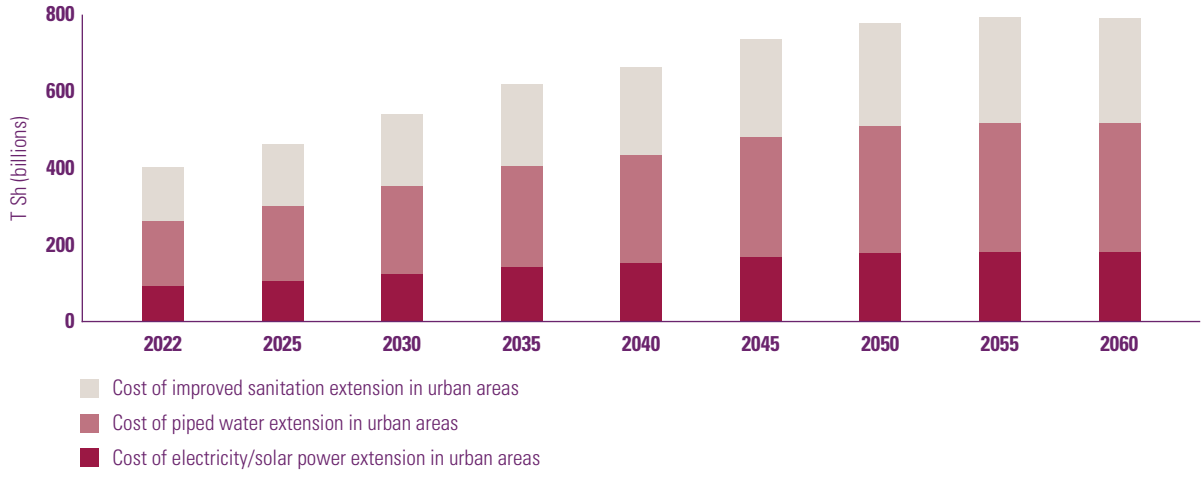

Figure 25: Real costs of improved electricity, water and sanitation extension in urban areas under the status-quo trajectory (at 2020/21 prices)

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018) and assumptions regarding extension costs retrieved from the World Bank (2019), and Hutton and Varughese (2016).

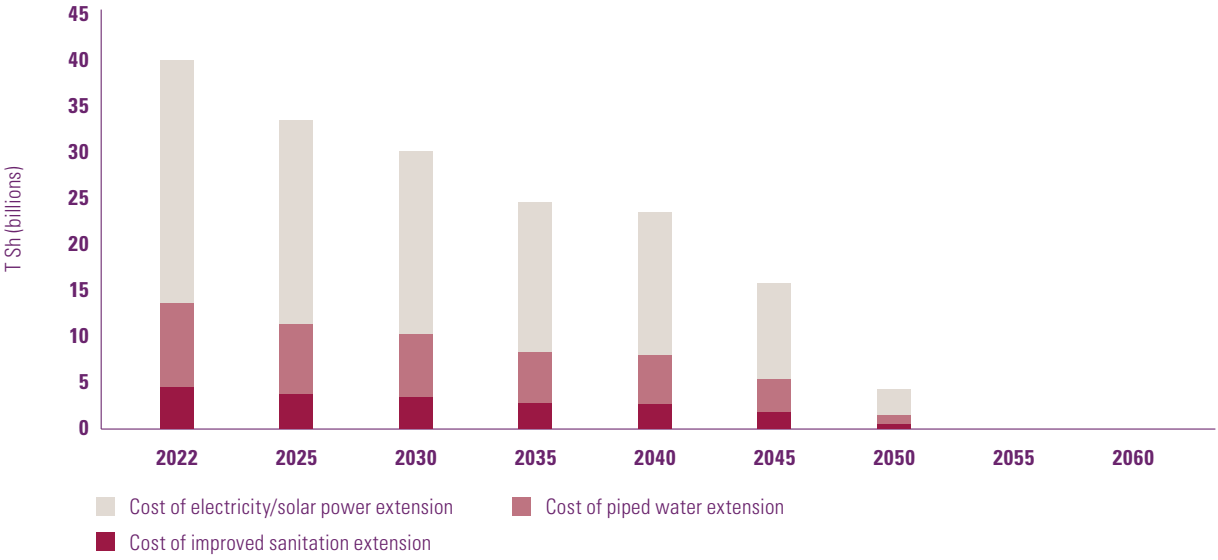

Figure 26: Real costs of improved electricity, water and sanitation extension in rural areas under the status-quo trajectory (at 2020/21 prices)

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018) and assumptions regarding extension costs retrieved from the World Bank (2019), and Hutton and Varughese (2016).

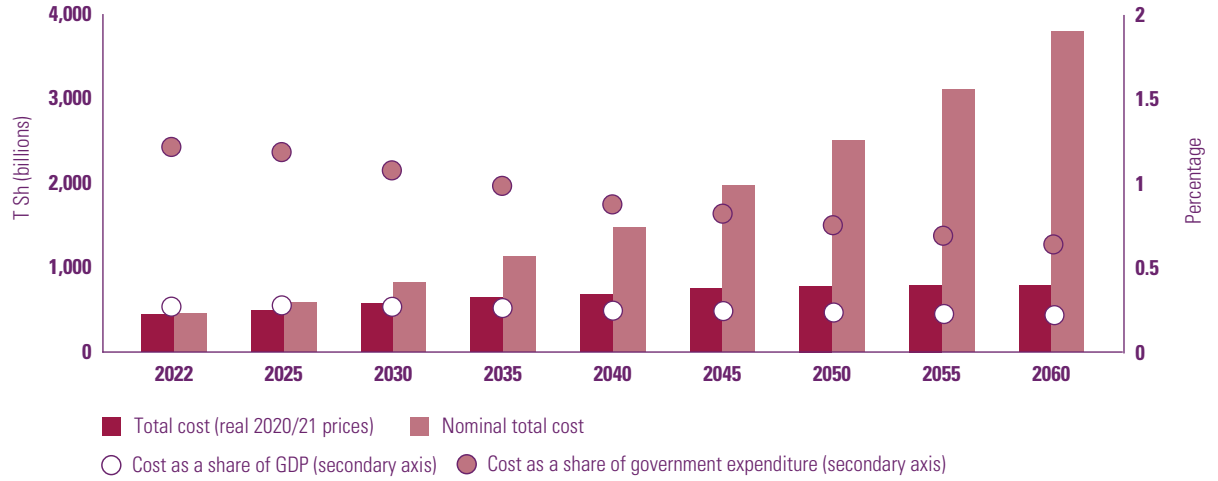

Figure 27: Projected nominal and real infrastructure budget, in absolute terms and as a percentage of GDP and government expenditure under the status-quo trajectory

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018) and assumptions regarding extension costs retrieved from the World Bank (2019), and Hutton and Varughese (2016).

3.1.5 Social development

Current situation

Mainland Tanzania is in Stage 2 of demographic transition. With 63 per cent of its population under the age of 25, and a projected increase in the share of the working-age population over time, the country will be faced with an unprecedented demographic challenge. To generate economic value and ensure growth, the government will have to ensure that the growing labour force has access to productive labour-market opportunities – an undertaking that may prove difficult given the substantial increase in the projected number of unemployed. While the country has reduced the total rate of unemployment from 11 per cent in 2006 to 9 per cent in 2021, future demographic pressures, as a result of a rapidly expanding population along with high fertility rates, will require substantial investments in the creation of decent employment opportunities (NBS, 2006; NBS and OCGS, 2021). Without these, Mainland

Tanzania may run the risk of a reversal in its historic trend.

In line with this, the government will have to pay specific attention to reducing unemployment among the youth (15–24 years) and the female population, especially in urban areas. In 2021, the youth represented the age group with the highest rate of unemployment (14.7 per cent) and females were roughly twice more likely to be unemployed than their male counterparts (12.2 percent compared to 5.7 per cent in 2021, respectively). In addition to this, rural rates of unemployment were lower than those in urban areas in 2021, at 7.2 per cent compared to 9.9 per cent (NBS and OCGS, 2021). Simultaneously, the country has witnessed a decline it its labour-force participation rate from 89.6 per cent in 2006 to 83.3 per cent in 2021 as a result of a decline in its employment-to-population ratio and an increase in its unemployment-to-population ratio. While this has economic repercussions, so does the resultant increase in Mainland Tanzania's rate of inactivity from 10.4 per cent of the working-age population in 2006 to 16.7 per cent in 2021, as well as the relatively large informal economy (NBS, 2006; NBS and OCGS, 2021). In 2021, approximately 29.1 per cent of all those employed were engaged in the informal sector. While this is a decrease equivalent to approximately 27 per cent from the levels exhibited in 2006, a relatively large proportion of the population remains engaged in a sector characterized by low wages, inadequate protection and low productivity (NBS, 2006; NBS and OCGS, 2021).

The labour market of Mainland Tanzania requires a profound transformation given that under the current conditions, Mainland Tanzania's labour market, including its relatively large informal economy as well as a increasing rate of inactivity, does not generate enough decent and formal employment to provide sufficient job opportunities for the growing working-age population. Without this transformation, the investment undertaken to generate a better educated and healthier workforce will result in suboptimal increases in productivity and value added to the economy of Mainland Tanzania. Instead, the growing working-age population, especially the youth, needs to be put to productive work. Therefore, investments are required that allow for a smooth transition to the formal labour market once education has been completed to reduce unemployment and discourage inactivity.

Economic implications

In the status-quo trajectory, **the number of new entrants to the labour market will decline over the coming four decades from 578,000 in 2022 to 417,000 in 2060**. This, in addition to insufficient employment opportunities, will not reduce the current number of unemployed, which will rise from 2.4 million to 33.2 million by 2060. Instead, in the current demographic and economic conditions in Mainland Tanzania (*see* Table 2), the share of the employed as a percentage of the population aged 15 and over will decline, while that of the unemployed will increase. This represents a drop from 75.8 per cent employed in 2021 to 47.8 per cent in 2060. The share of the population unemployed, on the other hand, increases from 7.5 per cent in 2021 to 35.5 per cent in 2060. In absolute terms, this still implies an increase for both Mainland Tanzania's employed and unemployed population given high rates of population growth. **Consequently, the country's employed population will increase by a total of 19.9 million, while the unemployed population will increase by 30.7 million over the coming four decades** (*see* Table 6). Considering youth, 44.2 per cent of the total unemployed and 25.3 per cent of the total employed were between the ages of 15 and 24 years in 2021 – equating to approximately 1.1 million and 6.2 million individuals, respectively. By 2060, these numbers will have increased to approximately 14.7 million unemployed youth and 11.3 million employed youth. Assuming that both proportions remain constant over time, **an additional annual 348,037 youth will be unemployed and an additional annual 129,089 will be employed between 2021 and 2060.**

Nevertheless, it is of importance to note that **this increase in unemployment, especially among the youth, can have long-lasting, negative impacts for the individuals as well as for the country.** Along with potential long unemployment spells, individuals may also experience fewer opportunities to develop their career. This may increase the likelihood that these individuals will end up working in Mainland Tanzania's informal economy. This is of concern for the country as it implies that

Table 6: Total employed and unemployed in thousands under the status-quo trajectory

	2021	2025	2030	2035	2040	2045	2050	2055	2060
Number of employed (millions)	**24.6**	**27.1**	**29.9**	**32.7**	**35.4**	**37.8**	**40.2**	**42.4**	**44.5**
Percentage change	–	10.2	10.3	9.4	8.3	6.8	6.3	5.5	5.0
As a percentage of the population aged 15 and older	75.8	73.7	70.0	65.5	61.3	57.4	53.8	50.6	47.8
Number of youth employed (millions)	6.2	6.9	7.6	8.3	9.0	9.6	10.2	10.7	11.3
Number of unemployed (millions)	**2.4**	**3.6**	**5.7**	**8.9**	**12.7**	**17.1**	**22.0**	**27.4**	**33.2**
Percentage change	–	50.0	58.3	56.1	42.7	34.6	28.7	24.5	21.2
As a percentage of the population aged 15 and older	7.5	9.6	13.3	17.8	22.0	25.9	29.5	32.7	35.5
Number of youth unemployed (millions)	1.1	1.6	2.5	3.9	5.6	7.5	9.7	12.1	14.7

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018); and information retrieved from MoHCDGEC et al. (2016), NBS and OCGS (2021) and the World Economic Forum.

a larger share of individuals will be working in low productivity sectors, resulting in lower tax revenues, fewer pension contributions, and higher levels of poverty and inequality due to low wages, poorer job prospects, and inadequate access to social protection (Yu and Ohnsorge, 2019).

If current labour market and economic conditions remained constant over time, Mainland Tanzania would not be able to attain the upper middle-income status by 2060. Instead, nominal GDP per capita will solely increase from T Sh 2,676,744 (US$1,151) in 2021 to T Sh 4,123,256 (US$1,773) in 2060. In line with this trajectory, poverty rates will also decline.

While in 2021, Mainland Tanzania exhibited a rate of poverty equivalent to 25.7 per cent (14.7 million individuals), it would drop to 21.1 per cent by 2060. Accounting for the rate of population growth over time, this would total approximately 27.5 million poor individuals (*see* Figure 28). While the absolute drop over the coming 39 years is in line with historical trends, it does so at a slower rate. From 1992 to 2021, poverty decreased by a total of 21.3 percentage points – from 47 per cent to 25.7 per cent (Minot, 2006; World Bank, n.d.). While this represents an annual average reduction in poverty of 2.1 per cent, the average annual rate over the projection period equates to –0.12 per cent.

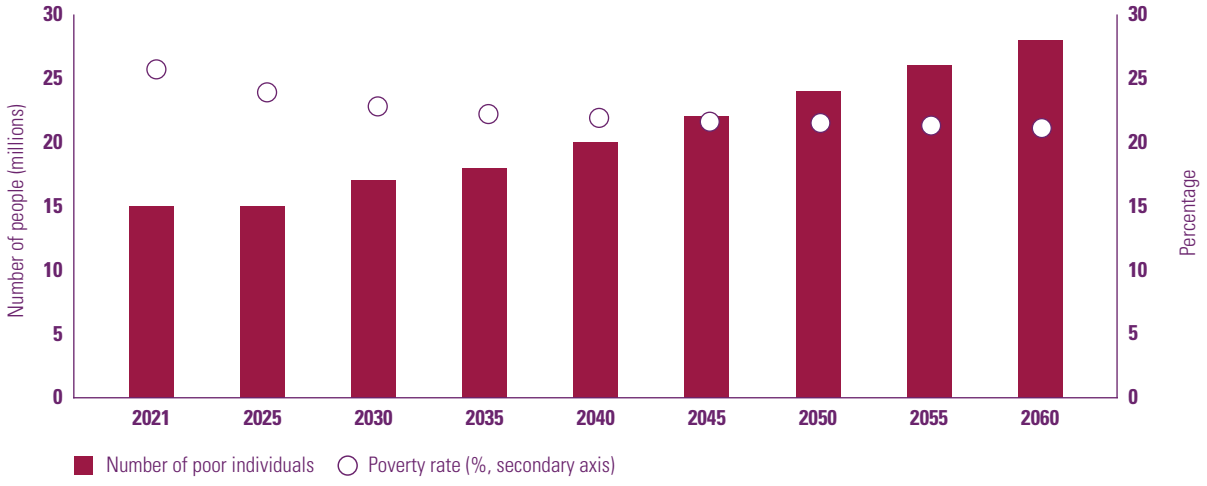

Figure 28: Projected poverty rate and the number of poor individuals under the status-quo trajectory
Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018), as well as relevant literature.

3.2 The most-favourable trajectory: low population growth rate with high public investment

Having explained the fiscal and socioeconomic implications that arise in the sectors when following the status-quo trajectory (low levels of public investment under high population growth rates), this subsection aims to provide an indication of how these implications will change if the government implements population and family planning policies that allow for the further reduction of the projected total fertility rate of Mainland Tanzania (0.5 births below the rates exhibited under the high population growth scenario), while also simultaneously improving the access to and quality of sectoral indicators over time (i.e., high levels of public investment).[19] This could be described as the most-favourable trajectory for Mainland Tanzania.

3.2.1 Population projections

Compared to the high population growth scenario, the low population growth scenario also projects an increase in Mainland Tanzania's population by 2060 albeit at a slower rate of growth. While the former scenario projects a total of just above 130 million by 2060, the latter attains 112.8 million as a result of lower annual total fertility rates. In the low population growth scenario, population growth rates are projected to decline significantly over the coming four decades, attaining 2.3 per cent in 2030, 1.9 per cent in 2040, 1.4 per cent in 2050 and 0.7 per cent in 2060 (*see* Figure 29).

The differences in the two population growth scenarios are evident when considering population density, as well as the rural-to-urban distribution. In both instances, the numbers provided are lower for the low population growth scenario than for the high population growth scenario described in Section 3.1. By 2060, Mainland Tanzania will have 120 individuals per square kilometre, with close to 66 per cent of the population living in urban areas. This will result in 74 million individuals living in Mainland Tanzania's urban centres, while roughly 39 million will be residing in rural areas by 2060 (*see* Figure 30).

Additionally, the age-disaggregated population groups are all expected to increase, some more than others. While the working-age population (18–64-year-olds) is projected to increase from 26.8 million in 2021 to 71.3 million by 2060 (*see* Figure 31), the child population (0–17-year-olds) does so at a lower rate of growth rising from roughly 28 million to 33.4 million over the coming four decades. This is also evidenced when considering the shares of the population subgroups as seen in Table 7. Compared to the high population growth scenario, the

Table 7: Projected age proportion of population for the low population growth scenario and the difference between it and the high population growth scenario

Year	Low population growth scenario					
	0–17-year-olds		18–64-year-olds		65+ years old	
	Low population growth scenario	Low minus high population growth scenario	Low population growth scenario	Low minus high population growth scenario	Low population growth scenario	Low minus high population growth scenario
2020	49.8%	0.0 pp	47.1%	0.0 pp	3.1%	0.0 pp
2030	46.3%	–1.6 pp	50.3%	1.5 pp	3.4%	0.1 pp
2040	40.4%	–3.3 pp	55.4%	3.0 pp	4.3%	0.2 pp
2050	36.1%	–3.6 pp	58.4%	3.1 pp	5.6%	0.5 pp
2060	29.6%	–4.8 pp	63.2%	3.9 pp	7.2%	0.9 pp

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).
Note: pp = percentage points

19 In line with the assumptions made by UNDESA (2019) and with the World Bank methodology used in Uganda (World Bank, 2021).

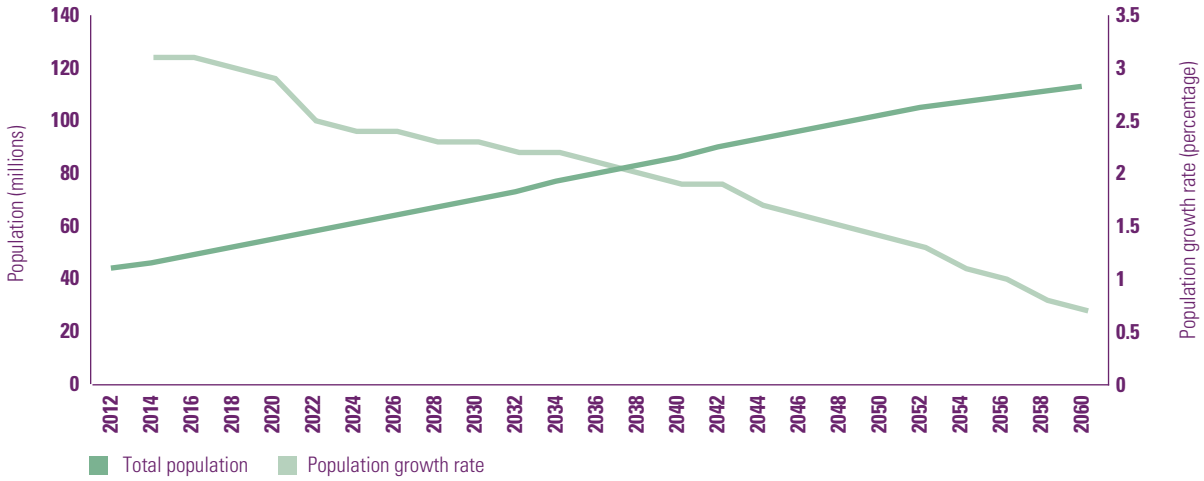

Figure 29: Mainland Tanzania's total projected population and annual projected population growth for the low population growth scenario

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

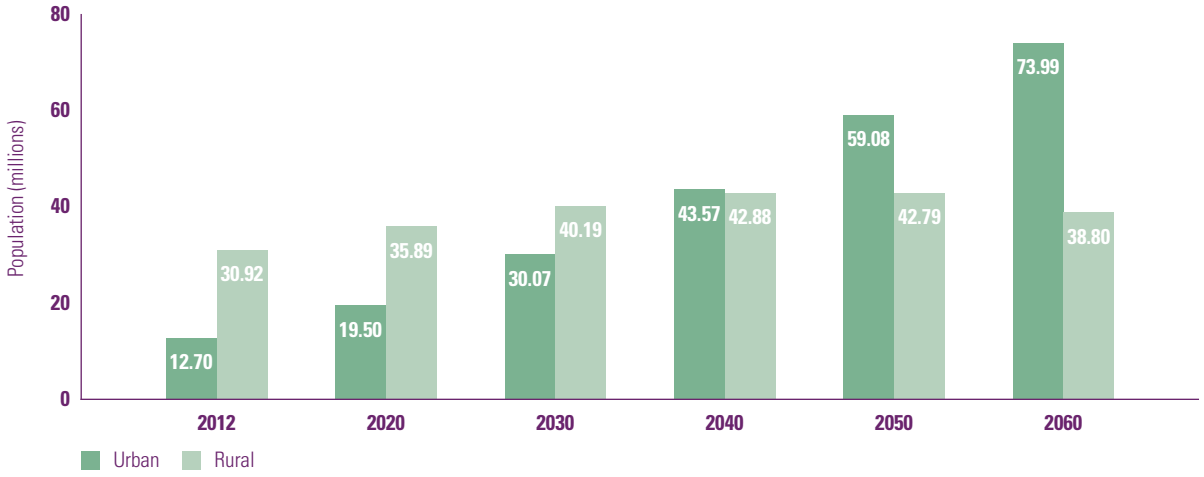

Figure 30: Mainland Tanzania's total rural and urban population projected for the low population growth scenario

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

projected proportion of the child population is lower, while those of the working-age population and those of individuals aged 65 and older are higher.

Combined, the changes in the aforementioned population subgroups over time will influence Mainland Tanzania's total dependency ratio. As seen in Figure 32, the 2021 ratio for this value will drop significantly over the coming years – more so for the low population growth scenario than for the high population growth scenario (48 per cent compared with 39 per cent, respectively).

The larger drop in the low population growth scenario is the result of an additional prospective effort to reduce the total fertility rate of women in Mainland Tanzania. The number of children as a percentage of the entire population will thereby decline by 20.3 percentage points by 2060. Combined with the increase in the elderly population, the total dependency ratio would fall from a level of 112.3 in 2021 to 58.1 over the coming four decades. In other words, while 100 working-age individuals supported roughly 112 dependants in 2021, this decreases to roughly 58 dependants by 2060.

The higher dependency ratio in the high population growth scenario indicates that the working-age population (the economically active population) would face a heavier burden in supporting and providing the social services needed by children and the aged than they would in the low population growth scenario. This low population growth scenario should thus lead to a higher level of national and household income if appropriate educational investments and subsequent job opportunities are provided to the growing working-age population of Mainland Tanzania.

As discussed at the beginning of this chapter, it must once again be mentioned that the subsequent sectoral results reflect the most-favourable trajectory that the government could follow in the coming four decades. This trajectory implies that the government would introduce policies and initiatives to curb population growth rates over the coming four decades as shown in Figure 29. Furthermore, the government would improve the access and quality of the sectoral indicators over time through high levels of public investment so as to align them to national and international policy targets. The results related to low public investment levels under the low population growth scenario are discussed in Appendix 3 (online).

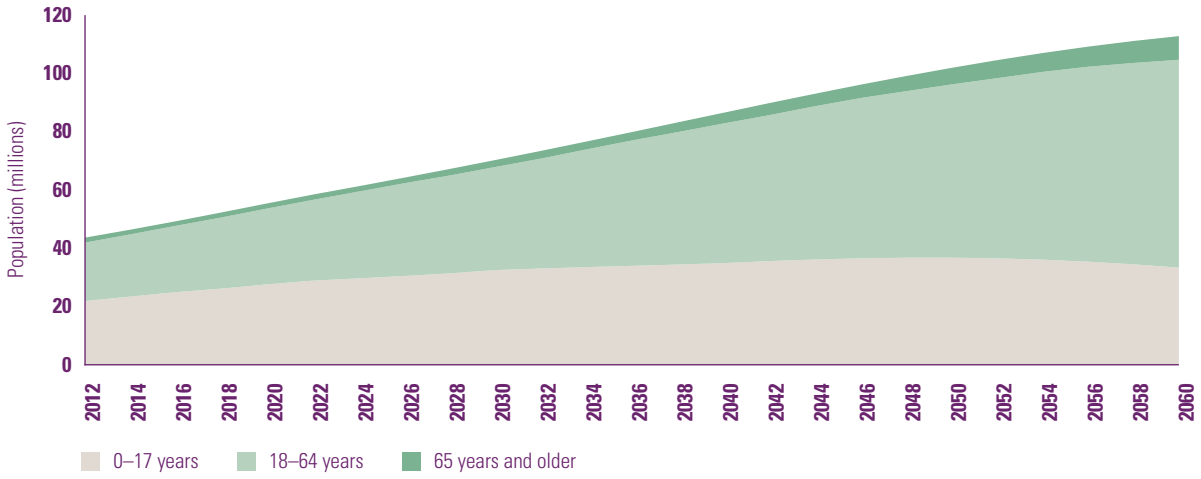

Figure 31: Total projected population by age group for the low population growth scenario
Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

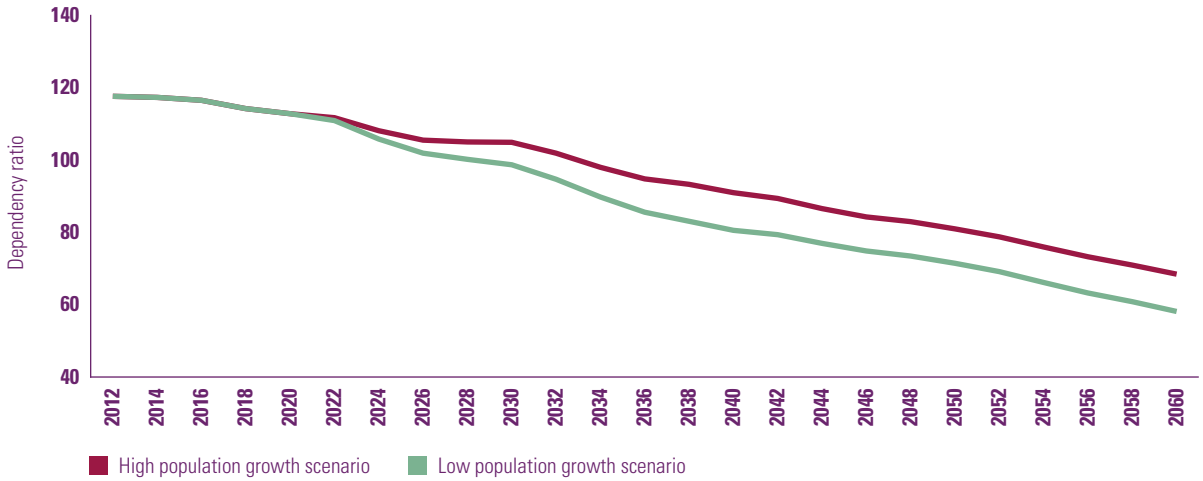

Figure 32: Projected dependency ratio, by population growth scenario
Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

3.2.2 Education

In contrast to the status-quo trajectory, **the most-favourable trajectory reflects the fiscal implications of reducing the population growth rates as well as enhancing pre-primary, primary and ordinary-secondary educational access and quality in line with key national and international policy targets** (as outlined in The Tanzania Development Vision 2025 targets, its Education Sector Development Plan 2016/17–2020/21, the SDGs, as well as the Global Partnership for Education). This includes attaining GERs equivalent to 100 per cent, at all educational levels; increasing retention and transition rates, specifically to ordinary-secondary education; reducing teenage pregnancy through the introduction of modern contraceptive methods; eliminating the shortages in teachers and classrooms; improving the training curriculum of teachers and ensuring that teachers are qualified, especially at pre-primary and primary levels; and building more and bigger schools, among others.

In line with this, the GERs under the most-favourable trajectory are expected to improve at all levels over the coming one-and-a-half decades (*see* Table 2). While public pre-primary and primary education will attain a GER equivalent of 100 per cent by 2025, public ordinary-secondary education will attain this by 2035. While this equates to a total of 3.5 million and 11.3 million students at public pre-primary and primary levels, respectively, in 2025, the number of enrolled public ordinary-secondary students will attain a level of 6.5 million by 2035. **As a result, across the 39-year period, an additional annual average of 205,059 children will enter the public schooling system.** Given this increase in enrolled students, as well as the improvements in the pupil-to-teacher ratio,[20] the number of pre-primary teachers will need to increase by roughly 765 per cent by 2060, with the number of primary and secondary schoolteachers needing to increase by roughly 83 per cent and 349 per cent, respectively (*see* Table 8). Compared to the status-quo trajectory, this represents a significant increase in investment by the government as the maximum number of teachers to be employed in the coming four decades differs significantly – by 109,152 public pre-primary teachers, 21,706 public primary teachers and 207,811 public ordinary-secondary teachers. The maximum increase in public teachers to be employed per education level under the most-favourable trajectory equates to approximately 116,000, 156,000 and 284,000, respectively.

Additionally, the improved access and quality of education will also require an increase in the number and size of schools at each education level. With an increasing number of enrolled students and an improving pupil-to-classroom ratio, the government will need to build more classrooms. The largest change in this respect is estimated at public ordinary-secondary education, where the total number of classrooms will need to increase by a factor of close to three over the coming four decades. At pre-primary and primary level, an increase of 163 per cent and 120 per cent, respectively, is needed. With limited available land area, the government will need to accommodate the increasing number of classrooms by constructing more and bigger schools. As part of the estimation, it was assumed that the current number of classrooms per school would triple by 2060. As seen in Table 8, this means that over the next 39 years, Mainland Tanzania will require a total of 24,633 public pre-primary schools, 19,398 public primary schools and 7,763 public secondary schools.[21] This is an additional 8,278 public pre-primary schools, 2,992 public primary schools and 3,962 public secondary schools compared to the number in 2021. When compared to the status-quo trajectory, the required number of schools, at its maximum, represents an additional 761 public pre-primary schools and 395 public secondary schools, yet less public primary schools – totalling 9,574 – within the coming four decades. This is attributed to a reduction in the public primary GER to 100 per cent, as well as an overall slowing population growth rate over time.

20 The public pre-primary pupil-to-teacher ratio will decrease from 169 students per teacher in 2021 to 50 students by 2035 and 25 students by 2060. The public primary pupil-to-teacher ratio will decrease from 61 students per teacher in 2021 to 50 students by 2025 and 40 students by 2060. The public ordinary-secondary pupil-to-teacher ratio will decrease from 26 students per teacher in 2021 to 20 students by 2025, maintaining that ratio until 2060.

21 This implies an increase in the size of public pre-primary schools from an average of two classrooms per school in 2021 to six classrooms per school in 2060. For public primary schools, this equates to an increase from eight classrooms per school in 2021 to 24 classrooms in 2060. Lastly, for public ordinary-secondary schools, the numbers equate to 12 classrooms and 36 classrooms, respectively.

Table 8: Projected number of public teachers, classrooms and schools by education level under the most-favourable trajectory

	Pre-primary			Primary			Secondary		
	Teachers	Classrooms	Schools	Teachers	Classrooms	Schools	Teachers	Classrooms	Schools
2021	15,191	31,694	16,355	175,877	132,450	16,406	81,500	46,065	3,801
2030	37,074	58,031	20,489	249,998	209,875	17,787	218,929	109,465	6,180
2040	83,250	72,242	18,881	278,532	237,681	14,911	310,015	155,007	6,478
2050	110,201	83,075	17,236	325,417	282,971	14,092	350,182	175,091	5,809
2060	131,325	80,076	13,774	322,433	286,607	11,834	361,579	180,790	4,973

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), as well as the Government of URT and UNICEF (2018) and UNICEF (n.d.a).

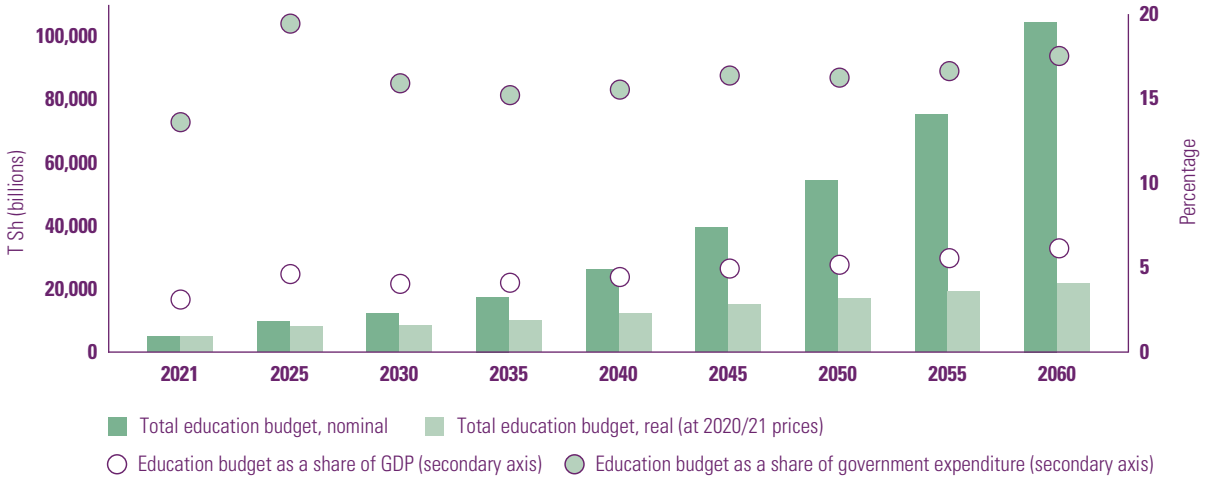

Figure 33: Projected nominal and real education budget, in absolute terms and as a percentage of GDP and government expenditure under the most-favourable trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), as well as the Government of URT and UNICEF (2018) and UNICEF (n.d.a).

Figure 34: Total real education budget in T Sh by trajectory (at 2020/21 prices)

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), as well as the Government of URT and UNICEF (2018) and UNICEF (n.d.a).

The advancements in educational outcomes in line with national and international policies bring with them considerable fiscal implications for the government. Over the coming four decades, the nominal education budget will increase from T Sh 4.9 trillion (US$2.1 billion) in 2021 to roughly T Sh 104.6 trillion (US$45 billion) by 2060 under the most-favourable trajectory. In real terms (2020/21 prices), this equates to T Sh 21.8 trillion (US$9.4 billion) for the same year (*see* Figure 33). Attaining the Education 2030 Framework for Action[22] would require a nominal total investment of approximately T Sh 1,457.2 trillion (US$626.6 billion) over the coming 39 years. This equates to T Sh 510.7 trillion (US$219.6 billion) in real terms.

When compared to the status-quo trajectory, a diverging trend is seen in the real education budget across time (*see* Figure 34). While in 2021, the real education budget amounted to T Sh 4.9 trillion (US$2.1 billion) for both trajectories, the gap between the two will increase to T Sh 3.2 trillion (US$1.4 billion) in 2030, T Sh 7.8 trillion (US$3.4 billion) in 2040, T Sh 13 trillion (US$5.6 billion) in 2050 and T Sh 19.1 trillion (US$7.3 billion) in 2060. As a result, the improvements in access to and quality of education, along with the reduction in population growth rates over the 39-year period, will have led to T Sh 338.1 trillion (US$145.4 billion) more in real costs compared to following the status-quo trajectory. Yet, while more expensive, the most-favourable trajectory will lead to better educational outcomes in the long run.

3.2.3 Health

Considering the most-favourable trajectory in the health sector, Mainland Tanzania not only reduces its total fertility rate over time, but also improves the quality of and access to health care at primary, secondary and tertiary levels to achieve a UHC Index of 90 per cent, and to attain the Abuja Declaration expenditure target. This includes not only an increase in the number of medical staff available per 10,000 individuals, but also an improvement in the number of facilities and the services they provide. As a result, by 2030, the population of Mainland Tanzania will benefit from the availability of 44.5 medical staff per 10,000 individuals as well as from an increased number of public hospital beds (18) per 10,000 individuals as identified under the targets of the 2030 SDGs. Furthermore, over the next 39 years, the average number of beds per public health facility will triple – implying that any new facility constructed will be bigger than the existing ones. These elements combined should improve health outcomes and reduce the currently low coverage of health care from 43 per cent to 90 per cent in Mainland Tanzania.

As seen in Table 9, **by 2060, attaining the above-mentioned targets will require an increase in the number of medical staff by a factor more than ten**. Simultaneously, the growing population and the expansion in the number of beds per facility will also require investment by the government in the construction of public health facilities.

In total, 5,002 additional primary health-care facilities will need to be constructed, along with 163 additional secondary and tertiary hospitals. These would need to be constructed during 2022 to provide the services needed for the growing population,[23] after which a decline in growth will cause many to become defunct. Yet, in time, these facilities could be repurposed (homes for the aged, facilities for people in need, etc.).

With these facilities being built to triple in size by 2060, the total number of beds will increase to 122,760 in the primary health-care system by 2060 and to a total of 80,252 in the secondary and tertiary health-care system. This equates to approximately 15 beds per primary health-care facility and 299 beds in each secondary and tertiary facility in 2060.

22 This implies that Mainland Tanzania's education budget will equate to 4 per cent of GDP and 15.9 percent of government expenditure by 2030, and continue to increase thereafter to attain 6.1 per cent of GDP and 17.5 per cent of government expenditure by 2060.

23 This is far above the current investments made into construction, yet will be necessary if Mainland Tanzania is to meet its 2030 SDG targets in the health sector, while simultaneously ensuring that a growing, yet declining population has access to health care.

Table 9: Changes in the number of medical staff, public hospital beds and public health facilities under the most-favourable trajectory

	Medical staff	Public hospital beds		Public health facilities	
		Primary	Secondary and tertiary	Primary	Secondary and tertiary
2021	47,992	29,760	19,455	5,994	195
2030	312,686	76,481	49,998	10,540	343
2040	384,711	94,098	61,515	9,599	312
2050	453,324	110,881	72,486	8,979	292
2060	501,889	122,760	80,252	8,242	268

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b).

The fiscal implications related to an improvement of the UHC Index to 90 per cent as well as to the attainment of the Abuja Declaration target are considerable. The total nominal public health budget of T Sh 2.3 trillion (US$989.3 million) in 2021 will increase to roughly T Sh 95.2 trillion (US$41 billion) in 2060. In real terms (2020/21 prices), the latter equates to T Sh 19.9 trillion (US$8.5 billion). Aggregated across the 39 years, the entire investment would total T Sh 1,434.5 trillion (US$616.8 billion) in nominal terms and T Sh 497.4 trillion (US$213.9 billion) in real terms (*see* Figure 35).

A similar trend is seen when considering government expenditure only on essential health services, which nominally increases from T Sh 1.8 trillion (US$791.4 million) in 2021 to T Sh 76.2 trillion (US$32.8 billion) in 2060. Combined, these equate to an overall investment by the government into essential services of approximately T Sh 1,147.6 trillion or US$493.5 billion (T Sh 398 trillion or US$171.1 billion in real terms) (*see* Figure 36). In this trajectory, Mainland Tanzania will have an overall health-care expenditure as a share of GDP of 3.8 per cent and as a share of government expenditure of 15 per cent by 2030, and 5.6 per cent and 16 per cent, respectively, by 2060.

> The smallest change would be seen in maternal mortality rates, which would decrease from 380 deaths per 100,000 live births in 2021 to 324 in 2060.

When compared to the status-quo trajectory, a diverging trend is seen in the total real health budget over time (*see* Figure 37). While in 2021 the health budget amounted to T Sh 2.3 trillion (US$989.3 million) for both trajectories, the gap between the two increases to T Sh 6.8 trillion (US$2.9 billion) in 2030, T Sh 12.3 trillion (US$5.3 billion) in 2040, T Sh 16.2 trillion (US$7 billion) in 2050 and T Sh 19.2 trillion (US$8.3 billion) in 2060. Therefore, across the four decades, the improvements in access to and quality of health care combined with curbing population growth rates will lead to roughly T Sh 456.2 trillion (US$196.2 billion) more in real costs compared to remaining in the status-quo trajectory.

While more expensive, it is important to note that incurring higher costs would allow for a reduction in neonatal, infant, under-five and maternal mortality rates compared to the increase seen under the status-quo trajectory. Neonatal, infant and child mortality would decline to a level of 5, 17 and 14 deaths per 1,000 live births, respectively. According to this calculation, **an annual average of 81,019 infants and 205,459 children under the age of 5 would die.** This is a reduction of 66.1 per cent and 77.1 per cent, respectively, compared to the status-quo trajectory. The smallest change would be seen in maternal mortality rates, which would decrease from 380 deaths per 100,000 live births in 2021 to 324 in 2060 (*see* Figure 38).

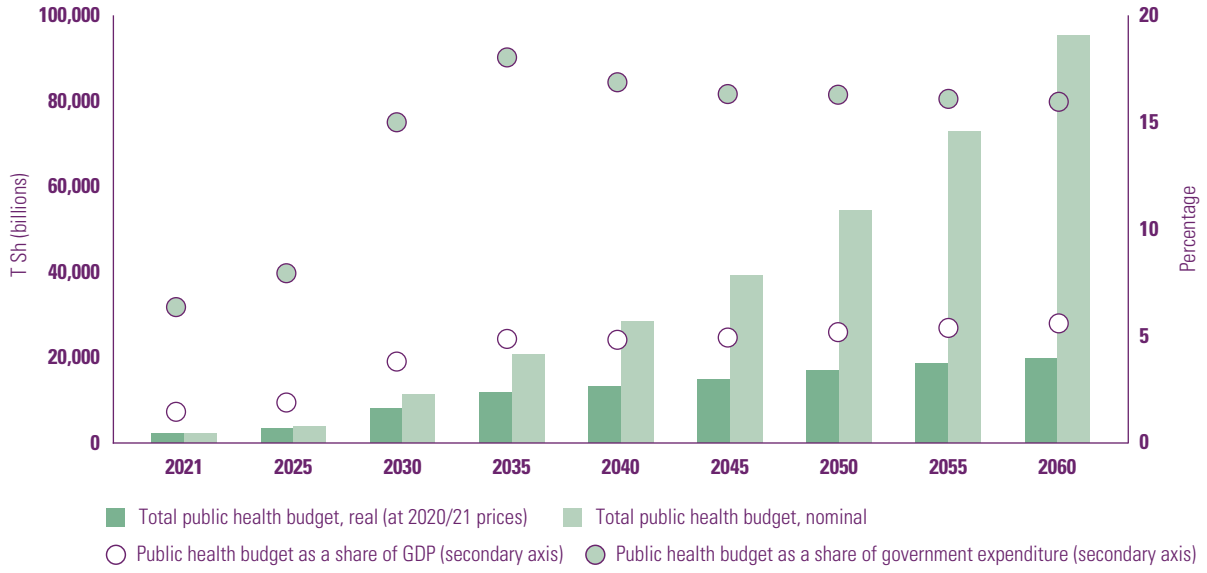

Figure 35: Projected nominal and real overall health-care budget, in absolute terms and as a percentage of GDP and government expenditure under the most-favourable trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b).

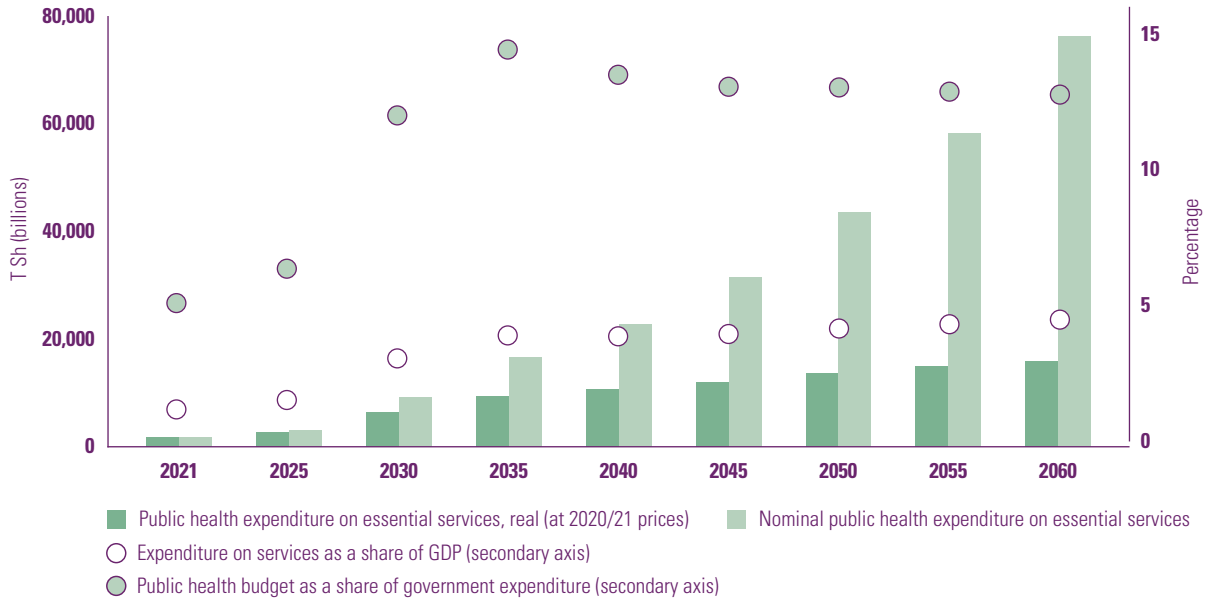

Figure 36: Projected nominal and real health-care budget on essential services, in absolute terms and as a percentage of GDP and government expenditure under the most-favourable trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b).

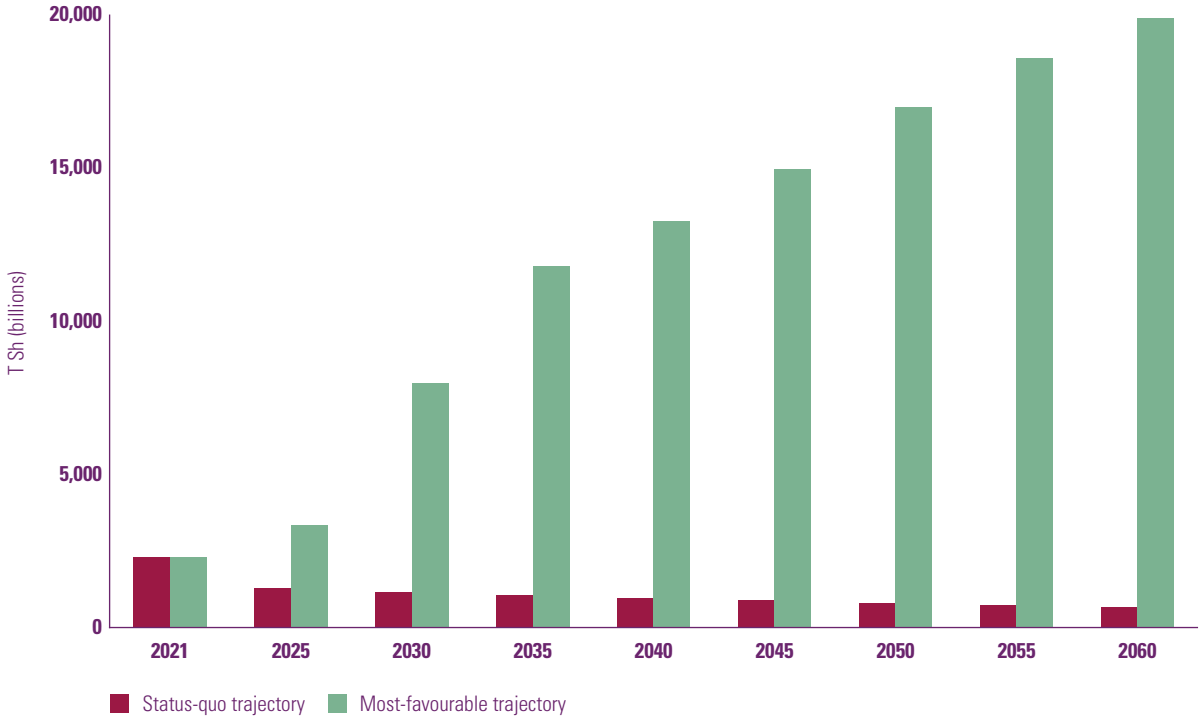

Figure 37: Total real overall health-care budget in T Sh by trajectory (at 2020/21 prices)

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b).

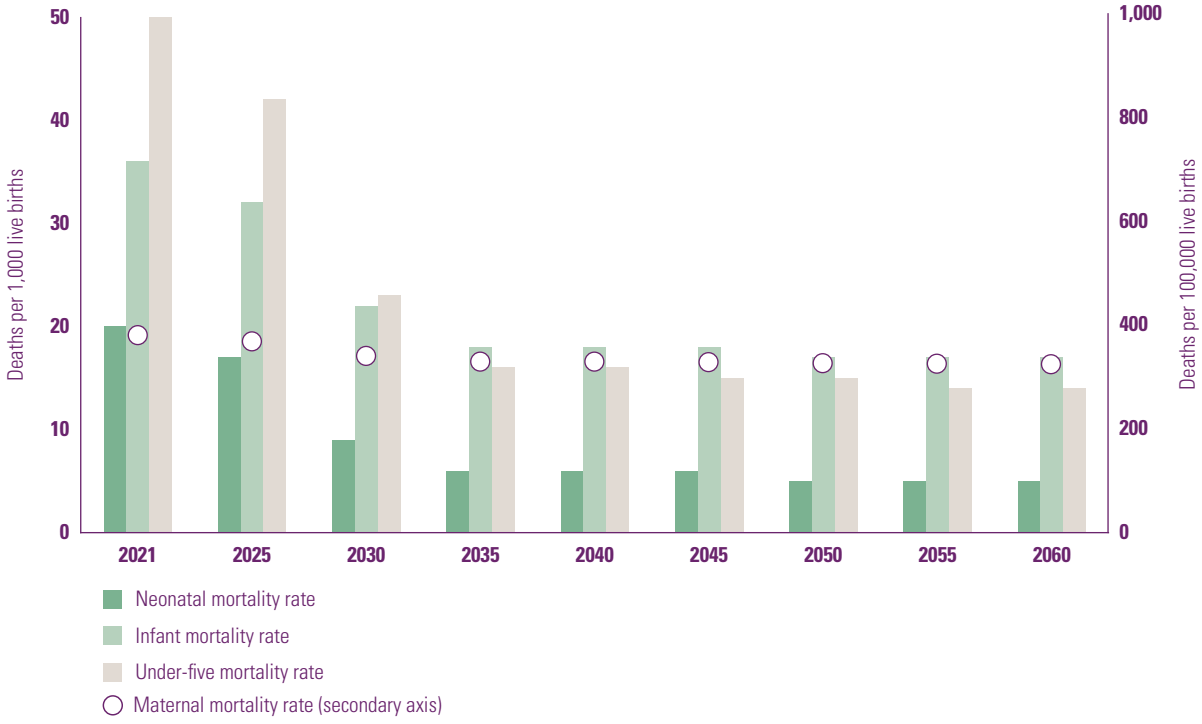

Figure 38: Projections in health outcomes under the most-favourable trajectory

Source: Author's calculations based on assumptions in MoFP (2017), NBS and OCGS (2018), MoHCDGEC (2020) and UNICEF (n.d.b).

3.2.4 Infrastructure

In comparison to the status-quo trajectory, the most-favourable trajectory under the infrastructure submodel will require the government to focus more specific attention on the rural population if the 2033 energy target[24] and the 2030 water and sanitation targets under the SDGs are to be met. This is largely due to the rural population currently having lower access rates than the urban population. It thus needs greater investment to meet relevant targets. This is illustrated by the relatively steep rise in rural population access figures from 2021 to 2030, compared to the moderate increase thereafter – especially when considering water and sanitation infrastructure (*see* Table 10).

The rapid rise in access rates across the electricity, water and sanitation sectors within the coming decade is also reflected by the costs that the government will need to incur. As seen in Figure 39, the total nominal cost ranges between T Sh 3.4 trillion (US$1.5 billion) and T Sh 6.2 trillion (US$2.7 billion) from 2022 to 2030, after which they fall to an annual average of T Sh 4.4 trillion (US$1.9 billion) given the attainment of universal access to water and sanitation services from 2030 onwards and to electricity from 2040 onwards. By sector, this equates to a total nominal investment of T Sh 28 trillion (US$12 billion) in electricity, T Sh 47.3 trillion (US$20.3 billion) in water and T Sh 98.3 trillion (US$42.3 billion) in sanitation between 2022 and 2060. In real terms, this equals to T Sh 12.9 trillion, T Sh 21.6 trillion and T Sh 46.4 trillion, respectively. Combined, the extension of services to achieve universal access to the three sectors will cost, on average, 0.88 per cent of annual GDP and 3.36 per cent of annual government expenditure under the most-favourable trajectory.

When compared to the status-quo trajectory, the most-favourable trajectory is more costly across all 39 years of the projection period, yet at a declining rate (*see* Figure 40). This is largely due to the achievement of national sectoral targets and declining population growth rates under the most-favourable trajectory. As a result, the gap in the real total infrastructure budget[25] between the two trajectories decreases from T Sh 2.9 trillion

Table 10: Urban and rural populations with access to electricity, water and sanitation under the most-favourable trajectory

	Electricity/solar power				Piped/improved water				Improved sanitation services			
	Urban		Rural		Urban		Rural		Urban		Rural	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%	Absolute	%	Absolute	%
2021	13,651,457	67	10,931,023	30	12,085,838	59	5,460,857	15	5,121,605	25	1,349,711	4
2025	16,961,277	69	19,126,098	50	23,233,510	95	32,514,367	85	7,336,898	30	28,689,147	75
2030	21,918,731	73	26,376,291	66	30,074,066	100	40,192,444	100	30,074,066	100	40,192,444	100
2035	29,943,966	82	34,313,477	82	36,453,524	100	41,772,928	100	36,453,524	100	41,772,928	100
2040	43,571,756	100	42,880,144	100	43,571,756	100	42,880,144	100	43,571,756	100	42,880,144	100
2045	51,240,740	100	43,299,380	100	51,240,740	100	43,299,380	100	51,240,740	100	43,299,380	100
2050	59,084,988	100	42,785,676	100	59,084,988	100	42,785,676	100	59,084,988	100	42,785,676	100
2055	66,801,196	100	41,291,356	100	66,801,196	100	41,291,356	100	65,801,196	100	41,291,356	100
2060	73,986,272	100	38,797,668	100	73,986,272	100	38,797,668	100	73,986,272	100	38,797,668	100

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018).

Note: The column indicating percentages equates to the total number of urban/rural individuals with access to the respective service as a share of the total urban/rural population of Mainland Tanzania.

24 As identified in the Garcia et al (2017).

25 Defined as the real infrastructure budget under the most-favourable trajectory minus the real infrastructure budget under the status-quo trajectory.

(US$1.2 billion) in 2022 to T Sh 500 billion (US$215 million) in 2060. Therefore, across the projection period, the improvements to access, as well as a reduction in the total fertility rate, will lead to roughly two times the real costs when compared to remaining at the status quo; i.e., T Sh 54.1 trillion (US$34.8 billion) compared to T Sh 26.9 trillion (US$11.5 billion) under the status-quo trajectory.

Nevertheless, **these investments are essential, as they not only enhance the productiveness of households and businesses, but also ensure that child health and nutrition improve given that clean water and appropriate sanitation services are paramount to stopping the spread of diseases**, such as cholera, diarrhoea and intestinal parasites, which can cause malnutrition, stunting and wasting in children (UNICEF, 2015). In addition to this, improved sanitation and water facilities in schools are crucial, especially for girls, as inadequate water and sanitation conditions may hinder their full participation in schooling and lead to poor performance and increased dropout rates (UNESCO, 2021).

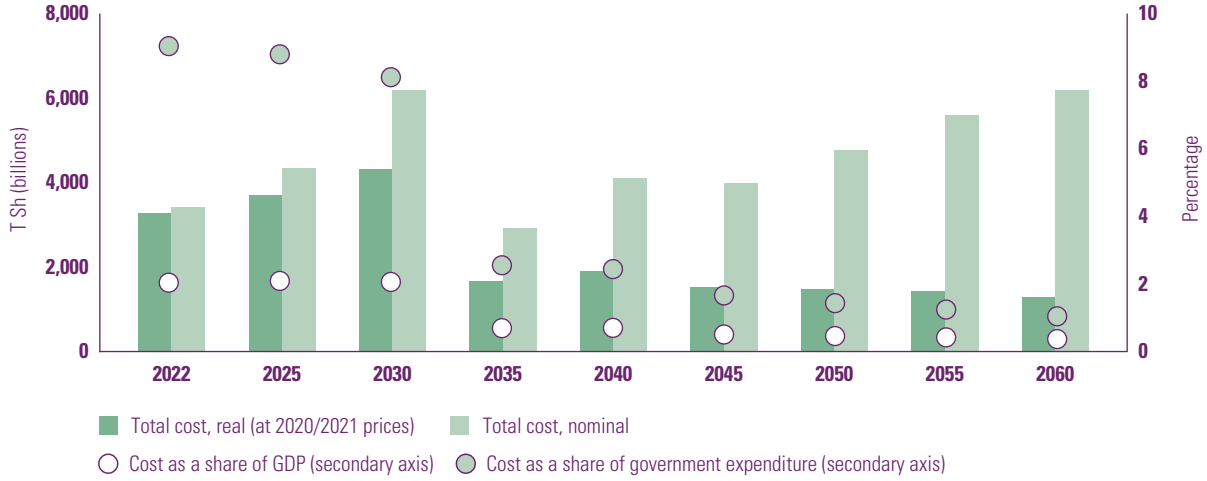

Figure 39: Projected nominal and real infrastructure budget, in absolute terms and as a percentage of GDP and government expenditure under the most-favourable trajectory

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018), and assumptions regarding extension costs retrieved from Hutton and Varughese (2016) and the World Bank (2019).

Figure 40: Total real overall infrastructure budget in T Sh by trajectory (at 2020/21 prices)

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018), and assumptions regarding extension costs retrieved from Hutton and Varughese (2016) and the World Bank (2019).

3.2.5 Social development

The exact gains that can be achieved by not only lowering fertility over time, but also improving the economic indicators in line with benchmark averages are illustrated in Table 11. **When comparing the most-favourable trajectory to the status-quo trajectory, the GDP per capita gains are greater in the former.** This result is robust to a sensitivity analysis. While the most-favourable trajectory assumes that Mainland Tanzania's economic indicators will improve to the average of the four benchmark countries as identified under the 2017 Demographic Dividend report, the results from the sensitivity analysis (i.e., Column 4 of Table 11) illustrate that this also holds true when assuming that the indicators solely improve to the average of African upper middle-income countries. Consequently, by improving the opportunities in the labour market, while simultaneously curbing population growth rates, GDP per capita increases to T Sh 44,167,442 (US$18,992) by 2060.

Such achievements are also present when considering the rate of poverty in Mainland Tanzania. Similar to the status-quo trajectory, the poverty rate of the most-favourable trajectory equates to 25.7 per cent in 2021. Nevertheless, over time, the difference in the rate of the two trajectories diverges. While the poverty rate solely declines to 21.1 per cent in 2060 under the status-quo trajectory, it reduces to 6.7 per cent under the most-favourable trajectory. The latter is also higher than the poverty reduction achieved under the sensitivity analysis, which sees a rate of 10.3 per cent attained in 2060.

However, when considering both the gains related to GDP per capita and poverty reduction, it must be noted that by not achieving economic indicators that are in line with the averages of the four benchmark countries, but rather those of African upper middle-income countries (i.e., the sensitivity analysis), Mainland Tanzania loses roughly 17 years of progress. As a result, Mainland Tanzania's citizens would have an overall lower level of well-being, which impacts education attained, health care accessed and utilized, as well as tax payments rendered, among other aspects.

Table 11: GDP per capita, poverty rates and number of poor individuals per trajectory

	Status-quo trajectory	Most-favourable trajectory	Most-favourable trajectory (sensitivity analysis)
GDP per capita T Sh (US$)			
2021	2,676,744 (1,151)	2,676,744 (1,151)	2,676,744 (1,151)
2030	3,462,791 (1,489)	5,662,791 (2,233)	4,430,233 (1,905)
2040	3,811,628 (1,639)	15,562,791 (6,061)	8,423,256 (3,622)
2050	3,955,814 (1,701)	31,972,093 (13,084)	14,204,651 (6,108)
2060	4,123,256 (1,773)	44,167,442 (18,992)	18,839,535 (8,101)
Poverty rate (%)			
2021	25.7	25.7	25.7
2030	22.8	18.8	20.3
2040	21.9	11.6	15.0
2050	21.5	8.0	11.7
2060	21.1	6.7	10.3
Poor individuals (in millions)			
2021	14.7	14.7	14.7
2030	16.5	13.2	14.3
2040	20.1	10.0	13.0
2050	24.1	8.2	12.0
2060	27.5	7.6	11.6

Source: Author's calculations based on assumptions in MoFP (2017), and NBS and OCGS (2018), as well as information regarding relevant indicators in economic development, health and labour force retrieved from the World Economic Forum (Global Competitive Index indicators), MoHCDGEC et al. (2016; fertility, mortality, life expectancy and family planning indicators), NBS (2015; labour-force participation rate) and relevant literature.

Chapter 4

DISCUSSION AND RECOMMENDATIONS

4.1 Discussion

Conclusively, the results presented in Chapter 3 indicate that the government will benefit the most, both socially and economically, by implementing policies that improve the underlying sectoral indicators, and reduce the country's total fertility rate over time. Although the costs are more substantial in comparison to maintaining the 'status quo', Mainland Tanzania will be able to reap the economic benefits of the demographic transition (higher economic growth rates due to increased productivity), thereby leading to lower future fiscal implications and attaining targets set out in national and international policies.

4.1.1 Education

Education in the past has seen several key developments in Mainland Tanzania, including progress in terms of the construction of schools, the availability and distribution of textbooks, the provision of qualified teaching, and the introduction of fee-free basic education. These have all been instituted to adhere to the Constitution of the United Republic of Tanzania, which enshrines the right to education for all. Yet, despite these efforts, the government is still faced with numerous challenges, including non-universal access to education, uncoordinated curriculum development, overcrowding in classrooms, retention problems both within and between the three basic education levels, and disparities across these levels and geographic locations with respect to the availability of human resources and educational infrastructure. According to the Education Sector Development Plan 2016/17–2020/21, these obstacles explain the deficits in learning as well as the underperformance of students in Mainland Tanzania, especially of girls (MoEST, 2018).

With a growing child and youth population over time, feasible investments will be needed to overcome these challenges, thereby bringing Mainland Tanzania closer to making quality education a reality for all. As the results indicate, the maximum increase of public pre-primary, primary and secondary enrolment under the most-favourable trajectory,[26] by 52 per cent, 30 per cent and 245 per cent, respectively, will require the government to invest in both the hard and soft infrastructure of schooling. This includes building (bigger) schools and hiring more trained teachers to allow for a decline in the student-to-teacher ratio to the levels identified under international and national policy targets. In Mainland Tanzania, an additional 556,849 teachers would need to be hired by 2055 to reduce the pupil-to-teacher ratio from 196 pre-primary, 61 primary and 26 secondary schoolchildren per teacher in 2021, to 25, 40 and 20 students by 2060, respectively. Also, through the building of more and bigger schools (in total 15,232 schools as indicated by the results for the most-favourable trajectory), the pupil-to-classroom ratios will decline from 81 pre-primary students, 81 primary students and 46 secondary students per classroom in 2021 to ratios of 41, 45 and 40, respectively, by 2060.

Therefore, while this expansion for the most-favourable trajectory may cost a total of T Sh 1,457.2 trillion or US$626.6 billion, nominally, (T Sh 510.7 trillion or US$219.6 billion at 2020/21 prices) over the coming four decades, as indicated by the results, it is required if current access to and quality of education is to be improved in Mainland Tanzania. By doing so, the government will also be able to achieve the Education 2030 Framework for Action as evidenced by an education budget that equates to 4 per cent of GDP and 15.9 percent of government expenditure by 2030, and 6.1 per cent of GDP and 17.5 per cent of government expenditure by 2060. This achievement is paramount to improving key sectoral outcomes.

The successful transition from primary to secondary education is of importance, especially for girls. This, together with an increase in the prevalence of modern contraceptive methods, helps delay marriage and first pregnancies. Furthermore, women with higher levels of education are more likely to participate in the wage-earning labour force and more likely to have smaller families. This contributes to changes in the age structure given a further lowering of birth rates, which over time

26 As a recap, this trajectory assumes improvements in key social indicators over time along with a lowering of population growth rates.

increases the opportunity for children and youth, especially women, to contribute to Mainland Tanzania's economy, thereby enhancing the potential for economic development.

In contrast, if these investments were not to be made, then the growth in population as well as the associated increases in enrolment will further decrease the quality of education provided to the students in Mainland Tanzania given the high pupil-to-teacher and pupil-to-classroom ratios. This may lead to a further deterioration in educational outcomes and may cause higher dropout rates and lower transition rates. Under these circumstances, the government would not be able to significantly add value to its economy.

4.1.2 Health

According to its Constitution, the government vows to provide every citizen with access to quality health care – to an extent the recent improvements in the expansion of service provision and the improvement in the quality of care have brought the country a step closer in doing so. Efforts have also been undertaken to provide primary health care to every individual in the country – ensuring that each village has a clinic and each ward a health centre (MoHCDGEC, 2021). At secondary and tertiary levels, the government has enhanced the clinical and specialist care services at regional referral hospitals, national hospitals and specialized hospitals, while also enhancing access to medicine, medical supplies and medical equipment (MoHCDGEC, 2021). Furthermore, particular progress has been achieved in the areas of reproductive health and communicable diseases. In the case of reproductive health this included the expansion of modern family planning tools; the reduction of maternal, newborn and child mortality; the reduction of childhood malnutrition; and improvements in antenatal, delivery and postnatal care. Service provision and treatment has also seen progress for HIV, tuberculosis and malaria in the case of the latter (MoHCDGEC, 2021).

Yet, despite this significant progress, many of the country's Health Sector Strategic Plan 2015–2020 targets, which are in line with the 2030 SDGs, have not been met – signifying that significant challenges are faced by the sector.

With a growing and ageing population over time, the provision of high-quality health care is paramount to ensuring that Mainland Tanzania's citizens remain healthy and productive.

These challenges are exacerbated by shortages of health-care workers, especially in remote areas. Furthermore, the quality of care, although improved, continues to be a challenge given that some citizens must still travel long distances to access specific services, while others do not receive adequate referral services. Of those who do, equipment is often inadequate in the respective hospitals. Combined, this illustrates that the present resources available are not enough to ensure the full provision of quality health services for all individuals in Mainland Tanzania. Furthermore, there has been a continuous decline in real per capita health budget over recent years from T Sh 52,093 (US$22.4) in 2015/16 to T Sh 42,093 (US$18.1) in 2020/21. This remains well below the T Sh 200,000 (US$86) to T Sh 260,465 (US$112) per capita range deemed necessary to reach Universal Health (MoHCDGEC, 2021). Consequently, Mainland Tanzania is currently assumed to exhibit a UHC Index of 43 per cent – one that is in line with that of Tanzania as a whole (WHO, 2021b).

As in the education sector, the government will need to make extensive investments to overcome these challenges. With a growing and ageing population over time, the provision of high-quality health care is paramount to ensuring that Mainland Tanzania's citizens remain healthy and productive. As a result, investments will need to be made that not only allow for the construction of more and bigger primary, secondary and tertiary health facilities, but also adequately supply them with the staff, technologies and medicines they require.

> Compared to the country's status-quo trajectory, reductions in neonatal, infant, under-five and maternal mortality rates are envisioned under the most-favourable trajectory.

Therefore, in order for the population to be adequately serviced over time, results indicate that the government would need to build an additional 5,002 public primary health facilities and 163 public secondary and tertiary facilities under the most-favourable trajectory. In addition to this, each facility built will need to triple in size. As a result, the total number of beds will increase to 122,760 in the primary health-care system by 2060 and to a total of 80,252 in the secondary and tertiary health-care system.

Furthermore, to service a growing population and meet the international standards of achieving 44.5 medical staff per 10,000 people, **the government will need to in invest at least T Sh 1,434.5 trillion or US$616.8 billion (T Sh 497.4 trillion or US$213.9 billion at 2020/21 prices) over the coming 39 years under the most-favourable trajectory**, as indicated by the results. By doing so, the country will have transformed its health sector to one that has a UHC Index of 90 per cent, and that has achieved the Abuja Declaration target of allocating at least 15 per cent of the government budget towards health. In fact, by 2030, results indicate that Mainland Tanzania's health budget will equate to 3.8 per cent of GDP and 15 per cent of government expenditure.

With such investment, improvements in key health outcomes are projected to occur in the coming four decades. In fact, compared to the country's status-quo trajectory, reductions in neonatal, infant, under-five and maternal mortality rates are envisioned under the most-favourable trajectory. From 2021 to 2060, neonatal mortality would decline by 15 deaths per 1,000 live births; infant mortality by 19 deaths per 1,000 live births; under-five mortality by 36 deaths per 1,000 live births; and maternal mortality by 56 deaths per 100,000 live births. As a result, the mortality rates would equate to 5, 17, 14 per 1,000 live births and 324 per 100,000 live births, respectively, by 2060.

The reduction and, as such, improvements in child and maternal mortality are crucial towards strengthening the country's growth and development over time. In addition to the emotional and social costs, maternal mortality also brings with it significant socioeconomic development losses – both in terms of their contribution to the economy through employment, but also through their role in raising healthy and educated children. To avoid such loss, studies have found that the provision of voluntary family planning services not only reduce maternal mortality by 30 per cent and lower the probability of early childbearing and high-risk pregnancies, but they also increase child survival through improving the mother's and child's nutrition and health (Policy, Advocacy and Communication Enhanced for Population and Reproductive Health, n.d.).

In addition, by reducing child mortality, the preference on family size is also influenced, given that families foresee better child survival rates. With fewer and healthier children, families have an increased level of disposable income that can be invested into further improving their children's health, education and well-being. With these improvements, a transition from higher to lower rates of fertility and child mortality is achieved in a country. The associated change in the age structure allows for transitioning through the stages of the demographic transition model, which, in association with improved socioeconomic and employment policies, can increase Mainland Tanzania's economic gains over time.

Consequently, if the government does not raise its sectoral health investments, then both the access to and the quality of health care will decrease given that a shortage of doctors and nurses will need to service ever more individuals, while not having enough space, equipment and medicine to do so. Ultimately, this could result in a decline in the UHC Index as well as have secondary impacts on the economy given the lower general well-being and productivity of the population.

4.1.3 Infrastructure

In the most recent years, the electricity, water and sanitations sectors have been rapidly evolving, especially considering the attention that they have received under the country's development agenda towards contributing to poverty reduction and economic growth. Having attained lower middle-income status in 2020, Mainland Tanzania must now continue in its efforts to ensure that conditions persist to becoming an upper middle-income country within the coming decades. To do so, the country must maintain its high rates of economic growth. This is supported through investment in infrastructure that not only benefits individuals, but also businesses. These include the further extension of water supply coverage to both urban and rural areas; the further extension of sanitation facilities, especially in schools, to ensure adequate hygiene and a lowering of the incidence of diseases; and the simultaneous extension of electricity supplied ensuring that it is adequate, affordable, reliable, accessible and environmentally friendly.

Despite these aspirations, the government is also faced with challenges. In terms of energy, the country faces an unprecedented increase in demand for electricity due to the acceleration in productive economic investments and an increase in consumption due to a rise in population. It was estimated that by 2035, an additional 9 gigawatts is required (African Development Bank, 2015). This is further challenged by the increasing unpredictability of hydropower and the significant costs associated with extending the grid to rural areas. As a result, large parts of the population are not adequately covered, with many facing disruptions including extensive load shedding.

Within the water and sanitation sectors, similar challenges can be identified. Most recently, the country has struggled to meet the urban demand for improved services given the drying out of water sources as a result of climate change, the malfunction of recently installed water points, inequitable budget allocations, late or no disbursement of funds, the increasing demand of economic development, and the rise in Mainland Tanzania's population (Joseph et al., 2017). This can be detrimental as the provision of these services is of importance for both human and economic development outcomes. In fact, unsanitary conditions coupled with a lack of access to safe water services can have significant health implications for Mainland Tanzania's population.

In light of these challenges, the government needs to rethink its focus in these sectors – to invest into the country's electricity, water and sanitation infrastructure, and also investigate its quality. This is of special importance given Mainland Tanzania's growing population along with increased rural-to-urban migration rates. While 66.5 per cent of the urban population had access to electricity/solar power in 2021, only 30.1 per cent of the rural population did. In terms of piped/improved water, these percentages equate to 58.9 per cent and 15 per cent, respectively, while access to improved sanitation was present for 25 per cent of the urban population and 3.7 per cent of the rural population.[27] Thus, to achieve universal access to water and sanitation by 2030 and to electricity by 2040, the government will need to place increased attention on rural areas given that their rates are significantly below those of their urban counterparts.

Therefore, to attain and maintain universality of access, results indicate that the government will need to invest, on average, T Sh 4.5 trillion (US$1.9 billion) from 2022 to 2060 under the most-favourable trajectory. By sector, this equates to a total nominal investment of T Sh 28 trillion (US$12 billion) in electricity, T Sh 47.3 trillion (US$20.3 billion) in water and T Sh 98.3 trillion (US$42.3 billion) in sanitation from 2021 to 2060, which is equivalent to, on average, 0.88 per cent of annual GDP and 3.36 per cent of annual government expenditure. **Compared to maintaining current access rates (the status-quo trajectory), the improvements in access and quality will lead to roughly three times the real costs across the 39-year period.** Yet, these are required to ensure a healthy and productive economy as without electricity, water and sanitation, industries will face difficulties operating, and diseases will spread. Such challenges would influence the income of individuals and their long-term productivity, thereby impacting economic growth in the long run.

27 Author's calculations based on MoHCDGEC (2016) and NBS (n.d.a).


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4.1.4 Social development

Mainland Tanzania is in Stage 2 of demographic transition. Consequently, one of the main challenges that the government will face over the coming four decades is to ensure that the growing working-age population, especially the youth, the female population and urban residents, will have access to productive labour-market opportunities. In 2021, the youth represented the age group with the highest rate of unemployment (14.7 per cent) and females were roughly twice more likely to be unemployed than their male counterparts (12.2 percent compared to 5.7 per cent, respectively). In addition, the urban unemployment rate was 9.9 per cent, while that in rural areas was 7.2 per cent. Simultaneously, the country has witnessed a decline it its labour-force participation rate, an increase in its rate of inactivity and a rise of those employed in the informal economy.

To counteract these trends, the government needs to be able to generate productive and decent employment over the coming decades. This includes implementing policies that reduce the level of informality, as well as establishing ones geared towards improving labour-market flexibility, financial market efficiency and the effectiveness of public institutions.[28] The aim of these is to provide employers with the freedom to make decisions about their workforce in accordance with the labour law; provide employers and individuals with all the information needed to make appropriate decisions about their investments and generate trust among citizens, reduce corruption and ensure that principles of integrity and disclosure are upheld (OECD, 2015). By achieving this, Mainland Tanzania will ensure that adequate public services are delivered to its population, investors are attracted, public funds are used adequately and the development of the private sector is supported (OECD, 2015). Combined, these will allow the country to reap significant

28 These can take many forms: "robust legal frameworks and representative parliaments with strong capacity for oversight; adept civil services and the timely and quality delivery of public services; efficient judiciaries that uphold the rule of law; vibrant and actively engaged civil societies; and free and independent media" (OECD, 2015).

benefits in terms of GDP per capita and economic growth if combined with improvements in the aforementioned sectors.

In fact, according to results, an improvement in labour-market flexibility, financial market efficiency and the effectiveness of public institutions to the level exhibited by relevant benchmark countries will allow Mainland Tanzania to sustain its lower middle-income status, while eventually enabling it to attain upper middle-income status by 2037. By doing so, the government will decrease the number of unemployed by approximately 75 per cent by 2060 by following the most-favourable trajectory rather than the status-quo trajectory. As a result, GDP per capita will increase from a level of T Sh 2.7 million (US$1,151) in 2021 to T Sh 44.2 million (US$18,992) in 2060 – the latter is T Sh 40 million (US$17,218) higher than under a situation where no improvements to the current labour market are achieved.

These are not the only gains that the government will reap. **By increasing labour-market opportunities and thereby improving the standard of living for individuals living in Mainland Tanzania, the government will also contribute to reducing the level of poverty**. While 25.7 per cent of the population was poor in 2021, this will decline to 6.7 per cent in 2060 on condition that Mainland Tanzania implements policies that allow it to curb its fertility rates, raise its expected and mean years of education, promote effective family planning methods and improve its economic indicators over time to that of relevant benchmark countries. In terms of the number of poor, this decline will equate to a reduction of close to 7.1 million individuals over the coming four decades.

4.1.5 Combined results

Summing up, it must be emphasized that the government must concurrently invest in and improve existing policies in education, health, infrastructure and social development to establish a socioeconomic environment that is conducive to growth. By raising sectoral expenditure and permitting cross-sectoral synergies, Mainland Tanzania can maximize the level of education attained by each child, reduce neonatal, infant, under-five and maternal mortality rates to the levels closer to or on a par to the targets identified under the SDGs, and consequently improve life expectancy.

Furthermore, through the implementation of policies that formalize the economy and generate jobs, the government can transition the children born in a period of high fertility into the labour market. In combination with high-quality education and health care for all, these children can become productive members of society – allowing them to earn higher wages, consume more and potentially invest any money that can be saved into business-related activities. Such investments, in combination with an increase in national savings, will in turn fuel economic growth and lead to an increase in Mainland Tanzania's GDP per capita over time.

To achieve this, the government will need to invest a total nominal amount of roughly T Sh 3,065.2 trillion (US$1.3 trillion) over the coming four decades (approximately T Sh 1,089.1 trillion or US$468.3 billion in real terms (2020/21 prices)). This is roughly T Sh 2,055 trillion (US$883.6 billion) more, in nominal terms, compared to a situation in which the government would continue to spend the same amount as was spent in 2021 for the coming 39 years. If disaggregated by year, the average annual total investment would equal T Sh 27.9 trillion (US$12 billion) at 2020/21 prices – 2.6 times the amount spent on the sectors in 2021.

Disaggregated by sector, this totals nominal values of T Sh 1,457.2 trillion (US$626.6 billion) for education, T Sh 1,434.5 trillion (US$616.8 billion) for health care and roughly T Sh 173.5 trillion (US$74.6 billion) for an expansion in infrastructure. Yet, once

Through the implementation of policies that formalize the economy and generate jobs, the government can transition the children born in a period of high fertility into the labour market.

again it must be emphasized that these are, at best, conservative estimates of what Mainland Tanzania needs to invest. Potential feedback loops of income generated over time given improvements in the standard of living were not endogenously included in the modelling for the four sectors. Nor did the model account for potential synergies or multiplier effects that could be generated across the four sectors through increased investments. This was due to the fact that the model could not accurately predict:

- To what extent the income of individual households would increase as a result of investments in education, health and infrastructure, and what impact this would have on the various outcome indicators across these sectors; and
- The synergies that could be generated between sectors through increased investments.

4.2 Recommendations

This assessment presents five main recommendations based on the findings outlined in this report. They focus on enabling a better transition from childhood to adolescence, focusing specifically on improving the access and quality of individuals to education, health, infrastructure, social protection as well as to labour-market opportunities.

4.2.1 Generate sustainable fiscal space that is invested into essential social sectors

To achieve sustainable and equitable education, health, infrastructure and social protection services, it is vital to not only understand how public expenditure is allocated and used across the sectors, but also how to ensure its sustainability over time. To do so, the government can undertake several actions.

- Over the past decade, several fiscal space analyses have been conducted for the United Republic of Tanzania, each with their own approach on how to generate sustainable financing for the social sectors. It is time that these analyses are compared, and a clear way forward is determined. This includes identifying those fiscal space options that are feasible and sustainable in the long run. Once identified, a clear action plan towards their implementation is required with any future analyses being based on the agreed upon options.

Additionally, the government can foster sustainable tax revenues that can subsequently be allocated towards education, health, electricity, water, sanitation and social protection by:

- Building trust among its citizens by providing them with transparency in terms of government spending. This can include the publication of a medium-term revenue strategy that informs citizens of how their taxes are spent. Within this strategy, investments should be envisioned that enhance public services.
- Expanding the tax base, but maintaining a simple system. Not only does this establish a more predictable environment for investors, but it also allows for an increasing number of small businesses to enter the formal sector, thereby disincentivizing tax evasion.
- Developing and launching a digital tax payment system once a comprehensive IT infrastructure has been developed and implemented in the country.
- Lastly, actions to fight corruption need to be strengthened to ensure that any financing available is not lost through illicit flows. This should include public sector management reforms, both at the policy and at the institutional level.

Rationale: Achieving national policy targets will require additional and sustainable financial commitments, especially considering the country's demographic pressures. By 2060, a total of 130.4 million people will require access to equitable public services. The government will need to solve any inefficiencies in spending as well as identify new sources of finance if they are to provide the growing population with adequate opportunities in a financially feasible and sustainable way.

4.2.2 Improve the number and quality of public sector staff, especially in the essential social sectors

Along with the generation of sustainable fiscal space, the government will need to ensure that enough qualified public staff are present in all public institutions, especially in the essential social sectors (education and health). This can happen through a number of avenues:

- The allocation of higher sectoral budgets so that a sufficient number of public sector staff can be hired that is in line with the demographic trend of the country. Furthermore, it allows public institutions to have the required hard and soft infrastructure needed to conduct their work. This ensures that individuals can receive the quality services that they require.
- The strengthening of existing policy frameworks for each sector thereby ensuring that the objectives and targets outlined therein are met. Particular focus should be placed on the 2014 Education and Training Policy, the National Framework for Continuous Professional Development for Practicing Teachers, the 1996 Science and Technology Policy, the 1978 Education Act, the 1986 Tanzania Commission for Science and Technology Act, the 2009 Public Health Act and the Health Sector Strategic Plan 2021–2026, among others.
- The adjustment of wages in line with annual real wage growth rates will ensure that the standard of living among public staff is improved and that they do not invest time in undertaking additional income-generating activities, but can rather give their full attention to their public job. Additionally, this will encourage public sector staff to remain in their jobs, while also reducing potential brain drain of the highly skilled – the latter of which is of particular importance in the health sector.
- Continuous capacity-building activities for public sector staff need to be budgeted for and conducted at national and subnational levels.

Rationale: With the growing demographic pressure, more public institutions, such as schools and health facilities, will need to be built, while qualified public staff needs to be hired and sustained, especially in remote and hard-to-reach areas of the country. In terms of education and health, an additional 73.4 million individuals will require access to basic health care, while an additional 14 million children aged 5–17 years will need access to basic education by 2060. While this will require more hard infrastructure to be built, it is important that these are equipped with qualified public staff. Without them, the adequate provision of quality public services, especially in the health and education sectors, cannot be guaranteed.

4.2.3 Universal access to essential infrastructure

The demographic pressures that are faced by Mainland Tanzania will require an extension of its essential infrastructure to ensure that all citizen's basic human rights are fulfilled. This includes access to electricity, sanitation and water. To do so, several actions can be implemented that are in line with the Third National Development Plan's goal of continuously expanding the water supply, the national grid and sanitation infrastructure to all rural and urban locations in the country. These include:

- Updating existing or developing new strategic documents, policy papers and regulations in line with the country's current conditions across the electricity, water and sanitation sectors. Within this legal framework, clear budget provisions regarding the operation and maintenance of electricity, water and sanitation infrastructure are required. In line with the latter, priority should also be placed on reviving non-functional infrastructure before starting new projects so that the resources available are used effectively.
- Improving interaction with the private sector.
    a. Identify concrete actions that allow for the establishment of a competitive electricity and water market so that efficiency is improved and operating costs lowered. To date, these utilities have been run by the state and without competition this leads to inefficiencies, especially given a lack of sustainable financial resources.
    b. Identify renewable sources of energy that can be built cost-effectively, especially in rural areas.

- Improving the operational efficiency of the public utility authorities through adequate capacity building initiatives at all levels of governance.
- Improving the underlying conditions of electricity, water and sanitation to ensure that the sectors are more attractive to national and international investors.

Rationale: The extension of the country's infrastructure is clearly outlined in the Third National Development Plan, yet universal access to electricity, water and sanitation, especially in rural areas, is still lacking. In 2021, an average of 10.2 million urban residents and 30.5 million rural residents in Mainland Tanzania still faced challenges in accessing most basic services, which is a basic human right. Without it, the country cannot ensure a healthy and productive economy because without electricity, water and sanitation, schools and hospitals cannot function effectively, industries cannot operate adequately, and diseases spread. This not only influences the income of individuals, but also their long-term productivity given a decline in their health and the human capital attained over the course of their life. Combined, this can negatively impact future economic growth; thereby jeopardizing Mainland Tanzania's goal of becoming an upper middle-income country.

4.2.4 Generate formal and decent labour-market opportunities

It is recommended that the government builds a more inclusive labour market that provides more and better formal employment opportunities, especially for youth and women. This requires a multipronged approach, ranging from educational reforms to the implementation of interventions and policies that address the need for gender equality and access to employment opportunities by youth. As such, the government is encouraged to:

- Ensure that labour-market opportunities inform the educational and vocational curriculum of the country to avoid a mismatch of skills and high levels of unemployment. This includes implementing more practical activities in the education curriculum that reflect the changing technological environment, instead of focusing primarily on theory.
- Create links between the education sector and employers/businesses through the introduction and/or strengthening of career centres.
- Create avenues to promote the participation of women in the labour market. This includes the implementation of actions that counter their lower levels of education and human capital, the societal views of a woman's role in employment and any sociocultural expectations that restrict women from accessing activities that enhance their skills or income (Lambin and Nyyssölä, 2022).
- Introduce initiatives that support the youth in their search for income-generating opportunities. Particular focus should be placed on entrepreneurship and formal businesses by providing them with access to capital or the implementation of grants that lower the costs of running a business.

Rationale: To date, a large majority of women and young workers in Mainland Tanzania remain under- or unemployed. Many turn to the informal sector for opportunities, which contributes little to economic growth. Over time, this will be detrimental if adequate adjustments are not made. If this were to happen, then by 2060, roughly 33.2 million individuals will be unemployed. This would represent an increase in the national unemployment rate from 9 per cent in 2021 to 42.7 per cent in 2060.

4.2.5 Establish the political conditions required to sustain social development and poverty reduction

Whether national and international targets set out in policy documents are achieved, will partially depend on the effective implementation of social protection policies, programmes and systems. For this to happen, Mainland Tanzania needs an in-depth understanding of the policy frameworks, financing strategies, programme design considerations, programme implementation as well as monitoring and evaluation tools required for the sound development of a comprehensive national social protection system. Consequently, the following actions are recommended:

- Build political will regarding social protection. This can be done through a social expenditure review

study, which can showcase the efficiencies and the positive economic, political and social changes that can result from implementing social protection policies.

- Update and implement a national social protection strategy so that an official budget can be allocated to achieving the set targets. This strategy, which should be assessed and updated regularly, allows for the building of a comprehensive system that links to and builds synergies with other sectoral policy areas.
- Establish a ministry that is specifically in charge of social protection as it is an area that is core to tackling poverty and vulnerability, while simultaneously strengthening inclusive development and equitable growth. This will ensure that national and international stakeholders in the realm of social protection have a specific focal person/institution with whom/which to collaborate and coordinate.
- Formally recognize the Tanzanian Social Action Fund and integrate it into the structure of the aforementioned Ministry of Social Protection.

Rationale: Although Mainland Tanzania has the Productive Social Safety Net Programme in place, it is predominantly financed by the World Bank and other donors. In addition to this, no clear focal person is present that explicitly concerns himself/herself with the country's social protection system. This is due to the absence of a national social protection policy/strategy with a clear direction of where the country is headed in terms of alleviating poverty and improving welfare through the use of social protection instruments. Additionally, without such a policy/strategy, no specific budget allocations will be made as there are no specific national social protection goals and targets to achieve.

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