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# **Population Dynamics and the Demographic Dividend Potential of Eastern and Southern Africa: A Primer**

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# **Population Dynamics and the Demographic Dividend Potential of Eastern and Southern Africa: A Primer**

**November 2019**

***UNICEF Eastern and Southern Africa Regional  
Office Social Policy Working Paper***

**Population Dynamics and the Demographic Dividend Potential of Eastern and Southern Africa: A Primer**

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## Table of Contents

|  |    |
|--|----|
| Executive Summary .....  | 3  |
| 1. Introduction .....  | 5  |
| 2. The demographic transition and population boom.....                 | 6  |
| 3. Increasing labour supply: The foundation of the dividend.....       | 11 |
| 4. Savings and investment: Driving the dividend .....                  | 15 |
| 5. Human capital: Maximizing the dividend .....                        | 16 |
| 6. Public investment decisions: The future of the dividend .....       | 20 |
| 7. Concluding thoughts .....   | 23 |
| References .....   | 25 |
| Annex 1. Classical demographic transition model: Snapshot of ESA ..... | 26 |
| Annex 2. Demographic fast facts about ESA.....                         | 27 |
| Annex 3. Demographic fast facts about Africa.....                      | 28 |

## List of Figures

|   |    |
|---|----|
| Figure 1. Birth and death rate projections in ESA, 1950-2100 .....                          | 6  |
| Figure 2. Fertility rate and life expectancy projections in ESA, 1950-2100 .....            | 7  |
| Figure 3. Population and growth rate projections in ESA, 1950-2100.....                     | 7  |
| Figure 4. Birth projections in ESA, 1950-2100.....  | 8  |
| Figure 5. Population pyramid projections in ESA, in 1990, 2020 and 2050.....                | 8  |
| Figure 6. Rural and urban population projections in ESA in 1990, 2020 and 2050 .....        | 9  |
| Figure 7. Population projections in select cities in ESA, 2005, 2020 and 2035.....          | 9  |
| Figure 8. New working age population projections in ESA, 1950-2100.....                     | 11 |
| Figure 9. Dependent and working age population projections in ESA, 1950-2100.....           | 12 |
| Figure 10. Young and old dependency ratio projections in ESA, 1950-2100 .....               | 13 |
| Figure 11. New working and non-working age population projections in ESA, 1950-2100.....    | 13 |
| Figure 12. Working and dependent age population projections in ESA, 1950-2100 .....         | 14 |
| Figure 13. Savings rates and dependency ratios by income groups, 1970-2018.....             | 15 |
| Figure 14. Human capital outcomes of 23 year olds in ESA, 2020 .....                        | 17 |
| Figure 15. Human capital outcomes of 23 year olds in ESA, 1990-2050 .....                   | 17 |
| Figure 16. Education completion rates under a magic bullet scenario in ESA, 1990-2050 ..... | 19 |
| Figure 17. Stunting affects under a magic bullet scenario in ESA, 1990-2050.....            | 19 |
| Figure 18. Human capital expenditure in select ESA countries, 2015.....                     | 21 |
| Figure 19. Per capita human capital expenditure in select ESA countries, 2015 .....         | 21 |
| Figure 20. Government expenditure by level of education in select ESA countries, 2017.....  | 22 |
| Figure 21. Economic classification of human capital expenditure in ESA, 2017 .....          | 22 |
| Figure 22. Human capital budget credibility rates in ESA, 2017 .....                        | 22 |

## Executive Summary

**This working paper provides an overview of demographic trends in the Eastern and Southern Africa (ESA) region and the potential to capitalize on the demographic dividend.**

The demographic dividend is the time-bound opportunity to catalyze economic growth and poverty reduction as the working age population expands due to falling birth and death rates. Using a variety of variables, the paper describes the ongoing population boom in ESA alongside the move toward higher levels of savings and investment that can propel the production of more goods and services and hence greater income and poverty reduction opportunities. It then assesses the recent and likely trajectory of human capital in the region – a key determinant of the dividend – while also modelling an alternative policy path whereby governments immediately ensure that each newborn reaches her or his full physical and cognitive development while also completing secondary school. The paper concludes by highlighting the importance of greater and better investment in human capital sectors, which will determine how much of the remaining dividend can be salvaged, while also discussing how UNICEF and development partners can help. The paper is accompanied by an [Excel tool](#) that replicates the analyses presented at country, regional and continental levels.

**Driven by shrinking family sizes and longer lives, ESA is in the midst of a demographic transition.** This ongoing structural change is dramatically increasing the total population. Home to just 85 million persons in the 1950s, the region will boast more than 1 billion people by 2050 and 1.5 billion in 2080 – more than China and India today. One of the immediate consequences of the fast population growth is many more children. While around 17 million babies will be born in 2020 – up from 12 million in 2000 – this number will surpass 22 million in the 2040s and plateau at 25 million per year toward the end of the century. Urbanization is also moving at lightning speed. From around one in three at present, the region will be predominately urban by 2050. In the process, many capital and secondary cities will see their populations more than double in just 15 years, with places like Addis Ababa, Dar es Salaam and Luanda housing more than 1,000 new residents every day between 2020 and 2035.

**The demographic transition also means that the labour supply is quickly expanding, which presents an opportunity for accelerated economic growth and poverty reduction.** The working age population (15-64 year olds) doubled between 1995 and 2020 in ESA, growing from 150 to more than 300 million. It further is projected to double again by 2047 – reaching more than 600 million persons – and to surpass the one billion mark in the 2080s. Enhanced economic growth can occur when the workforce outpaces the dependent age population (children and elderly), which is the foundation of the demographic dividend. This process is measured by the dependency ratio, which divides the total number of dependents by potential workers in the population. In ESA, the ratio currently stands at 78% (i.e. there are about 10 workers for every 8 dependents). This is expected to decline to 54% in the 2060s (i.e. about 10 workers for every 5 dependents) after which it will reverse course propelled by the increasing number of elderly persons. However, given that the rate of change will slow substantially in the 2050s, the region has about 30 years to benefit from demographic tailwinds. During this period, historical evidence shows a strong relationship between falling dependency ratios and rising savings rates, which facilitate greater investment and hence economic growth potential.

**Human capital is the basis for maximizing the demographic dividend yet remains elusive in ESA.** More workers and physical capital will not suffice. The quality and productive capacity of the workforce will ultimately dictate how much additional economic output can be achieved. However, applying human capital proxies to a cross-section of the young labour force reveals an unsettling situation. In 2020, for instance, only one out of every three young workers (as measured by a cross-section of the workforce – a cohort of 23 year olds) have completed some form of secondary education, while close to half were affected by stunting during childhood. The lack of basic literacy and numeracy skills combined with under-developed bodies and brains indicates that most workers remain far from reaching their productive or innovative potential.

**Human capital trends will likely improve over time, but the pace of change will not be fast enough to fully exploit the demographic dividend.** Based on projections, more than half of 23 year olds (53%) will possess no more than a primary education in the year 2050, while one-third will have suffered from stunting. Even under a completely unrealistic scenario whereby, starting in 2020, governments ensure that every new student completes secondary school and every newborn enjoys adequate nutrition throughout childhood, this new generation of fully empowered workers would not enter the labour market until the early 2040s, by which time the demographic window is getting ready to close.

**Quickly and radically boosting investment in human capital is the only hope for ESA to salvage the remnants of the demographic dividend.** Unfortunately, recent expenditure trends reveal the scale of the task at hand. In particular, few governments are meeting their financial commitments to core human capital sectors, while the low revenue base makes it impossible to achieve minimum investment levels in most places. The use of available resources is also problematic. In addition to favoring tertiary services and recurrent items at the expense of basic services and capital items – in contrast to demographic dividend investment needs – low budget credibility and execution trends indicate that many human capital resources simply go unspent.

**UNICEF and development partners can play a strategic role.** Plenty of evidence on new financing channels has already been generated across ESA, but now these opportunities must be translated into progressively greater budgetary allocations to human capital sectors. Beyond addressing the funding gaps, it is equally important to support government efforts to monitor the amount and use of resources directed to human capital programs as well as identify and correct spending inefficiencies to maximize the impact of that investment. As the demographic clock ticks, the urgency of this agenda grows ever-more pressing with each passing day.

*JEL classification: J11, J13, O11, O15*

*Key words: demographic economics, population economics, demographic transition, demographic dividend, age distribution, population growth, human capital, human capital investment, social sector investment*



# 1. Introduction

**This working paper provides an overview of demographic trends in the Eastern and Southern Africa (ESA)<sup>1</sup> region and the potential to capitalize on the demographic dividend.**

The demographic dividend is the time-bound opportunity to catalyze economic growth and poverty reduction as the working age population expands due to falling birth and death rates. Using a variety of variables, the paper describes the ongoing population boom in ESA alongside the move toward higher levels of savings and investment that can propel the production of more goods and services and hence greater income and poverty reduction opportunities. It then assesses the recent and likely trajectory of human capital in the region – a key determinant of the dividend – while also modelling an alternative policy path whereby governments immediately ensure that each newborn reaches her or his full physical and cognitive development while also completing secondary school. The paper concludes by highlighting the importance of greater and better investment in human capital sectors, which will determine how much of the remaining dividend can be salvaged, while also discussing how UNICEF and development partners can help.

**The paper is intended to support UNICEF’s understanding of demographic trends for more effective programming and advocacy, especially in the area of public finance.** It is accompanied by an [Excel tool](#) that allows users to select any country in Africa, any sub-region in Africa (Eastern and Southern, Western and Central, and Northern) or Africa as a whole, which autogenerates the analyses presented in Sections 2, 3 and 4 of the paper. The paper also serves as a template that can be customized to develop country-specific demographic narratives when used in conjunction with the tool. Annexes 2 and 3 additionally present demographic fast facts about ESA and Africa, respectively.

**Several technical issues should be kept in mind.** First, all demographic data presented in this paper and included in the Excel tool are derived from [UN DESA World Population Prospects: 2019 Revision](#) (medium variant estimates) and [UN DESA World Urbanization Prospects: 2018 Revision](#). Second, the objective of the paper is to provide a short overview of demographic concepts and trends in ESA, so country-specific information and cross-country comparisons are not presented. Third, where possible, data for ESA are presented as population weighted regional averages. For instance, if looking at children as a share of the total population, the ESA figure reflects the total number of persons aged 0-17 in all 21 countries in the region divided by the total population of all 21 of those countries. However, due to statistical reporting practices, this was not possible for some variables (e.g. fertility rate, death rate, life expectancy), so the information presented reflects the average value of the 21 countries.

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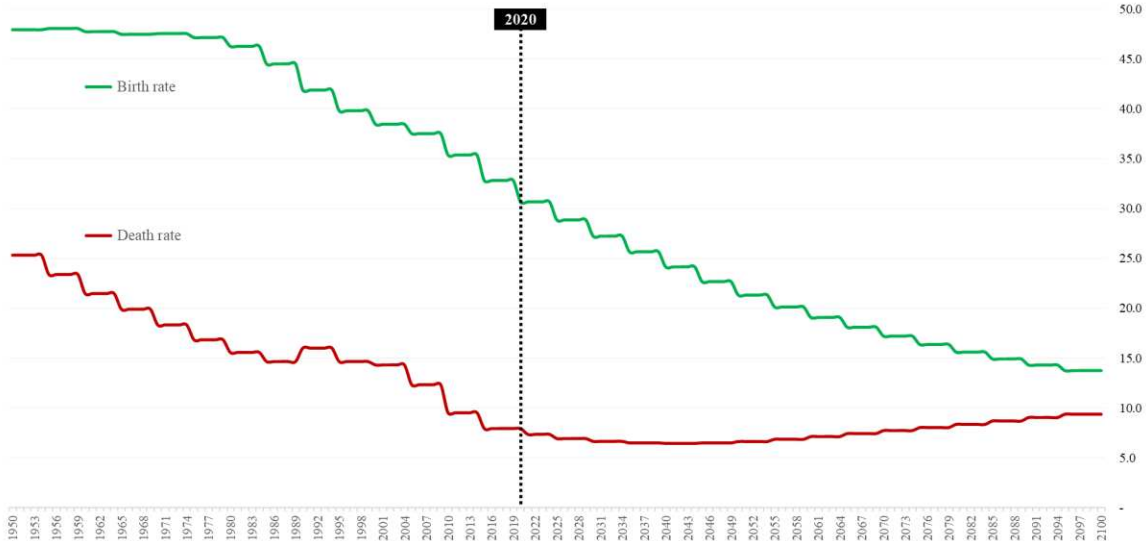
<sup>1</sup> ESA is intended as a UNICEF region and includes 21 countries: Angola, Botswana, Burundi, Comoros, Eritrea, Eswatini, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Rwanda, Somalia, South Africa, South Sudan, Tanzania (United Republic of), Uganda, Zambia and Zimbabwe.

## 2. The demographic transition and population boom

**All regions and countries experience a demographic transition due to declining birth and death rates.** Driven and sustained by a variety of factors, including better health and education services, improved agricultural productivity, general technological progress and urbanization (see Canning 2011, among many others), a fall in birth and death rates causes a structural change from large family sizes and short lives to smaller family sizes and longer lives. Annex 1 presents an overview of the stages of the classical demographic transition model for ESA.

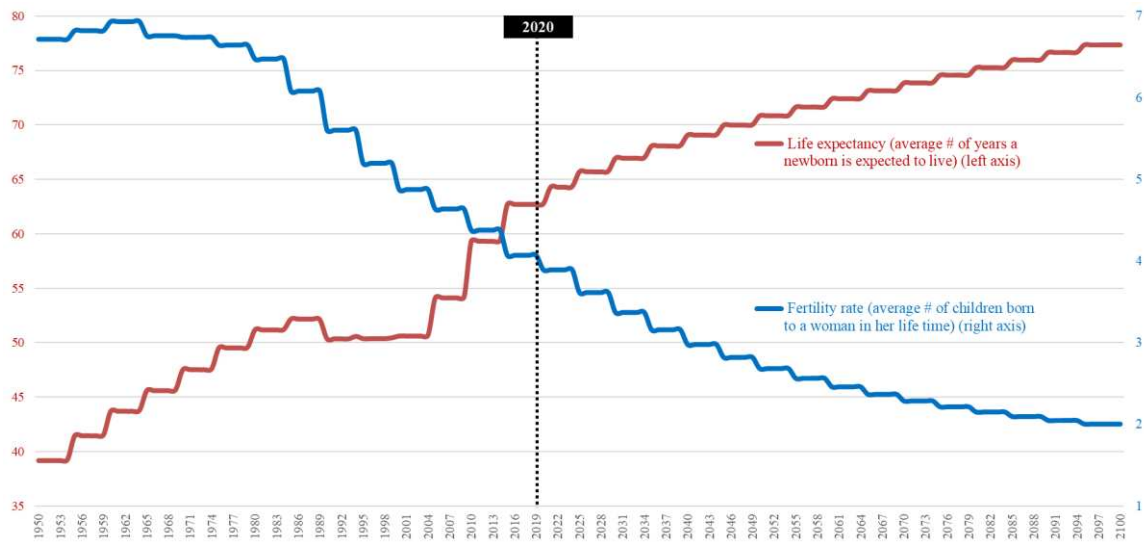
**Demographic transition forces began to take hold of ESA in the 1980s and continue to shape the region.** Death rates have been steadily declining since the 1950s and will bottom out around 2040, but the fall in birth rates did not begin until the late 1970s and will continue a downward trajectory until the end of the century, albeit at a much slower pace (Figure 1). The impacts on family size and life expectancy are astounding. While the average woman was expected to give birth to seven children in the 1960s, a person born in the region was lucky to survive 45 years (Figure 2). By the year 2000, however, women were having two fewer children, on average, while life expectancy had extended by five years. Currently, the average woman has around four children, which is projected to fall to three by 2040 and two in the 2090s. At the same time, a child born in the region today should live for around 63 years, but a child born in 2045 will be expected to enjoy 70 years of life and 75 for years for those born in 2080.

**Figure 1. Birth and death rate projections in ESA, 1950-2100 (per 1,000 population)**



Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

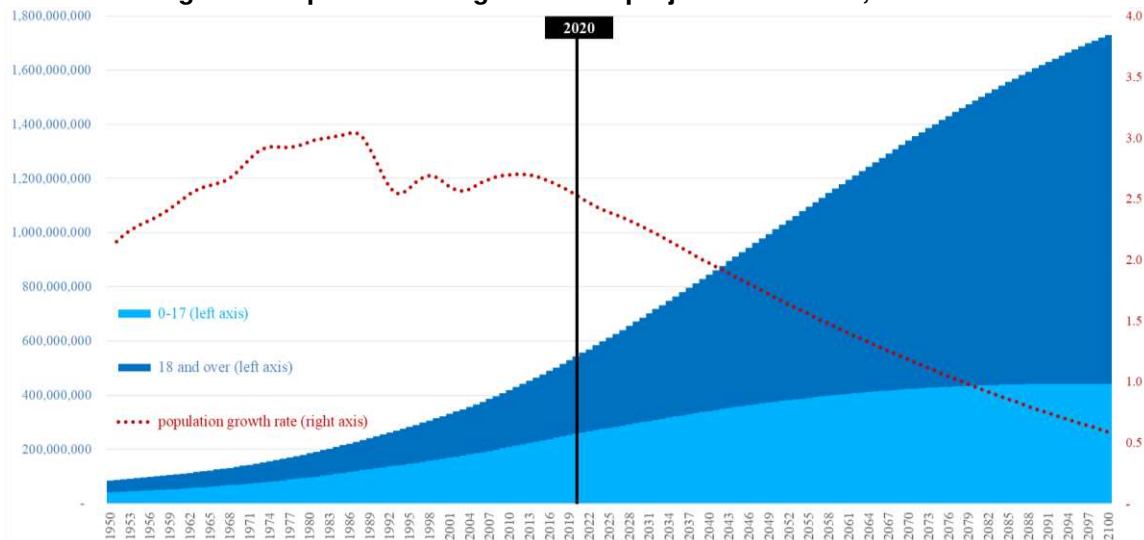
**Figure 2. Fertility rate and life expectancy projections in ESA, 1950-2100**



Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

**As the move toward smaller families and longer lives unfolds, the size of the population dramatically increases.** Before the demographic transition kicks off, population growth is low because high levels of fertility are largely offset by high levels of mortality. However, as the number of births remains high but deaths begin to decline, especially among children, the population growth rate spikes, which propels a sharp increase in the number of people. In ESA, the population growth rate moved from 2%, on average, in 1950, to 3% in the 1980s, which increased the total population from around 85 million to 220 million – or almost a three-fold jump (Figure 3). The population growth rate has been falling since and currently stands at 2.5% with about 550 million persons living in the region – just less than half of which are under the age of 18. Looking forward, although the population growth rate will continue a steady descent reaching 1% in 2080 and 0.6% by 2100, the total population will nearly double over the next three decades, reaching 1 billion in 2050 and then on to 1.5 billion in 2080.

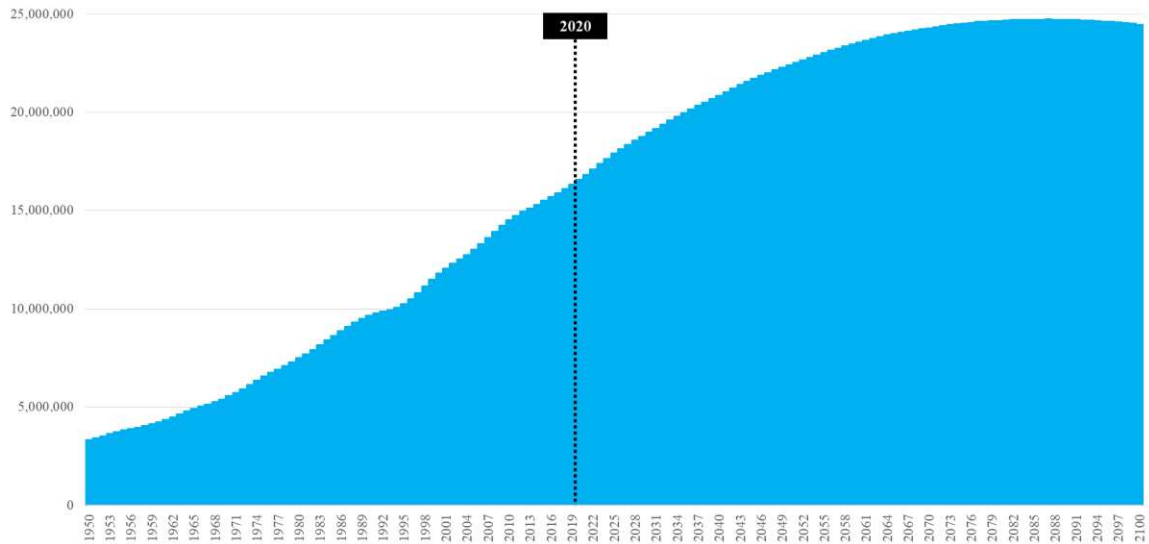
**Figure 3. Population and growth rate projections in ESA, 1950-2100**



Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

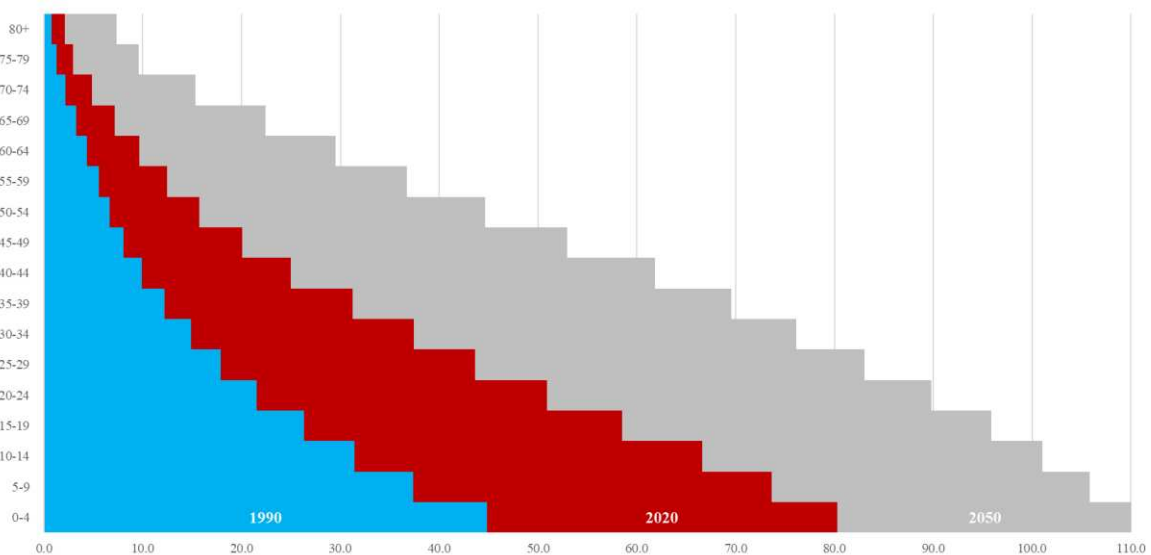
**As the demographic transition advances, one key social concern is the fast-growing number of children.** If looking at birth trends, there were around 12 million new babies to care for in ESA in the year 2000 (Figure 4). As of 2020, this number increased by an additional 5 million babies each year – reaching close to 17 million – and will surpass 22 million in the 2040s. At the same time, the number of children aged 0-4 in ESA will increase by more than 30 million between 2020 and 2050, which reaches 32 million for the cohort of 5-9 year olds (mainly primary school age) and more than 34 million for 10-14 year olds (mainly lower secondary school age) (Figure 5).

**Figure 4. Birth projections in ESA, 1950-2100 (in # of births)**



Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

**Figure 5. Population pyramid projections in ESA, in 1990, 2020 and 2050 (in millions)**

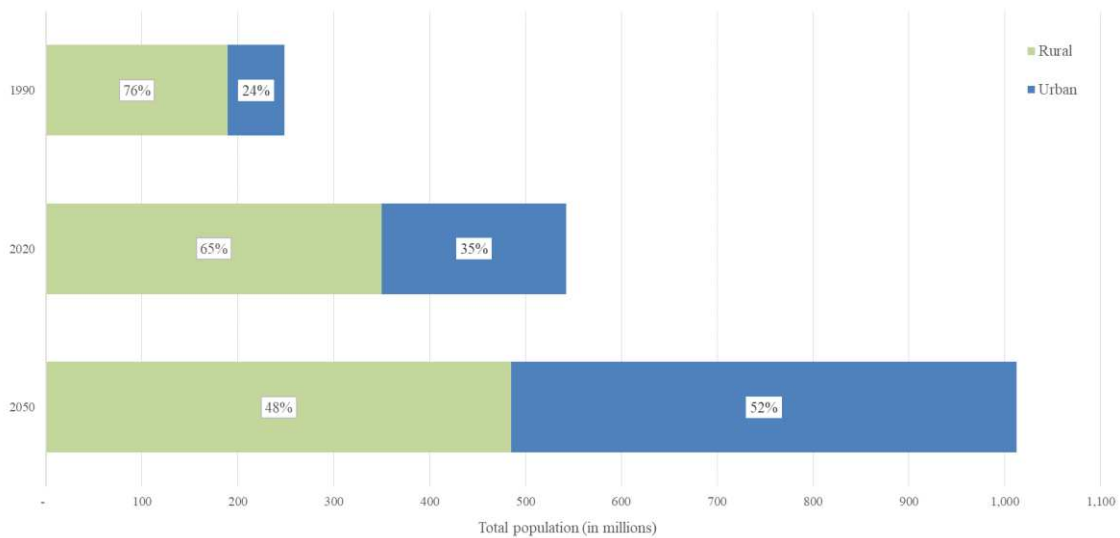


Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

Note: Each year represents the accumulated total, so by 2050 there will be around 110 million children aged 0-4 living in ESA

**Another critical issue is the location of population growth.** Here the overwhelming trend is urbanization. While currently around one in three persons reside in an urban area, ESA will be predominantly urban in 2047 (Figure 6). Overall, the number of persons living in urban areas will swell from 192 to more than 525 million between 2020 and 2050, which represents a nearly three-fold increase. Many cities will face extraordinary demographic pressures. For example, capitals like Bujumbura, Dar es Salaam, Kampala and Lilongwe will see their populations double over the next 15 years (Figure 7A), which applies to many secondary cities as well, such as Dire Dawa in Ethiopia and Quelimane and Tete in Mozambique (Figure 7B). For the three mega cities projected in the region by 2030 – Addis Ababa, Dar es Salaam and Luanda – they will be absorbing around 1,000 new residents every day over the next 15 years, on average (Figure 7C).

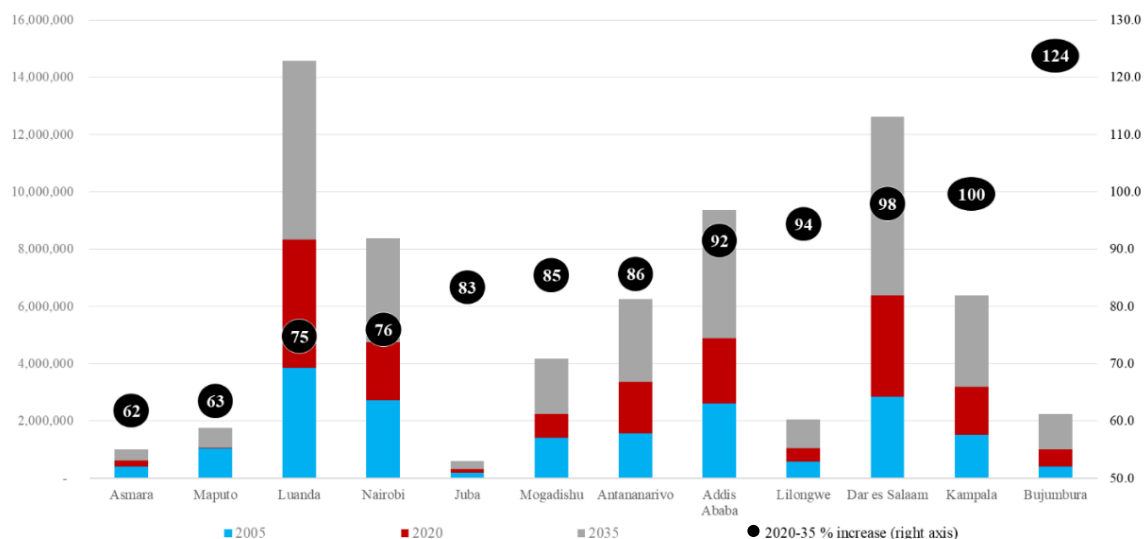
**Figure 6. Rural and urban population projections in ESA in 1990, 2020 and 2050 (in millions and as % of total)**



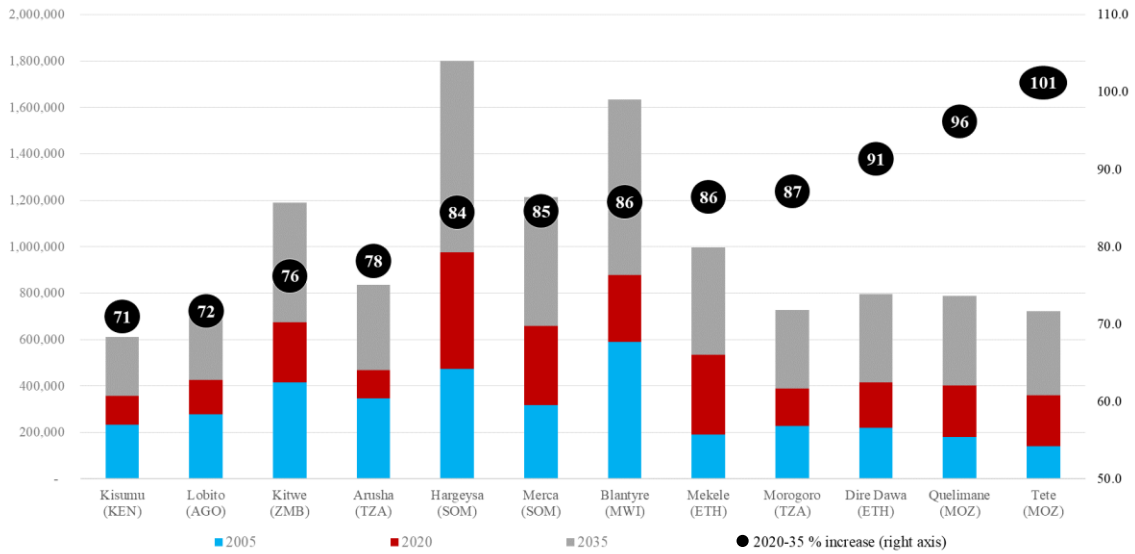
Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates) and UN DESA World Urbanization Prospects: 2018 Revision

**Figure 7. Population projections in select cities in ESA, 2005, 2020 and 2035**

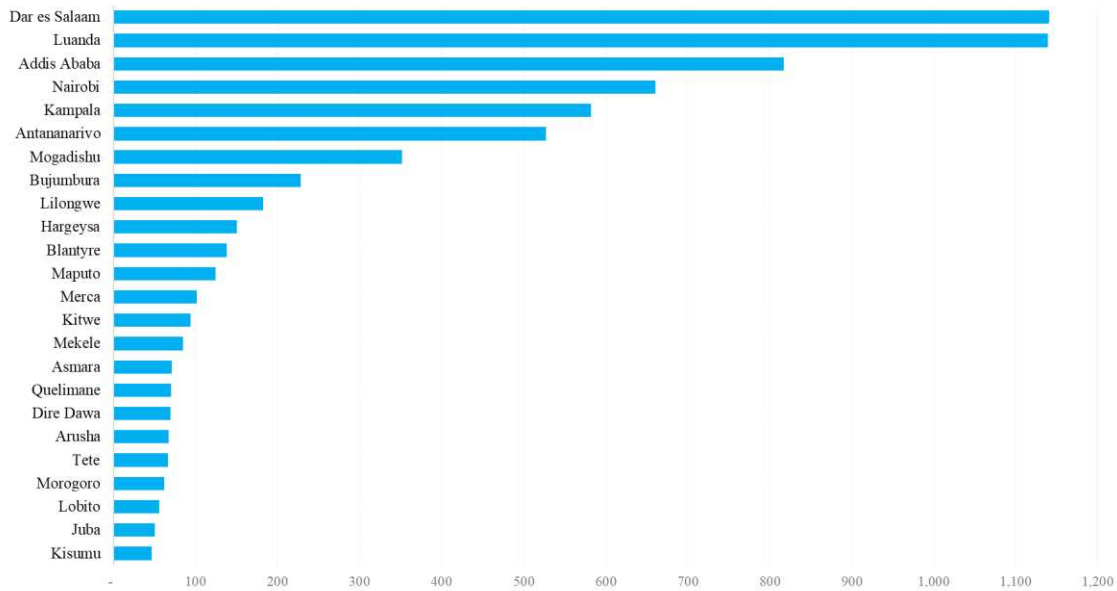
**A. Select capital cities (in # of persons and as % increase)**



### B. Select secondary cities (in # of persons and as % increase)



### C. Select cities (in average # of new daily residents between 2020 and 2035)

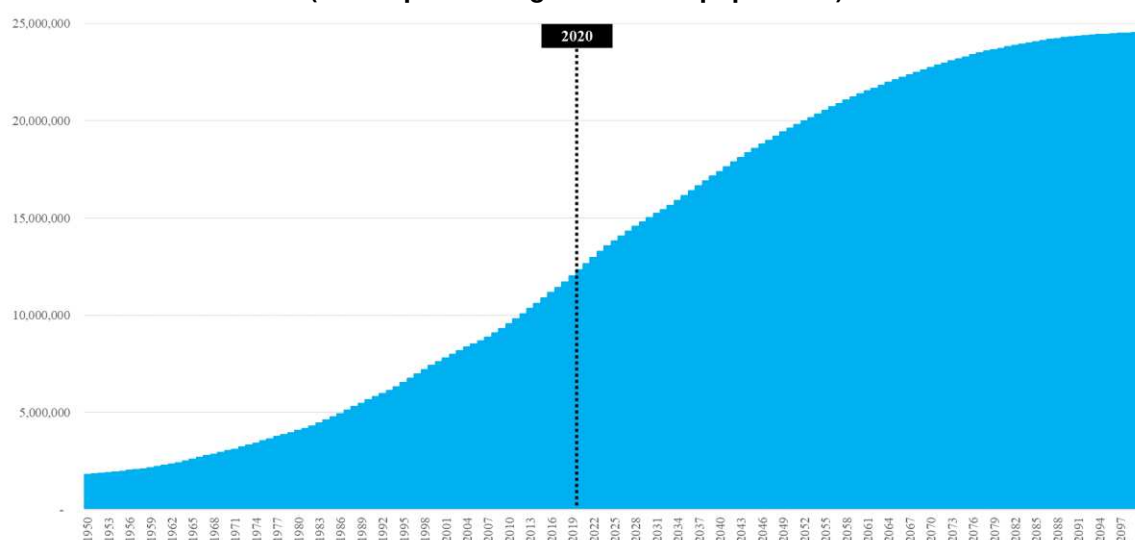


Source: Author's calculations based on UN DESA World Urbanization Prospects: 2018 Revision

### 3. Increasing labour supply: The foundation of the dividend

**In terms of the demographic dividend, the most important feature is the fast increase in the size of the working age population.** As more and more people enter the labour market, the economy has the potential to produce more and more goods and services, which can drive economic growth and income, thereby creating opportunities to significantly improve the well-being of the population (the details are explained in Section 4). This process is well underway in ESA. Currently, more than 12 million persons reach working age every year, which is double the number from the 1990s (Figure 8). Going forward, there will be more than 18 million new potential workers entering the labour market every year in the 2040s and 24 million in the 2080s.

**Figure 8. New working age population projections in ESA, 1950-2100  
(in # of persons aged 15 in the population)**

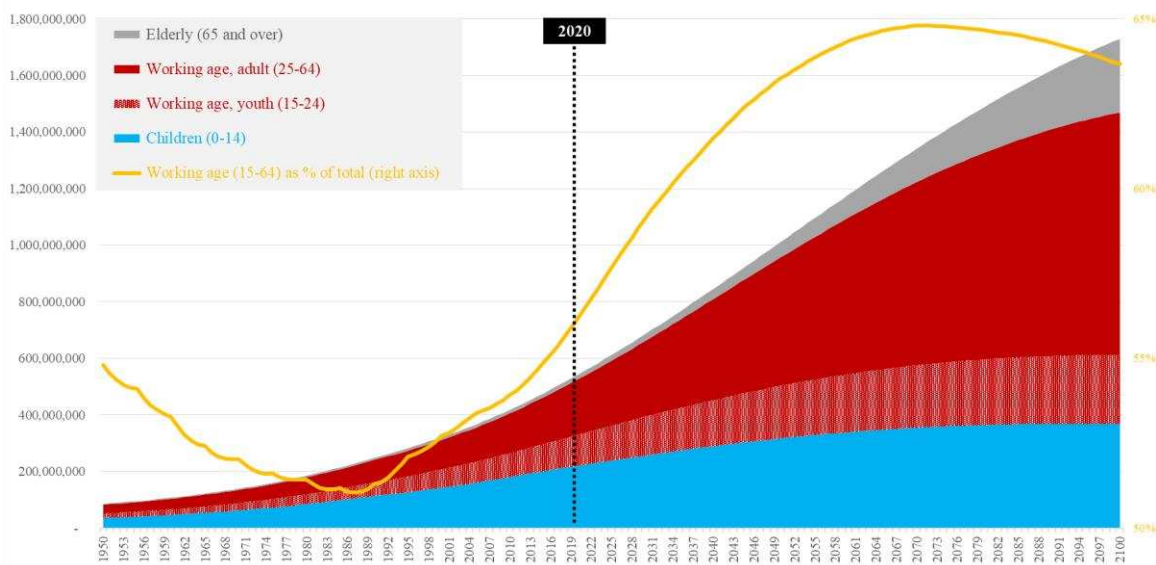


Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

**The window of opportunity that is available for a region or country to take advantage of the dividend is the period where the working age population increases faster than the dependent age population.** In ESA, the working age population (those persons aged 15-64) has been rising since the 1990s when it was just below 50% of the total population. It currently stands at 56% and is projected to increase to 60% in the mid-2030s before reaching 64% in the 2050s where it will hover until the 2090s and then begin falling (Figure 9). In terms of the overall size, the working age population doubled between the mid-1990s and 2020 – from 150 million to more than 300 million persons. Going forward, it is projected to double again by 2047, reaching more than 600 million, and will surpass one billion in the 2080s before starting to decline in the 2090s.



**Figure 9. Dependent and working age population projections in ESA, 1950-2100 (in # & % of total)**



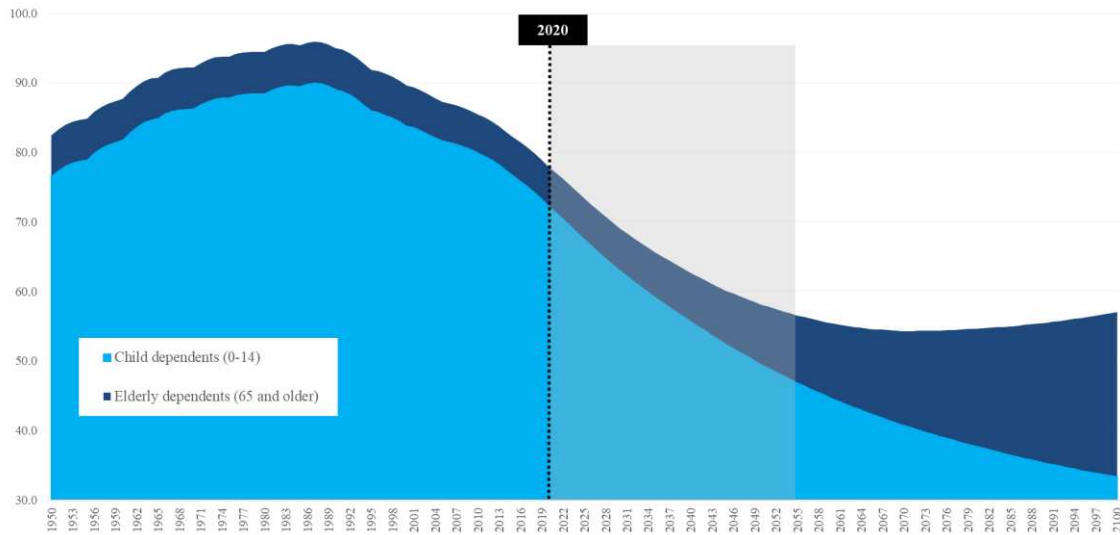
Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

**Building on the relationship between potential workers and non-workers, the dependency ratio can be used to assess the timeframe for a region or country to benefit from a demographic dividend.** Mathematically, the dependency ratio adds the number of children (under 14) and elderly (65 and over) and divides that by the number of persons of working age (15-64), which are standardized age categories used by the ILO. The ratio gets smaller as the size of the working age population grows faster than the size of the non-working age population.

**As described earlier, family sizes are continuing to shrink as life expectancy expands, which are causing the dependency ratio to fall in ESA.** The ratio topped out at 96% in the late 1980s (i.e. there were 96 dependents for every 100 potential workers); the ratio is currently at 78%, which is expected to bottom out around 54% in the 2060s before reversing course (Figure 10). However, since the rate of change will begin to slow down significantly in the 2050s, ESA has approximately 30 years to take advantage of the favorable demographic conditions that are being propelled by the rising share of working age persons in the population. To offer a comparison, this trend is inverted in high income countries, with the dependency ratio currently at 54%, on average, and expected to exceed 70% in 2050.



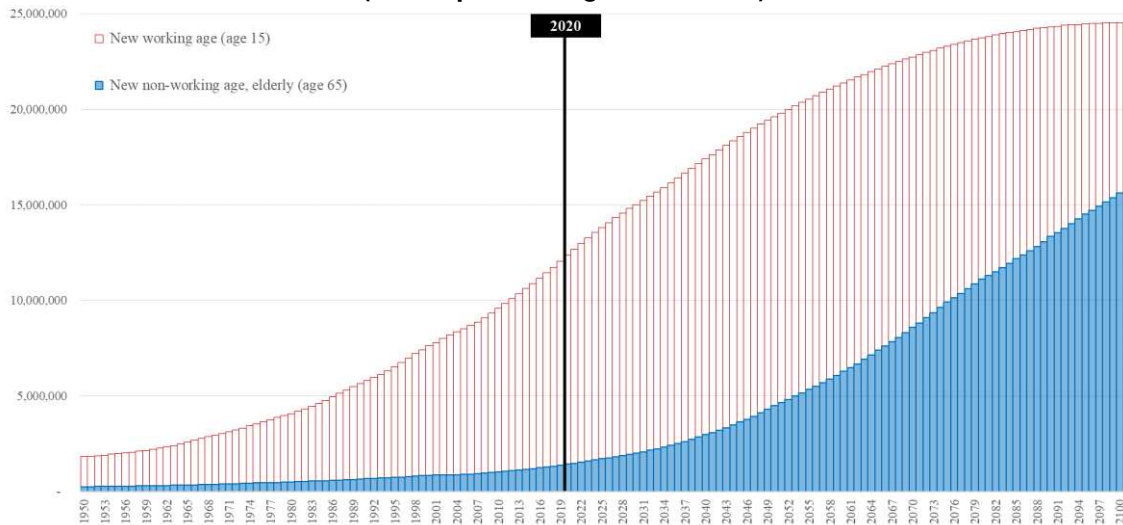
**Figure 10. Young and old dependency ratio projections in ESA, 1950-2100  
(children and elderly as a % of working age population)**



Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

**The demographic transition, therefore, presents a one-time opportunity for a region or country.<sup>2</sup>** As small families and long lives become the norm, the labour force will need to care for an increasing number of non-workers, mainly elderly persons. In ESA, around 1.4 million persons will turn 65 in 2020, but this number will double by 2040, triple by 2050 and increase tenfold around 2090, at which point an additional 14 million persons are projected to leave the labour force and become “dependent” each year (Figure 11). As the balance between new workers and new non-workers begins to change (i.e. the number of new babies and elderly begins to equal and eventually surpass the number of new workers each year), this signals that the demographic transition is ending. Based on current projections, dependents – elders in this case – will start to increase their share of the total population beginning in 2070 (Figure 12).

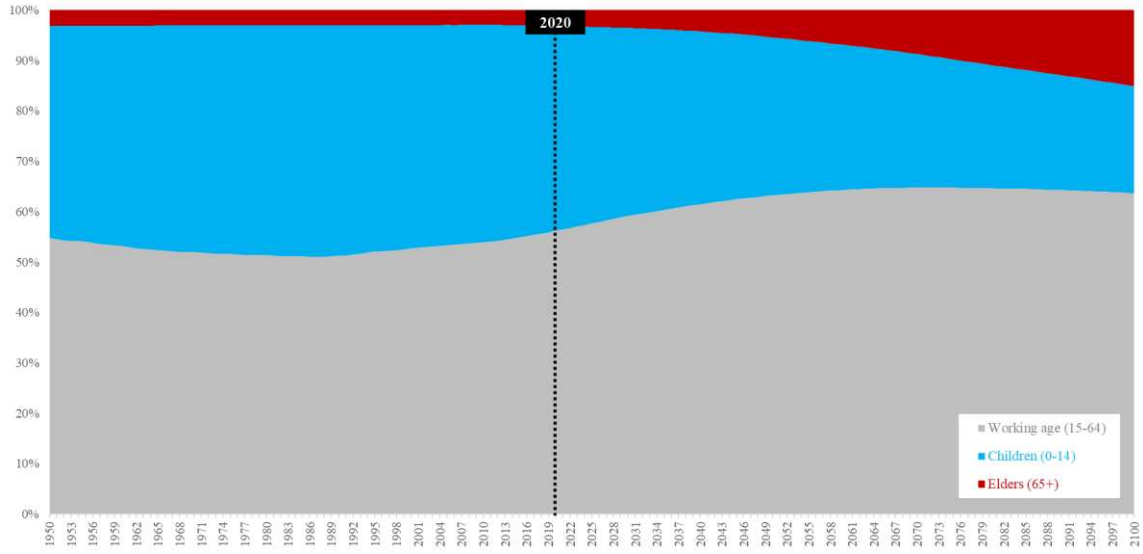
**Figure 11. New working and non-working age population projections in ESA, 1950-2100  
(in # of persons aged 15 and 65)**



Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

<sup>2</sup> A second dividend is possible when elderly workers accumulate savings/assets that can also be invested, but the ability of African countries to benefit from this remains questionable at present.

**Figure 12. Working and dependent age population projections in ESA, 1950-2100  
(% of population)**



Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

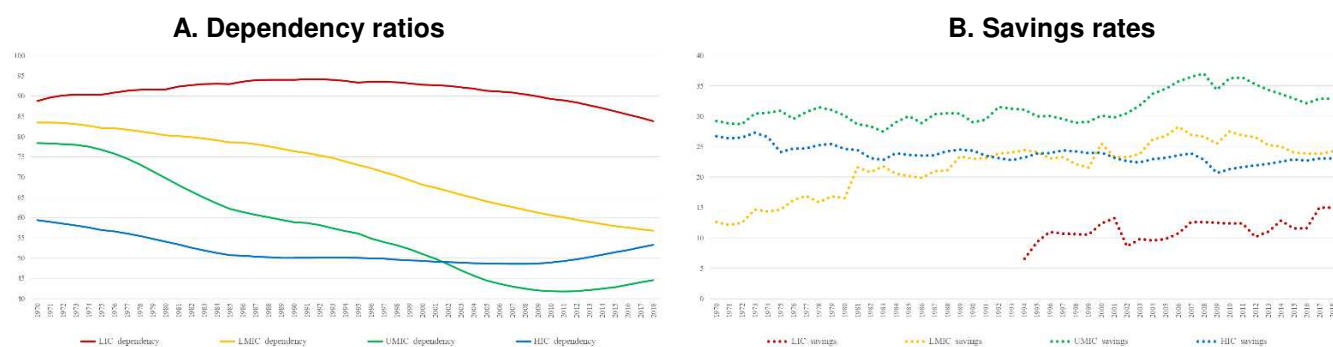
## 4. Savings and investment: Driving the dividend

**A key economic force that underpins the potential to achieve a demographic dividend is the savings rate.** When looking at the structure of an economy, the amount of savings equals the amount of investment. So as savings rise, investment in things like infrastructure, agriculture machinery, small businesses, etc. also rise which, in turn, set the foundation for greater economic output in the future.<sup>3</sup> In terms of the demographic transition, the increasing number of workers and output naturally create more income, which facilitates greater savings and investment. A rise in savings is also partly explained by the move toward smaller family sizes, which require fewer resources to maintain – i.e. it is cheaper to clothe, feed and educate three children than seven children.

**A strong relationship therefore emerges between falling dependency ratios and rising savings rates.** In low income countries, where the demographic transition is still at a relatively early stage, savings rates are very low – 15% of GDP, on average (red lines in Figures 13A and 13B). In contrast, upper-middle income countries, which are generally nearing the end of the demographic transition, are characterized by very high savings rates – 33% of GDP, on average (green lines in Figures 13A and 13B). This indicates that savings rates tend to increase relatively steeply as the demographic transition advances thus encouraging investment and broader economic development.

**However, this relationship eventually reverses.** Driven by low birth and death rates (i.e. post-demographic transition status), high income countries commonly feature very low and rising dependency ratios, which are accompanied by much lower savings rates. For instance, savings rates in high income countries are 23% of GDP, on average, which are a full ten percentage points lower than those in upper-middle income countries (blue lines in Figures 13A and 13B). Much of this change is driven by the rising consumption needs of the elderly who are no longer working and earning. Lower savings will then result in lower investment and hence limit the expansionary potential of the economy.<sup>4</sup>

**Figure 13. Savings rates and dependency ratios by income groups, 1970-2018**



Sources: UN DESA World Population Prospects: 2019 Revision (medium variant estimates) and World Bank national accounts data

<sup>3</sup> This is generally true, but the trade balance and fiscal balance are additional factors that affect the amount of investment in an open economy.

<sup>4</sup> See footnote 2.

## 5. Human capital: Maximizing the dividend

**The potential gains in economic output and improved well-being depends on the productive capacity of each new person that enters the labour force.** In other words, just because an economy has an increasing number of persons of working age does not automatically mean that there will be more output or improved productivity, or that there will be greater income and opportunities to improve well-being. There is no question that physical capital matters. The existence of high-quality infrastructure, in particular, is critical to facilitating and sustaining greater economic output and growth – think roads, ports and airports, water and irrigation systems, electricity and telecommunications networks, or anything that helps businesses produce and sell goods and services in domestic and international markets. Equally important, however, is human capital or the ability of the labour force to produce and sell those goods and services. A fast-growing labour force that is well-educated and fully physically and cognitively developed is therefore better positioned to contribute to increased economic output and take advantage of broader opportunities presented by the demographic transition (Lutz et al. 2019). Of course, the opposite is also true.

**As a thought exercise, it can be insightful to examine the human capital potential of young workers.** One very simplistic approach is to look at the educational achievement and general physical and cognitive development of a cohort of young workers. For the former, completion rates serve as a good proxy since they allow for estimating the number of a reference age group that completed no education, only completed primary education, only completed lower secondary education or completed upper secondary education.<sup>5</sup> For the latter, stunting rates among children under 5 are a decent proxy since they can also be linked to a reference age group and be tracked over time, while the effects of malnutrition and poor health experienced during childhood tend to be irreversible.<sup>6</sup> When combined, young workers that are better educated and whose growth was not affected by stunting should be expected to be more productive workers and hence better able to contribute to improved productivity and economic growth.

**When applying education and general development proxies, the current human capital potential in ESA is alarming.** Of the roughly 10 million 23 year olds<sup>7</sup> in the region in 2020, approximately 40% did not complete primary school while less than 20% studied full-time and progressed through upper secondary education without unreasonable delay (Figure 14A). If combining those persons that did not complete primary school or only completed lower secondary school, close to two out every three young workers (63%) could be considered lacking basic literacy and numeracy skills. At the same time, nearly half of 23 year olds (47%) in 2020 were affected by stunting as children, suggesting that their bodies and brains were never fully developed (Figure 14B).

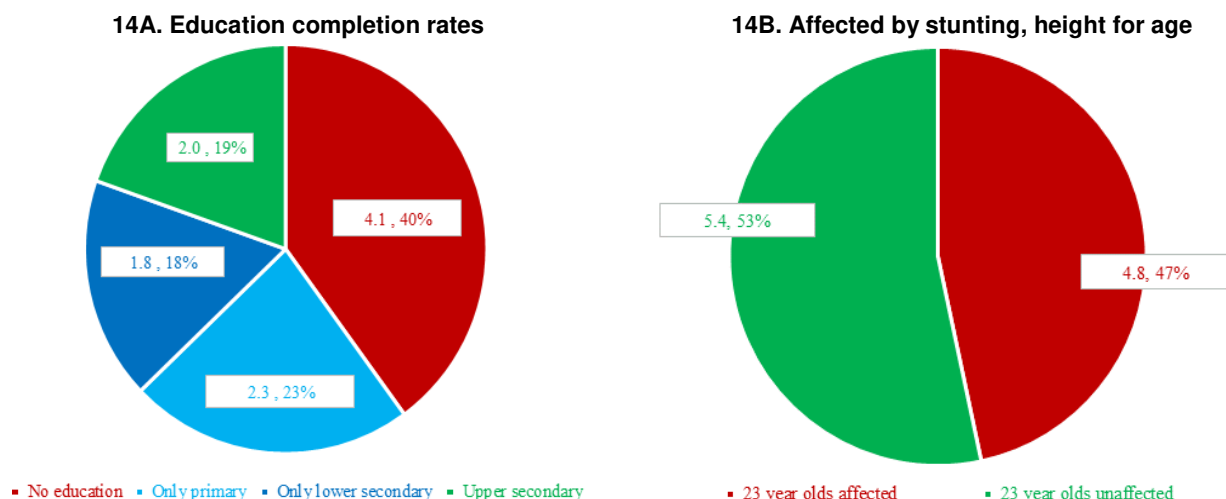
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<sup>5</sup> Applying the primary completion rates in year  $n - 6$ , lower secondary completion rates in year  $n - 3$  and upper secondary completion rates in year  $n$  to the reference age group for upper secondary completion rates in year  $n$  allows for estimating the number of persons in that age group that only completed each level or no level. For instance, primary rates in 2014, lower secondary rates in 2017 and upper secondary rates in 2020 can be used to approximate the educational achievement of 23 year olds in the year 2020.

<sup>6</sup> Applying the stunting rates in year  $n - 19$  to the reference age group in year  $n$  allows for estimating the number of persons in that age group that were affected and not affected by stunting as a child. For instance, stunting rates in 2001 can be used to approximate the number of 23 year olds in the year 2020 that were affected by stunting as children.

<sup>7</sup> Since the aim is to understand the highest level of basic education achieved, 23 is the youngest age that can be used for this analysis since completion rates represent the cohort of persons aged 3-5 years above the intended age for the last grade of each level of education who have completed that grade. In ESA, official school ages for upper secondary education are 16-18, on average, which means that the reference age group to identify completion rates is 21-23 (or  $18 + 3 = 21$  and  $18 + 5 = 23$ ).

**Figure 14. Human capital outcomes of 23 year olds in ESA, 2020 (in millions and % of total)**



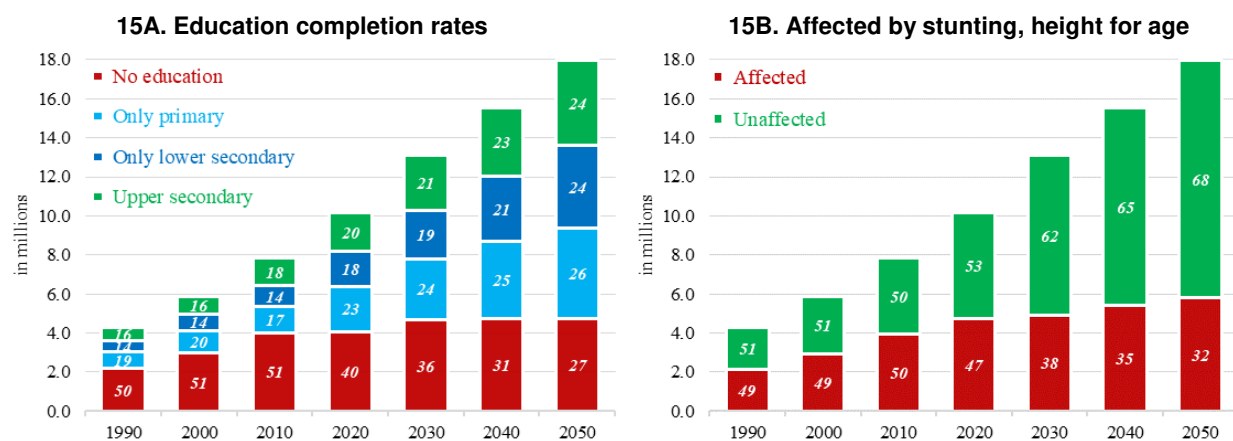
Sources: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates), UNESCO Institute of Statistics, and UNICEF, WHO and World Bank Joint Child Malnutrition Estimates (2018 edition)

Notes: Interpolation and nearest neighbor imputation methods used to gap fill missing values at the country level, where applicable, in order to arrive at regional estimates; 2020 projections are based on the least squares method using the latest 10-year period

**Based on current trends, the human capital potential of ESA will likely improve over time.**

Projecting the educational achievement of the same cohort of young workers indicates that the percentage of 23 year olds that do not complete any level of education will drop from 40% to 27% between 2020 and 2050 just as the share that complete lower and upper secondary education will increase by six and four percentage points, respectively (Figure 15A). Therefore, at the current rate of improved completion rates in the region, close to half of this representation of the young labour force will possess at least lower secondary education skills, which is 10% better than in 2020. Forecasting stunting trends on 23 year olds further suggests that the portion of this group of young workers that are affected will fall from 47% to 32% between 2020 and 2050; this indicates that close to 70% will have reached their full physical and cognitive development (Figure 15B).

**Figure 15. Human capital outcomes of 23 year olds in ESA, 1990-2050 (in millions and % of total)**



Sources: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates), UNESCO Institute of Statistics, and UNICEF, WHO and World Bank Joint Child Malnutrition Estimates (2018 edition)

Notes: Interpolation and nearest neighbor imputation methods used to gap fill missing values at the country level, where applicable, in order to arrive at regional estimates; forward-looking projections are based on the least squares method using the latest 10-year period

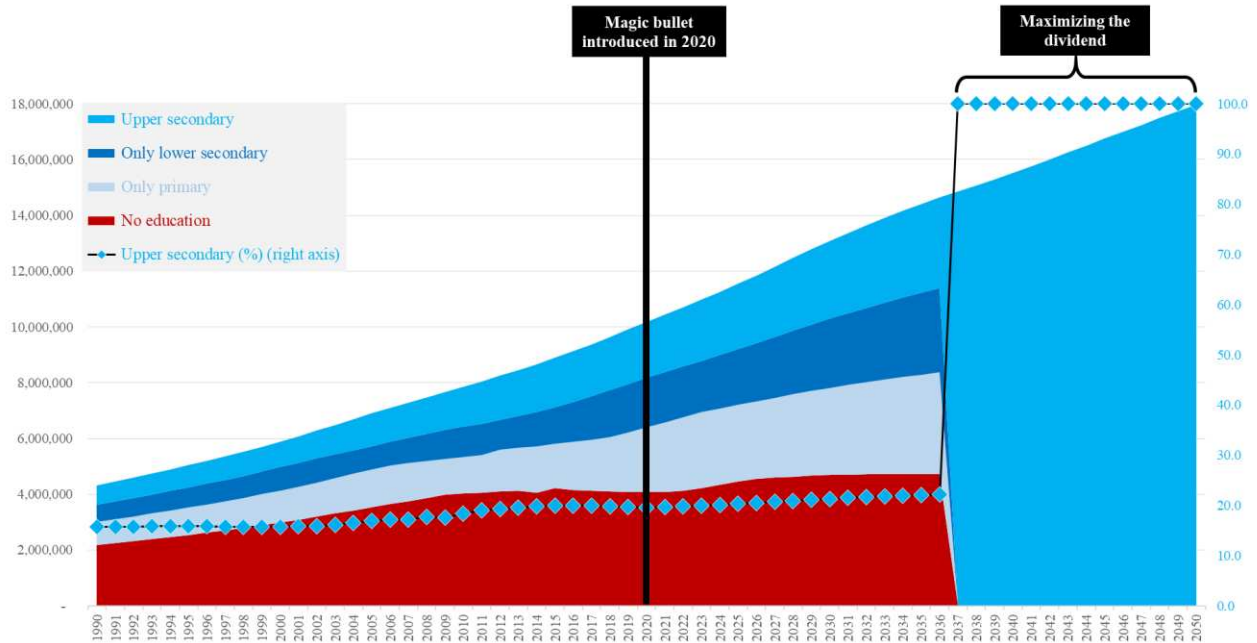
**Despite the likely progress in strengthening the human capital base of the working age population in ESA, the gains will not be enough to maximize the demographic dividend.**

Assuming that the cohort of 23 years olds were representative of the entire labour force in the year 2050 – acknowledging that this would be a significant over-estimation since older workers would have achieved lower levels of education and been affected by much higher incidences of stunting as children – more than half (53%) would still likely be illiterate and lack basic numeracy skills having completed no education or only primary education (Figure 15A above). At the same time, approximately one-third (32%) would not have reached their full physical or brain development potential due to the effects of stunting (Figure 15B above). Moreover, at that stage, dependent age populations would start to begin increasing their share of the total population, signaling the end of the window to capitalize on favorable demographic conditions. Current trends therefore suggest that ESA will remain far from possessing the human capital base required to fully reap a demographic dividend.

**But how would the outlook change if governments were able to instantly solve two of the most pressing human capital challenges?**

For the sake of argument, assume that, starting in 2020, all governments guaranteed that every child that enters primary school progresses through and graduates from secondary school without undue delay, while every newborn has adequate nutritional intake and is safeguarded from the effects of stunting throughout childhood. Under this “magic bullet” scenario, the cohort of 23 year olds would start their primary education at 6 years old in 2020 and would possess at least an upper secondary education in 2037 (Figure 16), while 23 year olds born in 2020 would be completely free of any impacts of stunting in 2043 (Figure 17). In other words, all new working age persons would have reached their full physical and cognitive development and enjoy a minimum set of skills in the early 2040s, which would present an opportunity to start maximizing the productivity and output potential of the economy from a human capital perspective. However, even under this implausible scenario, the older workforce would still be characterized by low educational achievement and stunted growth, while there would only be about a decade before the demographic window begins closing.

**Figure 16. Education completion rates among 23 year olds in ESA under a “magic bullet”\* scenario, 1990-2050 (in # and % of total)**

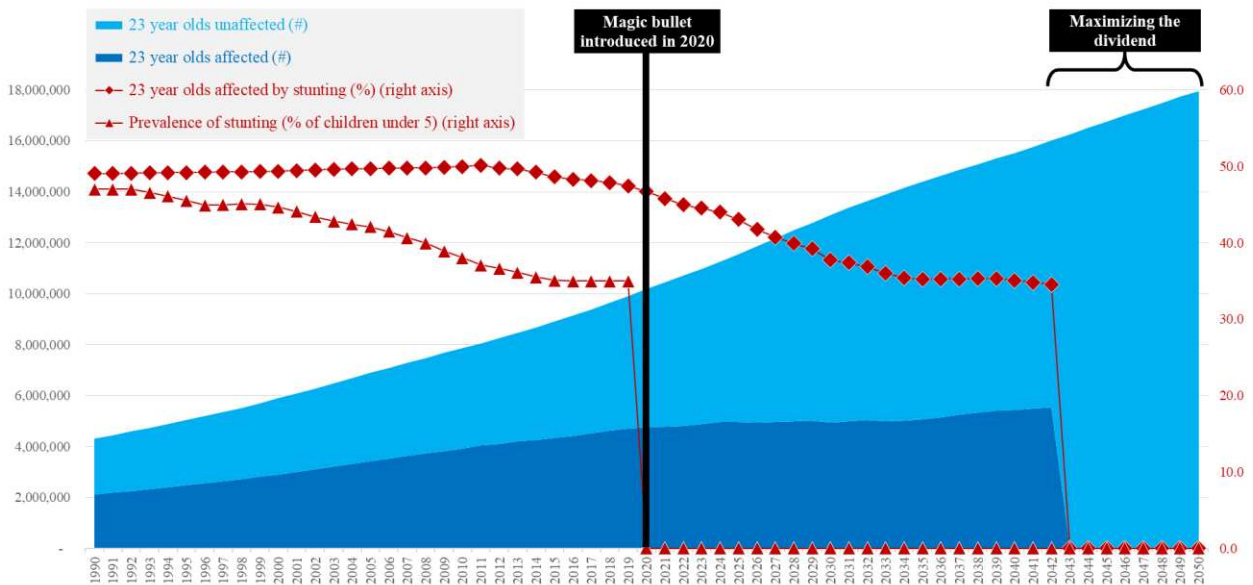


\* Assumes all students that enter primary school starting in 2020 finish upper secondary school without delay

Sources: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates) and UNESCO Institute of Statistics

Notes: Interpolation and nearest neighbor imputation methods used to gap fill missing values at the country level, where applicable, in order to arrive at regional estimates; forward-looking projections are based on the least squares method using the latest 10-year period, assuming that the cohort of children that enter primary school age in 2020 (6 years old) complete upper secondary education and reach 23 years of age in 2037

**Figure 17. 23 year olds affected by stunting under a “magic bullet”\* scenario, 1990-2050 (in # and % of total)**



\* Assumes that every child born in 2020 and after is never affected by stunting

Sources: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates), and UNICEF, WHO and World Bank Joint Child Malnutrition Estimates (2018 edition)

Notes: Interpolation and nearest neighbor imputation methods used to gap fill missing values at the country level, where applicable, in order to arrive at regional estimates; forward-looking projections are based on the least squares method using the latest 10-year period, assuming that the cohort of children that are born in 2020 complete upper secondary education and reach 23 years of age in 2043



## 6. Public investment decisions: The future of the dividend

**Unlocking the remaining potential of the demographic dividend in ESA hinges on the investment choices of governments starting today.** By investing in the health, knowledge, skills and resilience of their populations, governments can help the fast-growing labour force to be more productive, flexible and innovative, and thus better capable of contributing to sustained economic growth and poverty reduction while there is still time (World Bank 2018). As a starting point, this requires scaling up spending on core health and education programs, which will also need to be complemented by sound economic and governance policies to encourage savings, investment and the creation of new jobs for all of the new workers (Table 1).

**Table 1. Policy and programmatic approaches to deliver the demographic dividend**

| Area                           | Core policies and programs   | Special focus   | Benefits   |
|--------------------------------|--|---|--|
| <b>Health</b>                  | <ul style="list-style-type: none"> <li>▪ HIV/AIDS prevention and treatment</li> <li>▪ Immunizations</li> <li>▪ Nutrition, including school meals</li> <li>▪ Promotion of healthy lifestyles and diets among young adults</li> <li>▪ Sanitation</li> <li>▪ Sexual and reproductive health</li> </ul>                          | <ul style="list-style-type: none"> <li>▪ Ensure adequate personnel (doctors, nurses, midwives, community health workers), facilities, medical equipment and health commodities to provide universal access to basic primary healthcare services even as the demand for services increases vis-à-vis growing populations</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Improved child survival rates and life expectancy</li> <li>▪ Better attendance and performance in school among student populations</li> <li>▪ Enhanced worker productivity</li> </ul> |
| <b>Education</b>               | <ul style="list-style-type: none"> <li>▪ Early childhood development (ECD)</li> <li>▪ Primary school</li> <li>▪ Secondary school</li> <li>▪ Technical and vocational education and training (TVET)</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Ensure the number of classrooms, teachers and didactic materials match rising student populations</li> <li>▪ Strengthen the quality of learning, including through teacher training</li> <li>▪ Adjust learning curriculum to changing labour market demands</li> <li>▪ Support girl's empowerment by ensuring female participation throughout the school cycle and by outlawing and enforcing mechanisms to prevent child marriages and gender-based violence</li> </ul> | <ul style="list-style-type: none"> <li>▪ Improved skills of the workforce to move into formal sector jobs and earn higher wages, pursue entrepreneurial opportunities, and foster innovation</li> </ul>                        |
| <b>Economic and Governance</b> | <ul style="list-style-type: none"> <li>▪ Physical infrastructure</li> <li>▪ International trade</li> <li>▪ Tax incentives</li> <li>▪ Good governance, including rule of law, anti-corruption, contract enforcement, etc.</li> <li>▪ Macroeconomic stability</li> <li>▪ Savings and investment schemes for workers</li> </ul> | <ul style="list-style-type: none"> <li>▪ Support economic sectors that can expand and absorb the growing workforce</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Increased savings and investment</li> <li>▪ Increased number and quality of jobs</li> <li>▪ Increased economic output</li> </ul>  |

Sources: Author's summary based on USAID, PACE and Population Reference Bureau (2019), African Institute for Development Policy and University of Southampton (2018), Bloom et al. (2017), Canning et al. (2015), and UNECA and African Union Commission (2013)

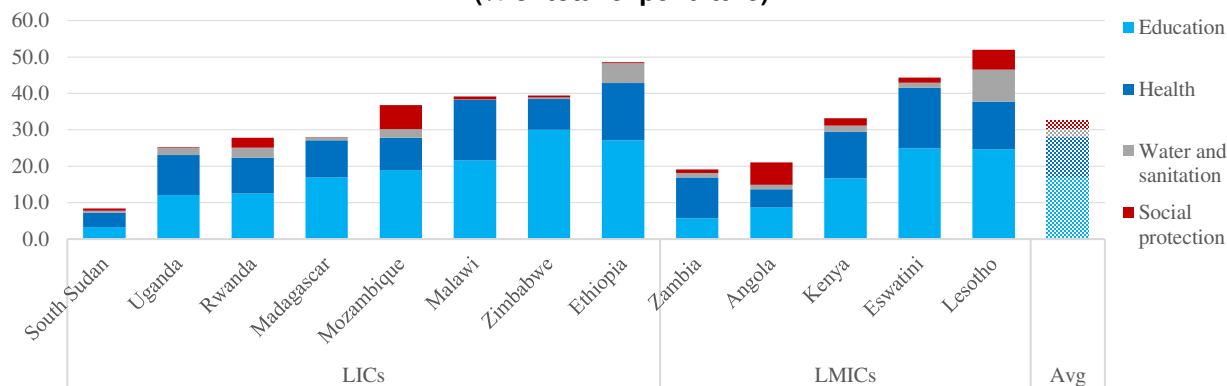
**Unfortunately, the recent levels, design and performance of human capital investment across ESA are very unlikely to reap much of the remaining demographic dividend.**<sup>8</sup> As a starting point, few governments are meeting their financial commitments to core human capital sectors, either in budget priority or in levels of investment. For example, only 5/21 countries with recent comparable expenditure data had devoted 20% or more of their national budgets to education in line with Education for All (UNESCO 2015), while just 3/21 countries had spent 15% or more according to the Abuja Declaration (WHO 2011) (Figure 18). And even where human capital sectors are afforded a higher share of the budget, the low revenue base makes it

<sup>8</sup> The information contained in this paragraph is a summary of a detailed review of human capital investment in ESA as presented in Chapter 7 of Cummins (2019a).



impossible for most governments to achieve minimum spending levels (Figure 19). The structure of human capital budgets is also problematic. On the one hand, budgets commonly favor tertiary services at the expense of primary services that are direly needed and gravely underfunded (Figure 20 presents an example from the education sector). On the other hand, infrastructure development and equipment and materials to support effective service delivery are often afterthoughts, as recurrent items – largely salaries – absorb the lion’s share of human capital budgets (Figure 21). Low budget credibility and poor budget execution, especially for capital items, act as additional barriers to better human capital investment (Figure 22).

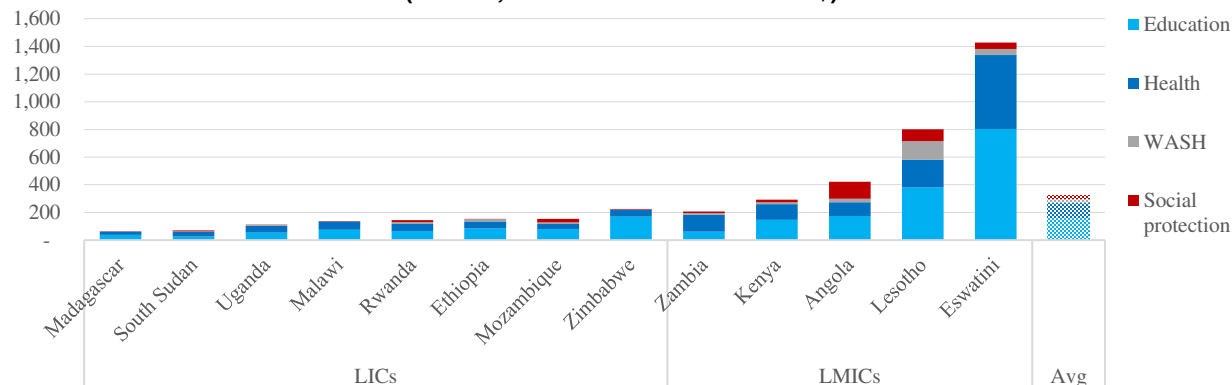
**Figure 18. Human capital expenditure\* in select ESA countries, 2015  
(% of total expenditure)**



Sources: WHO Global Health Expenditure Database for health, UNESCO Institute for Statistics for education, and Government Spending Watch for water and sanitation as well as social protection

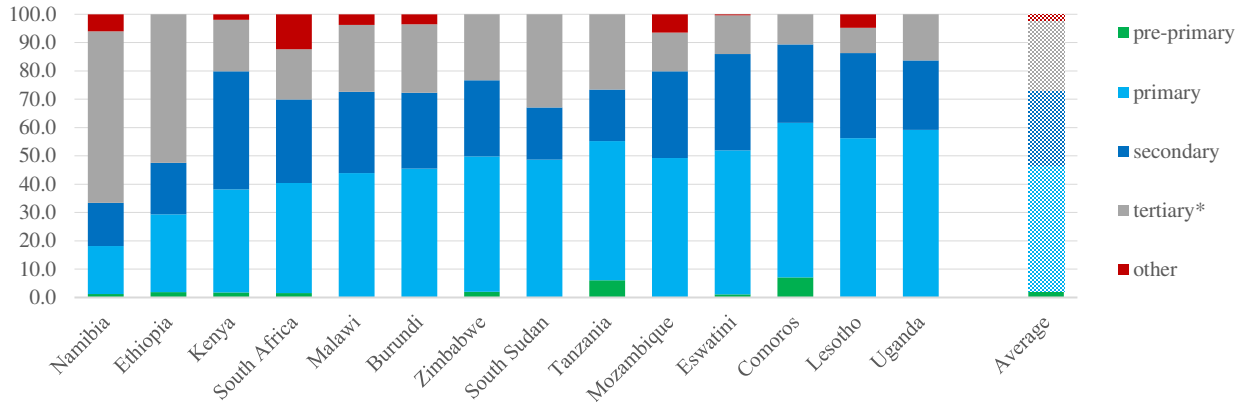
\* Data for water and sanitation are approved allocations and not actual expenditure as in the other sectors

**Figure 19. Per capita human capital expenditure\* in select ESA countries, 2015  
(in PPP, current international US\$)**



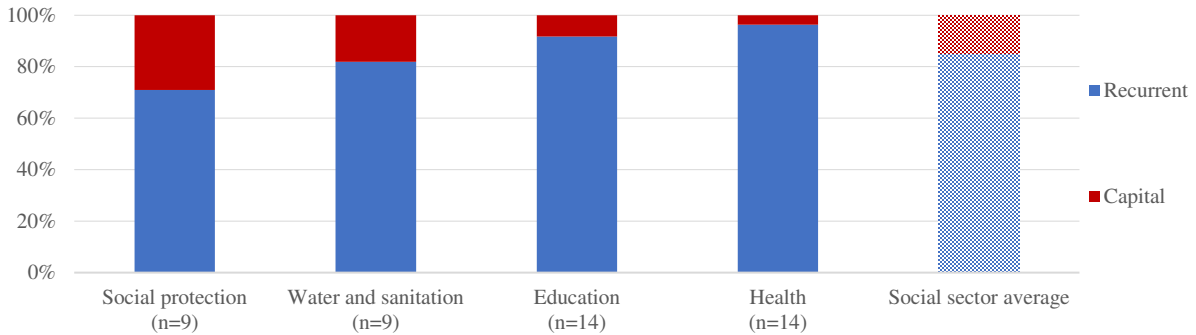
Source: Author’s calculations based on WHO Global Health Expenditure Database for health, UNESCO Institute for Statistics for education, Government Spending Watch for water and sanitation as well as social protection, and IMF World Economic Outlook Database (April 2019) for GDP and population

**Figure 20. Government expenditure by level of education in select ESA countries, 2017 or latest available (% of total government expenditure on education)**



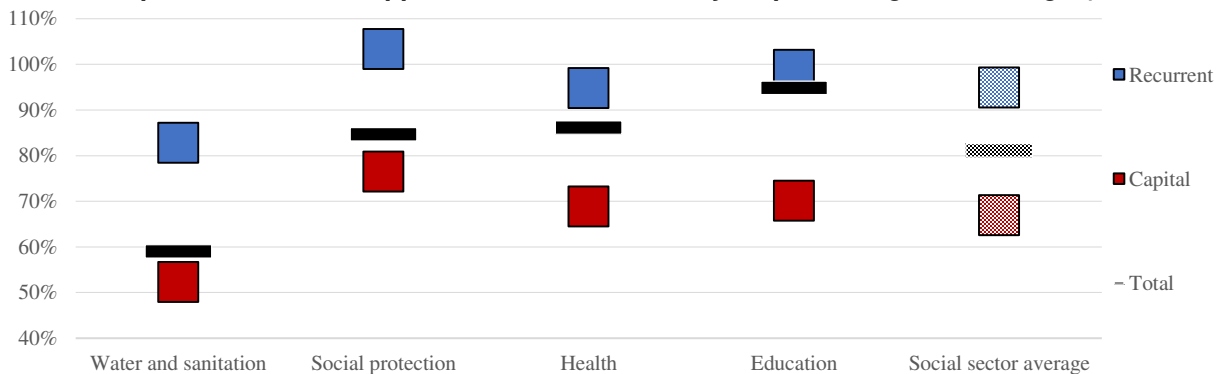
Source: UNESCO Institute for Statistics  
 \* Includes both tertiary and post-secondary non-tertiary

**Figure 21. Economic classification of human capital expenditure\* in ESA, 2017 or latest available (% of total social sector expenditure, regional averages)**



Source: Author's calculations based on WHO Global Health Expenditure Database for health, UNESCO Institute for Statistics for education, and Government Spending Watch for water and sanitation as well as social protection  
 \* Data for water and sanitation are approved allocations and not actual expenditure as in the other categories

**Figure 22. Human capital budget credibility rates in ESA, 2017 or latest available (actual expenditure as % of approved allocation, three-year period regional averages)**



Source: Author's calculations based on UNICEF budget briefs, Public Expenditure Reviews (PERs), Public Expenditure and Financial Assessments (PEFAs), BOOST databases and Government Spending Watch published since 2016

## 7. Concluding thoughts

**Population dynamics are upending ESA.** The ongoing shift toward smaller families and longer lives is causing jaw-dropping population growth. In addition to the huge increase in the number of children and workers, these processes are largely taking place in urban areas, which will be under increasing strain for the foreseeable future. At the same time, as the working age population outpaces the dependent age population, the region has an opportunity to benefit from the natural increase in economic output to improve well-being and accelerate poverty eradication.

**The time-bound window to take advantage of favorable demographic conditions is quickly closing.** Looking at the projected change in the dependency ratio, the region has approximately 30 years to exploit the growing labour force before the number of elderly persons starts to significantly increase, thus limiting savings, investment and future output potential.

**The remaining benefits will be largely determined by the human capital base of the workforce, which remains severely undeveloped.** When applying proxies for human capital to a cross-section of the young labour force, only one out of every three young workers has completed some sort of secondary education, while close to half were affected by malnutrition during childhood. The absence of basic literacy and numeracy skills combined with stunted bodies and brains indicates that most workers remain far from reaching their productive or innovative potential.

**Looking forward, human capital will not develop fast enough to maximize the demographic dividend.** According to projections, more than half of 23 year olds will still only possess no more than a primary education in 2050, while one-third will have suffered from stunting. And even under a completely implausible scenario whereby all governments guarantee that every newborn is well-nourished throughout childhood and every new student graduates from secondary school, this new generation of fully empowered workers would not enter the labour market until the early 2040s, by which time the demographic window is already beginning to close.

**Quickly and radically scaling up investment in human capital is the only hope for ESA to salvage some part of the dividend.** Yet concerns abound. Few governments are meeting their financial commitments to core human capital sectors, including education and health. At the same time, the low revenue base makes achieving minimum investment levels an impossibility in most countries. There are also major questions around the use and impact of resources allocated to human capital sectors, which are frequently unaligned to priorities or simply unspent.

**Despite the worrisome outlook, UNICEF and development partners can play help governments to galvanize and get the most out of their investment in human capital.** On the financing side, nearly all UNICEF country offices in ESA have recently carried out fiscal space analyses.<sup>9</sup> The regional summary report notes that every government has at least one very strong option to boost investment in human capital sectors (Cummins 2019b). Reprioritizing the budget, increasing domestic revenue and improving the efficiency of spending are the most promising avenues, while attracting greater foreign aid and cracking down on illicit financial flows are good approaches in sub-groups of countries. Through further analysis, advocacy and advice, and

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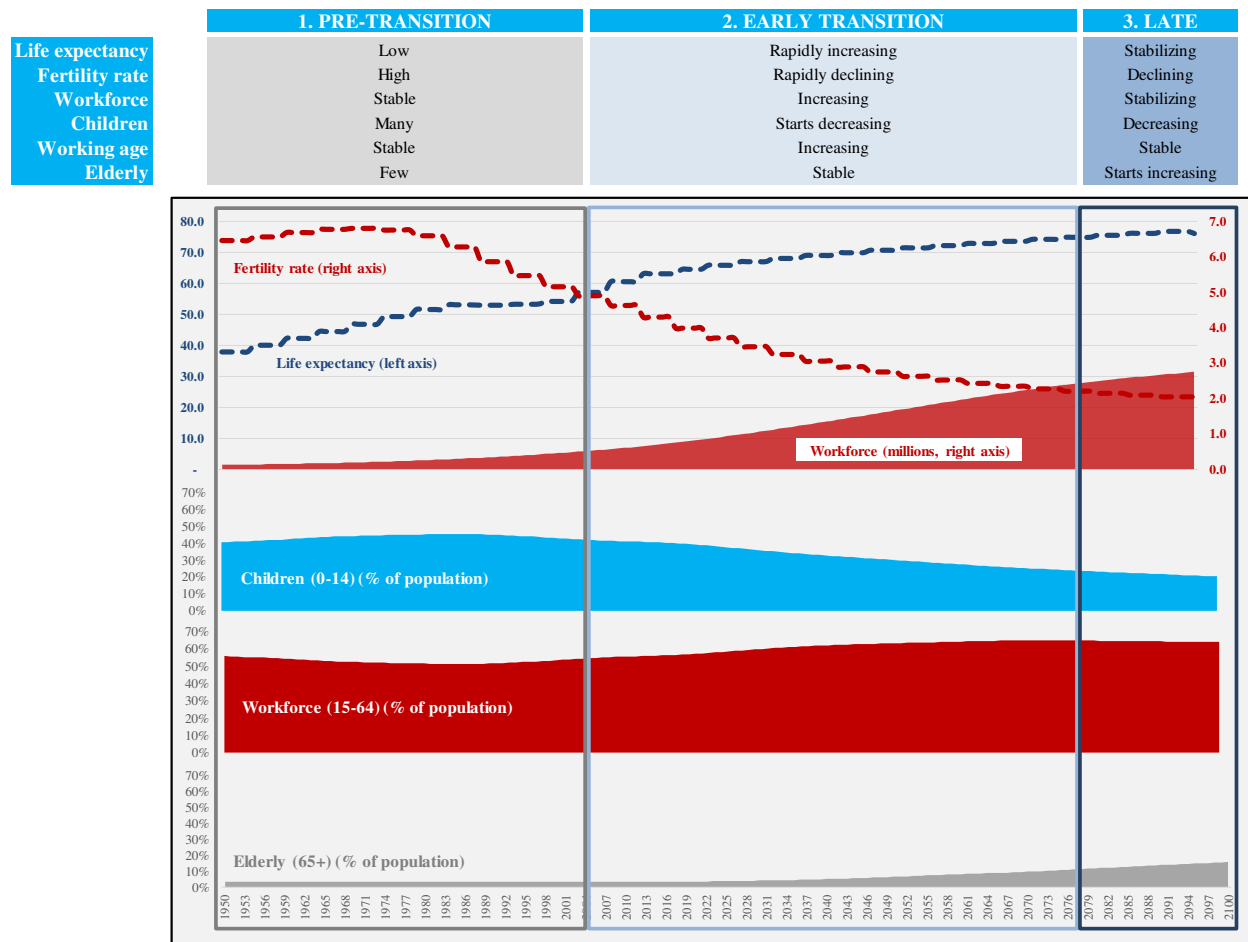
<sup>9</sup> The country reports are available here: <https://www.unicef.org/esa/reports/public-finance-analyses#fiscal-space>.

operational support, UNICEF and development partners can work with governments to translate these opportunities into progressively higher allocations to human capital programs. Beyond the funding gaps, they can also support governments to monitor the amount and use of resources going into human capital sectors as well as identify and address spending inefficiencies to maximize the impact of investment and capitalize on the remaining dividend. As the demographic clock ticks, the urgency of this agenda grows ever-more pressing with each passing day.

## References

- African Institute for Development Policy and University of Southampton (2018) [\*Regional Analysis of Youth Demographics\*](#), Nairobi: African Institute for Development Policy.
- Bloom, D., Kuhn, M. and K. Prettner (2017) "[Africa's Prospects for Enjoying a Demographic Dividend](#)," *Journal of Demographic Economics (JODE)*, Cambridge University Press 83(1), pp. 63-76.
- Canning, D. (2011) "[The Causes and Consequences of Demographic Transition](#)," *Population Studies* 65:3, pp. 353-361.
- Canning, D., Raja, S. and A. Yazbeck (2015). [\*Africa's Demographic Transition: Dividend or Disaster?\*](#), Washington, DC: World Bank.
- Cummins, M. (2019a) [\*The Macroeconomic and Social Investment Outlook for Children in Eastern and Southern Africa\*](#), Nairobi: UNICEF ESARO.
- Cummins, M. (2019b) [\*Fiscal Space for Children and Human Capital in Eastern and Southern Africa: Options and Strategic Entry Points to Address Investment Gaps in 16 Countries\*](#), Nairobi: UNICEF ESARO.
- Lutz, W., Cuaresma, J. C., Kebede, E., Prskawetz, A., Sanderson, W. C. and E. Striessnig (2019) "[Education rather than Age Structure Brings Demographic Dividend](#)," *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* 116 (26) 12798-12803.
- United Nations Economic Commission for Africa (UNECA) and the African Union Commission (2013) "[Africa and the Challenge of Realizing the Demographic Dividend](#)," 5 Policy Briefs on the Demographic Dividend.
- United Nations Educational, Scientific and Cultural Organization (UNESCO) (2015). [\*Incheon Declaration and SDG4 – Education 2030 Framework for Action\*](#). Paris: UNESCO.
- USAID, Policy Advocacy Communication Enhanced and Population Reference Bureau (2019) "[The Four Dividends](#)," Population Reference Bureau.
- WHO (2011). [\*The Abuja Declaration: Ten Years On\*](#). WHO: Geneva.
- World Bank (2018) "[The Human Capital Project](#)," World Bank Working Paper.

# Annex 1. Classical demographic transition model: Snapshot of ESA



Source: Author's calculations based on UN DESA World Population Prospects: 2019 Revision (medium variant estimates)

## Annex 2. Demographic fast facts about ESA<sup>10</sup>

### Overall population growth

- Home to just 85 million persons in the 1950s, the region will boast more than 1 billion people by 2050 and 1.5 billion in 2080 – more than China and India today.
- It will take 35 years for the population to double and 70 years to triple – from just under 550 million in 2020 to 1.1 billion in 2055 to 1.6 billion in 2090.
- The annual population growth rate in ESA will average 2.4% between 2020 and 2030, although it is currently above 3% in four countries: 3% in Tanzania, 3.1% in Burundi, and 3.3% in Angola and Uganda. Compare that to the global average (0.9%) or to averages in Asia (0.7%) or North America and Europe (0.1%).

### Urbanization

- Two out of three people still live in rural areas today (compare that to WCA where it is almost 1 in 2).
- There will be more people living in urban areas beginning in 2047.
- For the three mega cities projected in the region by 2030 – Addis Ababa, Dar es Salaam and Luanda – they will absorb around 1,000 new residents every day over the next 15 years as their populations nearly double.

### Births

- Close to 17 million babies will be born in ESA in 2020; this will reach 20 million by 2036 and peak at close to 25 million in the 2080s before declining.
- 1 birth takes place every 2 seconds – or 45,000/day; this will reach 1.6 births every 2 seconds – or 68,000/day – in 2087 before slowing down.

### Child population (0-17)

- There are just over 255 million children today, which will reach 300 million in 2030, 400 million in 2059 and peak at 442 million in 2094 before starting to decline.
- The share of children in the population will nearly fall in half between today and the end of the century – from 47% in 2020 to 25% in 2100.

### Labour force

- The potential workforce (15-64 year olds) will double in 27 years – from just over 300 million in 2020 to more than 600 million in 2047 – and surpass 1 billion in the 2080s.
- More than 12 million young persons will reach working age in 2020, which is close to 35,000 on a daily basis; those figures will double in the 2080s.
- The dependency ratio maxed out at 96% in the late 1980s (i.e. there were 96 dependents for every 100 potential workers in the population) and has been declining ever since; the current ratio stands at 78%, which is expected to bottom out around 54% in the 2060s giving the region approximately 30 years to exploit favorable demographic conditions. In contrast, this trend is inverted in high income countries, where the dependency ratio is currently 54%, on average, and will exceed 70% in 2050.

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<sup>10</sup> Based on the 21 countries included in UNICEF's regional classification – see footnote 1 for the complete list.

## Annex 3. Demographic fast facts about Africa<sup>11</sup>

### Overall population growth

- Home to just 225 million persons in 1950, the region crossed the 1 billion mark in 2009 and will reach 2 billion in 2039 and 4 billion in 2090.
- It will take just over 35 years for the population to double and 77 years to triple – from 1.4 billion in 2020 to 2.8 billion in 2058 to 4.2 billion in 2097. Compared to today, there will be “two Africas” in 2058 and “3 Africas” in 2097.
- The annual population growth rate in Africa will average 2.3% between 2020 and 2030, although it is currently above 3% in nine countries: 3% in Chad, Mali and Tanzania, 3.1% in Burundi, 3.2% in DRC, 3.3% in Angola and Uganda, 3.5% in Equatorial Guinea and 3.8% in Niger. Compare that to the global average (0.9%) or to averages in Asia (0.7%) or North America and Europe (0.1%).

### Urbanization

- At the start of the MDGs (in 1990), only 31% of people lived in urban areas, which has since risen to 44%.
- In 2033, more people will be living in urban than rural areas for the first time in African history, which will reach around 60% of the population by 2050 (that is as far as rural/urban projections go).
- Between 2020 and 2050, urban areas will need to absorb close to 900 million additional inhabitants compared to only around 260 million in rural areas.

### Births

- 1.3 births occur every second – or 113,00/day or more than 41 million/year; this will reach 2 births per second – or 172,000/day or nearly 63 million/year – in 2082 before declining.
- At its peak in 2082, there will be more newborns every year in the continent than the current populations of South Africa or Tanzania (both are just under 60 million).

### Child population (0-17)

- From just over 600 million today, it will reach one billion in 2058 and peak at more than 1.1 billion in 2093 before beginning to decline. The number of African children in 2093 will almost equal the entire present-day population of the continent.
- Children account for a decreasing share of the total population: Peaking at just over 51% in 1987, children currently account for 47% of the population and will fall to 26% by 2100.

### Labour force

- Africa’s working age population (15-64 year olds) is growing relentlessly: It will more than double in the next 30 years and increase more than threefold in the next 55 years – from 750 million in 2020 to 1.50 billion in 2050 to 2.25 billion in 2075.
- Close to 30 million young persons will reach working age in 2020, which is more than 80,000 per day; that figure will be 138,000/day in 2050 and 165,000/day in 2080.

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<sup>11</sup> The information presented for Africa is based on 52 countries. It excludes Mauritius, Mayotte, Reunion, Seychelles and Western Sahara since UNICEF is not present in those countries or territories. Their combined population in 2020 is estimated at 3.1 million persons, which amounts to 0.2% of the total population in Africa and means that their exclusion has a negligible impact.



- The dependency ratio maxed out at 93% in the early 1980s (i.e. there were 93 dependents for every 100 potential workers in the population) and has been declining ever since; the current ratio stands at 78%, which is expected to bottom out around 54% in the 2070s giving the continent approximately 40 years to exploit favorable demographic conditions. In contrast, this trend is inverted in high income countries, where the dependency ratio is currently 54%, on average, and will exceed 70% in 2050.

### Africa from a global perspective

- Half of the world's children (49%) will be African by the end of the century, up from about a quarter today (26%).
- Less than 20% of the global population lives in Africa today (17%), but this will reach 40% by 2100 – which means that the share will more than double.
- In 2072, Africa will overtake Asia as the region that contributes the largest number of new working age persons each year to the global labour force.
- By 2050, the continent will be home to 1.5 billion people of working age – more than the population of China or India today. This is both an opportunity and a risk, as African economies will need to create nearly 20 million new jobs each year.
- Africa will be home to three of the nine most populous countries in the world in 2050: Nigeria, Ethiopia and DRC.

| 2020 ranking | Country      | Population    |  | 2050 ranking | Country      | Population    | Change |
|--------------|--------------|---------------|--|--------------|--------------|---------------|--------|
| 1            | China        | 1,433,783,692 |  | 1            | India        | 1,639,176,036 | +1     |
| 2            | India        | 1,366,417,756 |  | 2            | China        | 1,402,405,167 | -1     |
| 3            | USA          | 329,064,917   |  | 3            | Nigeria      | 401,314,997   | +4     |
| 4            | Indonesia    | 270,625,567   |  | 4            | USA          | 379,419,097   | -1     |
| 5            | Pakistan     | 216,565,317   |  | 5            | Pakistan     | 338,013,194   | =      |
| 6            | Brazil       | 211,049,519   |  | 6            | Indonesia    | 330,904,672   | -2     |
| 7            | Nigeria      | 200,963,603   |  | 7            | Brazil       | 228,980,400   | -1     |
| 8            | Bangladesh   | 163,046,173   |  | 8            | Ethiopia     | 205,410,671   | +4     |
| 9            | Russia       | 145,872,260   |  | 9            | DRC          | 194,488,663   | +7     |
| 10           | Mexico       | 127,575,529   |  | 10           | Bangladesh   | 192,567,779   | -2     |
| 12           | Ethiopia     | 112,078,727   |  | 11           | Egypt        | 159,956,809   | -3     |
| 14           | Egypt        | 100,388,076   |  | 15           | Tanzania     | 129,386,845   | +10    |
| 16           | DRC          | 86,790,568    |  | 20           | Kenya        | 91,575,092    | +7     |
| 24           | South Africa | 58,558,267    |  | 21           | Uganda       | 89,446,901    | +11    |
| 25           | Tanzania     | 58,005,461    |  | 24           | Angola       | 77,420,355    | +21    |
| 27           | Kenya        | 52,573,967    |  | 25           | South Africa | 75,517,909    | -1     |
| 32           | Uganda       | 44,269,587    |  | 30           | Niger        | 65,593,043    | +27    |