RAPID
Estimating the Impact of Population Growth on Development in Malawi

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The Republic of Malawi
Acknowledgments

This analysis is the result of a partnership among:

- The Population Unit of the Ministry of Finance, Economic Planning and Development
- The Department of Population Studies at Chancellor College, University of Malawi
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About RAPID

This document presents findings from the RAPID (Resources for the Awareness of Population Impacts on Development) model, which projects the social and economic implications of population growth on various development sectors. Supported by USAID, RAPID has been applied in various countries and driven many policy decisions over the past three decades. This is the second full-scale application of RAPID specific to Malawi.¹

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Additional Malawi RAPID resources will be available at http://populationmalawi.org.

¹ RAPID is part of the Spectrum system of policy models. For this 2017 application, the additional Spectrum models used to inform the projections were DemProj (for demographic projections), FamPlan (for family planning information), and the AIDS Impact Model.
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OVERVIEW
Population and Development

Slower growth, more resources available

Understanding the impact of population growth on socio-economic development is essential for making strategic policy and program decisions. Malawi’s continued rapid population growth will significantly affect its ability to meet the basic needs of its health, education, economic, and agricultural sectors. It will also create challenges related to urbanization and other services, including clean water and electricity.

Formulating policies and programs to help Malawians meet their reproductive intentions (e.g., through increased use of voluntary family planning and keeping girls in school) will help slow population growth. With the right policies in place, slower population growth can lead to economic growth, improved food security, better health services, and greater access to social services for a healthier, more prosperous population.

Goal 5 of the Malawi Growth and Development Strategy III seeks to improve the health and quality of the population for sustainable socio-economic development.
Malawi’s Population

Rapidly growing

Malawi is experiencing rapid population growth—the result of high fertility rates coupled with decreased mortality rates. Between 2008 and 2017, the population grew from 13.1 million to approximately 17.4 million, an increase of approximately 33%.²

² National Statistical Office, 2010 Population and Housing Census Projections Report, Malawi
Overview

Fertility Rate

Decreasing, but still high

Malawi’s total fertility rate—a measure of the average number of children a woman will have over her lifetime—has decreased significantly over time. It fell from 6.7 children per woman in 1992 to 4.4 in 2015–2016. However, both women and men have consistently reported that their ideal family size is smaller than the national total fertility rate; often couples have more children than they want.

Fertility is considerably higher in rural areas (4.7) than in urban areas (3.0), and adolescent fertility rates are also high. Of women age 15–19, 29% are pregnant with their first child or are already mothers.³

³ National Statistical Office/Malawi and ICF, Malawi Demographic and Health Survey 2015-2016; The DHS Program, “STATcompiler”
Fertility Scenarios

Impact on population size

In 2015, Malawi’s population was 16.3 million. The country’s future population will be influenced by current and future fertility rates as well as by the current age structure. Two fertility scenarios illustrate how fertility rates affect the size of the population.

**Constant fertility scenario:** If the total fertility rate remains constant at 4.4 children per woman, the population is expected to grow to 42.8 million by 2050.

**Reduced fertility scenario:** If the total fertility rate decreases to 2.3 by 2050, the population is expected to grow to 34.3 million.

Malawi’s population is expected to be 20% lower if the fertility rate is reduced to 2.3 by 2050.
Age Structure

An expanding young population

The overall population is skewed toward young people under age 20, who made up approximately 56% of the population in 2015. Because of the large number of young women who will soon enter their reproductive years, even as the fertility rate declines, Malawi’s population will initially continue to grow rapidly. However, if Malawi’s policies and programs are restructured to enhance young people’s opportunities and encourage smaller families, youth can be a driving force behind economic prosperity in the coming decades.

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4 Avenir Health, Spectrum model 2017
Child Dependents

Lower fertility rate means fewer child dependents

In 2015, there were approximately 6.7 million child dependents in Malawi. If the fertility rate remains constant, there will be 15.9 million child dependents by 2050. But if the fertility rate is reduced to 2.3, this number is projected to fall to 9.6 million, which would permit greater investment in health and education per child.

A reduction in the number of child dependents would also help enable Malawi to reap the benefits of a demographic dividend, which is the economic benefit that may arise from a significant increase in the ratio of working-age individuals relative to young dependents, coupled with investments and economic reforms to ensure economic productivity and ample jobs.

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5 Child dependents refer to all children ages 10 and younger as well as children 10–14 who are not part of the labour force.
Impact of Population Growth on Future Development

Consequences for key sectors

Continued rapid population growth will have far-reaching consequences in Malawi, including for:

- Health
- Education
- Economy
- Agriculture
- Urbanization
- Water
- Electricity

These consequences will be described in the following pages.
Status of the Health Sector

Through implementation of the Health Sector Strategic Plan (2011–2016), substantial gains in health have been made over the past five years, particularly in reducing maternal and child mortality. These gains were driven by increased use of key services, such as delivery with a skilled birth attendant, and increased coverage of basic vaccinations. To further address the health needs of Malawi’s growing population, improvements in tackling human resource constraints, health commodity shortages, and limited access to health services are critical.

Health Professionals

With lower fertility, fewer doctors, nurses, and community health workers will need to be trained

Malawi is facing a shortage of trained health professionals. In 2015, there were about 15,482 doctors, nurses, and community health workers in the country.\(^7\) By 2050, a projected 45,142 of these health professionals will be needed under the current total fertility rate of 4.4, compared with 36,164 if the fertility rate decreases to 2.3 by 2050.

Hospitals and Health Centres

With lower fertility, fewer hospitals and health centres will need to be built

In 2015, there were approximately 616 hospitals and health centres in Malawi, with nearly a quarter of the population living more than 8 kilometres from the nearest facility. As the population increases, a projected 1,864 health centres and hospitals will be needed by 2050 under a fertility rate of 4.4, compared with 1,493 if the fertility rate is reduced to 2.3.

371 fewer hospitals and health centres need to be built by 2050 if the fertility rate is reduced to 2.3

8 Ministry of Health, Malawi Service Provision Assessment 2013-14; Government of the Republic of Malawi, Health Sector Strategic Plan II, 2017-2022
Annual Health Expenditure

With lower fertility, less spending on health will be needed

For the past five years, Malawi’s average per capita spending on health was the lowest in the Southern African Development Community. Furthermore, healthcare financing in Malawi remains unpredictable and is largely donor dependent, accounting for 62% of total health expenditure between 2012–2015. Households accounted for 13%, and the Government of Malawi accounted for 26% of total health expenditure.⁹

To meet future capacity and infrastructure requirements, an increase of Malawi’s annual recurrent health expenditure is needed. Between 2015 and 2050, US$101.1 billion in total would be needed if the fertility rate remains constant, compared to US$90.3 billion if fertility is reduced to 2.3.

⁹ Government of the Republic of Malawi, Health Sector Strategic Plan II, 2017-2022
Recurrent Health Expenditure Under Constant and Reduced Fertility

$10.86 billion can be saved from 2015 to 2050 if the fertility rate decreases from 4.4 to 2.3
The National Education Sector Plan “recognizes education as a catalyst for socio-economic development, industrial growth and an instrument for empowering the poor, the weak and the voiceless.”

Pupils

Increasing number of pupils

With Malawi’s young population, the number of primary and secondary school pupils is projected to more than double by 2050—to a total of 10.9 million under the current fertility rate of 4.4. But if the country reaches a fertility rate of 2.3 children per woman by 2050, that number would be reduced to 7.3 million, resulting in 3.6 million fewer pupils to educate in 2050.

“Malawi has one of the world’s most dramatic teacher shortages ... there are 130 children per class in grade 1, on average.”

—UNESCO, Teaching and Learning: Achieving Quality for All, p. 2
Teachers

Increasing demand for qualified teachers

In 2015, on average, every primary school teacher had 67 pupils and every secondary school teacher had 25 pupils. When considering only trained teachers, the pupil to teacher ratio was even higher, at 75 pupils per trained primary school teacher and 64 per trained secondary school teacher.\textsuperscript{10}

To achieve the recommended UNESCO pupil to teacher ratio of 40 to 1 for primary schools and 25 to 1 for secondary schools, in 2050 Malawi will need approximately 300,000 primary and secondary school teachers under the current fertility scenario, compared to approximately 204,000 teachers under a reduced fertility scenario.

With the teacher workforce only growing at 1% per year, meeting these needs will be difficult to achieve.\textsuperscript{11} One way to help address the teacher shortage and enable better pupil to teacher ratios is through lower fertility, which will lead to fewer school-age children.

\textsuperscript{10} Ministry of Education, Science and Technology, 2015 Education Management Information System Bulletin
\textsuperscript{11} UNESCO, Teaching and Learning: Achieving Quality for All
Schools

Vast infrastructure improvements and more schools needed

Malawi does not have enough permanent school buildings that can withstand the rainy season, desks and books are in short supply, and there is little access to electricity in primary schools. As Malawi’s population grows and more children reach school age, the country will need more schools to educate its children.

If fertility remains constant, the number of primary and secondary schools needed will triple by 2050, to approximately 22,000. Alternatively, with low fertility, the number of schools needed is projected to double by 2050 to approximately 15,000, which would be more manageable to build.

7,000 fewer schools would need to be built with fertility reduced to 2.3 by 2050

12 Ripple Africa, “General Information About Education in Malawi”
Education Expenditure

With lower fertility, less recurrent education spending is needed

Given an increase in the number of students, Malawi’s Ministry of Education, Science and Technology will need to increase annual expenditure for primary school students to US$351 million by 2050 under the constant fertility scenario, compared to US$230 million under the reduced fertility scenario. Similarly, the required annual expenditure for secondary school students will be approximately US$214 million or US$161 million, respectively. Cumulatively from 2015–2050, US$13.1 billion will be needed for primary and secondary education expenditure under the constant fertility scenario, compared to US$11.4 billion under the reduced fertility scenario.

With reduced fertility, the resources saved can be used to ensure more teachers are trained, improve the pupil to teacher ratio, build new schools, and improve existing infrastructure.
Recurrent Education Expenditure Under Constant and Reduced Fertility

$1.7 billion can be saved from 2015 to 2050 if the fertility rate declines to 2.3
“High rates of population growth hinder investment in both human and physical capital formation, and exert pressure on the environment and often result in unsustainable use of a fragile resource base.”

Economic Sector

Population’s impact on the economy

In 2017, the annual GDP growth rate was 4.5%, and is predicted to grow to 5.5% by 2020.\textsuperscript{13} A rapidly growing population will affect the degree to which Malawi can improve GDP per capita. Under a reduced fertility scenario, GDP per capita is projected to be approximately US$1,100 by 2050, compared to $880 per capita if fertility remains constant.

\textsuperscript{13} International Monetary Fund, “IMF DataMapper: Real GDP Growth”
Employment

With lower fertility, fewer new jobs are needed

Malawi’s economically active population is currently estimated at approximately 8.3 million. With rapid population growth, many new jobs must be created each year to support the number of youth entering the labour force; otherwise, unemployment and underemployment will increase.

In 2015, approximately 250,000 new jobs were required. If fertility remains constant, approximately 15.1 million jobs will need to be created between 2015 and 2050. This number can be reduced to 12.9 million if fertility decreases to 2.3.

2.2 million fewer new jobs would be needed from 2015 to 2050 if the fertility rate decreases from 4.4 to 2.3

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“Agriculture remains the anchor of our economy. It is the main support of our life. Given this importance, agriculture deserves to be driven by best policies.”

–Professor Arthur Peter Mutharika, President of the Republic of Malawi, Foreward to the National Agriculture Policy, p. ix
Agricultural Sector

With lower fertility, there is more arable land per capita

Approximately 66% of Malawi’s 3.8 million hectares of arable land is used for agriculture. Malawi relies on its arable land to both sustain its people and support its economy—30% of Malawi’s GDP is generated by the agricultural sector, which employs 64.1% of the country’s labour force.\textsuperscript{15}

To maintain current levels of food production for citizens, agricultural productivity will have to increase. If fertility remains unchanged until 2050, the amount of arable land in 2050 will be reduced from 23 to 10 hectares per 100 people, compared to 13 hectares per 100 people if fertility decreases to 2.3 children per woman.

\textsuperscript{15} Ministry of Agriculture, Irrigation and Water Development, 2016 National Agriculture Policy
Agriculture
Maize Needed for Consumption

Population’s impact on food security

Population growth creates the need for more food production, and if there is a scarcity, costs can increase and access decrease, meaning less food will be available, especially for the country’s poorest residents. In 2015, farmers in Malawi produced approximately 2.8 million metric tons of maize.\textsuperscript{16} Between 2015 and 2050, 149 million metric tons of maize will be needed to feed the population if the fertility rate remains constant at 4.4, compared to 135 million metric tons if the fertility rate declines to 2.3 children per woman.

\textsuperscript{16} Food and Agriculture Organization of the United Nations, “FAOSTAT”
Cumulative Metric Tons of Maize Needed from 2015 to 2050

- Constant Fertility
- Reduced Fertility

14 million fewer metric tons of maize needed from 2015 to 2050 if the fertility rate decreases from 4.4 to 2.3
“The rapid urbanization rate is posing a major challenge to government at all levels and other stakeholders. An integrated approach to these urban challenges can lead to a reduction in urban poverty; there is a need for open discussion, transparency, and the inclusion of all urban stakeholders.”

–United Nations Human Settlements Programme, Malawi National Urban Profile, p. 6
Urban Growth

Fertility’s impact on urban population

In 2015, approximately 16.3% of Malawi’s population (about 2.7 million people) lived in cities, with almost one-third living in Lilongwe.\textsuperscript{17} It is projected that the urban share of the population will increase to 30.2% by 2050.\textsuperscript{18} If fertility remains constant, in 2050, urban areas will house a projected 12.9 million people. Under the low fertility scenario, the population living in urban centres will be considerably smaller—at just under 10.4 million.

\[ \text{fewer people in urban areas in 2050 if the fertility rate decreases from 4.4 to 2.3} \]

\textsuperscript{17} World Urbanization Prospects, The 2014 Revision - Urban and Rural Population
\textsuperscript{18} National Statistical Office, 2010 Population and Housing Census Projections Report, Malawi

\textsuperscript{18} World Urbanization Prospects, The 2014 Revision - Urban and Rural Population
Urban Households

Fewer urban households with reduced fertility

The number of new urban households is also expected to rise. If the fertility rate remains the same, in 2050, approximately 600,000 more urban households are expected, compared to if the fertility rate is reduced. With an increase in the number of urban households comes a need for higher levels of resources and services, such as piped water, electricity, and transportation.

600,000 fewer urban households in 2050 if the fertility rate decreases from 4.4 to 2.3
“Water is potentially the engine for social and economic development in Malawi. This vision endeavours to ensure that every Malawian has equitable access to water and sanitation services for sustainable socio-economic development and enhancement of the country’s natural ecosystems.”

–Ministry of Agriculture, Irrigation and Water Development, National Water Policy, p. 4
Clean Water

Population’s impact on the need for treated water

Lack of access to clean, safe water in Malawi is a serious threat that can lead to poor health and even death. Although Malawi’s Water Boards increased production of treated water in urban areas, it has not kept pace with urban population growth—16% of the urban population has to walk 30 minutes or more in order to access potable water.\textsuperscript{19}

Water Boards produced a combined 96.69 million cubic metres (m$^3$) of treated water in 2015, although more than one-third was lost on its way to delivery.\textsuperscript{20} If fertility remains constant, production will need to increase to 236 million m$^3$ in 2050 to serve the urban population’s domestic water needs. However, if fertility decreases, the need will be lower, at 189 million. Cumulatively, between 2015 and 2050, 3.87 billion m$^3$ of water will be needed if the fertility rate remains constant, compared to 3.46 billion m$^3$ if fertility decreases.


\textsuperscript{20} Ministry of Agriculture, Irrigation and Water Development, 2015/2016 Water, Irrigation and Sanitation Sector Performance Report
Water Needed for Domestic Use in Urban Areas from 2015 to 2050

407 million m$^3$ less water needed between 2015 and 2050 if the fertility rate is reduced to 2.3
Population growth places a higher demand on limited resources and affects Malawi’s availability to provide an adequate supply of clean water. An increased provision of safe, treated water, more efficient use of produced water, and additional water conservation and environmental protection efforts are needed to ensure the viability of the water supply for future generations.
Water Connections

With lower fertility, fewer water connections are needed

In 2015, the Water Board had approximately 238,000 household, institutional, and industrial/commercial water connections and community water points or kiosks. However, access to safe water is not reliable, as typically one-third of community water points are not operational. As the urban population grows, the demand for water connections will also increase. The need for water connections in urban areas is projected to increase to 1.16 million in 2050 if the fertility rate remains constant, and to about 928,000 if fertility decreases to 2.3 children per woman.

22 UNICEF, “Malawi, Water, Sanitation and Hygiene Promotion”
“Developments in the energy sector have an important bearing on the success of economic development initiatives in any country. Energy is a crucial input into the different demand sectors of the economy, be it households, agriculture and natural resources, transport, industry, mining and construction.”

–Ministry of Energy and Mining, National Energy Policy for Malawi, p. xvi
Electricity

With lower fertility, fewer people will be left without electricity

In 2015, only approximately 10% of Malawians had access to electricity (about 30% in urban areas and 2% in rural areas). The Electricity Supply Corporation of Malawi Limited (ESCOM) plans to enable access to electricity for half of the population by 2050. However, projections indicate that if the fertility rate remains at 4.4 children per woman, 25.3 million Malawians—59% of the population—are expected to go without electricity. This drops to 16.8 million—or 49%—if the fertility rate is reduced to 2.3.

In addition to reduced fertility, interventions in the energy sector that aim to increase production and access to sustainable energy sources are also key to ensure greater access to energy for the population.

23 Malunga, Country Report for Malawi
24 Ministry of Natural Resources, Energy and Mining, Integrated Resource Plan for Malawi
Outlook

If Malawi’s fertility remains constant, its population is expected to double by 2041 and reach an estimated 42.8 million by 2050, making it difficult to adequately meet the basic socio-economic needs of the population. However, if fertility declines, this will remove some of the pressure on resources, making it easier for development to keep pace with population growth across sectors, creating potential for a more prosperous country. As gains are achieved and resources reinvested, slower population growth will allow for accelerated development.
Looking to the Future

Investing in family planning leads to positive outcomes across all sectors

For Malawi to realize its development potential, the country must promote policies and programs that support Malawians in meeting their reproductive intentions. The country has already taken tremendous strides in expanding access to equitable, high-quality, and voluntary family planning services, with a broad mix of methods offered, and family planning is commonly used. Still, there is further to go as, on average, the desired fertility rate for Malawians is 3.4 children per woman instead of the current 4.4.26

To ensure that Malawians have access to voluntary family planning, and to meet Malawi’s FP2020 goal of 60% of all women using modern contraceptives by 2020, will require adequate financial backing and alignment of existing social sector investments with population and development goals. All sectors can benefit from lower fertility rates, and have a responsibility to advocate for increased investment in family planning programs.

26 National Statistical Office/Malawi and ICF, Malawi Demographic and Health Survey 2015-16
What can different sectors do to help address population growth?

To decrease population growth and/or to mitigate its effects, stakeholders from various sectors should consider including interventions in their strategic plans that:

• Promote access to family planning funding, information, services, and supplies
• Develop programs to keep girls in school
• Strengthen access to social services
• Improve the health system and child health outcomes
• Create job opportunities for youth
• Improve agricultural yield interventions and economic diversification
• Incentivize the expansion of urban infrastructure, safe water, and electricity

If Malawi can do more to address population issues and increase its investment in family planning, the country can improve the lives of its citizens and fully realize the benefits of adequate access to education, economic opportunities, health services, and other vital day-to-day needs, such as food, clean water, and electricity. Such gains will help ensure sustainable socio-economic development and contribute to transforming Malawi into a middle-income country.
References and Data Sources


International Monetary Fund. “IMF DataMapper: Real GDP Growth.” http://www.imf.org/external/datamapper/NGDP_RPCH@WEO/MWI.


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