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POPULATION GROWTH CHALLENGES IN SUB-SAHARAN AFRICA: ARE THEY JUST DEMOGRAPHIC?

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Abstract: The dominant demographic force in sub-Saharan region for the next few decades will be the continued population growth as fertility decline in this region has been, and will probably be, very slow. The pace of growth of the adult population will be higher than that of younger age groups. This continued growth poses challenges to the countries' socio-economic development and the study that follows elaborates on the various development issues and stresses the importance of immediate action, before the demographic dividend becomes a lost opportunity. It attempts to give an overall view of the issues related to population dynamics and development, and points out the most important and sometimes complex linkages. This analysis suggests that Malthusianism may not only be a vision of the future, but some countries may already be experiencing some of its features. The stakes are high and urgent action is needed.

Resumo: A força demográfica dominante na região da África sub-Saariana nas próximas décadas será de continuação de crescimento populacional pois o declínio da fecundidade nesta região tem sido e provavelmente continuará a ser muito lento. O ritmo de crescimento da população adulta será superior ao dos grupos mais jovens. Este crescimento contínuo coloca desafios ao desenvolvimento socio-económico dos países e o estudo que se segue elabora sobre os vários aspectos de desenvolvimento e sublinha a importância de uma acção imediata antes que o dividendo demográfico se torne uma oportunidade perdida. Pretende dar uma visão geral das questões relacionadas com dinâmicas populacionais e desenvolvimento e chama à atenção das relações mais importantes e por vezes complexas. Esta análise sugere que o Malthusianismo talvez não seja apenas uma visão do futuro, mas alguns países talvez já estejam a experimentar alguns dos seus aspectos. Os desafios são grandes é necessária uma acção urgente.

POPULATION GROWTH CHALLENGES IN SUB-SAHARAN AFRICA: ARE THEY JUST DEMOGRAPHIC?

Sub-Saharan Africa's population in 2020 is estimated at 1.1 billion and is growing at 2.65 per cent per year (average 2015-2020), while in most of the rest of the world's regions population grows at a much slower pace, less than 1% a year for the same period. In sub-Saharan Africa fertility rates are staggeringly high but this is not the only reason for population growth rates. The rapid decline in mortality rates, particularly infant and child mortality, play a crucial role in the high growth rate levels, as the declining of fertility levels happen at a much slower pace. Today's African women bear 4.72 children on average during their lifetime¹.

The Berlin Institute for Population and Development² analysed the evolution of 103 less developed countries and concluded that none of them has a strong socioeconomic performance without a parallel decline in fertility levels. In addition, the most prevalent and severe problems today occur in sub-Saharan Africa, where the 27 countries with the largest development problems are the ones that have highest fertility rates.

Rapid population growth contributes to poverty at the family level, by straining the families' budget, reducing available resources to feed, educate and provide health care to each child.³ Rapid population growth puts a lot of stress in ecosystems, specifically on food production and consequently food security, land and more generally, environment degradation and water supply.⁴ Rapid population growth impacts on economies in different ways, but the slow-down of the increase in the income per capita is the most evident consequence. Moreover, health and education systems become stressed and millions of young people become unemployed, even outside the informal labour market. Cities are overpopulated both by natural increase and migration from rural areas. Furthermore, governments, attempting to provide capital investments for their population, will decrease the investment in infrastructure and industry. Rapid population growth, associated with high fertility, represents a threat to the women and children's health and increasing mortality rates because women have babies too early, too late and too many of them.⁵

¹ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

² Sippel, Lilli; Kiziak, Tanja; Woellert, Franziska and Klingholz, Reiner. 2011. *Africa's Demographic Challenges: How a Young Population Can Make Development Possible*.

³ Birdsall, Nancy. 1994. "Government, Population, and Poverty: Win-Win Tale." In *Population and Development: Old Debates, New Conclusions*", Transaction Publishers, New Brunswick (USA) and Oxford (UK), 1994, Ch.9.

⁴ Alex Evans, 2009 "The Feeding of the Nine Billion, Global Food Security for the 21st Century" Chatham House, Royal Institute of International Affairs, UK, pp. 6-10.

⁵ http://www.unicef.org/about/history/files/sourcebook_children_1990s_part3.pdf, p. 89, visited 5 March 2013.

While at the beginning of this century, economic growth in sub-Saharan Africa was a promising one to bolster its economy, with annual GDP growth close to 7%, the collapse of commodity prices and the world economic crisis slowed down this GDP growth rate to 3% a year.⁶ However, even with a sound economic performance, rapid population growth hinders a fast development progress.

The stakes are high. The study that follows elaborates on these issues and stresses the importance of immediate action, before the demographic dividend becomes a lost opportunity. It attempts to give an overall view of the issues related to population dynamics and development, and point out the most important and sometimes complex linkages.

This study is about sub-Saharan Africa. However, in this region there is a wide diversity across regions and countries, diversity that is translated in different languages, population size, economic performance, natural resources and others. For instance, countries' population can vary from two hundred thousand people (S. Tomé e Príncipe) to two hundred million (Nigeria),⁷ GDP per capita as low as 271 USD (Burundi) to 10 261 USD (Equatorial Guinea).⁸ There will be diverse socio-economic pathways, some countries will be able to upgrade to middle income or even high-income status, while others will live in Malthusian systems. Nevertheless, the main issues in demographic dynamics are similar in a majority of sub-Saharan countries, and, even when per capita GDP is high, asymmetries within most of these countries leave a large number of poor people struggling to survive.

Covid-19's effects on population structure dynamics are unknown, mostly because it is still an ongoing pandemic and it is not yet clear what will happen with the pandemic itself, even less with its effects. There will be direct effects on population structure due to mortality increases, both by the virus itself and by the decrease in the health services accessibility. This mortality effect on population structure will be at least partially offset by the effects of the pandemic on sexual and reproductive health leading to increased fertility, as sexual activity might have increased and access to contraceptive use decreased.⁹ Furthermore, changes in migration may occur, induced by confinements or by widespread hunger. Nevertheless, the dimension of these effects is not yet known and probably will continue so in the near future. In this sense, this study will not consider this pandemic's effects.

⁶ IMF 2016 *Regional Economic Outlook: sub-Saharan Africa: Time for a Policy Reset*. Washington DC.

⁷ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

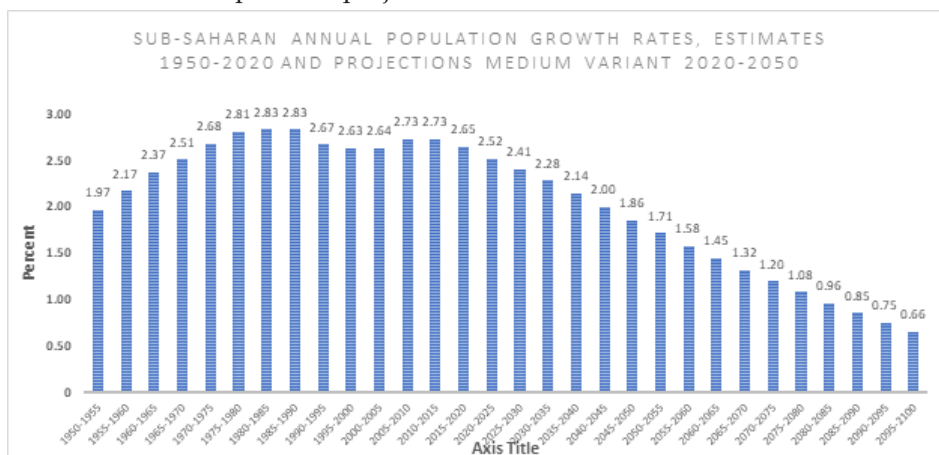
⁸ Google public data, based on World Bank data, visited 15/09/2020

⁹ Lindberg, L. D., Bell, D. L., & Kantor, L. M. (2020). The Sexual and Reproductive Health of Adolescents and Young Adults During the COVID-19 Pandemic. Perspectives on Sexual and Reproductive Health. <https://onlinelibrary.wiley.com/doi/full/10.1363/psrh.12151>

THE NUMBERS: PAST AND FUTURE

As mentioned earlier, sub-Saharan Population in 2020 is estimated at 1.1 billion people and is growing at 2.65 per cent per year. If this rate of population increase remains constant, by 2050 the population in the region would be 2.3 billion and at the end of the century, it would be 8.5 billion. In other words, a rate of population growth of this magnitude would double the population in around 28 years and in 56 years it would be four times today’s population. By the end of the century it would be eight times today’s population. However, decreases in fertility for the past years suggest that rates of population increase will tend to lower. Indeed, medium variant projections of population growth rate made by UN-DESA, forecasts a steady decrease of the annual population growth rate from now on, reaching around 1.8 percent in 2050 and 0,66 percent by 2100 (see Figure 1)¹⁰.

Figure 1: Annual population growth rates in Sub-Saharan Africa in the past and projected to 2100, UN medium variant



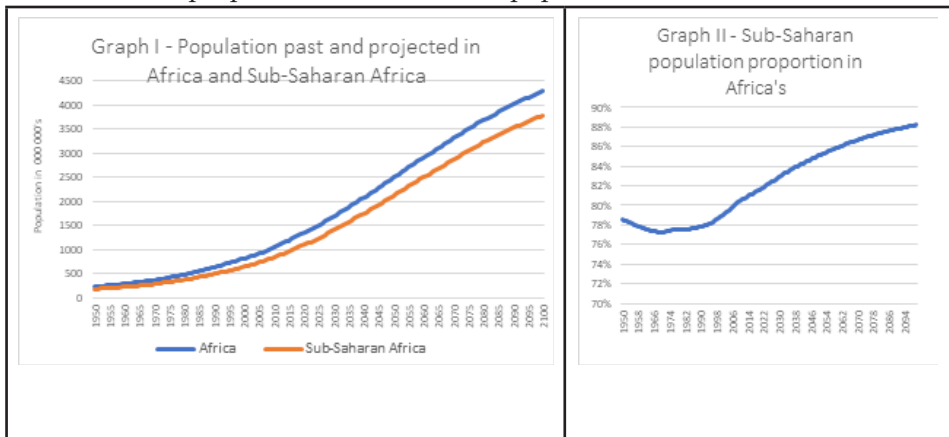
Source: UNDESA 10

Considering this medium growth rate variant, the population in sub-Saharan Africa 2050 will be approximately 2.1 billion and in 2100 it will be 3.8 billion, much less than the population reached in case the growth rate is constant (see Figure 2, Graph I)¹⁰. So far, UN projections for few decades ahead have been rather accurate, while for long term they primarily serve as a scenario that may occur under certain possible conditions that may not happen exactly as predict-

¹⁰ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

ed11. In Figure 2, Graph II, the proportion of sub-Saharan Africa in Africa's population across the years is presented. As can be seen, this proportion is increasing significantly from 79% in 1950 to 88% in 2100, showing that Sub-Saharan Africa's population is growing at a higher pace than the rest of Africa's population¹².

Figure 2: Population past and projected in Africa and Sub-Saharan Africa, and proportion of Sub-Saharan population in Africa's



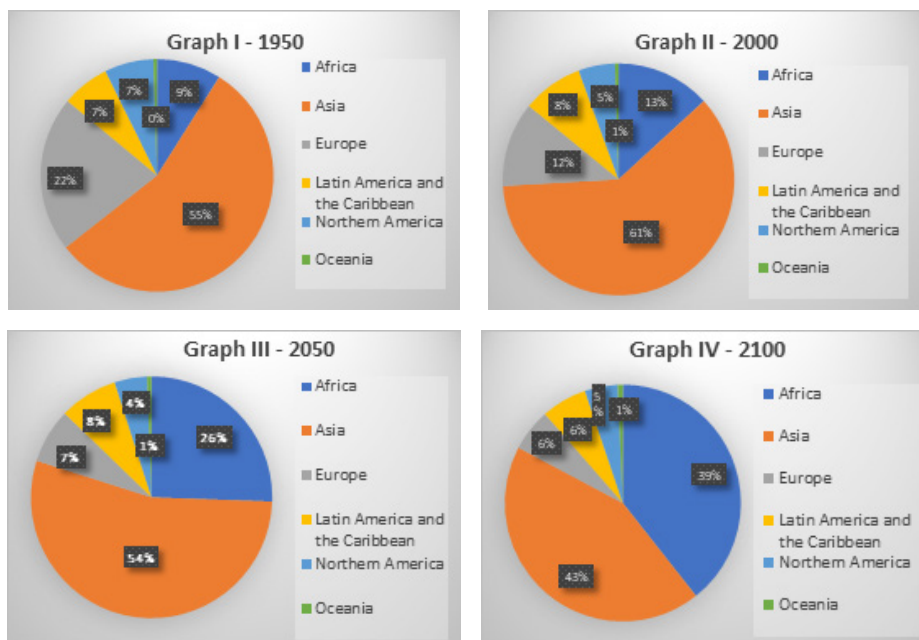
Source: UNDESA 12

It is also interesting to observe the evolution of the population's share of each of the six continents, from 1950 to 2100¹². As can be observed in Figure 3, Africa's population share of the world population increases significantly over time. Indeed, there are four graphs representing the six continents population share over a 50 year period. Graphs I and II, represent estimates for 1950 and 2000 and Graphs III and IV represent UN medium variant projections for 2050 and 2100.

¹¹ Cleland, J. and Machiyama, K. (2016) "The Challenges Posed by Demographic Change in sub-Saharan Africa: A Concise Overview" in *Population and Development Review* 43(2). October 2016.

¹² United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

Figure 3: Evolution of the population's share in six continents



Source: UNDESA 13

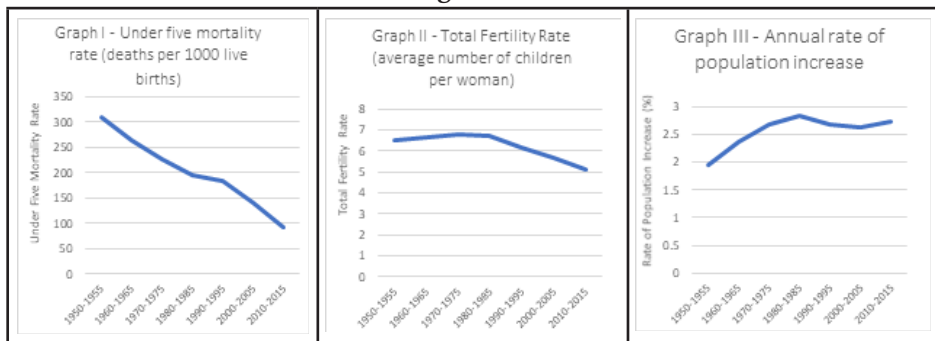
WHY RAPID POPULATION INCREASE AND ITS CONSEQUENCES

Annual population growth in a region or in a country depends on the levels of fertility, mortality and migration. More specifically, it is the difference between the number of births and the number of deaths in a given year, added or subtracted by the number of migrants, although this last component has, in general, a smaller impact on population growth than the other two components. The population pyramid of a country with high persistent fertility, has the shape of a triangle where the number of people at each age is smaller than the number of the younger ones. This means that in general, there are more births in each year than in the previous one and the number of people of a given age is higher than the number of people of that age in the year before. The sub-Saharan Africa average total fertility rate of 4.72 earlier mentioned suggests that most countries in sub-Saharan Africa have high fertility rates and that their age pyramids are just as described. However, as population growth also depends on mortality rates, a look at both aspects over the past and their projections to the future are essential to understand the dynamics of population growth.

¹³ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

Indeed, under-five mortality rate decreased from 309 deaths per 1,000 live births in 1950 to 78 deaths per 1,000 live births in 2020¹⁴. This decrease has been remarkable: in the 1950s, almost one out of three children did not reach 5 years old, while nowadays only one in thirteen children does not reach the age of 5, albeit being still a very high mortality. Interestingly, today's under-five mortality rate in sub-Saharan Africa is lower than the respective rate in the 1950s in Europe. However, during the same period, the total fertility rate decreased from 6.51 to 4.72 live births per woman. As a consequence, population the growth rate increased significantly during the period 1950-2015 in sub-Saharan Africa (see Figure 4). In this sense, rapid population growth motivated by a decrease in mortality, is a sign of a considerable improvement of the quality of life represented by drastic decrease in mortality rates, but it brings significant socio-economic burdens.

Figure 4 :



Source: UNDESA 14

The reasons for high fertility are diverse, but mortality plays a crucial role. Traditionally large number of children represented the importance and richness of a family. Children worked on the farm, and the family represented a small enterprise where size directly correlated with output. In fact, in a subsistence agrarian economy and without limits of access to land, high levels of fertility are economically attractive. When the predominantly agrarian subsistence economy evolves to a industrialized, technologically more advanced economy¹⁵ there is a value associated with the children (costs of education, health, transport and others) and the strategy of having many children is no longer efficient. This technical progress also comes with a decrease in the mortality rates, in particular child mortality, but parents still fear the capricious inroads of mortality. While these

¹⁴ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

¹⁵ Becker, Gary S. and Barro, Robert J. 1988. "A Reformulation of the Economic theory of Fertility." *The Quarterly Journal of Economics*, Vol.CIII, February 1988, Issue 1. USA, pp.1-3.

mortality declines are substantial, parents still think that many children die, because it is still true, even though for the last decades children mortality levels decreased to less than half of what it was previously¹⁶. Responses and behavioural adaptations are delayed: it takes time for parents to realize this decrease and for a while they continue to think that they have to have many children¹⁷. Indeed, social security systems are non-existent for most of the population, and children constitute the old age support for the parents. So, even decreases in fertility witnessed in several sub-Saharan countries, stalls at a certain point as parents need to guarantee at least one surviving child. Nevertheless, women's education and urbanization have been driving forces for fertility declines. However, quality education for a growing young female cohort is challenging and its effects on fertility only become meaningful at secondary schooling level or higher. Furthermore, even considering that urbanization has a good population control effect, while urban centres increase in number and size, so do the rural areas, albeit at a slightly slower pace. In this sense, overall declines in fertility levels due to migration and urbanization might not be as significant as expected.

It is important to point out that even if total fertility rate levels decrease to replacement level, usually slightly less than 2.1 children per woman (depending on mortality levels), the population will probably continue to grow for decades. Indeed, this happens due to the fact that high fertility in the recent past means that there are more mothers than in the previous years for a while and the total number of children born in the entire population is still higher than the number of deaths. This effect may take several decades before vanishing. It is interesting to observe what happened in China, where a strict and drastic one-child policy took place starting in 1980. There was a sharp decrease in fertility rates per woman during the first decade after the policy took place and since 1990 total fertility rate has been well below replacement and nowadays it is 1.65 children per woman. Nevertheless, population in China is still growing and it is projected that only in 2040 the Chinese population will stop to grow. So, sixty years were needed to stop population growth in China, and, meanwhile, its population grew from 1.00 billion in 1980 to 1.44 billion in 2020¹⁸.

So, more likely than not, sub-Saharan Africa population is set to grow for the next few decades. Population dynamics are complex, involving several variables, directly or indirectly, and population's medium term projections can not be greatly changed in short time periods. However, it is important to point out that a decrease in the current levels of fertility in sub-Saharan Africa will slow the pace of the population growth and it is estimated that today's population in Africa is 7

¹⁶ United Nations Children Fund (UNICEF). 2012. *The State of the World Children 2012*. UNICEF, New York, pp. 83-137.

¹⁷ Carvalho, A. 2005. "Mortality Perceptions and their Influence in Fertility Desires." PhD diss. University of Southampton, UK. (Carvalho, 2005), pp. 226-237.

¹⁸ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

per cent less than it would be if no family planning programs were put in place¹⁹.

During the 1960s and 1970s there was great concern about the rapid population growth in most countries in the world and its effects on development. As a consequence, large-scale family planning programs were set up, but excesses in the populous China and India scaled down the family planning financial support. In the 1990s the appearance and quick spread of the HIV/AIDS pandemic, definitively diverted this support, as the human costs that this pandemic brought to millions of people made a redefinition of financing priorities necessary. Furthermore, it was foreseen that the previously projected population increase would be reversed by this pandemic. However, HIV/AIDS has not changed fundamentally the demographic equation²⁰.

Much of the African elites have had the perception that rapid population growth was not an issue because of the vastness of Africa, low population densities and abundance of resources²¹. The Berlin Institute for Population and Development²² reports that "In our study of 103 current and former development countries, we could show that no single country has developed socio-economically without a parallel decline in the birth rate." Sippel, Kiziak, Woellert and Klingholz used a cluster analysis approach to scientifically prove that indeed there is a link between decreasing fertility and increasing development. The cluster analysis were included several development indicators such as economy, education, health, reproductive health, gender equality, and political and economic indicators. More specifically, they included the gross domestic product (GDP) growth rate, the gross national income (GNI) per capita, the Gini coefficient, the percentage of people without education, the percentage of people who attended primary and secondary school, percentage of people who completed a university degree, life expectancy, infant mortality rate, maternal mortality ratio, gender development index, corruption perception index, among others.

Indeed, they demonstrated that there is a correlation between the degree of fertility decline and the present level of development of a country¹. The question of what came first – fertility decline or socioeconomic progress – cannot be drawn from the cluster analysis, but looking at the history of the successful Asian Tigers

¹⁹ Das Gupta, Monica; Bongaarts, John and Cleland, John. 2011. Population, Poverty and Sustainable Development: a Review of the Evidence. The World Bank, Development Research Group, June 2011, pp. 13-15.

²⁰ Sippel, Lilli; Kiziak, Tanja; Woellert, Franziska and Klingholz, Reiner. 2011. Africa's Demographic Challenges: How a Young Population Can Make Development Possible. Berlin: Berlin Institute for Population and Development, pp. 4-8 and 12-16.

²¹ May, John. April 2008. http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICA_EXT/0,,contentMDK:21709116~pagePK:146736~piPK:226340~theSitePK:258644,00.html (visited 27 February 2013).

²² Sippel, Lilli; Kiziak, Tanja; Woellert, Franziska and Klingholz, Reiner. 2011. Africa's Demographic Challenges: How a Young Population Can Make Development Possible. Berlin: Berlin Institute for Population and Development, pp. 6-10.

a clear relationship between both can be observed. Indeed, as May²³ mentions, "... the 'Asian Miracle' is attributable to a large extent (40%) to rapid declines in fertility and age structures". Somehow the two variables seem to be two faces of the same coin: socio-economic progress is needed for a complete fertility transition and a fertility decline is necessary to guarantee a rapid socio-economic progress. In addition, the most prevalent and severe problems today occur in sub-Saharan Africa, where the 27 countries with the largest development problems are the ones that have the highest fertility rates²⁴.

WORKING AGE POPULATION AND EMPLOYMENT

Nowadays, perhaps the most dramatic and serious challenge as consequence of rapid population growth is the increase of working age population, that can be evidenced in Table 1, where the number of sub-Saharan working age people in the past, current and projected in 30 years period is shown. As can be seen, every 30 years the number of working age people more than doubles, and so does the corresponding increments. Indeed, the average annual increment for people aged 15-64 years for the period 1960-1990 was 4.4 million, for the next 30-year period this average was 11.6 million and it is projected that for the period 2020-2050, it will be more than 25.6 million a year²⁵.

Table 1: Population aged 15-64 and increments of population aged 15-64 years in 30-year periods (millions)

	Population aged 15-64 (millions)				Increments of population aged 15-64 years in 30-year periods (millions)		
	1960	1990	2020	2050	Increment 1960-1990	Increment 1990-2020	Increment 2020-2050
Sub-Saharan Africa	119	253	601	1 313	133	349	712

Source: UNDESA²⁶

Similarly, at country level, management of human resources will be rather demanding as exemplified by the case of Mozambique, a country that is home

²³ May, John. April 2008. <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/0,,contentMDK:217>

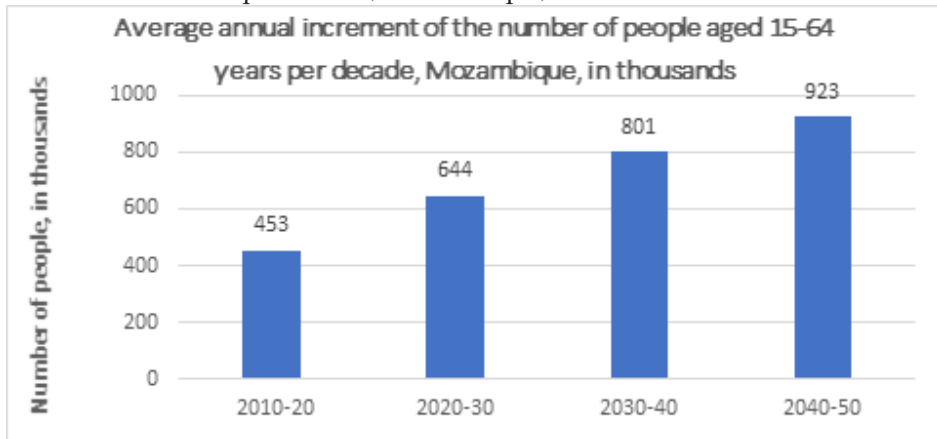
²⁴ Cleland, J. and Machiyama, K. (2016) "The Challenges Posed by Demographic Change in sub-Saharan Africa: A Concise Overview" in *Population and Development Review* 43(2). October 2016.

²⁵ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

²⁶ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

to around 31 million people in 2020 and has a current population growth rate of 2.93% a year. In this country, the number of working age people that was added, on average, to the previous year's, was 453,000 people for the last 10 years and, according to medium variant UN projections, the average annual increment per year will grow steadily to 644,000 during the decade 2020-30 and will continue to grow to 923,000 yearly average in the decade 2040-2050 (see Figure 5). This last figure indicates that at each year in that decade there will be almost a million additional working age people in relation to the previous year.

Figure 5: Average annual increment of the number of people aged 15-64 years per decade, Mozambique, in thousands



Source: UNDESA 26

Data on employment and unemployment in Africa is rare, imprecise and sometimes estimates from various United Nations organizations can differ significantly. Even more rare are breakdowns of unemployment rates by age which would be needed to estimate youth unemployment. A significant part of the reason for this lack of accurate data on employment/unemployment is the existence of a vast and sizeable informal sector in the African economies which is difficult to measure or even to estimate. However, any analysis considering only the formal sector would be incomplete, even erroneous, as it would include only a part of a country's economic activity.

The International Labour Organization (ILO), cited in United Nations Development Program (UNDP)²⁷ gives a glimpse on the existing data in 2011. The employment to population ratio (proportion of working age population aged 15 years and older who are in employment) in sub-Saharan Africa was around 65 per cent and this rate has not significantly changed for the previous 20

²⁷ United Nations Development Program (UNDP), 2011 Assessing progress in Africa toward the Millennium Development Goals. UNDP, New York, pp. 11-17.

years. However, this employment figure includes 'vulnerable employment', i.e. the sum of own-account workers and unpaid family workers. Furthermore, the number of working hours per week can be very low. For instance, according to the National Institute of Statistics in Mozambique, a person that worked at least an hour in the week of the National Census reference, is considered as a person who was working at that time²⁸.

The ratio of vulnerable employment to total employment in Africa was 76 per cent in 2009, but women are even more vulnerable than men, as this statistic, disaggregated by gender, gives 84 per cent for women, while for men it is 70 per cent. While there is no disaggregation by age, young people seem to suffer more from unemployment than older people. Indeed, a considerable part of the Sub-Saharan Africa population are youths, as can be seen In Table 1, were population increases and youth population increases in sub-Saharan Africa from 2010 to 2025 are presented.²⁹ From this table, it can be seen that young people aged 15-24 and 15-34 years constitute respectively, one fifth and almost one third of the whole population.

Table 2: Size of youth aged 15-24 years, aged 15-34 years and total population in sub-Saharan Africa, years 2010-2025

Year	Youth aged 15-24 years	Youth aged 15-34 yrs	Total population
2010	172,010 (20%)	296,104 (35%)	853,564
2015	192,683 (20%)	336,042 (35%)	963,752
2020	217,084 (20%)	380,025 (35%)	1,084,318
2025 (projected)	242,628 (20%)	426,053 (35%)	1,212,135

Source: data from World Bank 29

Because of population growth, governments are unable to guarantee employment for most of the working age population, even when they manage, with great efforts, to increase considerably the number of employed people, as the rate of population growth is just too high to keep pace with it.

For instance, in Maputo Province, South of Mozambique, with a population of 1.8 million people in 2017³⁰, the total number of people who worked

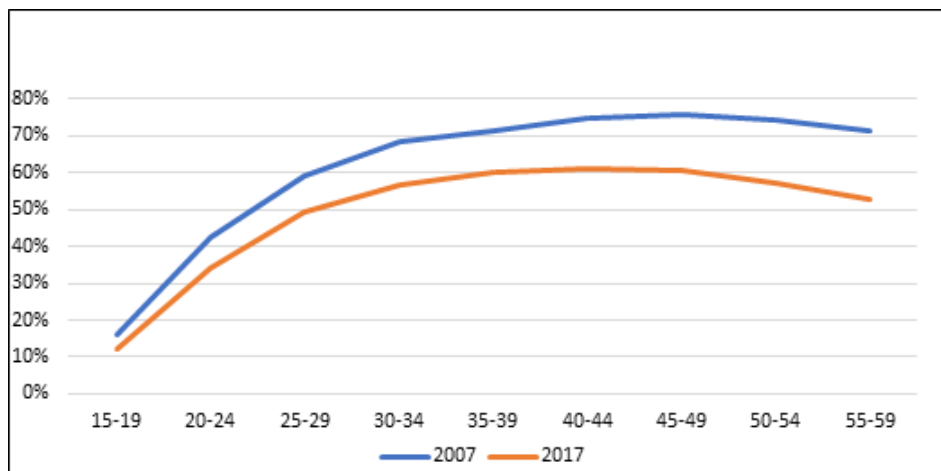
²⁸ Instituto Nacional de Moçambique (INE), Mozambique, visited in 23/09/2020: <http://www.ine.gov.mz/documentos/documentos-metodologicos/manual-de-conceitos-e-definicoes-de-mocambique-2013-publicacao-final.pdf/view>

²⁹ Visited 5 March 2013: <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEAaLTHNUTRITIONANDPOPULATION/EXTDATASTATISTICSHNP/EXTHNPSTATS/0,,contentMDK:21737699~menuPK:3385623~pagePK:64168445~piPK:64168309~theSitePK:3237118~isCURL:Y,00.html>

³⁰ Instituto Nacional de Estatística (INE) Mozambique (2019). Resultados Definitivos do Censo 2017 (Por Província). Acesso: 02/10/2019: <https://drive.google.com/open?id=1LDrOU6COQsvN2zxywIGtKq8bPe4zzh5L>

in the Census reference week increased around 110,000 from 2007³¹ to 2017. Nevertheless, the percentage of people who worked decreased from 54% in 2007 to 44% in 2017 and the number of working age people that does not work, increased from 306,000 in 2007 to 612,000 in 2017. Furthermore, as mentioned earlier, youths suffer more the lack of employment than the older ones. Figure 6 presents the graph of the percentage of people aged 15 to 59 years who worked in the Census reference week, Maputo Province, Mozambique, 2007 e 2017. The percentage of youths aged 20-24 years who worked is almost half than those people aged 45-49 years. Aggravated by the shape of the age pyramid, the number of unemployed youths is much higher than the adults'.

Figure 6:Percentage of people aged 15 to 59 years who worked in the Census reference week, Maputo Province, Mozambique, 2007 e 2017



Source: INE (2010; 2019)

Investing in the youth, particularly through the creation of labour intensive programs, is a crucial strategy to transform the demographic challenge into economic opportunities, social inclusion and poverty reduction.

Perhaps ironically, child labour in sub-Saharan Africa is very high, 32 per cent of children aged 5 to 14 years are economically active³². Besides the ethical aspects linked to this, the high levels of participation of children in economic activities makes a large proportion of families still favor large families and thus creating a vicious circle difficult to break.

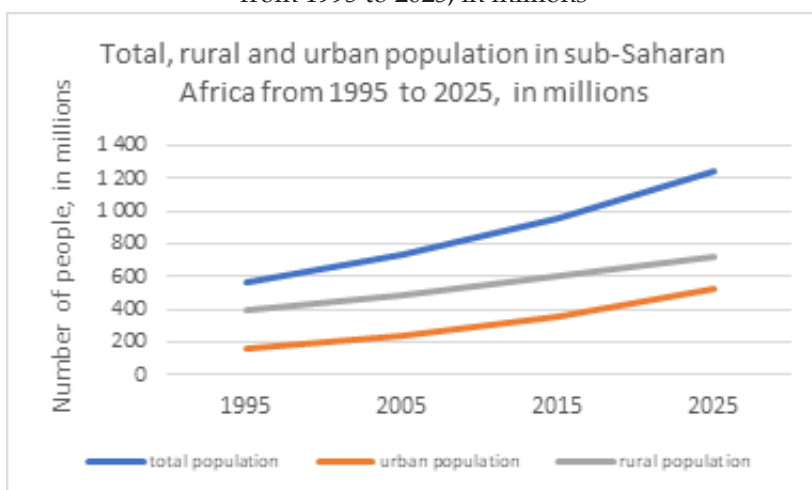
³¹ Instituto Nacional de Estatística (INE) Mozambique (2010). III Recenseamento Geral da População e Habitação 2007. Resultados Definitivos. Maputo

³² United Nations Children Fund (UNICEF). 2012. The State of the World Children 2012. UNICEF, New York, pp. 83-137.

RURAL .VERSUS URBAN

The most dramatic change in population structure in the next decades will be the proportions of rural and urban people. The fast growing population associated with the rural to urban migration will transform the mostly agrarian Sub-Saharan Africa in the recent past to a new sub-continent where a majority will be urban people. According to UNDESA³³ estimates and projections, in 2015 urban population was 37% and it is projected that in 2050 there will be 55% percent urban people. Nevertheless, due to the rural areas' high fertility, rural population will continue to grow, but at a smaller rate than the whole population, as can be seen in Picture 7.

Picture 7: Total, rural and urban population in sub-Saharan Africa from 1995 to 2025, in millions



Source: UNEDESA 33

In fact, the sub-Saharan Africa urbanization process has some important specific features that are important to consider. First, it occurs at a very fast pace, for instance, from 1995 to 2025 urban population is expected to increase 3.2 times. Second, part of urban population increases is due to natural increase, not just migration. Third, industrialization in most sub-Saharan Countries is not growing and thus demand for manpower is not a primary motivation for the rural-urban migration, and as a consequence, migrants will stress out further the vulnerable employment market in the cities. Fourth, because of the very high fertility rates in rural areas, rural population continues to increase, even though many rural people migrate to the cities.

³³ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects: the 2015 Revision, DVD Edition*.

Urbanization, through the centuries constituted a major motor in the creation of wealth: the organization of the work is more efficient, transportation of people and goods are easier and with less costs, the access to health and education services is more effective, innovation is more intense, investments in infrastructures benefit many people, and so on. However, the existing infrastructures, sanitation, employment and others in large cities cannot accommodate such population increase. In an interview at the Woodrow Wilson School, Princeton University, Eliya Zulu³⁴ from AFIDEP (African Institute for Development Policy), stated that rapid urbanization is one of Africa's biggest challenges. Indeed, as he said, *"Africa is the least urbanized region of the world now, but it's growing at the highest rate ... If the economies are not going to develop the capacity to absorb this population and create enough jobs for them, there's going to be chaos, because you can't have all these young people without having jobs for them."*

Until recently, rural settlements in sub-Saharan Africa were the epicentre of poverty and human suffering. All measures of poverty, whether based on income, consumption or expenditure, show that rural poverty was deeper and more widespread than in cities. However, recent studies have suggested that urban populations are changing in many countries. For instance, a case study in Kenya indicated that urban under-five mortality has increased over time, and although urban rates are still lower than the rural ones, the urban poor children have higher mortality rates than even their rural counterparts³⁵. In this study, this was partly attributed to low access to health facilities, poor sanitation and clean water. The current concentration of poverty, slum growth and social disruption in cities does paint a threatening picture: for a large proportion of people sanitation is non-existent, epidemic diseases thrive, exploitation is rampant, unemployment widespread and physical dangers lurk where law is absent and order may be left to criminal gangs. This increase of extreme poverty in the cities is often overlooked. Indeed, as cities accommodate the country's most well-off people, extreme poverty is diluted in the overall statistics. A good indicator attesting these concerns is the increase in slums. In fact, the number of people living in slums increased considerably, more precisely, from 103 to 198 million,³⁶ i.e., it almost duplicated during the same period.

³⁴ Zulu, Elya. 2011. <http://www.newsecuritybeat.org/2011/02/eliya-zulu-on-population-growth-family-planning-and-urbanization-in-africa/>, visited 27 February 2013.

³⁵ Madise et al, 2007. "Progress Towards the Child Mortality Millennium Development Goal in Urban Sub-saharan Africa: The Dynamics of Population Growth, immunization, and access to clean water" *BMC Public Health* 2007, 7:218.

³⁶ United Nations Human Settlements Programme (UN-HABITAT). 2012. *State of the World's Cities 2012-2013*. UN-HABITAT, Nairobi, Kenya, pp. 123-125.

HUMAN CAPITAL: EDUCATION AND HEALTH

The most important effect of rapid population growth on education is the stress it poses on school attendance and the quality of educational systems. Immediately after independence most African countries set up educational systems aiming to implement universal schooling, at least at the level of primary education. Nowadays, governments struggle hard to keep this universal schooling. Rapid population increase is a great part of the problem, as every year there are many more school age children than there were in the previous year. In Table 3, the evolution of school age population in 30 years periods, from 1960 to projected 2050 in sub-Saharan Africa is presented.³⁷ For instance, the number of children aged 6-14 years, mostly primary school age children, more than doubled from 1960 to 1990, and from 1990 to 2020. This means that in these thirty years periods, in order to just maintain the quantity and quality of existing primary school services, the country should for instance more than double schools, teachers and equipment. This trend will slightly decrease for the next 30 years, but it will be a large increment.

Table 3: Evolution of school age population in 30 years periods, from 1960 to projected 2050, sub-Saharan Africa, in millions

Age groups	1960	1990	2020	(projected) 2050	Increment 1960-1990	Increment 1990-2020	Increment 2020-2050
6-14	48.9	119.1	254.4	408.2	70.2	135.3	153.8
15-17	13.5	32.0	72.7	126.3	18.5	40.6	53.6

Source: UNDESA 38

Educational systems have to manage this situation by increasing the number of schools, teachers and books. Often, when a country's revenues don't allow for an increase of the education budget, education managers resort to other solutions such as increasing the number of children per class, diminishing the number of hours in school, giving classes under trees. Indeed, primary school net attendance in sub-Saharan Africa is 67 per cent for boys and 65 per cent for girls, respectively³⁹ while for secondary schools the ratios are 31 per cent and 28

³⁷ UNDESA United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

³⁸ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

³⁹ United Nations Children Fund (UNICEF). 2012. *The State of the World Children 2012*. UNICEF, New York, pp. 83-137.

per cent. Between 2005 and 2011 school attendance rose from 59 to 96 per cent in Burundi⁴⁰, but the average number of students per class is estimated at 83. In Niger, Burkina and Mali more than half of young people aged 15-19 years did not finish primary school⁴⁰. Among the young people aged 20-24 years a large proportion has no schooling at all (for instance, more than 50% in Burkina Faso and Mali, more than 30% in Chad and Ethiopia).⁴¹ In general, girls' school enrolment is lower than boys', more so in the rural areas.

Even if governments decide to increase considerably the educational budget, they will do so at the expense of capital investments in infrastructures and industry and thus the countries' development will be jeopardized in the future. Education in Africa needs to be modernized and developed in accordance with manpower demand. Additional financial resources are needed to transform the educational systems, but this investment will be efficient only if the number of students don't increase at the level of today's increase.

Likewise, health systems suffer considerably from rapid population increase. High fertility means that more people than the previous year will need to access care services and there is an increased demand for physicians, nurses and other service providers. Furthermore, in the rural areas there is a crucial shortage of health facilities and the lack of prospects in the rural areas is assumed to lead to a swell in the migration into urban areas.

Throughout Africa, disease is a permanent spectre. Just malaria and HIV/AIDS are responsible for one third of all deaths. Infant and under-five mortality rates have been decreasing since the 1970s, but they are still very high. Maternal mortality rates are high, in fact per 100,000 births 640 women die with causes related with pregnancy and childbirth. This mortality ratio means that 1 in 31 women will die in her life time due to maternal causes. The more children women bear, the greater will be the risk of mortality, hence maternal mortality rates will decrease with decreases in fertility.⁴²

The high fertility levels associated with rapid population growth have some specific effects on women's and children's health and wellbeing: i) Increases infant mortality rates (births from very young or very old mothers, and births not much spaced increase the probability of infant's death); ii) Increases maternal mortality risk, because they have more children and consequently are more exposed to mortality and also because the risk of death is more likely in pregnancies of very young or very old women; and iii) Increases the clandestine abortions and consequently increases the associated mortality risks.

Access to family planning services is a great women's empowerment tool.

⁴⁰ Visited in 20/08/2019: <http://www.un.org/africarenewal/magazine/august-2012/african-schools-keep-eye-prize>

⁴¹ Visited in 20/08/2019: <http://www.un.org/africarenewal/magazine/august-2012/african-schools-keep-eye-prize>

⁴² United Nations Children Fund (UNICEF). 2012. *The State of the World Children 2012*. UNICEF, New York, pp. 83-137.

Indeed, if women exert their rights in having as many babies as they want, they will be free to participate more actively in economic activities and thus better contribute to the well-being of the society. Furthermore, very early pregnancies are still very numerous across sub-Saharan Africa. Indeed, there are 123 births per 1,000 adolescents aged 15-19 years and 28 per cent of women aged 20-24 years gave birth before they are 18 years old. Not only these rates are due to a low contraceptive prevalence, but also to social norms allowing very early marriages or unions. Indeed, 24 per cent of girls aged 15-19 years are married or in union. Moreover, the starting of childbearing at very low ages strongly contributes to high levels of fertility.⁴³

POVERTY, ENVIRONMENT AND FOOD SECURITY

Rapid population growth affects poverty in diverse ways and levels. Various studies point out that the probability of a family with large number of children to be poor is higher than a family with a small number of children. In this case, high fertility, not only increases the number of poor but also increases the percentage of poor. Indeed, taking into account that on average a poor family has more children than a rich family, if poor people continue to be poor and rich people continue to be rich then in the next generation not only the number of poor people will increase, but also the relative percentage of poor will rise. Furthermore, at national level, economic improvements are not translated to significant per capita revenues in high fertility settings.

Sub-Saharan Africa countries today produce less food per head than at any time since independence.⁴⁴ Furthermore, since the 1970's sub-Saharan Africa has been a net importer of food and between 1980 and 2007, net imports in real terms grew 3.4% a year. Studies attribute population growth to account for a large part for this increase.⁴⁵ While enough food is produced worldwide, it is not always produced where it is needed and in countries with rapid population growth there are barely yield increases through modern farming methods.

Food insecurity tends to grow, as the lack of financial resources to buy cereals is becoming a constraint. Indeed, the already difficult acquisition of cereals is becoming aggravated by the fact that cereals tend to be more scarce and expensive in the world market.⁴⁴ Not only did world population grow also in other parts of the world, but in addition the change in many people's diet in the emerging economies is creating competition on the availability of food, particu-

⁴³ United Nations Children Fund (UNICEF). 2012. *The State of the World Children 2012*. UNICEF, New York, pp. 83-137.

⁴⁴ Alex Evans, 2009 "The Feeding of the Nine Billion, Global Food Security for the 21st Century" Chatham House, Royal Institute of International Affairs, UK, pp. 6-10.

⁴⁵ Rakotoarisa, Iafrate and Pascali, 2011. *Why has Africa become a net food importer?* Rome, FAO, Trade and Markets Division.

larly cereals.

With Africa facing a large increase in population for the next decades, food availability should grow proportionally just to maintain the existing levels of malnutrition. However, big questions arise. First, as the rural population continues to grow, the amount of arable land will decline in inverse proportion. Second, 95% of sub-Saharan Africa agricultural production is rainfed thus extremely subject to climate change. Third, farm sizes are already very small, and will continue to decrease with rural population increase, and thus the output will less and less be able to feed the subsistence farmers. For instance, in Mozambique at least 25% of the farmers control less than half hectare.⁴⁶

The Intergovernmental Panel on Climate Change (IPCC) thinks that Africa will be the continent hardest hit by the consequences of climate change. Indeed, experts think that large extensions of land will become dry, millions of people will be thirsty and livestock will suffer considerably⁴⁷. Alex Evans⁴⁸ reports that the outlook for global food security over the coming decades will be characterized by turbulence, uncertainty and risk.

Indeed, the rapid population growth risks to outpace sub-Saharan Africa's capacity to produce its own food⁴⁹. Food insecurity is widespread and at least 30 per cent of people are malnourished. It is urgent to implement some kind of green revolution, but financial resources are needed to do that. Furthermore, population pressure will inflate competition for other resources such as water and firewood.

MIGRATIONS AND POLITICAL STRIFE

Most of the poorer countries are in sub-Saharan Africa, and the most prevalent and severe problems today occur in the region. Furthermore, the 27 countries in this region with the largest development problems are the ones that have highest fertility rates.⁵⁰ A likely trend between now and mid-century is increased intra-regional migrations in the region, probably involving millions of people

⁴⁶ Cleland, J. and Machiyama, K. (2016) "The Challenges Posed by Demographic Change in sub-Saharan Africa: A Concise Overview" in *Population and Development Review* 43(2). October 2016.

⁴⁷ Sippel, Lilli; Kiziak, Tanja; Woellert, Franziska and Klingholz, Reiner. 2011. *Africa's Demographic Challenges: How a Young Population Can Make Development Possible*. Berlin: Berlin Institute for Population and Development, pp. 12-16.

⁴⁸ Alex Evans, 2009 "The Feeding of the Nine Billion, Global Food Security for the 21st Century" Chatham House, Royal Institute of International Affairs, UK, pp. 6-10.

⁴⁹ Angelo, Victor. 2012. "Europe and Africa: From Indifference to Interdependence" Paper presented at the conference 'Building the Africa-Europe Partnership: What Next?,' Fundação Calouste Gulbenkian, Lisbon, December 13-14.

⁵⁰ Cleland, J. and Machiyama, K. (2016) "The Challenges Posed by Demographic Change in sub-Saharan Africa: A Concise Overview" in *Population and Development Review* 43(2). October 2016.

as people in the poorer countries, will tend more and more to migrate to others more well off, and the incapacity of controlling borders efficiently will not prevent these movements. When common culture and language are present in both migrants and host community, the prospects may be good, but the key question is whether this cross border migration will bring widespread violence.

It is well known through human history that high competition for scarce resources has often led to political instability and war. The rapid population growth without a corresponding socio-economic development can exacerbate existing conflicts that otherwise may not be as significant. This includes disputes between countries, armed rebellions, civil conflicts. More and more scholars attribute to rapid population growth part of the responsibility of conflicts in the past three decades⁵¹, such as Rwanda⁵².

Indeed, it's interesting to note that:

- During the 1960s and 1970s the annual population growth in Rwanda was around 3 per cent; it increased to almost 5 per cent at the end of the 1980s. Population increase at this level means that the population doubles in 15 years. Rwanda's genocide occurred soon after the population growth rate peak⁵³.
- In Mali, one of the recent large conflicts in sub-Saharan Africa, population doubled in around 15 years since 1975. Indeed, Mali's population was around 1 million in 1975, and it is estimated more than 8 million in 2020.⁵⁴
- Population growth rate of Democratic Republic of Congo (DRC) was between 2.7 and 3 per cent a year, from 1965 to 1985. Then this rate jumped and in 1992 reached its peak at 4.1 per cent level. Conflict in DRC intensified in the middle of the 1990s.⁵⁵
- On Picture 8, the high total fertility rate of selected countries is presented. As can be seen, the total fertility rate ranged from 6 to 8 children per woman during decades and afterwards in the 1990s and 2000s experienced some kind of significant upheaval.

⁵¹ Institute du Sahel, Centre d'Études et de Recherche sur la Population pour le Développement (CERPOD). 1990. *Population and Development dans le Sahel: les défis de la croissance rapide de la Population*. CERPOD, Bamako, Mali, (1990).

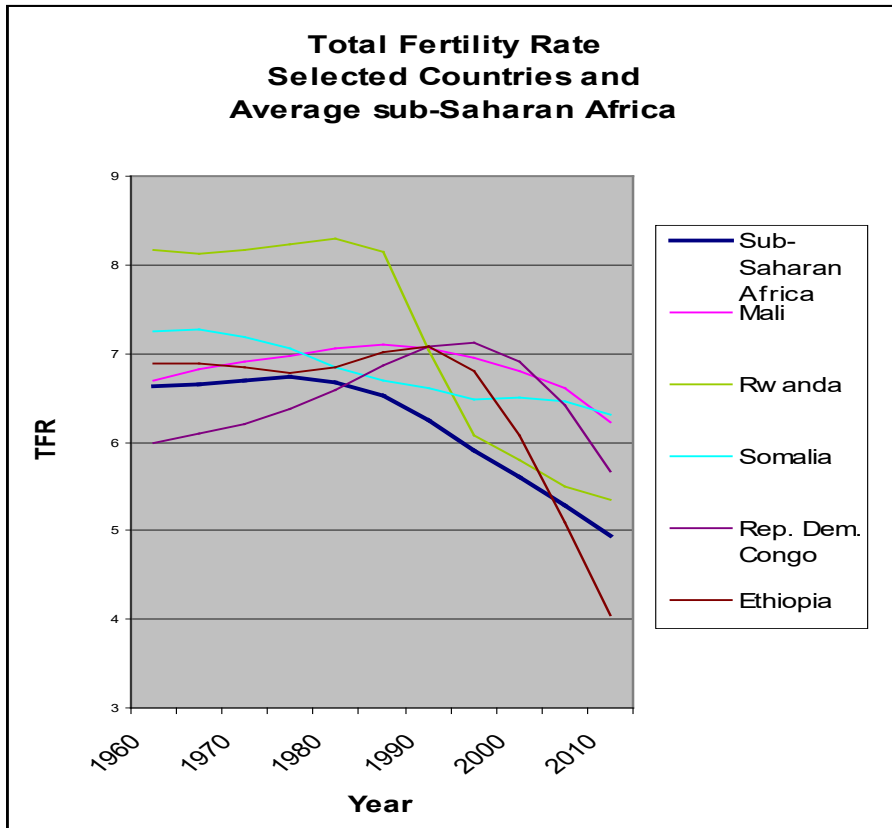
⁵² King, M. 1996. *The Population Wolf and Demographic Entrapment in Rwanda*. *American Journal of Public Health*, 1996 Jul; 86(7): 1030-1.

⁵³ Visited in 20/08/2019: http://www.google.com/publicdata/explore?ds=d5bncppjof8f9_&met_y=sp_pop_grow&idim=country:RWA&dl=en&hl=en&q=rwanda%20population%20growth%20graph

⁵⁴ United Nations Department of Economic and Social Affairs (UNDESA) Population Division, *World Population Prospects 2019, Volume 1: Comprehensive Tables*.

⁵⁵ Visited in 20/08/2019: https://www.google.com/publicdata/explore?ds=d5bncppjof8f9_&hl=en_US&dl=en_US#!ctype=l&strail=false&bcs=d&nslm=h&met_y=sp_pop_totl&scale_y=lin&ind_y=false&rdim=country&idim=country:COD&ifdim=country&hl=en_US&dl=en_US&ind=false

Picture 8. Total Fertility Rate (TFR) in selected countries and average sub-Saharan Africa, from 1960 to 2010.



Source: World Bank data, in Google's public data ⁵⁶

Furthermore, rapid population growth may exacerbate the income inequality and strengthen authoritarian governments. Indeed, as Nancy Birdsall mentions⁵⁷, the massive availability of labour often provokes a reduction of salaries, which in turn increases wealth inequalities. This increase in inequality, prevents the policies on economic development to become as effective as it was projected. Indeed, a society where the majority of people are poor and poorly educated has difficulty in creating wealth. Meanwhile the creation of an elite in contradiction with a vast and poor majority, so poor that their subsistence is not guaranteed,

⁵⁶ Google public data, World Bank data

⁵⁷ Birdsall, Nancy. 1994. "Government, Population, and Poverty: Win-Win Tale." In *Population and Development: Old Debates, New Conclusions*", Transaction Publishers, New Brunswick (USA) and Oxford (UK), 1994, Ch.9.

leads governments to use strong measures and restrict freedom and basic rights to curb a majority revolt. In addition, this situation stimulates corruption.

Young adults, particularly young men, have a tendency to resort to violence if they are denied any prospects such as education and jobs. Some studies show that countries with disproportionately high percentage of adolescents are much susceptible to political unrest and armed conflict⁵⁸ and fragile governments will not be able to guarantee peace.

CONCLUDING COMMENTS

The dominant demographic force for the next few decades will be continued growth as fertility decline in sub-Saharan Africa has been very slow. The pace of growth of the adult population will be higher than that of younger age groups.

This analysis suggests that Malthusianism may not be only a vision of the future, somehow some countries are already experiencing some of its features. Population growth has physical limit, but the main problem in sub-Saharan Africa population growth is its speed, which is overwhelming. Even large decreases in fertility will not solve immediately all problems arising from the rapid population growth, but will slow the growth and help the development. Nevertheless, strategies for development and preventing large scale Malthusian turmoil are urgently needed to put in place.

Many Asian countries had a similar situation a few decades ago. Strong policies to curb high fertility were put in place and fertility declines were fast and for a large period of time the working age group grew while the children's group decreased and the older retired group was not yet of a considerable size. This made the proportion of working age people to the non-working people rather high and this strong working force drove forward the economic development, thus benefiting from a demographic dividend. However, strong and sound economic policies were also put in place.

The way to the demographic dividend is open for the African states. Indeed, if conditions to fertility decline are created and at the same time the right course for education and employment were set, the prospects of today's poorest countries would significantly improve. Fertility decline per se will not guarantee socio-economic development, as it is impossible to fully gain the demographic dividend in a country of weak education, high unemployment rates, and even violence⁵⁹.

Improving agricultural output is urgent, but needs strong investments. Complementary, long term development will not prevail without a rapidly

⁵⁸ Haub, Carl/ Sharma, O.P. 2006. "India's Population Reality: Reconciling Change and Tradition." Population Bulletin

⁵⁹ Sippel, Lilli; Kiziak, Tanja; Woellert, Franziska and Klingholz, Reiner. 2011. Africa's Demographic Challenges: How a Young Population Can Make Development Possible. Berlin: Berlin Institute for Population and Development, pp. 55-72.

growth industrial base. Investing in the youth, particularly through the creation of labour intensive programs, and providing them with quality education are crucial strategies to transform the demographic challenge into economic opportunities, social inclusion and poverty reduction.

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