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Counting people and making people count: Implications of future population change for sustainable development

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19 April 2017

Question

What are the most significant implications of these dynamics for international development, as currently articulated in the most up-to-date literature?

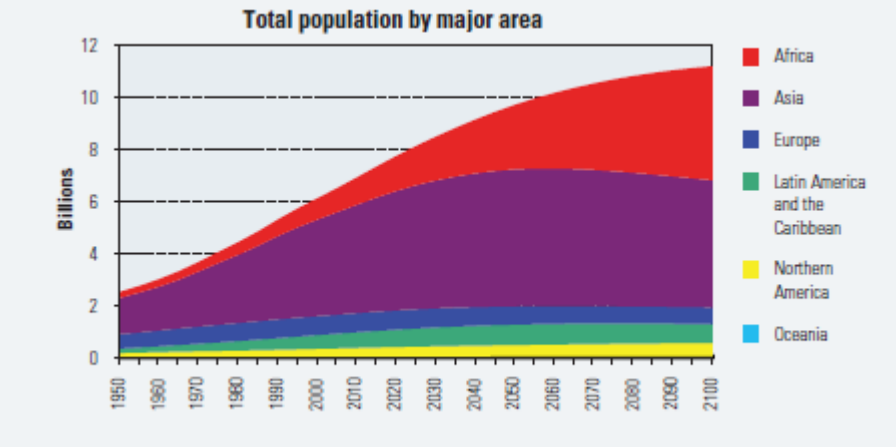
Contents

1. Summary of future population change

The following summary is taken from the Key Findings of the 2015 Revision of the UN Population Division's World Population Prospects (United Nations Department of Economic and Social Affairs Population Division, 2015) and is purely to provide an overview of future population change. The global development challenges of future population change are broad and a comprehensive review is beyond the scope of this pilot learning journey. This report instead focusses on the areas highlighted by DFID at this stage of the journey with the addition of addressing the fertility challenge.

In July 2015, the world population reached 7.3 billion people. This is an increase of one billion since 2003 and two billion since 1990. The world population continues to grow though more slowly than in the past. Ten years ago, world population was growing by 1.24 percent per year. In 2015, it is growing by 1.18 percent per year. 50.4 percent of the world was male and 49.6 percent was female. The median age of the global population was 29.6 years. Twenty-six percent were under the age 15, 62 percent 15-59 years and 12 percent 60 years or over. Sixty per cent of the global population lives in Asia (4.4 billion), 16 per cent in Africa (1.2 billion), 10 per cent in Europe (738 million), 9 per cent in Latin America and the Caribbean (634 million), and the remaining 5 per cent in Northern America (358 million) and Oceania (39 million) (Figure 1). China (1.4 billion) and India (1.3 billion) remain the two largest countries of the world, both with more than 1 billion people, representing 19 and 18 percent of the world's population, respectively.

Figure 1. Total population by major area



Source: UN Population Division 2015 Revision wall chart

Africa is the fastest-growing major area with more than half of global population growth between 2015 and 2050 expected to occur here (1.3 billion additional people). Between 2015 and 2050, the populations of 28 African countries are projected to more than double. By 2050, Africa's share of the global population is expected to increase to 25 percent and will be the only major area still experiencing substantial population growth. Asia is projected to be the second largest contributor to future global population growth, adding 0.9 billon people between 2015 and 2050. The medium variant projection assumes that fertility will fall from 4.7 children per women in 2010-2015 to 3.1 in 2045-2050. Population growth remains especially high in the group of 48 countries designated as the least developed countries, of which 27 are in Africa. Amongst the ten largest countries in the world, Nigeria's population (currently the seventh largest in the world) is growing the most rapidly. By 2050, Nigeria is expected to become the third largest country in the world.

The concentration of population growth in the poorest countries will challenge governments in sustainable development.

The global population is expected to reach 8.5 billion (95% CI 8.4 to 8.6 billion) in 2030 and 9.7 billion in 2050, according to the medium projection variant. Global population is expected to continue to grow until 2050, even if the decline in fertility accelerates. However, projected total population growth is highly dependent on fertility, a relatively small change in fertility behaviour can generate large differences in projected total population over several decades. In the medium-variant projection, it is assumed that global fertility will decline from 2.5 children per woman in 2010-2015 to 2.4 in 2025-2030 to 2.25 in 2045-2050. However, for countries with high fertility (9 percent of the world's population where an average woman has 5 or more children over her lifetime) there is significant uncertainty in the projection of fertility, even over the next 15 years. Of the 21 high-fertility countries, 19 are in Africa and 2 are in Asia. The largest are Nigeria, Democratic Republic of Congo, United Republic of Tanzania, Uganda and Afghanistan. Fertility has declined in almost all major areas of the world. In Africa, where fertility levels are highest of any major area, total fertility has fallen from 4.9 children per woman in 2005-2010 to 4.7 children per woman in 2010-2015. A decline was also observed in Asia, Oceania, Latin America and the Caribbean and Northern America. A slight increase was observed in Europe.

Adolescent childbearing, has fallen in most countries, but remains high among some major areas: the adolescent birth rate (births per 1,000 women aged 15-19) in 2010-2015 was highest in Africa, at 98 per 1,000 women, followed by Latin America and the Caribbean at 67 per 1,000.

The slowdown in population growth brought about by a reduction in fertility is associated with population ageing. Population ageing (as fertility declines and life expectancy rises) is occurring throughout the world. In 2015, there were 901 million people aged 60 or over (12 percent of the global population). Rapid ageing will occur in all major areas so that by 2050, all major areas of the world except Africa will have nearly a quarter or more of their populations aged 60 or over. The number of older persons in the world is projected to be 1.4 billion by 2030 and 2.1 billion by 2050. All major areas of the world are projected to experience significant population ageing, including Africa which has the youngest age distribution. However, Asia is expected to experience the highest proportion of the increase (66 percent). The number of persons aged 80 or over is projected to more than triple by 2050.

Global life expectancy is 68 years for men and 73 years for women in 2010-2015. Globally, life expectancy is expected to rise from 70 years in 2010-2015 to 77 years in 2045-2050. Africa is projected to have a life expectancy of 70 years in 2045-2050. The least developed countries have experienced a six-year average gain in life expectancy from 56 years in 2000-2005 to 62 years in 2010-2015, roughly double the increase recorded in the rest of the world. Whilst significant differences in life expectancy across major areas and income groups are projected to continue, they are expected to diminish by 2045-2050.

Population ageing is projected to have a profound effect on the number of workers per retiree, as measured by the Potential Support Ratio (PSR), defined as the number of people aged 20 to 64 divided by the number of people aged 65 and over. Currently Africa has 12.9 people aged 20 to 54 for every person aged 65 or above, Asia has PSRs of 8.0, Latin America and the Caribbean 7.6, Oceania 4.8 and Europe and Northern America at or under 4. Japan, at 2.1 has the lowest PSR in the world. By 2050, seven Asian countries, 24 European countries, and four countries of Latin America and the Caribbean are expected to have PSRs below 2.

Populations in many regions are still young. In Africa, children under age 15 account for 41 percent of the population in 2015 and young persons aged 15 to 24 account for a further 19 percent. Latin America and the Caribbean and Asia, which have seen greater declines in fertility, have smaller percentages of children (26 and 24 per cent, respectively) and similar percentages of youth (17 and 16 per cent, respectively). In total, these three regions are home to 1.7 billion children and 1.1 billion young persons in 2015.

The under-five mortality rate decreased by more than 20 percent in 156 countries or areas between 2000-2005 and 2010-2015. A 20 percent or more reduction was recorded in Africa (42 out of 57 countries or areas), Asia (43 out of 51), Europe (39 out of 40), Latin America and the Caribbean (24 out of 38), and Oceania (8 out of 13). Absolute declines were particularly large in Sub-Saharan Africa (142 to 99 per 1,000 live births) and in the least developed countries (125 to 86 per 1,000 live births).

HIV/AIDS-related adult mortality has peaked in most countries mostly due to the widespread availability of antiretroviral treatment. However, the impact of the epidemic is still evident. Life expectancy in Southern African, the region with the highest prevalence of the disease, is not expected to return to the level where it was in the early 1990s until 2030.

International migration is a much smaller component of population change than births or deaths. However, in some countries and areas the impact of migration on population size is significant, including in countries that send or receive proportionately large numbers of economic migrants or those affected by refugee flows. Overall, between 1950 and 2015, the major areas of Europe, Northern America and Oceania have been net receivers of internal migration, while Africa, Asia and Latin and the Caribbean have been net senders, with the volume of net migration generally increasing over time. From 2000 to 2015, average annual net migration to Europe, Northern America and Oceania averaged 2.8 million persons per year. When countries are grouped by income rather than geography, the numbers are higher. From 2000 to 2015, average annual net migration to high-income countries averaged 4.1 million persons per year from lower and middle-income countries. In the future, net migration is projected to be a major contributor to population growth in many high-income countries. Between 2015 and 2050, total births in the group of high-income countries are projected to exceed deaths by 20 million, while the net gain in migrants is projected to be 91 million. Thus, in the medium variant, net migration is projected to account for 82 per cent of population growth in the high-income countries. Several high-income and middle-income countries in the “global south” have also been attracting migrants in larger number for several years too. Between 2015 and 2050, the top net receivers of international migrants (more than 100,000 annually) are projected to be the United States of America, Canada, the United Kingdom, Australia, Germany, the Russian Federation and Italy. The countries projected to have net emigration of more than 100,000 annually include India, Bangladesh, China, Pakistan and Mexico.

The 50th session of the Commission on Population Development was held on 3 to 7 April 2017. Eliya Zulu from the African Institute for Development Policy (AFIDEP) gave a Keynote speech on Changing age structures and sustainable development in youthful societies (http://www.un.org/en/development/desa/population/pdf/commission/2017/documents/Presentation_EliyaZulu.pdf). He discussed the slower demographic transition in Africa compared to Asia and Latin America. Most populations in sub-Saharan Africa are dominated by children and youth, although populations in Southern and Northern Africa are older than the rest of sub-Saharan Africa due to steady fertility declines. The window of opportunity for harnessing the demographic dividend has opened and already peaked in some African countries highlighting the limited

period to take advantage of a youth bulge before it turns into an old-population bulge. Eliya Zulu proposes that to optimise linkages between youthful populations and sustainable development family planning must be prioritised. Teenage marriages and childbearing must not be tolerated at all anywhere and on-going interventions to reduce child mortality to enhance fertility decline and improve life expectance at birth needs to be stepped-up. Educations systems must be reformed to the prioritise transferable skills, innovation, science and technology and entrepreneurship. Universal secondary education must be embraced and access to tertiary education increased to "unleash" the power of youth in driving socioeconomic transformation. The capacity to generate quality jobs and livelihoods for the current work force and upcoming working-age bulge needs to be enhanced to optimise inclusive sustainable development. This includes empowering women into employment and other stable livelihoods outside the home. Rania Antonopoulos, Director of the Gender Equality and the Economy Programme at the Levy Institute, Bard College, gave a Keynote speech on Changes in age structure and sustainable development in ageing societies.

2. A historical sketch of population concerns and research findings in poor countries

Concerns about the economic effect of rapid population growth, originating with Malthus in the late 18th century, re-surfaced in the middle of the last century when it became clear that an era of unprecedented, rapid increase in the populations of developing countries had started. In 1958, a hugely influential book on India's demography and economy by Coale and Hoover concluded that India's development was jeopardised by rapid population growth and its attendant age structure with high and rising child dependency ratios (Coale & Hoover, 1958). Badly needed investment in agricultural modernisation and industrialisation was being diverted to address the immediate needs for more schools, health care and infrastructure. Together with concerns about longer term sustainability of increasing population and consumption and more apocalyptic warnings about resource depletion and food shortages (Ehrlich, 1968; Meadows, Meadows, Randers, & Behrens III, 1972), this seminal work provided the economic rationale for national and international support for family planning programmes, which burgeoned in the 1960s and 1970s.

Subsequently, the Coale-Hoover thesis attracted empirical challenges. No straightforward relationship between national population growth and per capita output was observed (Kuznets, 1967); the relative size of the school age population did not appear to influence the share of national income allocated to education (Schultz, 1987); and no confirmation was found that savings and investment were adversely affected by high youth dependency ratios (Kelley, 1988). Influential scholars argued that, far from being an obstacle to development, increased population stimulated innovation and productivity (Boserup, 1965; Simon, 1981). The mood among many economists of scepticism, or even neutrality, about the consequences of high fertility and population growth was captured by the cautious and nuanced conclusions of the 1986 US National Academy report on population (National Research Council, 1986).

In the past two decades, the evidence on demographic-economic relations has tilted yet again towards support of Coale and Hoover. These more recent analyses have the advantage over earlier studies in access to a longer time series of data and advances in statistical modelling. Unlike many early studies that took population growth as a unitary concept, demographic factors are represented in a more detailed and richer manner, distinguishing, for instance, between size, density, age structure, fertility and mortality. The key result of these studies concerns the potential boost to output and incomes of fertility decline, acting through its link to age structure.

Fertility decline reduces the child dependency ratio and ushers in an era of several decades when the working age population continues to grow because of the legacy of past high fertility. This era, dubbed the demographic “bonus” or “dividend”, is temporary, because it is inevitably followed by a decline in the ratio of workers to dependents as the population ages.

The benefit of high ratio of workers to dependent young and old is obvious but its effect can be greatly magnified by the enhanced opportunity for savings and investment, both in higher quality education, thereby raising human capital, and also physical capital, thereby facilitating agricultural intensification and industrialisation. Modelling of data from 86 countries with market economies suggests that demographic change (excluding mortality) accounted for about 20% of increases in per capita output over the period 1960-95 (Kelley & Schmidt, 2005). The effect of the demographic dividend is conditional on the existence of effective institutions for saving and investment and on macro-economic policies. These conditions were particularly favourable in East Asia (and Western Europe) with correspondingly larger estimated impacts of demography on economic growth than in South America where conditions were less favourable (Bloom, Canning, & Malaney, 2000; Kelley & Schmidt, 2005). Because of hitherto modest declines in fertility, sub-Saharan Africa is yet to experience the era of favourable demographic change and it remains uncertain whether countries in this region will benefit to the same extent as in East Asia, partly because of historically low savings rates (Eastwood & Lipton, 2011).

A large body of household studies broadly supports the new macro-economic results. A strong correlation between the number of children in a household and poverty has been observed for decades. Children with many siblings tend to be less well educated and less well nourished, though these associations are context-specific, being weaker in Africa probably because of diffusion of the costs of children among extended lineages (Green & Merrick, 2005). Causal interpretation, however, has been problematic. Do the poor choose to have larger families than the less poor, because of perceived advantages of future labour contributions or as a form of security in old age? Or is their poverty in part a consequence of high fertility? Twin studies minimize problems of causality and these suggest that large family sizes do impact negatively on the education and health of children (Rosenzweig & Wolpen, 1980; Rosenzweig & Zhang, 2009). Other social scientists, including demographers, tend to stress lack of choice and are more ready than economists to interpret high fertility as a barrier to the escape from poverty. The large body of survey evidence on unwanted childbearing supports the latter view. Unwanted childbearing is invariably more common among the poor than the rich. Sound reasons can account for this relationship. The poor have less information about contraception, greater misgivings about its use and restricted access to service.

Powerful confirmation that the poor benefit from fertility-reduction comes from the quasi-experiment in Matlab, a poor district in a poor country, Bangladesh. Starting in 1977, half the area received high-quality intensive family planning services while the other half continued to receive routine government services. Fertility fell faster and earlier in the treatment area than the comparison area though by 1996 the gap had closed. Among the long-term consequences of this difference was better education of children, greater asset accumulation, and greater use of preventive health services in the treatment than in the comparison area (Joshi & Schultz, 2007).

Most of the positive effects of fertility decline and associated population change on economic development unfold over decades and, for this reason, may be unattractive to political leaders with short term horizons. Analyses by the Futures Group address this concern by demonstrating that family planning also can bring short-term gains (Moreland & Talbird, 2006). For 16 African countries the costs of meeting unmet need for family planning were assembled; the number of

unintended pregnancies and births averted by family planning were estimated; and the savings represented by these averted births in meeting MDGs by 2015 calculated. The average estimated benefit/cost ratio for the 16 countries was an impressive 3.7. The largest savings were in primary schooling (with an obvious lag of five years) and in obstetric care with additional savings in immunization, provision of bed nets for malaria control and improvement in water supply and sanitation. The effect of preventing unintended births on absolute poverty may also be considerable but were not included in the analysis.

3. Fertility

Fertility decline in most countries of sub-Saharan Africa has started later and proceeded more slowly than in countries in Asia and Latin America and the Caribbean. The future pattern that fertility takes will determine population growth and age structure shifts not only in this region, but also globally.

While nearly half of the world's population lives in countries where fertility is below two births per woman, implying population decline in the long term in the absence of migration, nearly all DFID priority countries have fertility well above replacement level. The exceptions are Bangladesh, India, Nepal, Lebanon, and South Africa where fertility is now close to two births per woman. Half of DFID priority countries are in sub-Saharan Africa and most have high fertility. The UN medium projection assumes a continuation of the gentle fertility decline in Africa from a little under 5 births per woman to 3 births by mid-century. Under this scenario, the annual number of births will rise from 35 million in 2015 to 53 million by 2050. The maternal mortality ratio, deaths per 100,000 births, is about 500 in Africa, far higher than in other regions and only about half of deliveries have the advantage of a skilled attendance. The 49% increase in the annual number of births per year over the next 35 years will certainly impede progress in improvement of maternal health.

However, the UN projections may be too pessimistic. The attitudes of African leaders have become more positive towards promotion of family planning, in part because of the demographic dividend narrative, which has been endorsed by both the World Bank and the IMF. Recent successes in reducing fertility in Ethiopia and Rwanda have profound implications for the region.

Ethiopia's population is estimated to be about 100 million, the second most populous country in sub-Saharan Africa. Despite rapid growth in GDP in the past 10 years, it remains one of the world's poorest countries and is the world's largest recipient of international food aid. School enrolments have improved but adult educational levels are low. Half of women of reproductive age have received no schooling and the percentage with secondary schooling is exceptionally low.

Despite these disadvantages, the country has achieved an impressive degree of demographic modernisation. For instance, life expectancy improved by close to 16 years between 1990 and 2013, whereas the gain for Africa was only about six years. Similarly, fertility fell from seven births per woman in the early 1990s to 4.6 births in 2010-15, a drop of 35% compared with a drop over the same period of 18% for the entire region.

Strong policies and programmes can take much of the credit for these stunning achievements (Halperin, 2014). The 1993 population policy set explicitly demographic goals of reducing fertility to four births and raising contraceptive use to 44% by 2015. In 2004, the abortion law was liberalised. A cadre of over 30,000 mainly female community-based health and family planning workers was trained for one year and posted back to their own localities. One lesson from

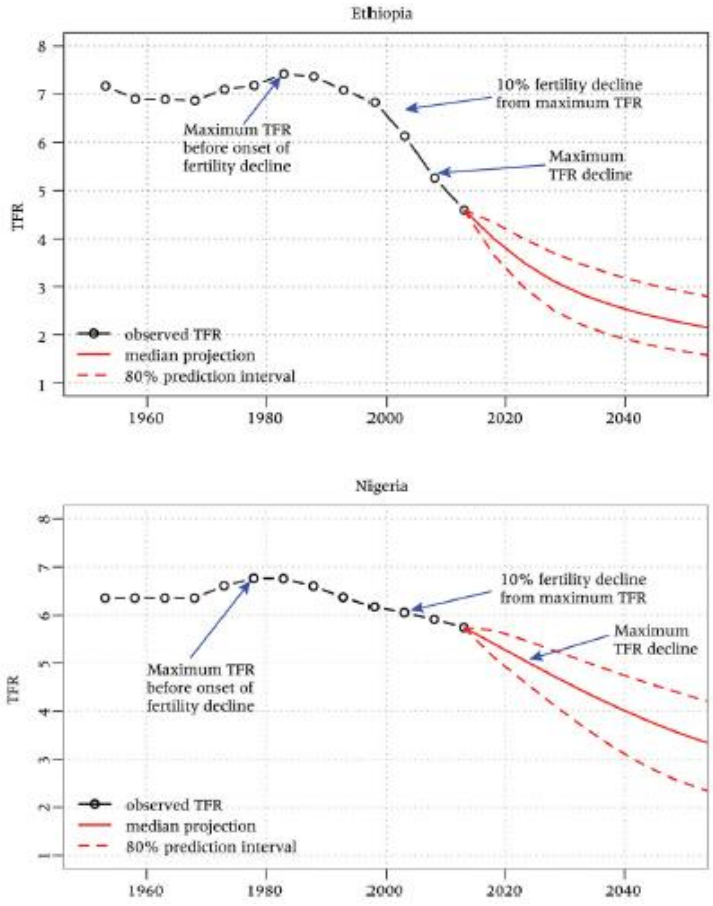
Ethiopia, like that of Bangladesh in the 1980s, is that major progress towards low mortality and fertility can be made in conditions of poverty and illiteracy given political will and programmatic efficiency. It also demonstrates that childbearing can fall sharply in a very poorly educated society. The claim is often made that radical reproductive change is dependent on the achievement of secondary schooling for a high proportion of adult women. While female education is highly conducive for fertility decline, the Ethiopia example shows that it is not a precondition.

Rwanda, a much smaller and more densely populated country than Ethiopia, is placed at position 163 out of 188 on the human development index, the same as Uganda but slightly higher than Ethiopia at position 174. The country adopted a pronatalist stance in the aftermath of the genocide but in 2003, the policy changed to the goal of reducing population growth and, as in Ethiopia, a strong emphasis was given to outreach family planning services. Between 2005 and 2014/5, the percent of married women using a modern contraceptive method rose from 10% to 48% and fertility fell from six to a little over four births per woman, an astonishingly rapid transformation.

The key lesson from Ethiopia and Rwanda appears to be that determined government initiatives can bring about rapid reproductive change as part of a wider agenda of health improvements, educational expansion and economic vibrancy. Both political regimes run relatively efficient administrations that are capable of mass mobilisation and implementation of effective nationwide programmes. Both are autocratic, with little tolerance for opposition, and it remains uncertain whether political evolution towards greater inclusiveness and freedom of expression will occur. The civil insurrection in Ethiopia in October 2016 is certainly a warning sign that a more inclusive approach is needed. Nevertheless, the experience of these two countries is relevant to the more secure and competent regimes in Africa.

Gerland et al. compares the pace of fertility decline for Ethiopia and Nigeria, the two most populous countries in sub-Saharan Africa, and its implications for their future populations (Gerland, Biddlecom, & Kantorová, 2017). Figure 2 below shows that both countries reached a maximum fertility level in the late 1970s and early 1980s, however, Nigeria's fertility decline has been consistently slower than Ethiopia's resulting in a current total fertility of 4.6 births per woman in Ethiopia and 5.7 in Nigeria.

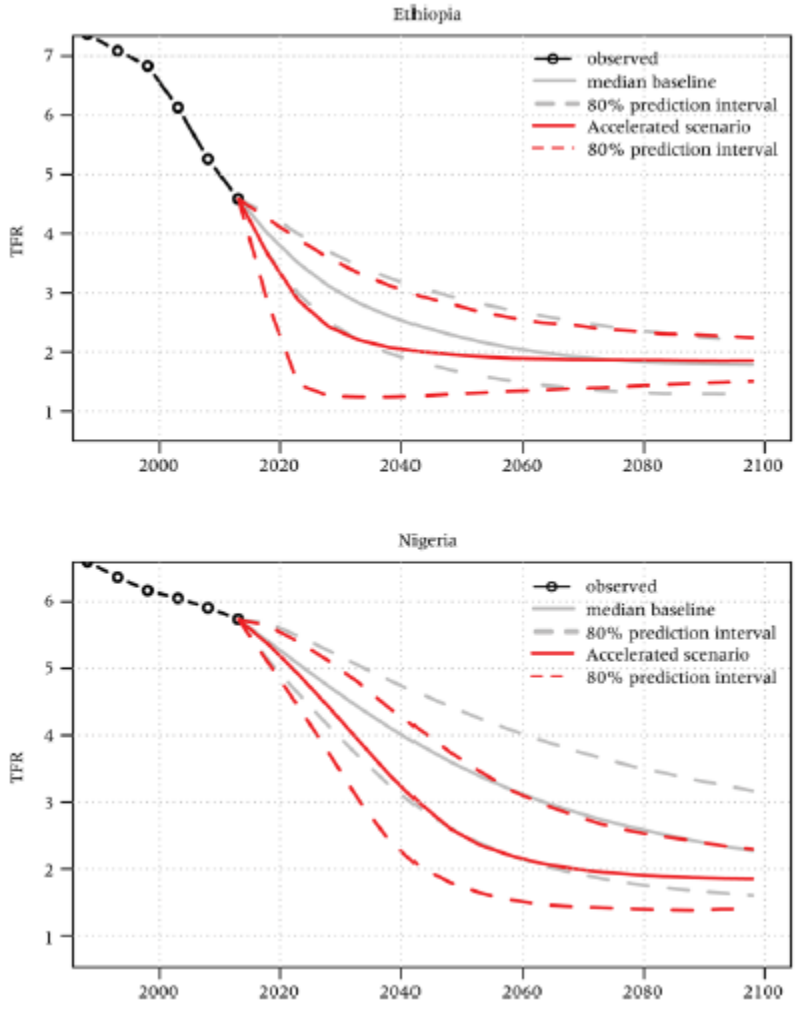
Figure 2. Observed decline in total fertility from 1950 to 2010-2015, predicted decline, and period of maximum TFR and maximum decline for Ethiopia and Nigeria.



Source: UN Population Division World Population Prospects 2015 Revision and computations by authors Gerland et al. 2017.

The authors then modelled fertility scenarios for 2015 to 2100 to examine the impact on population size if fertility decline accelerates at a faster pace through fertility transition than currently projected. The model is based on the fertility transition experience of 21 countries which showed a similar pattern of accelerated decline in fertility despite disparate institutional, social, economic and cultural contexts; and could therefore apply to a region that also has distinctive and diverse contexts. The following figure 3 shows the implications for Ethiopia and Nigeria. Median projected total fertility by 2045-2050 would decline from 2.3 (baseline) to 2.0 (accelerated decline) in Ethiopia and from 3.6 (baseline) to 2.6 (accelerated decline) in Nigeria. This accelerated fertility scenario has greater implications in Nigeria where the current pace of fertility decline has been much slower than in Ethiopia; the projected population would grow from 99 million in 2015 to median 182 million by 2100 in Ethiopia, compared to 234 million under the baseline scenario, and from 182 million in 2015 to 466 million by 2100, compared to 737 million under the baseline scenario.

Figure 3. Probabilistic fertility projections (median and 80 percent prediction intervals) for two scenarios: baseline and accelerated fertility decline in Ethiopia and Nigeria.



Source: UN Population Division World Population Prospects 2015 Revision and computations by authors.

Applying an accelerated pace of fertility decline to countries at earlier stages of transition illustrates the substantial impact on future population growth of other possible patterns of fertility decline in sub-Saharan Africa.

Bongaarts 2016 writes that within a decade, women everywhere should have access to quality contraceptive services, even in rural areas of poor countries to reduce rapid population growth and high birth rates (Bongaarts, 2016). Where legal, safe abortion services should be made available. Education of women and men through media campaigns and collaboration with community leaders should address other challenges such as incorrect rumours about side effects and conservative social attitudes. These efforts can be led by governments but Bongaarts highlights that results are better obtained when services are provided through multiple ways including private commercial providers and non-governmental organisations. Substantially increased funds are required to achieve these aims. The Kaiser Family Foundation track donor government spending on family planning following the 2012 London Summit on Family Planning (Wexler & Kates, 2015). Bongaarts ends by proposing that family planning must be reclassified as a development intervention to raise its priority as the proportion of ODA allocated to family planning should be increased.

4. Population age structure

The young population

The youth bulge is a common phenomenon in many developing countries, and in particular in the least developed countries. A variety of definitions have been used, including the percent of people aged 15 to 24 (or 29) years in the total population, total adult population or working age population (15 to 64 years). It is often due to a stage of development where a country achieves success in reducing infant mortality but the fertility rate is still high. Despite a marked decline in child mortality in SSA, fertility rates remain high where women have on average 4.7 children – twice the number in South Asia (Watkins & Quattri, 2016). Youth bulges persist until a couple of decades after the onset of fertility decline which acts initially to stabilise and then reduce cohort size.

Swollen cohorts of young people entering the working age population pose a huge challenge for sufficient job creation. Where policy and institutional contexts are unfavourable and the educational system poorly attuned to the job market, the consequence is high unemployment among young people and blighted aspirations. Conversely, when conditions are favourable and the job market buoyant, youth bulges are part of the "demographic dividend" and a force for rapid economic growth.

SSA is in an earlier stage of demographic transition than other regions. A rapidly increasing share of the world's children will be born into the region registering the slowest pace of poverty reduction. A report by Watkins and Quattri presents a scenario for child poverty in 2030 (Watkins & Quattri, 2016). Merging demographic data with a World Bank poverty scenario, detailed regional and age profiles for extreme poverty are development. Key findings include:

- Around 22% of sub-Saharan Africa's children – 147.7 million in total – will be living below the $1.90 poverty threshold (including 46.3 million in the 0-4 age group)
- These children will account for 43% of total global extreme poverty – almost twice the level in 2012
- The region will account for almost 90% of extreme poverty among the world's children, up from around 50% today
- Modest levels of redistribution in which the incomes of the poorest 40% rise at 2 percentage points above the average, would lift significant numbers of sub-Saharan African children above the poverty threshold: projected child poverty for sub-Saharan Africa in our scenario falls by 68 million, or almost 50%.

This paper shows that the region's distinctive mix of demography, inequality and initial poverty points towards a large gap between SDG ambition and prospective outcomes, with Africa's children at the heart of that gap. Economic growth is unlikely to close the SDG gap entirely. Yet with better equitable distribution, investments in human capital, reproductive health care and social protection, it could generate a twin benefit in the form of an accelerated demographic transition with a more rapid reduction in child poverty.

The adult population: employment, productivity and poverty

The implications of population change in sub-Saharan Africa for employment, productivity, and poverty-reduction is a huge and contested subject, to which justice cannot be done in this report.

The UN projections indicate an increase over the next 35 years of those aged 20-64 years of 164% for the region, from 416 to 1,100 million between 2015 and 2050. Because of high fertility in the past, the growth of the adult population will be faster than for the total population. Thus, the support ratio, the number in the prime working ages relative to less productive younger and older people, will improve, giving rise to the possibility of a demographic dividend. According to U.S. based economists---including Bloom, Kelly and Canning-- such favourable changes in age structure in East Asia accounted for 20-30% of the rapid economic growth in the region. However, all the papers on this subject stress that any major benefit is conditional on conducive policies, parallel improvements in education and training, and increased investment from domestic savings or foreign sources. Moreover, the fertility declines, and changes in support ratios, were much sharper than have occurred in Africa so far. It may be the case that the demographic signal will continue to be too weak in Africa to exert a profound influence on economic prospects. But, as shown for Ethiopia and Rwanda, accelerated fertility declines are possible.

The following narrative is from Cleland 2017 (Cleland, 2017). Reliable information on current employment and livelihoods is scarce because few African countries have conducted labour force surveys and because of inherent measurement difficulties in settings where subsistence farming and informal activities dominate. Yet World Bank and ILO sources provide a reasonably consistent picture. About 65% rely on farming for their main occupation, about 20% are in the non-agricultural informal sector, mainly self-employed and working in small family enterprises, while close to 15% are wage earners. Most wage earners work in the sales and service sector; only 2-3% are employed in the industrial sector (manufacturing, mining, construction and public utilities). The share of wage earners in the public sector has been falling and is now estimated to be about 40%, though higher in resource rich countries.

Among wage earners, the disappointing feature is the very small proportion employed in the industrial sector and particularly in manufacturing. Indeed, Africa's share of global manufacturing exports fell from 2% to 1% between 1992 and 2012 whereas East Asia's rose from 30% to 58% (UNIDO, 2013). Along with low agricultural productivity, the weakness of industrial sector employment distinguishes Africa most sharply from low and low-middle income countries in other regions. Whereas about 11% of the labour force in low income Bangladesh and Cambodia have an industrial wage the equivalent in low income African countries is 2.3%. For low-middle income countries in Africa, the proportion is 2% compared with a range from 5.4% in Laos to over 14% in Vietnam (L Fox, Haines, Huerta Muñoz, & Thomas, 2013).

There are, however, positive features. As noted earlier GDP growth has been impressive and by no means confined to resource-rich countries. The poverty headcount has fallen from 57% in 2000 to 43% in 2012. Despite the region's declining share of global manufacturing, the value of manufacturing rose from $73 to $98 billion between 2005 and 2014, at constant prices. The absolute number of jobs in manufacturing also increased though this is not reflected in share of employment because the labour force grew by 10 million a year between 2000 and 2015 (Balchin et al., 2016). It is also likely that conventional employment statistics do not provide a valid impression of positive changes in Africa because they do not consider multiple income sources. A detailed analysis of Uganda is revealing (L. Fox & Pimhidzai, 2011). Despite impressive and sustained annual GDP growth of 8%, an exclusive focus on primary employment shows little change. But a more comprehensive examination of livelihoods reveals a clear trend towards income diversification and a shift away from subsistence agriculture. Between 1992 and 2009, the percent of rural households having a non-farm enterprise increased from 24% to 40%. Over

the same period, farmers widened the range of crops grown and became more commercial. In the view of the authors these subtle changes, undetected by conventional surveys, account for the large drop in the poverty head count.

To achieve welfare improvements against a back drop of very rapid increases in the working age population African countries need to make simultaneous progress on three fronts: improvement of agricultural productivity; creation of manufacturing jobs on a far larger scale than in the past; and encouragement of entrepreneurship in the informal sector. Unless this three-fold progress is made, the doubling of population in the next 35 years will entrench poverty and hunger.

Much has been written on the steps necessary to improve agricultural productivity and the long list includes: greater investment to improve seed varieties, increased use of fertilisers, more astute crop rotation and diversification, enhanced water capture and storage, better infrastructure, and access to credit and markets. Particular optimism has been expressed about the potential of digital technology to better link small farmers to the wider world by providing them, for instance, with information about market prices. The route to progress is well lit. Climate change is the most obvious threat. Most farmers in Africa will remain vulnerable to erratic rainfall and temperature increases will be damaging to yields in the tropics.

Historically, the pathway out of national poverty has involved a massive expansion of manufacturing, together with improvements in agricultural productivity. Manufacturing has been the main engine of economic growth and technological progress in poor countries. It makes a larger contribution to GDP per worker than the service sector, except for tradable services (mainly finance and the professions). Moreover, manufacturing has a multiplier effect in terms of employment; each job in manufacturing generates two to three jobs in other sectors (UNIDO, 2013).

As noted above, Africa's economic progress in the past 15 years has not been driven by manufacturing, a feature that raises doubts about sustainability. The crucial question is whether African countries can exploit their growing and increasingly urban labour force to develop a thriving manufacturing base. Past and future trends in the number of global jobs in manufacturing is uncertain. According to the World Bank (UNIDO, 2013; World Bank, 2012), the number has risen only slightly since 1990 and is currently about 200 million; increased production has been largely the result of productivity gains. If valid, this implies that Africa must wrest jobs away from Asia. UNIDO (2013), however, considers jobs in the informal sector and related services (often outsourced by manufacturers) and estimates that manufacturing and related jobs rose from about 400 to about 500 million between 1995 and 2009. The 2009 estimate comprises 200 million in the formal sector, an equal number in the informal sector and 100 million in related services. UNIDO's more comprehensive assessment may be correct but it is unlikely that informal sector jobs have the same advantages as formal jobs in terms of productivity, earnings and wider advantages for the economy. Rapid application of automation and robotics adds a further uncertainty about the prospects of manufacturing to absorb the labour force.

Many factors will determine the future of manufacturing in Africa, including infrastructure, relative wages and skills of the labour force, size of the domestic market, a coastline for exports by sea, capital for investment conducive policies. It may seem predictable that manufacturing will migrate to Africa, as wages rise in China and other parts of Asia, just as it earlier migrated from Europe and North America to Asia. That prospect is reasonable in the more distant future but, in the more immediate future, the prospect is uncertain.

Even with an optimistic view about the creation of private-sector wage-earning jobs, the creation of such jobs will be unable to match the sharp increases in the adult population. A very large fraction of the working age population will remain in the non-agricultural informal sector. An IMF working paper concluded that “even with non-agricultural growth as rapid and labor intensive as occurred in the last 20 years in East Asia, a similar employment transition will not occur. The enterprises would not be able to absorb the same share of the labor force because the labor force would just be too big” (L Fox et al., 2013). The same paper shows that, even under extremely optimistic assumptions about industrial growth, employment in the short term will continue to be dominated by agriculture and the informal sector. In Uganda an impressive 100,000 non-agricultural jobs were created each year between 2002 and 2005, but there were 400,000 new entrants to the labour force, leading to a generalised conclusion that at best only one-quarter of young people leaving school in Africa will find a wage job (Filmer, 2014; L. Fox & Pimhidzai, 2011).

These considerations underscore the key role of small family enterprises and self-employment to Africa’s economic future. Conducive policies can help, for instance by enhancing access to credit, but much will depend on the ingenuity, hard work, and entrepreneurial abilities of individuals.

The ageing population

The proportionate increase in the population aged 65 and over in sub-Saharan Africa will be very high: from 30 million in 2015 to 104 million in 2015 according to UN projections. There are more women aged 60 years and over than men in the population (Pillay & Maharaj, 2012). However, at older ages a far greater percentage of men are married than women. Labour force participation of those aged 60 years and over remains high, but men tend to dominate the elderly workforce. In terms of geographical distribution, the older population are evenly dispersed between rural and urban areas. Life expectancy will increase in all regions of the continent. However, the fastest growth of the ageing population will occur in Northern Africa, followed by Southern Africa. The ageing population of Africa will grow at an accelerated rate over the next few decades, however, as a fraction of total population, the increase will only be modest, from 3% to 5%. It is thus debatable, given other pressing concerns, how much attention the plight of the elderly should receive in this region.

In non-African DFID priority countries, population ageing is an important issue. In Myanmar, Jordan, and Kyrgyzstan, for instance, the old age dependency ratio, the number of people aged 65+ per hundred of working age, is expected to rise from around 10% to over 20% between 2015 and mid-century.

Globally, nearly 80% of the elderly have no access to pension benefits. Thus, social protection of the elderly is increasingly an urgent necessity in many developing countries, particularly in Asia where coverage rates of contributory pension insurance schemes are low (Handayani, 2013). In the absence of adequate social protection programmes, the elderly continues to work or rely on family or community support. However, this support may be changing in the face of urbanization, industrialization and socio-cultural changes in the region.

One approach to tackling old-age poverty is social pensions. In contrast to contributory pension schemes or tax-financed schemes for relatively privileged groups such as civil servants, both of which are earnings-related, social pensions are flat rate benefits financed out of general revenues, which aim to reduce poverty and secure a minimum income for elderly. Qualitative assessment of the impact of social pensions in several countries such as Bangladesh, Nepal, Thailand and Viet Nam shows that social pensions contribute

significantly to basic needs expenditure of older persons, including cost of food, healthcare and expenses associated with social and ceremonial activities. The pension has also been associated with improved well-being and self-esteem.

However, the benefit size of social pensions in these four countries is not sufficient to meet all the basic needs of the recipients. The monthly allowance is ranging from $3.60 in Bangladesh or one-fifth of the country poverty line to $9.50 in Viet Nam, which constitutes only 60% of the national minimum living standard. Despite the positive contribution of social pensions to older people's livelihood, they must undoubtedly continue to rely on support from their children, extended families and communities. And as evidence from Viet Nam suggests, many older people are often compelled to work in agriculture to supplement their pensions.

The demographic dividend that contributed substantially to economic growth in developing Asia in the past is diminishing. Population ageing affects growth through savings, capital accumulation, labour force participation and total factor productivity (TFP). A report by Park and Shin examined the impact of aging on those four channels in 12 developing Asian economies that collectively make up the bulk of the region's population and output (Park & Shin, 2011). Projections about the impact of demographic change (old-age and youth dependency ratios) on the future economic growth rate of per capita GDP of these 12 countries from 2011 to 2020 and from 2021 to 2030 were made. There is diversity among the 12 economies with respect to the size and timing of demographic effects on economic growth. In Hong Kong, China; the Republic of Korea; and Singapore where population aging is well under way, demography will already have a negative impact on growth in 2011–2020, i.e., they will pay a demographic tax rather than earn a demographic dividend in the immediate future. In the PRC, Taipei China, Thailand, and Viet Nam where aging began at a later stage, demographic impacts will still be positive from 2011 to 2020 but will turn negative in 2021–2030. India, Indonesia, Malaysia, Pakistan, and the Philippines will continue to reap a demographic dividend in 2021–2030; however, even in those youthful economies the dividend will be visibly smaller in 2021–2030 relative to 2011–2020.The results indicate that there will be a sizable adverse economic impact where population aging is more advanced.

5. Implication of population change for service provision and human capital

According to the UN medium projection for sub-Saharan Africa, the number of children of primary and secondary school age, 5 to 19 years, will rise by almost 90 percent, from 359 million in 2015 to 668 million in 2050. Improvements in health and education (human capital) are key to social and economic progress but increasing populations apply increasing pressure on health and education provision. Most African countries are not training enough physicians, nurses, midwives and skilled birth attendants to cope with increasing birth rates. To achieve universal primary schooling and educate increased numbers of children an extra 3.3 million primary teachers will be required (UNESCO Institute for Statistics, October 2013). Demand for secondary school places will increase as growing numbers graduate from primary school and an extra 5.1 million teachers will be required to achieve universal lower secondary education by 2030 (UNESCO Institute for Statistics, October 2013). However, secondary schooling is more expensive than primary schooling with government budget allocations often insufficient to meet demand. Maintaining and improving quality of schooling must not be compromised in the pursuit of universal education but is vulnerable to the large increase in the school-aged populations.

Not all DFID priority countries are faced with this strain on educational provision. In Myanmar, for instance, fertility has been falling for several decades and is now estimated to be about 2.5 births

per woman. Fertility decline is projected to continue. Thus, the projected school age population, 5-19 years, will fall slightly between 2015 and 2050. This provides an opportunity for the country to strengthen the quality of education and training. Such investment is claimed to partially account for the success of the “Asian tiger” economies.

Returning to Africa, the large projected population increase poses similar strains on health provision as it does for education. Most African countries are not training enough physicians, nurses and midwives. A detailed examination of 12 countries found that six were not training sufficient health staff at all three levels to maintain existing absolute numbers and only three were training sufficient nurses and midwives to replace those leaving the labour force. Four countries were on track to increase numbers but not sufficiently to match population increase. Only two countries were likely to improve the ratio of staff to population (Kinfu, Dal Poz, Mercer, & Evans, 2009). The 59 percent projected increase in the number of infants and young children will pose a strain on health budgets and staff. It is estimated that the health work force would need to increase by 10 percent per year to meet demand for health care between now and 2030, a rate of growth far higher than in other developing regions (World Health Organization, 2016).

6. Inequality and vulnerability

Climate change

Climate change has the potential to damage the lives of many people around the globe: severe droughts, rising sea levels, food insecurity and the increased incidence of extreme weathers pose a threat to millions. Certain regions and groups are more exposed than others. Climate change, and the consequences thereof, are inequality issues, as they are likely to hit some of the poorest countries in the world the hardest. Sea level rises in places such as Bangladesh, stronger hurricanes in the Caribbean and droughts on the African continent will be compounded by a lack of infrastructure and/or the lack of the strong institutional governance necessary to mitigate the damage. Governments will need to play a significant role in reducing the damage of climate change to the poorest, most marginalised and most vulnerable groups within their populations.

Evidence is increasing that climate change is taking the largest toll on poor and vulnerable people, and these impacts are largely caused by inequalities that increase the risks from climate hazards (United Nations DESA, 2016). Poor families occupy the least desirable land, land that is more vulnerable to effects of climate change such as mud slides, water contamination and flooding. Climate change is also a major factor for intergenerational inequality. Future generations will have fewer resources, such as water, forests or fertile soils. They will also have less safely inhabitable land than we have today and be disadvantaged by broader ecological changes, which will have led to significantly less animal and plant diversity.

Food security

Countries in sub-Saharan Africa have been importing increasing amounts of food. Since the 1970s Africa has been a net importer of food; between 1980 and 2007, net imports in real terms grew at 3.4 percent per year (Rakotoarisoa, Iafrate, & Paschali, 2011). Population growth, and changing dietary preferences among the urban population, rather than increased consumption

per head, accounts for most of this trend. While richer countries, such as Botswana and Gabon, import more per head of population than poor countries, all but a handful of poorer African countries are net importers. On average, 31 percent of cereals consumed in 2008 were imported (African Development Bank Group, 2009). Recent estimates of the total value of food imports range between US $30 and 50 billion per year.

Increased food imports coexist with widespread under-nutrition. While there has been modest improvement since the early 1990s, it is estimated that 25 percent of Africa's population was undernourished 2011-13, higher than any other developing region (FAO, 2013). Most of countries with alarming measures on the global hunger index are in Africa (IFPRI (International Food Policy Research Institute), 2014). Nutritional gains have been sharper in Southern, South-Eastern and Eastern Asia than in Africa.

Africa is a predominantly rural, agricultural region. About two-thirds of employment derives from agriculture. Yet the population has become increasingly dependent on food imports and hunger remains widespread with little improvement over the past 20 years. The reasons for this disastrous conjunction are manifold and have been widely analysed. Whereas most Asian countries benefitted from the Green Revolution that transformed agricultural yields, no such leap forward occurred in Africa; yields per hectare have remained static and domestic production has barely kept pace with population increase by extending cropland. Between 1985 and 2005, cereal production grew by 65 percent but population increased by 71 percent (Jayne & al., 2010). Little research has been done into genetic improvement of some key African crops, such as sorghum, millet, and teff. Use of fertilisers, irrigation and mechanisation are extremely low. Rural infrastructure is poor and thus marketing of surplus production is difficult. Access to credit for farmers has been very limited. Only in the last decade has it been acknowledged that agriculture has been scandalously neglected in development policies (World Bank, 2007).

The region now faces a further doubling of population in the next 35 years. Food availability must increase to a similar degree just to maintain existing nutritional standards and by more if under-nutrition is to be reduced. Though enhanced food availability does not guarantee reduced hunger, particularly in the urban population where economic access is crucial, it is an essential precondition. Nor do the nutritional needs of growing populations necessarily have to be met by domestic production but the costs of escalating food imports would be a severe and probably unsustainable burden on all but the few wealthier countries.

The big question is therefore whether agricultural production in Africa can more than double between now and mid-century. Baseline yields are so low that addressing the barriers mentioned above provide a potential for rapid improvements. Taking into account availability of virgin land and assuming a doubling of yields, Alexandratos (Alexandratos, 2005) calculates that the majoriity of 11 African countries with particularly high population growth could increase cereal production per head by 2050. However, several major and less tractable obstacles to progress can be identified: continued growth of the rural population poses an obvious risk of over-cropping and over-grazing, leading to further soil degradation and erosion; climate change, as already mentioned; the preponderance of very small scale farmers and insecurity of land security which may inhibit risky innovation.

7. Migration

International migration is the most politically sensitive of all demographic topics. Partly for this reason, the scale of future migration is impossible to forecast with any confidence and most projections simply assume that recent flows will continue at the same level. Though most migration takes place within regions, the literature deals mainly with the consequences of migration from poor to rich countries. The population of less developed regions are currently growing annually by 66 million and it is estimated that about 4 million migrate to richer regions per year. It is thus clear that international migration cannot act as an important safety valve to relieve the pressure of increasing numbers in poor countries but they can benefit from remittances and the expertise and new ideas that returning migrants bring. Remittances are far greater than Official Development Assistance and make a particularly large contribution to GDP in three DFID priority countries: Kyrgyzstan, Tajikistan and Nepal. Set against these benefits is the loss of the best educated and most enterprising individuals. Many economists regard the flow of people from countries with surplus labour forces to countries where the labour force is set to fall as most inevitable and beneficial to both sending and receiving countries (World Bank Group, 2016). The benefits to sending countries can be increased by ensuring that migrant workers enjoy the same employment conditions as native workers, by reducing the transaction costs of remittances and by encouraging the eventual return of migrants to their countries of origin.

An increasing number of people are being forcibly displaced (refugees, asylum seekers and internally displaced persons), reaching 65.3 million individuals by the end of 2015; a 75 percent increase from 37.3 million in 1996 (UNHCR, 2015). From 1999 to 2011 this population remained relatively stable but then dramatically increased since then coinciding with the beginning of the 'Arab Spring' and the Syrian conflict. Other unresolved crises and conflicts, as well as new ones that arose during the year, also contributed to the increase in global forced displacement. These included new or reignited conflicts in Burundi, Iraq, Libya, Niger, and Nigeria, together with older or unresolved crises in Afghanistan, the Central African Republic, the Democratic Republic of the Congo, South Sudan, and Yemen. Most the world's refugees – nine out of ten – are hosted in the global South, led by Turkey, Pakistan and Lebanon. Half are children and half come from just three war-torn countries – Syria, Afghanistan and Somalia.

It is likely that rapid population increase in Africa will result in large-scale cross border movements of population, because of Malthusian pressures and failed states. Niger, with a projected increase of population from 20 million to 72 million by mid-century, is an extreme example of population problems in the Sahel. It is difficult to imagine the country being able to support such an increase, even at the lowest standard of living, and also difficult to envisage indefinite international food aid on such a scale. The obvious remedy is mass migration to neighbouring countries and it is uncertain whether this can happen without civil strife

Not all migration is 'distress-driven' but can offer an escape route out of poverty. Official census and sample surveys tend to underestimate the extent of temporary migration and commuting by poor people seeking employment opportunities in distant locations, increasingly facilitated by better roads and communication networks (Deshingkar & Anderson, 2004). Deshingkar et al recommends that policy needs to become more flexible to provide services to people who are on the move, including e.g. access to crucial information on labour markets and rights, as well as basic services in health, education, shelter and food (Deshingkar & Anderson, 2004).

8. Urbanisation

The proportion of people living in urban areas is expected to increase from 54 percent of the world's population in 2014 to 66 percent in 2050 (United Nations, 2014). Africa and Asia remain mostly rural with 40 and 48 percent of respective populations living in urban areas, although Africa and Asia are expected to urbanise faster than other regions and are projected to become 56 and 64 percent urban respectively, by 2050. Continuing population growth and urbanization are projected to add 2.5 billion people to the world's urban population by 2050, with nearly 90 per cent of the increase concentrated in Asia and Africa. Just three countries, India, China and Nigeria, together are expected to account for 37 percent of the projected growth of the world's urban population between 2014 and 2050. There is great diversity in the characteristics of the world's urban environs: close to half of urban dwellers reside in relatively small settlements of less than 500,000 inhabitants, while nearly one in eight live in the 28 mega-cities of 10 million inhabitants or more. The number of mega-cities has nearly tripled since 1990; and by 2030, 41 urban agglomerations are projected to house at least 10 million inhabitants each. Whereas several decades ago most of the world's largest urban agglomerations were found in the more developed regions, today's large cities are concentrated in the global South, and the fastest-growing agglomerations are medium sized cities and cities with 500,000 to 1 million inhabitants located in Asia and Africa. Some cities have experienced population decline through low-fertility, economic contraction and natural disasters. Integrated polices to improve the lives of both urban and rural dwellers are needed.

As the world, has transformed including through rising inequality, increasing insecurity, widening impacts of climate change, advances in life expectancy, information and communications technology, governance and human knowledge, cities have been a primary area where this change has taken place. Persistent urban issues over the last 20 years include urban growth, changes in family patterns, growing number of urban residents living in slums and informal settlements and the challenge of providing urban services. Connected to these persistent urban issues are emerging urban issues including climate change, exclusion and rising inequality, rising insecurity and an upsurge in international migration (United Nations Human Settlement Programme (UN-HABITAT), 2016).

Cities are important drivers of economic and social development and improved quality of life for all, when well-managed. However, rapid and unplanned urban growth threatens sustainable development (United Nations Human Settlement Programme (UN-HABITAT), 2016). Many cities are grossly unprepared for the challenges associated with urbanization. Today urban areas are more unequal than rural areas and hundreds of millions of the worlds urban poor live in sub-standard conditions. The New Urban Agenda agreed on at the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) in 2016 should promote cities and human settlements that are environmentally sustainable, resilient, socially inclusive, safe and violence-free and economically productive; and better connected to and contributing towards sustained rural transformation. This is in-line with Goal 11 of the SDGs: to make cities and human settlements inclusive, safe, resilient and sustainable. Good governance is required to achieve this and encompasses strong effective leadership, land-use planning, jurisdictional coordination, inclusive citizen participation in the design of infrastructure and efficient financing to help foster urban responses to climate change.

Living conditions of Africa's urban population is of particular concern. The percent of all urban dwellers in this region living in slum conditions has fallen only slightly from 70% in 1990 to 55.2%

in 2014 (Division, 2015). In contrast, 30% of the urban population in Southern Asia live in slums. Africa's urban population is projected to double in the next 20 years and the pressure on urban housing and infrastructure will be relentless. While it is possible that large and growing concentrations of young people will act as a magnet for inward investment to support manufacturing, the danger is that slums, largely composed of people living in poverty on the margins of the urban economy, will proliferate. The threat to social cohesion of increasing numbers of slum dwellers living close to small affluent elites is obvious.

Keats and Wiggins reviewed population in rural areas of the developing world to identify patterns of change, the drivers of these changes and to assess what this may mean for policy for agricultural and rural development (Keats & Wiggins, 2016). To explore changes at country level, sixteen relatively populous developing countries from Asia, the Middle East and North Africa, Latin America and Sub-Saharan Africa were selected. It is expected that between 2015 and 2030 the world's rural population will peak at about 3.3 billion and then decline.

Key messages from this report are as follows:

- Growth in rural areas is slowing in Africa and declining in East Asia, Southeast Asia and Latin America. Policies to reduce rural population growth include family planning, poverty reduction, health improvements and schooling for girls.
- Fertility and mortality rates have been falling in rural areas. Lower fertility and less child mortality empowers women. Fertility and mortality tends to be higher in rural than urban areas largely owing to high mortality of children under age five (although this may not be the case when compared to informal urban settlements). The combination of higher mortality and fertility delays the demographic transition in rural areas so that rates of natural population growth in rural areas are usually higher than those in urban areas
- The proportion of the rural population in working years is rising potentially delivering a demographic dividend. However, labour shortages are emerging in some rural areas, pushing up rural wages and encouraging mechanization. Facilitating transfer of rights to operate land are indicated in these areas.
- Most rural areas experience net out-migration. Education of people living rurally encourages such movement. Policies to discourage migration tends to raise costs and dangers to migrants and should instead facilitate movement providing good information and allow transfer of citizens rights from rural to urban locality. The population of cities thus grows faster than the rural population, despite the underlying more rapid increases in rural areas.

Nearly 1 million people live in slums and this number is expected to double by 2030. People in slums have much worse health than those in non-slum urban areas, which in part can be attributed to "neighbourhood effects" (Ezeh et al., 2017). The "urban bias" in favour of urban areas does not extend to slums – people living in some slums have worse health than the rural poor. This may not be the case for those with short stay times in slum areas, however, those who remain in slums can enter a downward spiral of ill health and financial distress. Slums offer high returns on investment because beneficial effects are shared across many people in densely populated neighbourhoods. The authors of a recently published paper argue that, in all low-income and middle-income countries census tracts should be designated slum or non-slum to inform local policy and provide a basis for research surveys that build on censuses (Lilford et al., 2017).

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Expert contributors

Sadly, Professor Hans Rosling was unable to contribute to this report. Prof Rosling was an "edutainer" who presented facts and figures with passion to educate the world about global health, population growth, poverty reduction and trends in human development. The following are just a few links to his exemplary work.

Complexity of Population and Resource Issues

http://www.filmsforaction.org/watch/hans-rosling-brilliantly-explains-complexity-of-population-and-resources-issues-using-simple-tools/

Don't panic - how to end poverty in 15 years

https://www.gapminder.org/videos/dont-panic-end-poverty/

Tedtalk: The best stats you've ever seen

https://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen

Suggested citation

Millington, K.A. and Cleland, J. (2017). *Counting people and making people count: Implications of future population change for sustainable development.* K4D Helpdesk Report. Liverpool, UK: Liverpool School of Tropical Medicine.

About this report

This report is based on five days of desk-based research. The K4D research helpdesk provides rapid syntheses of a selection of recent relevant literature and international expert thinking in response to specific questions relating to international development. For any enquiries, contact helpdesk@k4d.info.

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