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Population growth and its implications for ACP rural development

Resources on Population growth in ACP countries[1]

Compiled by Isolina Boto, Head of CTA Brussels Office
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Briefing no. 16

Resources on Population growth in ACP countries[1]

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Compiled by Isolina Boto, Head of CTA Brussels Office and Camilla La Peccerella, Young Researcher at the CTA Brussels Office

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Introduction

The 21st Century will feature a first-time occurrence in world history: virtually all population growth will be in the developing countries of Africa, Asia, and Latin America. Population growth will no longer be a phenomenon shared by all regions. Put quite simply, the Earth will be very different demographically at the end of this century from what it was at the beginning. Beyond the shift in the balance of numbers itself, many of the implications of this new world are unknown. There will, of course, be significant increases in the demand for food, water, and energy in developing countries.

Some of that increase will be due to growth in numbers and some will result from rising living standards. Indeed, there will likely be a tradeoff between the two. Much of the increase in resource demand will result from rising living standards, but that, in turn, will likely depend upon slowing population growth. It is argued that rapid population growth impedes development, particularly when it occurs in countries with few cash resources to cope with both population growth and the need to expand the delivery of health, education, and social services.

A key difference between demographic trends in this new century and the past century is the growing divergence not only between regions, but even within them. For example, although rural populations still grow in Africa, cities such as Lagos, Nigeria, which held but 288,000 residents in 1950, is projected by the UN to be about 13 million today. Monitoring trends such as these will be key to understanding population trends today and in the future[2].

1. Population growth: current state and future projections

1.1. Population size and growth

In 2011, world population stood at 7 billion.

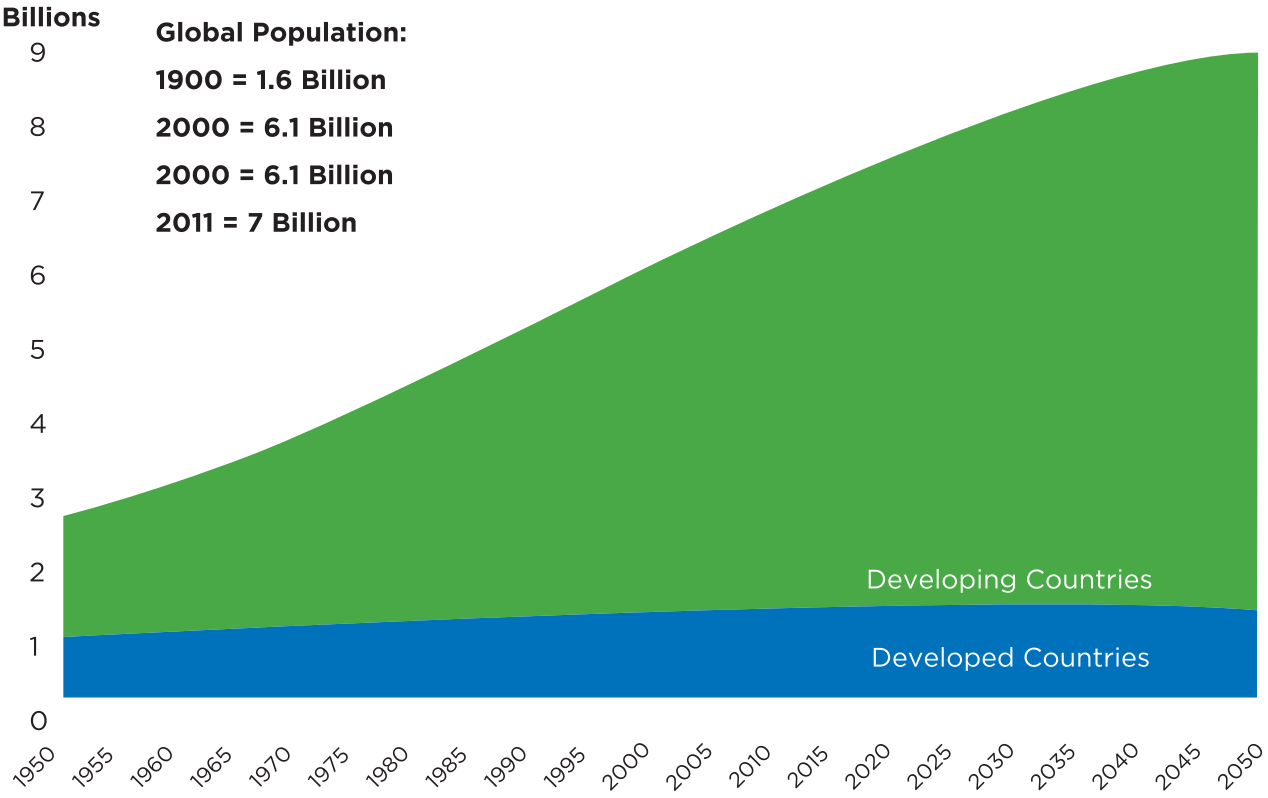
According to the 2010 Revision (published in May 2011) of the official United Nations population estimates and projections, the world population is projected to reach 9.3 billion in 2050. Much of this increase is expected to come from high fertility countries, which comprise 39 in Africa, nine in Asia, six in Oceania and four in Latin America.

Asia will remain the most populous major area in the world in the 21st century, but Africa will gain ground as its population more than triples, increasing from 1 billion in 2011 to 3.6 billion in 2100. In 2011, 60 per cent of the world population lives in Asia and 15 per cent in Africa. But Africa's population is growing about 2.3 per cent a year, a rate more than double that of Asia (1 per cent). Asia's population, which is currently 4.2 billion, is expected to peak around the middle of the century (5.2 billion in 2052) and to start a slow decline thereafter. The populations of all other major areas combined (the Americas, Europe and Oceania) amount to 1.7 billion in 2011 and are projected to rise to nearly 2 billion by 2060 and then decline very slowly, remaining still near 2 billion by the turn of the century. Among the regions, the population of Europe is projected to peak around 2025 at 0.74 billion and decline thereafter.

Between 2009 and 2050, the population of the more developed regions will remain largely unchanged at 1.2 billion inhabitants and would have declined to 1.15 billion were it not for the projected net migration from developing to developed countries (which is projected to average 2.4 million persons annually from 2009 to 2050), but the population of the less developed regions is projected to rise from 5.6 billion in 2009 to 7.9 billion in 2050 and will be distributed among the population aged 15-59 (1.2 billion) and 60 or over (1.1 billion) because the number of children under age 15 in developing countries will decrease.

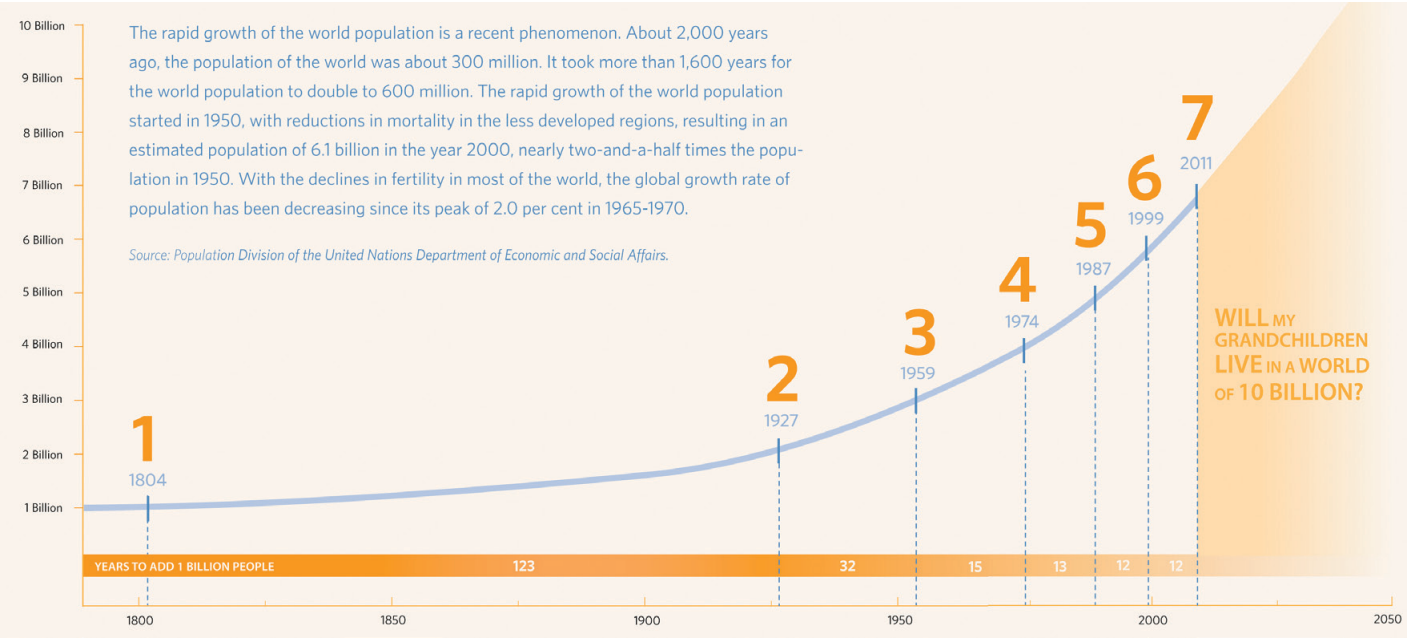
At the same time, the population of the least developed countries is projected more than to double, from 835 million inhabitants in 2009 to 1.7 billion in 2050. Consequently, by 2050, 86 per cent of the world population is expected to live in the less developed regions, including 18 per cent in the least developed countries, whereas only 14 per cent will live in the more developed regions[3].

Table: Global population growth is almost entirely concentrated in the world's poorer countries[4]



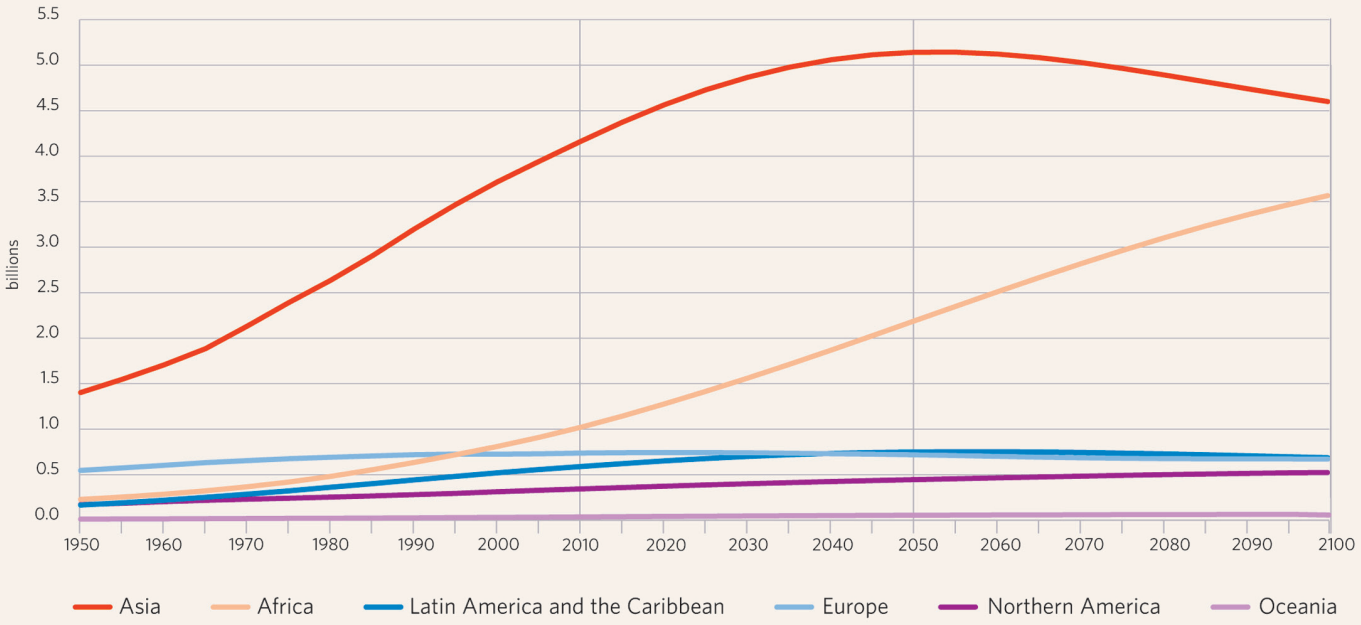
United Nations Population Division, *World Population Prospects, The 2008 Revision*

Years when world population reached increments of 1 billion.



Source: UNFPA, State of the world population 2011. People and possibilities in a world of 7 billion. http://foweb.unfpa.org/SWP2011/reports/EN-SWOP2011-FINAL.pdf

ESTIMATED AND PROJECTED POPULATION BY MAJOR AREA, MEDIUM VARIANT, 1950-2100 (BILLIONS)



Asia will remain the most populous major area in the world during the 21st century but Africa will gain ground as its population more than triples, passing from 1 billion in 2011 to 3.6 billion in 2100.

In 2011, 60 per cent of the world population lived in Asia and 15 per cent in Africa. Africa's population has been growing 2.3 per cent per year, a rate more than double that of Asia's population (1 per cent per year). The population of Africa first surpassed a billion in 2009 and is expected to add another billion in just 35 years (by 2044), even as its fertility drops from 4.6 children per woman in 2005-2010 to 3.0 children per woman in 2040-2045.

Asia's population, which is currently 4.2 billion, is expected to peak around the middle of the century (it is projected to reach 5.2 billion in 2052) and to start a slow decline thereafter.

The populations of all other major areas combined (the Americas, Europe and Oceania) amount to 1.7 billion in 2011 and are projected to rise to nearly 2 billion in 2060 and then decline very slowly, remaining still near 2 billion by the turn of the century. Among the regions, the population of Europe is projected to peak around 2025 at 0.74 billion and decline thereafter.

Source: Population Division of the United Nations Department of Economic and Social Affairs.

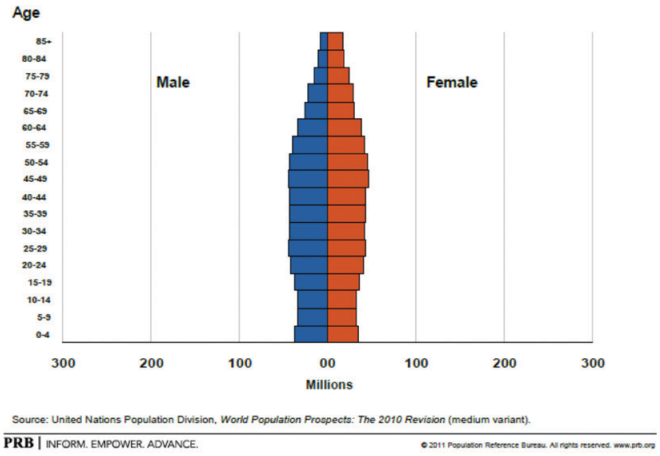
Source: UNFPA, State of the world population 2011. People and possibilities in a world of 7 billion. http://foweb.unfpa.org/SWP2011/reports/EN-SWOP2011-FINAL.pdf

1.2 Population age composition

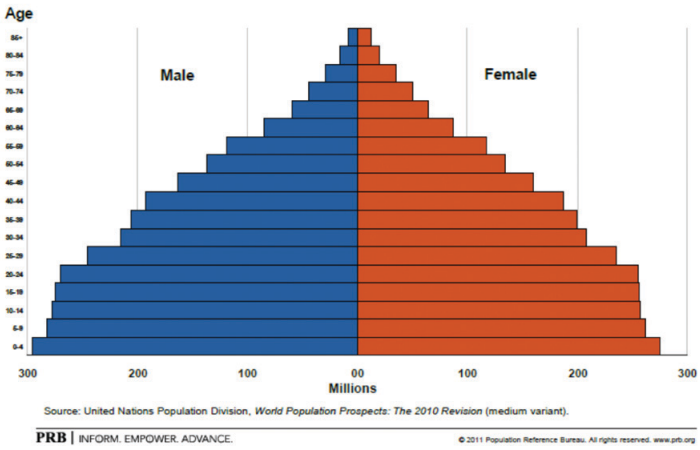
Population in developing countries still young

Currently the population of the less developed regions is still young, with children under age 15 accounting with 30 per cent of the population and young persons aged 15 to 24 accounting for a further 19 per cent. In fact, the numbers of children and young people in the less developed regions are at an all time high (1.6 billion children and 1.0 billion young people), posing a major challenge for their countries, which are faced with the necessity of providing education or employment to large cohorts of children and youth even as the current economic and financial crisis unfolds. The situation in the least developed countries is even more pressing because children under 15 constitute 40 per cent of their population and young people account for a further 20 per cent.

Fewer young people in developed countries ensures little population growth or even population decline.



Large numbers of young people in developing countries guarantee large population growth.



Source: Population Reference Bureau. http://www.prb.org/pdf11/2011-world-population-data-sheet-presentation.pdf

In the more developed regions, children and youth account for just 17 per cent and 13 per cent of the population, respectively, and whereas the number of children is expected to change little in the future, remaining close to 200 million, the number of young people is projected to decrease from 163 million currently to 134 million in 2050. In both the more and the less developed regions, the number of people in the main working ages, 25 to 59, is at an all time high: 603 million and 2.4 billion, respectively. Yet, whereas in the more developed regions that number is expected to peak over the next decade and decline thereafter reaching 528 millions in 2050, in the less developed regions it will continue rising, reaching 3.6 billion in 2050 and increasing by nearly half a billion over the next decade. These population trends justify the urgency of supporting employment creation in developing countries as part of any strategy to address the global economic crisis that the world is experiencing[5].

By 2050, the number of youth will have risen from just under a half billion in 1950 to 1.2 billion. At that point, about nine in 10 youths will be in developing countries. This very large group will arrive at working age with a right to expect gainful employment, adequate health care, and the ability to raise a family with an appropriate living standard if they so choose. Before those things can come about, they must have had access to sufficient education and training so that they can take part in building their country's society and economy. Most likely, tomorrow's youth will have moved to cities in larger numbers as opportunities in the rural areas diminish. But will the economic conditions of their country be able to meet their rising expectations? This will be one of the major social questions of the next few decades[6].

Population growth and its implications for ACP rural development

Globally, population aged 60 or over is the fastest growing

Furthermore, the implications of population ageing cannot be dismissed. In the more developed regions, the population aged 60 or over is increasing at the fastest pace ever (growing at 2.0 per cent annually) and is expected to increase by more than 50 per cent over the next four decades, rising from 264 million in 2009 to 416 million in 2050. Compared with the more developed world, the population of the less developed regions is ageing rapidly. Over the next two decades, the population aged 60 or over in the developing world is projected to increase at rates far surpassing 3 per cent per year and its numbers are expected to rise from 473 million in 2009 to 1.6 billion in 2050. Increasing longevity also contributes to population ageing.

Globally, life expectancy at birth is projected to rise from 68 years in 2005-2010 to 76 years in 2045-2050. In the more developed regions, the projected increase is from 77 years in 2005-2010 to 83 years in 2045-2050, while in the less developed regions the increase is expected to be from 66 years currently to 74 years by mid-century.

A major concern is that most developing countries are unlikely to meet the goal of reducing under- five mortality by two-thirds between 1990 and 2015, as called for in the Millennium Development Goals. According to the UN 2008 Revision, 133 of the 151 developing countries with more than 100,000 inhabitants in 2009 will not reach that goal. Furthermore, 60 developing countries, located mainly in sub-Saharan Africa or belonging to the group of least developed countries, are projected to have in 2015 an under-five mortality higher than 45 deaths per 1000, the less demanding target set by the Programme of Action of the International Conference on Population and Development[7].

2. The drivers of population dynamics

2.1 Fertility

According to the UN data, total fertility—that is, the average number of children a woman would bear if fertility rates remained unchanged during her lifetime—is 2.56 children per woman in 2005-2010 at the world level. This average masks the heterogeneity of fertility levels among countries. In 2005-2010, 76 countries or areas (45 of them located in the more developed regions) have fertility levels below 2.1 children per woman, that is, below replacement level[8], whereas 120 countries or areas (all of which are located in the less developed regions) have total fertility levels at or above 2.1 children per woman.

Although most developing countries are already far advanced in the transition from high to low fertility, seven countries still have fertility levels of 6 children per woman or higher in 2005-2010 and in Niger total fertility is greater than 7 children per woman. Although the fertility of those seven countries is projected to decline after 2010 at a pace of about one child per decade, none is expected to reach 2.1 children per woman by 2045-2050 in the medium variant. As a result, their population is expected nearly to triple, passing from 159 million in 2008 to 425 million in 2050.

These seven countries are least developed countries—Afghanistan, Chad, the Democratic Republic of the Congo, Niger, Somalia, Timor-Leste and Uganda—and several are highly affected by the HIV/AIDS epidemic. Moreover, a number of them have been experiencing civil strife and political instability in recent years, factors that militate against the provision of basic services for the population[10].

Fertility rates have fallen in every major world region, but in some regions the rate remains quite high. Globally, the average number of children per woman fell from 5.0 around 1950 to 2.6 in 2009. Sub-Saharan Africa has the highest average at 5.3, falling from 6.7 around 1950. Worldwide, the use of contraception rose from less than 10 percent for married women of childbearing age in the 1960s to 62 percent in 2009. Again, regional variations provide stark contrasts. In Africa, 28 percent of married women use contraception; in Latin America, the share is 71 percent; North America, 73 percent; Europe, 68 percent; and Asia, 67 percent[11].

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These projections recognize that currently fertility in Africa is quite high and contraceptive use rather low. In only a few countries have African women adopted family planning in a significant way.

Kenya, one of the few countries to achieve some substantial fertility decline, still has a TFR of nearly five children despite formulating a national population policy to slow growth as early as 1963. The country was watched by demographers anticipating fertility decline, but that did not begin until almost thirty years later. Uganda, whose TFR declined from about 7.4 in 1988 to 6.9 in 1995, would take over one hundred years to reach the "two-child" family.

It does appear that Africa has, in fact, begun the transition to lower fertility, although the number of countries is limited. What factors favor fertility decline and which might block it? In many African cultures, a large number of children is highly prized as it ensures the lineage of the family and provides considerable prestige. Avoiding a birth may be seen as denying an ancestor a path to return. Extended kinship in these very rural societies means that the economic cost of a child to a couple is often not a consideration. Finally, decisions are rarely made as a couple in societies that are often male-dominated (and where women in

general want to have less children than men).

Still, nearly all African governments have now reversed their previous view that high fertility is desirable and have identified it as a serious impediment to raising health and living standards. But, the time lag between such policies and results is often a long one, particularly when the economic resources needed to establish family planning education programs – and to change attitudes – are lacking and frequent political disruption intervenes. The establishment of family planning programs will also require considerable expense for "supply," methods such as the pill or condom[11].

2.2 Mortality and pandemics

Life expectancy and trends in mortality

Life expectancy remains low in the least developed countries, at just 56 years in 2005-2010, and although it is projected to reach 69 years in 2045-2050, realizing such increase is contingent on reducing the spread of HIV and combating successfully other infectious diseases. Similar challenges must be confronted if the projected increase of life expectancy in the rest of the developing countries, from under 68 years today to 76 years by mid-century, is to be achieved. The 49 least developed countries, which include 27 of the countries that are highly affected by HIV/AIDS, have been experiencing higher mortality than other development groups. Their life expectancy at birth was 56 years in 2005-2010 and is expected to remain relatively low, reaching 68.5 years in 2045-2050.

Africa has the lowest life expectancy levels of any major area. Furthermore, life expectancy in Africa has virtually stagnated since the late 1980s. While this trend is due in large part to the HIV/AIDS epidemic, other factors have also played a role, including armed conflict, economic stagnation, and resurgent infectious diseases such as tuberculosis and malaria. The recent negative developments in many countries of Africa represent major set backs in reducing mortality. Only in 2005-2010 is life expectancy expected to begin rising again and, provided efforts to reduce the expansion of the HIV/AIDS epidemic and to treat those affected by it succeed, it is expected to continue rising to reach 67 years in 2045-2050. However, even if these gains materialize, by mid-century the population of Africa is still expected to be subject to the highest mortality levels in the world, with its overall life expectancy being 9 years lower than the next lowest one, that of Asia[12].

Projected population growth linked to sustained progress in HIV/AIDS prevention and treatment

The projected population trends also depend on achieving a major increase in the proportion of AIDS patients who get anti-retroviral therapy to treat the disease and on the success of efforts to control the further spread of HIV[13].

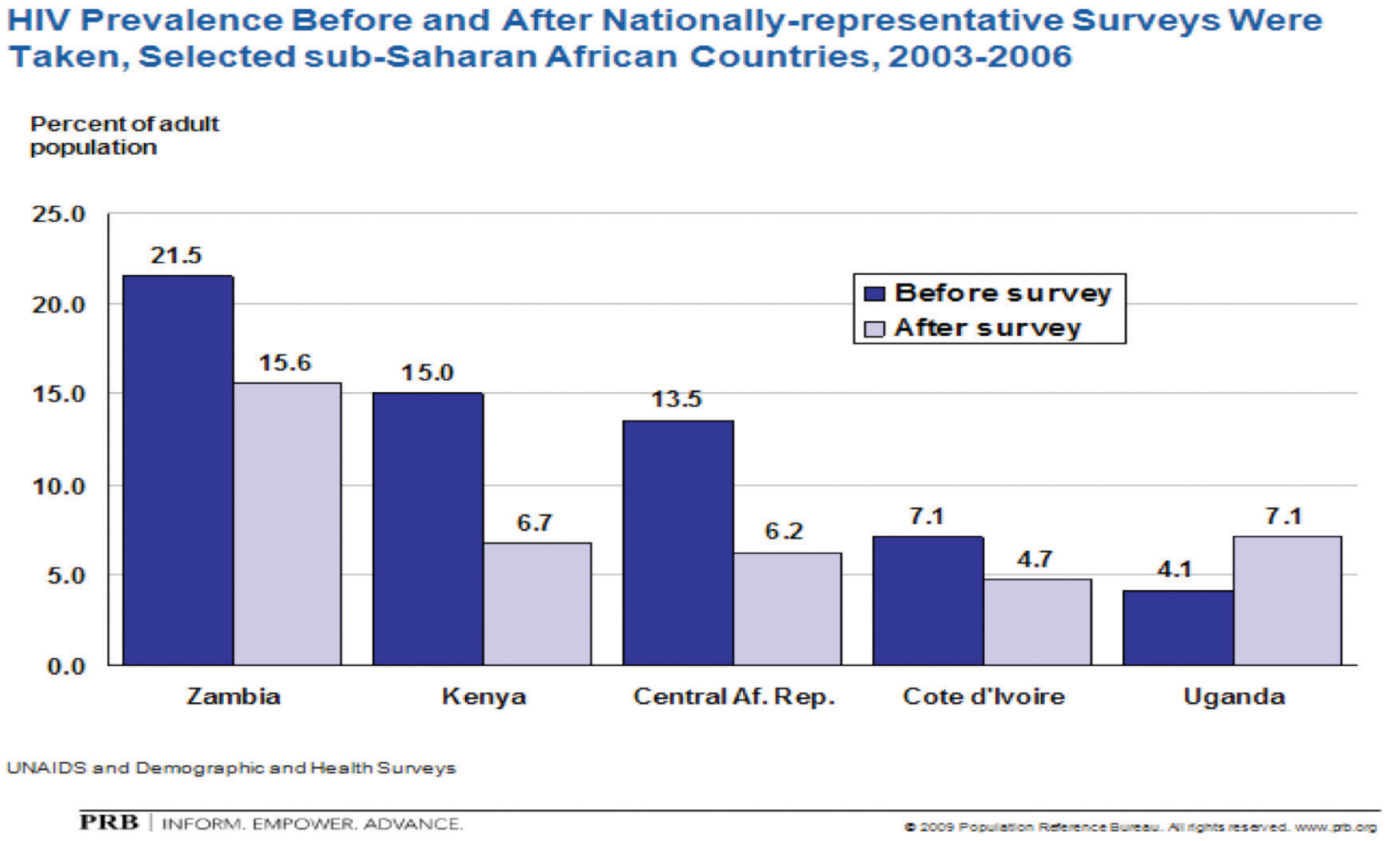
Although the HIV/AIDS epidemic continues to be a major issue of concern in the global health agenda, adult HIV prevalence reached a peak over the past decade or so in at least two thirds of the 58 countries considered to be most affected by the epidemic and a growing number of them are reaching and maintaining lower prevalence levels. Nevertheless, in countries where prevalence has been high, the impact of the epidemic in terms of morbidity, mortality and slower population growth continues to be evident. Thus, in Southern Africa, the region with the highest prevalence of the disease, life expectancy has fallen from 61 years in 1990-1995 to 52 years in 2005-2010 and is only recently beginning to increase. Nevertheless, life expectancy in the region is not expected to recover the level it had in the early 1990s before 2045. As a consequence, the growth rate of the population in the region has plummeted, passing from 2.4 per cent annually in 1990-1995 to 1.0 per cent annually in 2005-2010 and is expected to continue declining for the foreseeable future.

The UN 2008 Revision confirms yet again the devastating toll AIDS has in terms of increased morbidity, mortality and population loss. Life expectancy in the most affected countries already shows dramatic declines. In Botswana, where HIV prevalence is estimated at 24 per cent in 2007 among the population aged 15-49 years, life expectancy has fallen from 64 years in 1985-1990 to 48 years in 2000-2005. By 2005-2010, life expectancy is expected to increase again to 55 years as a result of declining HIV prevalence and increased access to anti-retroviral therapy. In Southern Africa as a whole, where most of

the worst affected countries are, life expectancy has fallen from 61 to 53 years over the last 20 years. While the impact in Southern Africa is particularly stark, the majority of highly affected countries in Africa have experienced declines in life expectancy in recent years because of the epidemic.

The toll that HIV/AIDS is taking is already retarding progress in reducing child mortality. Thirty-five per cent of children infected through mother-to-child transmission are estimated to die before their first birthday, and 61 per cent die by age five. The impact of HIV on child mortality is particularly dramatic in countries that had achieved relatively low levels of child mortality before the epidemic began. In Zimbabwe, for instance, where under-five mortality was one of the lowest in sub-Saharan Africa, it has risen from 88 child deaths per 1,000 births in 1985-1990 to 112 per 1,000 in 2000-2005 and is projected to decline to 94 per 1,000 in 2005-2010. In Swaziland, under-five mortality has risen from 107 to 126 deaths per 1,000 births between 1985-1990 and 2000-2005, and is expected to decline to 102 deaths per 1,000 in 2005-2010[14].

Table: HIV Presence in selected ACP countries[15]



2.3 Migration estimates and impacts

The movement of people across borders is one of the forces shaping population size, age structure, and distribution.

In 2005, the number of international migrants in the world reached almost 191 million, up from 155 million in 1990. The number of international migrants increased by 10 million from 1990 to 1995, going from 155 to 165 million. The estimated increase was close to 12 million from 1995 to 2000 and above 14 million from 2000 to 2005. International migrants constituted 3 per cent of the world population in 2005. Developed countries absorbed most of the increase in the number of international migrants between 1990 and 2005 (33 out of 36 million). In developing countries, the migrant stock stagnated during the period—it declined in 1990-1995 and increased slowly from 1995 to 2005[16]. In 2005,

INTERNATIONAL MIGRATION

International migrant population, 2010

Europe	69.8 million
Asia	61.3 million
North America	50.0 million
Africa	19.3 million
Latin America	7.5 million
Oceania	6.0 million

Countries hosting the largest number of international migrants in 2010

United States	42.8 million
Russian Federation	12.3 million
Germany	10.8 million
Saudi Arabia	7.3 million
Canada	7.2 million

Top-three migrant-sending countries and estimated diaspora in millions

China	35.0 million
India	20.0 million
The Philippines	7.0 million

Source: Population Division of the United Nations Department of Economic and Social Affairs

approximately 60 million people migrated from a less developed country to a more developed one, roughly the same number that migrated from one less developed country to another less developed one[17].

The increase in the number of international migrants in certain developing countries has been counterbalanced by declines in the number of migrants in other developing countries. The repatriation of refugees, in particular, counterbalanced the increases in economically motivated migration in Asia and in other parts of the developing world. As a result of these trends, there is an increasing concentration of international migrants in the developed world. The proportion of the global migrant stock living in developed countries rose from 53 per cent in 1990 to 60 per cent in 2005. Relative to the total population, the proportion of migrants increased between 1990 and 2005 in the more developed regions and declined in the less developed regions. In 2005, international migrants constituted the largest share of the population in Oceania (15 per cent), Northern America (14 per cent) and Europe (9 per cent). In contrast, international migrants accounted for less than 2 per cent of the total population in Africa, Oceania and Latin America and the Caribbean. Moreover, the proportion of international migrants in the total population has declined in these three regions since 1990. The drop in the number of refugees is one of the main reasons for the slow increase in the number of migrants in most developing regions and the decline observed

in Latin America and the Caribbean and the group of least developed countries. The number of refugees in developing regions dropped from 16.5 million in 1990 to an estimated 10.8 million in 2005. The end of long-standing conflicts, particularly in Africa and Central America, led to the repatriation of large numbers of refugees that were under the mandate of the Office of the United Nations High Commissioner for Refugees (UNHCR)[18].

Estimates of net migration between the major development groups show that since 1960 the more developed regions have been net gainers of emigrants from the less developed regions. Furthermore, net migration to the more developed regions has been increasing steadily from 1960 to 2000. During 1990-2000, the more developed regions were gaining annually 2.7 million migrants. About half of that net flow was directed to Northern America (1.6 million annually). During 2000-2010, the level of net migration to the more developed regions as a whole changes moderately, reaching a peak of 2.9 million migrants annually. Over the rest of the projection period, net migration to the more developed regions is projected to remain at about 2.4 million per year, of which 1.3 million are directed to Northern America. Given the low fertility prevailing in developed countries, deaths are expected to exceed births over the foreseeable future. Consequently, the population of the more developed regions would be decreasing if the excess of deaths over births were not counterbalanced by a net migration gain. During 2010-2050, the net number of international migrants to more developed regions is projected to be 96 million, whereas the excess of deaths over births is 58 million, implying an overall growth of 38 million.

International migration is the component of population change most difficult to measure and estimate reliably. Thus, the quality and quantity of the data used in the UN estimation and projection of net migration varies considerably by country. Furthermore, the movement of people across international boundaries, which is very often a response to changing socio-economic, political and environmental forces, is subject to a great deal of volatility. Refugee movements, for instance, may involve large numbers of people moving across boundaries in a short time. For these reasons, projections of future international migration levels are the least robust part of current population projections and reflect mainly a continuation of recent levels and trends in net migration[19].

The world total is likely to reach 7 billion in the latter half of 2011, with the bulk of growth in the world's poorest nations. The less developed countries of Africa, Asia, and Latin America and the Caribbean are projected to increase by just under 50 percent in the 41 years between now and 2050, and the poorest of these are projected to double in population size over that period. But this scenario assumes that fertility in less developed countries will decline smoothly to the low levels observed in today's more developed countries: about 1.8 children per woman. For fertility to fall to those low levels, many factors are key, including significant increases in the use of family planning in many less developed countries[20].

Remittances a lifeline for those back home

The amount of money that international migrants send back to their countries of origin worldwide dipped sharply but briefly during the economic crisis in 2008-2010, but recovered quickly, according to a May 2011 report from the World Bank, *Outlook for Remittance Flows 2011-13.* The report, which covers only officially recorded remittances to developing countries, said that the flow of money to Latin America and the Caribbean had made the best recovery because of the stabilization of the United States economy. Remittances from migrants in Europe have been adversely affected by high European unemployment rates, cutbacks in public spending, financial crises in several European Union countries, tightening of immigration controls and negative attitudes towards migrants.

The report notes that some countries have begun to issue "diaspora bonds" backed by remittances to raise money for development projects. Ethiopia, Greece and India are among the countries that have begun or are thinking about instituting this innovation. Migrant diasporas are huge and their potential contributions significant. The World Bank report estimates that 161.5 million people are in the combined diasporas from developing countries, with Latin America and the Caribbean, South Asia, sub-Saharan Africa and East Asia and the Pacific having the largest numbers living abroad.[21]

3. Demographic growth: the specificities of Sub-Saharan Africa

For many years, the demography of Africa has been unique for two reasons: its very high fertility and very young age structure. That situation remains true today and is the reason that no other world region has as much potential for population growth. While those remain as demographic characteristics that set Africa apart, a third has now been added: AIDS. AIDS has drastically altered the outlook for some African countries, but the continent will nonetheless experience tremendous population growth even with the AIDS catastrophe.[22] The unusually young age structure of Africa itself assures long-term population growth on the continent. The United Nations projection for Africa anticipate an addition of 1.2 billion population by 2050 alone. That addition is the same as the entire population of today's developed countries. This projection includes the effect of higher AIDS mortality than previously thought. In many African countries, the number of tomorrow's parents (those below age 15) accounts for nearly half of the population. In Europe, only 15 percent of the population is below age 18. Thus, the process of slowing population growth — a stated goal of nearly every African government – must result from two processes: fertility decline which, in turn, gradually reduces the proportion of young people in the population.

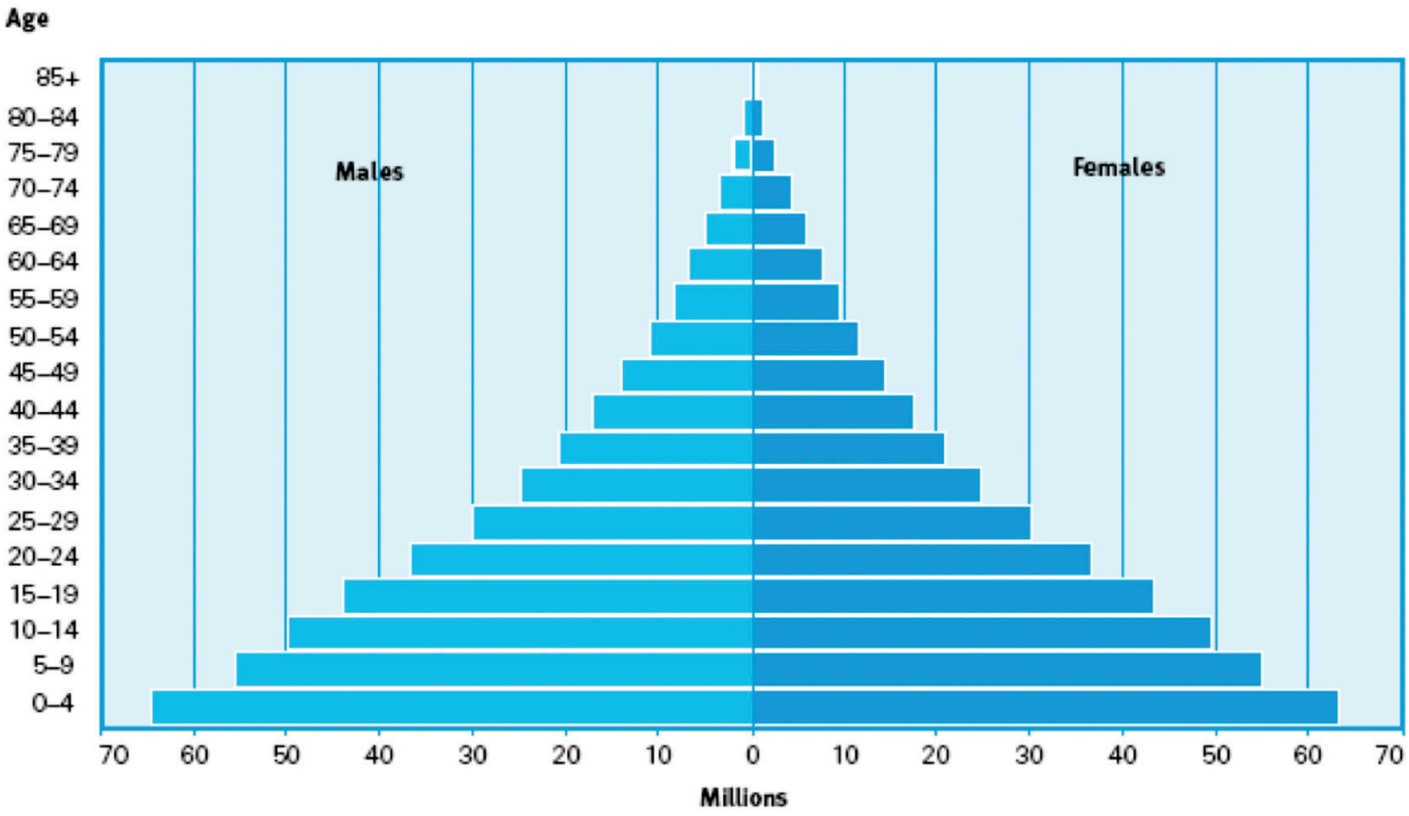
The United Nations projections of population growth in Africa for the first half of this century and the conclusion of each projection variant is the same: rapid population expansion. The most commonly used projection, the medium series, results from the assumption that African women will average about 2.4 children by mid-century – equivalent to less than half of today's fertility level. This medium projection recognizes that current fertility in Africa is quite high and contraceptive use rather low. Under this scenario, population growth in Africa will continue well into the 22nd Century, passing two billion before growth stops. The only way that African population growth will slow significantly in this century would be if fertility were to fall to less than two children by 2050, about that of France. The sub-Saharan population is growing at the rate of 2.5 percent per year as compared to 1.2 percent in Latin America and Asia. At that rate, Africa's population would double in 28 years. The reason for the fast population increase in Africa is the rapid decline in infant and child mortality, whilst fertility levels have remained high and are decreasing only slowly. Today, African women bear 5.5 children on average during their lifetime, except in Southern Africa. The key issue is the lag between the infant and child mortality decline, on the one hand, and the fertility decline, on the other. The AIDS epidemic, despite all the development problems it brings to Africa, will not fundamentally change the demographic equation. For the first time in about two decades, the U.N. Population Division estimates that no one African country will experience a negative population rate of growth as a result of HIV/AIDS. This is because programs on HIV/AIDS are showing some results and estimates about the epidemic have been recalculated downwards. However, successes are still fragile and should not lead us to be complacent[23].

Recent developments and future challenges

Two interesting recent developments have been observed behind SSA population growth rates. First of all, the fertility decline seems to have stalled in a number of important African countries. This coincides with an actual decline in the level of schooling of young adults and worsening health care and family planning services. Second, fewer people than anticipated are dying of AIDS. This has less to do with the rapid spread of anti-retroviral treatment in parts of the continent than with a significant downward correction of the estimates made by UNAIDS of the numbers of people infected with the virus. Put together, a higher starting level of fertility plus a lower level of mortality result in higher population growth, even when the long-term assumptions are left unchanged.

As estimate forecast, Africa's population will almost certainly more than double from its current level of around 740 million. Because of the great longer term uncertainties surrounding the future speed of fertility decline and the possible new health crises under the very poor development conditions anticipated, the 95 percent range by the end of the century is very broad, from a low 1.1 billion to a very high 3.3 billion. The central 20 percent range is 1.9–2.2 billion by 2100. Two factors will in all likelihood keep Africa at the bottom of world development unless some trends change radically in the near future: continued very rapid population growth together with stagnant or declining educational attainment levels

Fig. 1: Africa's Population in 2000: 43 Percent Below Age 15



(partly as a consequence of rapidly increasing numbers of children), and the additional environmental and agricultural problems likely to be caused by climate change[24].

Rapid population growth is a challenge for sub-Saharan Africa in relation to ecosystems, food security, land tenure, environmental degradation and water supply. Civil strife is also often caused by population pressure on scarce resources. Rapid population growth impacts on the economy because governments need to provide human capital investments for their population -- education, health, etc. When population grows too fast such investments become logistically and financially very difficult to meet. In addition, rapid population growth may slow down the increase of income per capita. For example, if your economy expands at six percent per year but your population at three percent, your revenue per capita will expand at only three percent.

Table: Demographic, social and economic indicators in the African regions[25]

	Total population (millions) (2009)	Projected population (millions) (2050)	Ave. pop. Growth rate (%) (2005- 2010)	% urban (2009)	Urban growth rate (2005- 2010)	Total fertility rate (2009)	% births with skilled attendants GNI per capita PPP$ (2007)	External population assistance (US$,000)	Under-5 mortality M/F estimates (2005- 2010)
Africa	1.009,9	1.998,5	2,3	40	3,4	4,52	49	3.179,335	142/130
Eastern Africa	318,8	711,4	2,6	23	4,1	5,17	35	1.790,256	131/117
Middle Africa	125,7	273	2,642	42	4,2	5,53	63	122,771	200/178
Southern Africa	57,5	67,4	1	58	1,9	2,59	89	455.307	80/65
Western Africa	298,6	625,6	2,5	44	3,9	5,14	42	531.575	169/162
Caribbean	42	49,5	0,8	66	1,6	2,35	73	154.273	48/41

4. Population growth: the most vulnerable

4.1 Youth

Although people 24 years old or younger make up almost half of the world's 7 billion population (with 1.2 billion between the ages of 10 and 19), their percentage of the population in some major developing countries is already at its peak, according to the Population Division of the United Nations Department of Economic and Social Affairs in its *World Population Prospects: The 2010 Revision.*

In fact, the percentage of young people—ages 10 to 24, according to United Nations classifications—has begun to decline in many places, not only in developed industrial nations but also in middle income countries. In Mexico, where fertility has decreased significantly in recent decades, the country's population "pyramid" has been steadily shrinking at the bottom, with the birth-to-14 age group down from 38.6 per cent of the total national count in 1990 to 34.1 per cent in 2000, and then to 29.3 per cent in 2010. The country's median age has consequently risen from 19 to 26 in two decades. The bulge moves upward into middle age, and the pyramid is reshaped.

Statistics like these demonstrate that in middle-income and some rapidly developing lower-income countries the number of years in which a large, young working population can be counted on to fuel development may be fleeting, and governments and the private sector need to act expeditiously to prepare the young for productive roles and create jobs for them early in their working lives.

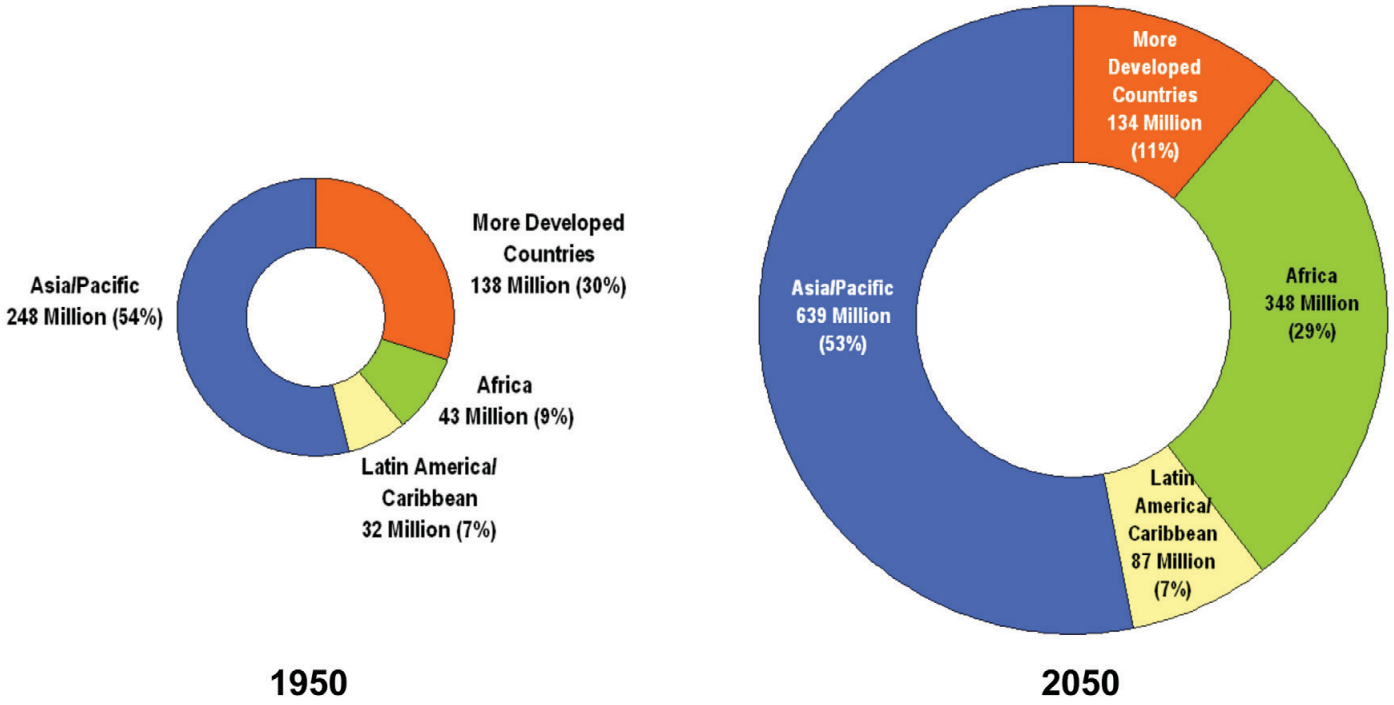
In sub-Saharan Africa, where economic growth rates remain relatively high, governments were warned in the *2011 Economic Report on Africa* by the United Nations Economic Commission for Africa and the African Union that this performance was not being translated into needed jobs. The report urged more effective government intervention to create employment-building policies and programmes.[26]

The World's Youth Population more and more concentrated in Africa and Asia.

Although the world is aging, the proportion of the population between 15 and 24 in LDCs will continue to be higher than in MDCs. In 2005, young people represented 13.7 percent of the MDCs' population, 166 million. That share is expected to drop to 10.5 percent by 2050. The vast majority of the world's youth, 1.1 billion, are in LDCs. Sub-Saharan Africa has the world's most youthful population and is projected to stay that way for decades. Most developing countries have young populations because of high fertility and improvements in child survival. But as fertility rates decline and young populations grow older in many LDCs, a bulge in the working- age population with fewer children and elderly to support may provide benefits. This "demographic dividend" can bring improvements in society by allowing more investments in education, technology, and skills to support a growing economy; encourage more targeted investment in health care; and increase economic output because more people are working. With the right investments in health, education, rural agricultural development, entrepreneurship, and training, a large youth population can be an opportunity for development and economic growth. However, without educational opportunities and a strong economy with healthy labor markets, the youth bulge can be problematic. The lack of job opportunities for youth in many countries breeds frustration. Some youth with few job prospects and little hope of future advancement may resort to criminal activities or join one side or another of armed conflicts[27].

By 2050, the number of youth (between 15 to 24) will have risen from just under a half billion in 1950 to 1.2 billion. At that point, about nine in 10 youths will be in developing countries. This very large group will arrive at working age with a right to expect gainful employment, adequate health care, and the ability to raise a family with an appropriate living standard if they so choose. Before those things can come about, they must have had access to sufficient education and training so that they can take part in building their country's society and economy. Most likely, tomorrow's youth will have moved to cities in larger numbers as opportunities in the rural areas diminish. But will the economic conditions of their country be able to meet their rising expectations? This will be one of the major social questions of the next few decades[28].

Table: World's youth population, ages 15 to 24. regional breakdown[29]



4.1.1. Youth employment

Secure jobs that offer a decent wage are in short supply almost everywhere today, especially for young people. The International Labour Organization, the ILO, reported in 2010 that 81 million of the 620 million economically active youth from ages 15 to 24 globally—or 13 per cent of that age group—were unemployed the year before, largely because of the world financial and economic crisis. At the peak of the economic crisis, the global youth unemployment rate saw its largest annual increase ever—from 11.9 per cent to 13.0 per cent between 2007 and 2009. Young women have had more difficulty than young men in finding work, the ILO adds. The female youth unemployment rate in 2009 stood at 13.2 per cent compared to the male rate of 12.9 per cent. The situation is especially "dire" in the Arab States, and "can only be made worse as the economic crisis closes even the few doors open to those who seek to gain some income and satisfaction through employment," states the ILO, adding that there is "a gross waste of the productive potential of young women."

4.2 Women

Since 1950, the greatest gains in life expectancy at birth occurred among women. Worldwide, men have higher mortality and greater disability than women. In nearly every country, men die at younger ages. However, women spend about 15 percent of their lives in poor health, compared with about 12 percent for men[30]. The female health disadvantage stems from risks associated with pregnancy and childbearing and gender bias. Women are disadvantaged from birth in many countries: Girls receive less nutritious food and less medical care, perpetuating a cycle of poor health. Women who are undernourished during pregnancy are more likely to have low birth-weight babies and undernourished children. Women face additional risks associated with childbirth, and maternal mortality is particularly high in sub-Saharan Africa. Reducing maternal mortality is one of the UN's Millennium Development Goals. Worldwide, one in 92 women are estimated to have a lifetime risk of dying from pregnancy-related causes, but the gap between MDCs and LDCs is great. In the MDCs, the risk is one in 6,000, and in the LDCs,

YOUTH LABOUR FORCE PARTICIPATION RATE, BY REGION AND SEX, 2010

Labour force participation rates for young women are lower than for young men in all regions except East Asia, mainly reflecting differing cultural traditions and the lack of opportunities for women to combine work and family responsibilities not only in the developing world but also in the industrialized world. In many regions, gender gaps in youth participation rates have narrowed over the past decade, but they remain large in South Asia, the Middle East and North Africa. In the latter region, the female participation rate decreased faster than the male rate, actually increasing the gender gap.

	Total %	Male %	Female %
World	50.9	58.9	42.4
Developed Economies and European Union	50.2	52.6	47.7
Central and South-Eastern Europe (non-European Union) and the CIS	41.7	47.7	35.5
East Asia	59.2	57.0	61.6
South-East Asia and the Pacific	51.3	59.1	43.3
South Asia	46.5	64.3	27.3
Latin America and the Caribbean	52.1	61.3	42.7
Middle East	36.3	50.3	21.5
North Africa	37.9	52.5	22.9
Sub-Saharan Africa	57.5	62.7	52.2

Source: Global Employment Trends for Youth. International Labour Organization

one in 75. The danger is greatest in sub-Saharan Africa, where one in 22 women have a lifetime risk of dying from such causes. Maternal mortality is linked to such factors as the frequency and type of prenatal care and the type of attendants at birth. High levels of mortality can be prevented with proper care and facilities, services that are frequently lacking in LDCs.

A large body of research has linked education for women and girls with lower birth rates. Indeed, recent data from many LDCs have shown that women with at least a secondary-level education eventually give birth to one-third to one-half as many children as women with no formal education.

In some of these countries, the fertility of these better-educated women approaches replacement level (2.1 children per woman). Better-educated women generally are able to exercise more control over their reproductive lives, including delaying marriage and childbearing. Delayed childbearing and more time between births improve infant and child outcomes[31].

The challenge of family planning

Fertility rates among women ages 15 to 24 vary widely across regions. The United States has the highest teenage fertility rate in the developed world and 82 percent of U.S. teen pregnancies are unplanned. After declining from 1991 to 2005, the fertility rate among girls ages 15 to 19 in the United States has increased to 42 births per 1,000 girls, according to 2006 data. In Africa, for girls ages 15 to 19, the rate is 118 births per 1,000 girls and 237 births per 1,000 women ages 20 to 24. In

Europe, the rate is much lower, at 17 per 1,000 girls ages 15 to 19 and 65 births per 1,000 women ages 20 to 24. The reason for the divergence is not because young women in Africa, Latin America, and Asia want to have more children than young women in other regions; the skewed ratios reflect an unmet need for family planning. According to a study of Demographic and Health Surveys from 38 developing countries, sexually active, young unmarried women are more likely to report an unmet need for contraceptives than young married women. In many countries, the percentage of girls ages 15 to 19 giving birth each year has declined, but not significantly.

Pregnancy among girls ages 15 to 19 is more common in sub-Saharan Africa and Latin America and the Caribbean than in South and Southeast Asia. Adolescent girls with less education who are living in rural areas are more likely to be pregnant. Education for young women is a key component to addressing unmet need for family planning. Girls' education has been proven to improve the quality of life of families and lower fertility rates. School-based sex education can also lead to more healthy attitudes, mitigating risky behavior that puts girls at risk for pregnancy and HIV infection. HIV prevention efforts can be linked to family planning programs to reduce unintended pregnancies and ensure the health of young women and men[32].

The ICPD Programme of Action[33], contains a full section on family planning, whose "basis of action" is the following:

> "The aim of family-planning programmes must be to enable couples and individuals to decide freely and responsibly the number and spacing of their children and to have the information and means to do so and to ensure informed choices and make available a full range of safe and effective methods. The success of population education and family-planning programmes in a variety of settings demonstrates that informed individuals everywhere can and will act responsibly in the light of their own needs and those of their families and communities. The principle of informed free choice is essential to the long term success of family-planning programmes. Any form of coercion has no part to play. In every society there are many social and economic incentives and disincentives that affect individual decisions about child-bearing and family size. Over the past century, many Governments have experimented with such schemes, including specifi c incentives and disincentives, in order to lower or raise fertility. Most such schemes have had only marginal impact on fertility and in some cases have been counterproductive. Governmental goals for family planning should be defined in terms of unmet needs for information and services". Demographic goals, while legitimately the subject of government development strategies, should not be imposed on family-planning providers in the form of targets or quotas for the recruitment of clients (para. 7.12) [34].

The case of Sub-Saharan Africa

It could be argued that the population issue in sub-Saharan Africa is in essence a gender issue. That is because women have little choice in the decision of child bearing. They often need to bear many children as a means of social recognition and economic survival. Some are also poorly educated and family planning services are often inadequate. In many countries, age at marriage is still too low. Young girls become pregnant too early and face terrible consequences such as fistulae, which make them suffer and become social outcasts[35].The experience of Asia and Latin America has shown that female education, legal reform and access to family planning services have made a difference in many countries. Family planning programs alone have been able to reduce fertility by about one child per woman.

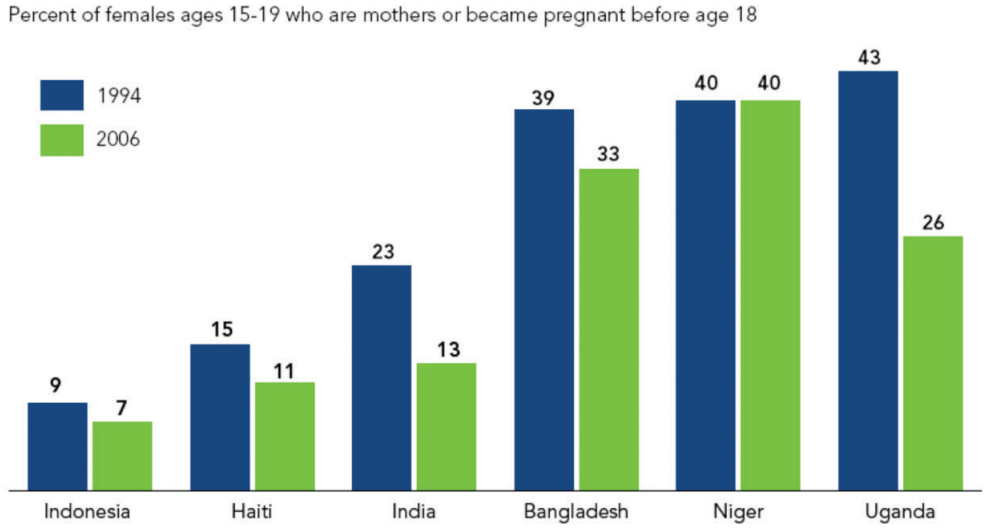
The use of family planning in the African regions with the largest populations remains low. In sub-Saharan Africa, the only region with extensive use of contraception is Southern Africa, but that region's population is dominated by one country, South Africa. Elsewhere in in sub-Saharan Africa, family planning usage is infrequent and occurs primarily in urban areas What are the prospects for the spread of family planning in Africa? It is certainly true that a small number of countries have demonstrated that the acceptance of the idea of family limitation has begun, but there are many obstacles in addition to traditional attitudes towards the number of children and a woman's role in life. In many cases, government resolve will have to be strengthened and the difficult process of setting up a system of counseling and supply will have to be greatly expanded. In many cases, the funds for such programs may be lacking. Throughout Africa, women prefer temporary, or "spacing" methods such as the pill, injection, and intrauterine device (IUD). These methods require not only a regular and accessible source of supply but a commitment on the part of the couple to use them. However, the belated recognition of HIV/AIDS as a national calamity by many governments may accelerate family planning programs in ways that were not anticipated, increasing condom use and involving men to a much greater degree[36].

Reproductive rights and reproductive health

There are various reasons for continued high fertility as few opportunities in rural areas, low incentive to save, and children are still viewed as insurance for old age and a source of labour. Furthermore, and despite medical advances, infectious disease is still widespread, particularly in rural areas, so cultural norms and policies encouraging high fertility in order to achieve desired family sizes are not changing much.[37] In SSA, women have little choice in the decision of child bearing. They often need to bear many children as a means of social recognition and economic survival[38]. While mortality has declined in Sub-Saharan Africa, following the pattern in other areas (infant mortality in the region fell by 43 percent between 1960 and 2000), fertility has not (declining only 19 percent in the same period).[39] The risk of dying from pregnancy or childbirth in sub-Saharan Africa is one in 22. Comparatively, the risk in developed countries is only about one in 7.300[40].

Early childbearing poses serious health risks for both mother and child. Many girls under 18, especially in poorer countries, are physically immature and at higher risk for obstetric complications. And children born to these young mothers are at higher risk for illness and death than children born to mothers in their 20s. Some countries have reduced the prevalence of early childbearing by keeping girls in school and changing community norms and national policies about early marriage.

Tables: Fertility rates indicators[41]



Note: Data are from surveys taken around 1994 and 2006.

Total fertility rate (lifetime births per woman)

	1994	2006
Indonesia	2.9	2.6
Haiti	4.8	3.9
India	3.5	2.7
Bangladesh	3.4	2.7
Niger	7.0	7.0
Uganda	6.9	6.7

Improving maternal health and reducing maternal mortality is one of the key concerns and one of the eight Millennium Development Goals (MDGs) adopted at the Millennium Summit (MDG5). Within the MDG monitoring framework, the international community committed itself to reducing the maternal mortality ratio (MMR) by three quarters between 1990 and 2015.

Of the estimated total of 536 000 maternal deaths worldwide in 2005, developing countries accounted for 99% (533 000) of these deaths. Slightly more than half of the maternal deaths (270 000) occurred in the sub-Saharan Africa region alone, followed by South Asia (188 000). Thus, sub-Saharan Africa and South Asia accounted for 86% (459 000) of global maternal deaths.[42]

These estimates provide an up-to-date indication of the extent of the maternal mortality problem globally. They strongly indicate a need for both improved action for maternal mortality reduction and increased efforts for the generation of robust data to provide better estimates in the future[43]. The separate analysis of trends shows that, at the global level, maternal mortality has decreased

at an average of less than 1% annually between 1990 and 2005 – far below the 5.5% annual decline, which is necessary to achieve the fifth MDG, concerning maternal mortality reduction. To achieve that goal, MMRs will need to decrease at a much faster rate in the future – especially in sub-Saharan Africa, where the annual decline has so far been approximately 0.1%. Achieving this goal requires increased attention to improved health care for women, including high-quality emergency obstetric care.

Table: Comparison of 1990 and 2005 maternal mortality by Regions[44]

Region	1990*		2005*		% change in MMR between 1990 and 2005	Annual % change in MMR between 1990 and 2005
	MMR	Maternal deaths	MMR	Maternal deaths		
WORLD TOTAL	430	576 000	400	536 000	-5.4	-0.4
Developed regions**	11	1 300	9	960	-23.6	-1.8
Countries of the commonwealth of independent states (CIS)***	58	2 800	51	1 800	-12.5	-0.9
Developing regions	480	572 000	450	533 000	-6.6	-0.5
Africa	830	221 000	820	276 000	-0.6	0.0
Northern Africa****	250	8 900	160	5 700	-36.3	-3.0
Sub-Saharan Africa	920	212 000	900	270 000	-1.8	-0.1
Asia	410	329 000	330	241 000	-19.7	-1.5
Eastern Asia	95	24 000	50	9 200	-47.1	-4.2
South Asia	620	241 000	490	188 000	-21.1	-1.6
South-Eastern Asia	450	56 000	300	35 000	-32.8	-2.6
Western Asia	190	8 500	160	8 300	-16.2	-1.2
Latin America and the Caribbean	180	21 000	130	15 000	-26.3	-2.0
Oceania	550	1 000	430	890	-22.2	-1.7

The ICPD Programme of Action: the recognition by the international community of the existence of reproductive rights.

Within the United Nations, the first mention of a right related to human reproduction dates from 1968, when the International Conference on Human Rights adopted the Proclamation of Teheran in which the international community recognized that "parents have the basic human right to determine freely and responsibly the number and the spacing of their children". The characterization of this basic human right was developed further in the Principles and Objectives of

the World Population Plan of Action adopted by the World Population Conference in 1974, which states in paragraph 14(f) that "[a]ll couples and individuals have the basic right to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so; the responsibility of couples and individuals in the exercise of this right takes into account the needs of their living and future children, and their responsibilities towards the community".

In addition, the World Population Plan of Action, which was the first United Nations document to provide guidance to governments on how to develop population policies, noted explicitly that those policies should conform to human rights, as stated in para. 17: "Countries which consider that their present or expected rates of population growth hamper their goals of promoting human welfare are invited, if they have not yet done so, to consider adopting population policies, within the framework of socio-economic development, which are consistent with basic human rights and national goals and values."

Over the next two decades, as increasing numbers of countries formulated and implemented population policies, the recognition that successful policies had at their core a full respect for human rights was strengthened. The result was the characterization of reproductive rights that was adopted in 1994 by the ICPD, the main tenets of which are that:

> "reproductive rights embrace certain human rights that are already recognized in national laws, international human rights documents and other consensus documents. These rights rest on the recognition of the basic right of all couples and individuals to decide freely and responsibly the number, spacing and timing of their children and to have the information and the means to do so, and the right to attain the highest standard of sexual and reproductive health. It also includes the right to make decisions concerning reproduction free of discrimination, coercion and violence, as expressed in human rights documents. In the exercise of this right, they should take into account the needs of their living and future children and their responsibilities toward the community. The promotion of the responsible exercise of these rights for all people should be the fundamental basis for government and community-supported policies and programmes in the area of reproductive health, including family planning. As part of their commitment, full attention should be given to the promotion of mutually respectful and equitable gender relations and particularly to meeting the educational and service needs of adolescents to enable them to deal in a positive and responsible way with their sexuality (para. 7.3) "[45]

Increasing education enrollment rates

Education is an obvious necessity for a productive and rewarding life and contributes to economic and social progress for individuals and countries. Children in many developing countries stay in school longer, but those gains have been far from uniform. For many years, a key issue in education has been the lack of equal opportunity for girls but that, too, has undergone notable changes as the ratio of enrolled girls to boys climbs slowly to parity. Often missing in such statistics, however, is information about the quality of education, particularly in rural areas where most students in developing countries live.[46] While population policies aiming at lowering the total fertility rate is not the primary reason for educating girls, the effect of rising education on women's empowerment and their decisions on childbearing is a frequently analyzed relationship. In the graph, the relationship between education and fertility is clear and it is one that is repeated in country after country. What is often not made clear is that the number of women with any education above primary in developing countries may be quite low. Women with secondary and higher education are often very different from the majority, perhaps residing in urban areas and with parents who are committed to educating daughters along with sons. Higher education and lower fertility therefore cannot be seen as a simple law of cause and effect but are rather elements of a generally higher socio-economic status. For the vast majority of the population, the cost of education is a serious obstacle and, oftentimes, sons will come first. Here, as always, statistics tell only part of the story. The social and cultural background of a country must always be considered as well.[47]

Evidence from Sub-Saharan Africa

It has long been established in demography that education is one of the most important, if not the

single most important covariate of both fertility and mortality/health, second only to the demographic core dimensions of age and sex.

Researchers have examined the changes in child mortality rates in three large African countries (Ethiopia, Kenya and Nigeria), which are indicative of the region's recent developmental crises. In all three countries, the under-5 mortality of children born to women with secondary education has been significantly lower than that of women with no education or only primary education. Better education, among many other things, results in better health for mothers and children because of improved access to crucial information and healthcare. It is noticeable that out of the three countries, only Ethiopia has seen an improvement in child mortality over time. In both Kenya and Nigeria, the overall child mortality conditions have actually worsened. And in this context, female education has become even more important. While for women with low or no education, things have clearly become worse over time, for women with secondary education, things have actually improved or at least not worsened. This illustrates the fact that the development and humanitarian crisis in Africa is to a large extent an education crisis and—as we will illustrate in the following analysis—coincides with a population growth crisis. The picture of fertility rates by level of education looks very similar to that of child mortality rates.

Women with secondary education consistently have much lower fertility rates and in all three countries their fertility rates have continued to decline over time, whereas for uneducated women and those with only some primary education, the fertility rates have increased somewhat, which is the reason for the stalled overall fertility decline. In Ethiopia today, women with no formal education have on average six children, while those with primary education have five and those with secondary education only two. These are indeed stunning differentials that shed a different light on the discussion of the stalled fertility decline. Given the key role of female education in lowering fertility and the fact that the transition to at least junior secondary education typically makes the biggest difference, it seems obvious that rapid improvements in female education should—in addition to many other positive effects on empowerment, health and wellbeing—be viewed as a highly efficient population policy[48].

5. How does population growth challenge r development?

5.1 Population growth, urbanization and rural development

Recent data corroborates that the world population will reach a landmark in 2008: for the first time in history the urban population will equal the rural population of the world and, from then on, the world population will be urban in its majority. This event is a consequence of rapid urbanization in the last decades, especially in the less developed regions. Nevertheless, major parts of the world remain largely rural. In Africa and Asia, still six out of every ten persons live in rural areas.

If between 2007 and 2050, the world population is expected to increase by 2.5 billion, passing from 6.7 billion to 9.2 billion, the population living in urban areas is projected to gain 3.1 billion, passing from 3.3 billion in 2007 to 6.4 billion 2050.

Thus, the urban areas of the world are expected to absorb all the population growth expected over the next four decades while at the same time drawing in some of the rural population. As a result, the world rural population is projected to start decreasing in about a decade and 0.6 billion fewer rural inhabitants are expected in 2050 than today. The sustained increase of the urban population combined with the pronounced deceleration of rural population growth will result in continued urbanization, that is, in increasing proportions of the population living in urban areas.

Furthermore, most of the population growth expected in urban areas will be concentrated in the cities and towns of the less developed regions. Asia, in particular, is projected to see its urban population increase by 1.8 billion, Africa by 0.9 billion, and Latin America and the Caribbean by 0.2 billion. Population growth is therefore becoming largely an urban phenomenon concentrated in the developing world.

During 2008, for the first time in history, the proportion of the population living in urban areas will reach 50 per cent. While in the more developed regions, the proportion urban was already nearly 53 per cent in 1950, in the less developed regions the 50 per cent level will likely be eached around 2019

Urban population by major geographical area (in per cent of total population)

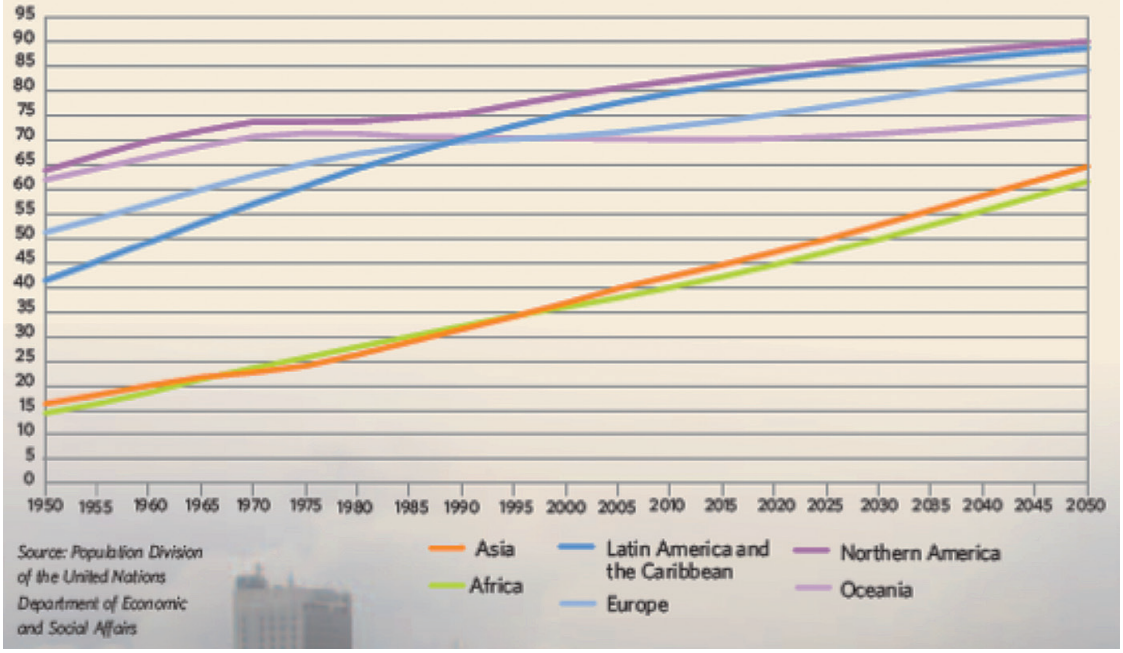


Table: Urban and Rural areas in ACP countries[49]

	Percentage urban			Average annual rate of change (%)	
				Urban	Rural
Country or area	2007	2025	2050	2005-2010	2005-2010
World	49,4	57,2	69,6	2,0	0,4
More developed regions[a]	74,4	79,0	86,0	0,5	-0,5
Less developed regions[b]	43,8	53,2	67,0	2,5	0,5
Least developed countries[c]	27,9	38,1	55,5	4,1	1,7
Less developed regions, excl. China	44,1	52,1	65,7	2,5	0,9
Sub-Saharan Africa[e]	35,9	45,2	60,5	3,7	1,7
Africa	38,7	47,2	61,8	3,3	1,6
Eastern Africa	22,7	30,6	47,6	3,9	2,1
Burundi	10,1	17,1	33,3	6,8	3,6
Comoros[1]	27,9	33,3	50,7	2,7	2,4
Djibouti	87,0	91,3	94,2	2,2	-1,4
Eritrea	20,2	30,8	50,1	5,4	2,7
Ethiopia	16,6	24,2	42,1	4,3	2,2
Kenya	21,3	29,6	48,1	4,0	2,3
Madagascar	29,1	37,9	56,1	3,8	2,2
Malawi	18,3	28,8	48,5	5,2	2,0
Mauritius	42,3	47,9	63,4	0,9	0,7
Mozambique	36,1	50,1	67,4	4,1	0,7
Rwanda	18,0	25,2	42,9	4,2	2,4
Seychelles	53,8	63,9	76,2	1,4	-0,6
Somalia	36,0	46,3	63,7	4,2	2,2
Uganda	12,8	18,0	33,5	4,4	3,1
United Republic of Tanzania	25,0	35,1	54,0	4,2	1,9
Zambia	35,2	41,5	58,4	2,3	1,7
Zimbabwe	36,8	47,2	64,3	2,2	0,2
Middle Africa	41,1	52,2	67,4	4,3	1,8
Angola	55,8	69,0	80,5	4,4	0,7
Cameroon	56,0	68,4	79,9	3,5	0,1
Central African Republic	38,4	45,2	61,6	2,3	1,5
Chad	26,1	37,5	56,7	4,7	2,2
Congo	60,9	68,6	79,0	2,7	1,1
Democratic Republic of the Congo	33,3	45,6	63,2	5,1	2,3
Equatorial Guinea	39,2	46,1	62,4	2,8	2,1
Gabon	84,7	89,7	93,5	2,1	-1,7
Sao Tome and Principe	59,8	71,7	82,1	3,0	-0,5
Southern Africa	57,3	66,3	77,6	1,5	-0,6
Botswana	58,9	70,3	81,1	2,5	-0,6
Lesotho	24,7	38,5	58,1	3,5	-0,3
Namibia	36,2	47,9	65,3	2,9	0,4
South Africa	60,2	69,0	79,6	1,4	-0,7
Swaziland	24,6	33,6	51,9	1,7	0,3

Western Africa	42,9	53,5	68,0	3,8	1,4
Benin	40,8	50,4	66,6	4,0	2,3
Burkina Faso	19,1	29,1	48,4	5,0	2,4
Cape Verde	58,9	70,1	80,8	3,5	0,4
Côte d'Ivoire	48,2	59,8	73,7	3,2	0,6
Gambia	55,7	68,1	81,0	4,2	0,7
Ghana	49,3	61,6	75,6	3,5	0,5
Guinea	33,9	45,0	62,9	3,5	1,4
Guinea-Bissau	29,7	35,4	52,7	3,2	2,9
Liberia	59,5	70,9	83,1	5,6	2,8
Mali	31,6	43,6	62,3	4,8	2,2
Mauritania	40,7	48,4	64,4	3,0	2,2
Niger	16,4	21,0	37,1	4,0	3,4
Nigeria	47,6	60,3	75,4	3,8	0,9
Saint Helena	39,1	46,6	62,4	1,5	1,0
Senegal	42,0	50,0	65,7	3,1	2,0
Sierra Leone	37,4	45,7	62,4	2,9	1,5
Togo	41,3	53,9	69,8	4,3	1,5
Latin America and the Caribbean					
Antigua and Barbuda	30,5	35,2	51,9	0,9	1,3
Bahamas	83,5	87,0	90,9	1,4	-0,0
Barbados	39,3	50,0	66,6	1,5	-0,5
Belize	51,2	60,8	74,0	3,1	1,0
Cuba	75,6	78,0	84,4	0,0	-0,1
Dominica	73,6	79,8	86,6	0,2	-1,6
Dominican Republic	68,3	78,2	86,1	2,6	-0,9
Grenada	30,7	37,1	54,4	0,3	-0,1
Guyana	28,2	33,7	51,1	0	-0,3
Haiti	45,6	64,7	78,9	4,5	-1,0
Jamaica	53,0	59,6	72,5	0,9	0,1
Saint Kitts and Nevis	32,2	38,3	55,3	1,4	1,2
Saint Lucia	27,7	33,0	50,4	1,4	1,0
Saint Vincent and the Grenadines	46,6	55,5	70,1	1,3	-0,2
Suriname	74,6	80,5	87	1	-0,8
Trinidad and Tobago	12,9	20,8	38,3	2,9	-0,0
Pacific region					
Fiji	51,8	61,6	74,6	1,6	-0,5
Papua New Guinea	12,5	15,9	29,8	1,9	2,0
Solomon Islands	17,6	25,9	44,3	4,1	1,9
Vanuatu	24,3	34,4	53,5	4,1	1,8
Kiribati	43,7	49,3	64,5	1,8	1,4
Marshall Islands	70,7	77,1	84,6	2,7	1,0
Micronesia (Fed. States of)	22,4	27,3	44,4	0,8	0,4
Nauru	100,0	100,0	100,0	0,3	—
Palau	79,6	90,6	94,1	1,8	-5,1
Cook Islands	73,0	85,8	91,1	-0,7	-6,5
Niue	38,0	50,2	67,2	-0,2	-2,9
Samoa	22,7	29,9	47,9	1,7	0,6
Tonga	24,4	33,4	51,8	1,6	0,1
Tuvalu	49,0	58,5	72,4	1,3	-0,5

Rural population growth since 1960 has been particularly rapid in Africa and in Melanesia and Micronesia, at nearly 2% per year. Although slower rural growth is expected during 2000-2030 in all regions, 10 of the 21 regions in the world are still expected to see their rural population increase, with substantial rises likely in Eastern Africa, Middle Africa, Western Africa, Melanesia and Micronesia. Many of the countries in those regions already have seriously degraded rural environments and difficulties in feeding their populations. In South-central Asia and Western Asia, rural population growth is expected to be modest but countries in those regions already have high rural population densities[50].

Rural Population and Rural Growth Rate by Major Area and Region, 1960-2030[51]

Major area or region	Rural population (millions)			Rural rate of growth (average annual percentage)	
	1960	2000	2030	1960-2000	2000-2030
World	2 005.2	3 210.0	3 222.6	1.18	0.01
More developed regions	353.3	285.0	199.7	-0.54	-1.19
Less developed regions	1 651.9	2 925.0	3 022.9	1.43	0.11
Africa	225.4	487.3	640.2	1.93	0.91
Eastern Africa	76.4	182.4	259.9	2.18	1.18
Middle Africa	26.1	61.8	96.1	2.15	1.47
Northern Africa	46.8	85.3	88.6	1.50	0.13
Southern Africa	11.4	24.3	22.1	1.89	-0.31
Western Africa	64.6	133.5	173.6	1.81	0.88

5.2 Population, the environment and climate change

5.2.1 The impacts of population growth on natural resources

Land availability and land degradation

Population growth estimates raise a challenge in terms of nutrition and, although land availability is neither the only nor always the most important aspect to be considered for achieving food security, it is still a crucial issue. Land currently used in crop production in the developing countries (excluding China) amounts to some 760 million hectares (ha), of which 120 million ha are irrigated. These 760 million ha represent only 30 per cent of the total land with rain-fed crop production potential, which is estimated to be 2,570 million ha. However, not all the remaining 1,810 million ha of land with crop production potential is, or should be, considered available for agricultural expansion. Limiting factors in expanding cultivated land area include the scarcity of high-quality agricultural land, competition from alternative land uses, and the risk of environmental degradation of marginal cultivated lands and forests. Much of the land in the 1.8 billion ha "reserve" is of inferior quality compared with that currently in agricultural use. Moreover, a large share of the land not in crop

production is concentrated in a small number of countries (27% in Brazil, 9% in the Democratic Republic of the Congo and another 36% in 13 other countries), and is not actually available, as it is under forest or located in protected areas.

Competition for land is intensifying. Although direct consumption of grain by humans is the most efficient use of available food supplies, more land in developing countries is now used for growing grain feed, fodder and forage for livestock, as dietary preferences change with increasing wealth in favour of meat and dairy products. Development and population growth have also claimed increasing shares of land for housing, industry and infrastructure. Although the data are rough, some estimates point towards some 94 million ha of land of all types being occupied by human settlements and infrastructures in the developing countries (excluding China). Many of the world's largest cities are in fact located on extremely fertile agricultural land. As cities expand they displace farms, cover fertile soils with pavement and contaminate neighbouring soils through airborne deposits and solid waste landfills. Projections place the additional land to be occupied by human settlements in the period to 2030 at about 100 million ha, of which nearly 60 million ha would be land with agricultural potential. While this is only a small fraction of total land area, in countries such as China with limited potential for bringing more land into production, even small losses are a cause for concern.

Land degradation affects a much larger area. The state of knowledge in this area is, however, weak.

Estimates of loss of productivity due to land degradation vary widely, with some observers finding little effect, and others viewing land degradation as a major threat to food security globally. The problem is clearly serious in some areas where, for instance, extension of farming up steep slopes led to erosion, or where poor irrigation practices led to water logging or salinization of soil. Yet on the broader scale there is little correspondence evident between global and regional estimates of the severity of human-induced land degradation and trends in agricultural production. The role of overgrazing in causing land degradation and desertification has also been debated.

Long-term global warming and climate change could also threaten as much as one half of the high-quality land resources of some countries through sea-level rise or deterioration in agro-ecological conditions. Agriculture now contributes about 30% of total global emissions of greenhouse gases (GHGs). "Tropical forest clearance and land cover change were major factors in the past for CO2 emissions, but more attention is now being given to methane (CH4) and nitrous oxide (N2O), since agriculture is responsible for about 40 and 80% respectively of total global anthropogenic emissions of these GHGs". Agricultural intensification in recent decades has taken a heavy toll on the environment. Poor cultivation and irrigation techniques and excessive use of pesticides and herbicides have led to widespread soil degradation and water contamination. Salinization of the soil is a serious problem in West Asia and in localized areas in other regions. Each year an additional 20 million ha of agricultural land becomes too degraded for crop production, or is lost to urban sprawl. Yet over the next 30 years the demand for food in developing countries is expected to double. So, new land will certainly be farmed, but much of it will be marginal and therefore even more susceptible to degradation. Advances in agricultural biotechnology may help developing countries by creating drought-, salt- and pest-resistant crop varieties. However, the environmental impact of biotechnology has yet to be fully evaluated and many questions, in particular those related to biosafety, remain to be answered[52].

Desertification and biodiversity threats under population pressure

During the last two decades, agricultural expansion, logging, development, and other human activities caused the deforestation of more than 120,000 square kilometers each year. In contrast, an area only one-tenth that size was regained due to reforestation efforts and natural re-growth.

This is the continuation of an historical process that has left the world with less than half of its original forests. While population growth and density are unquestionably related to forest cover trends, there is no simple way to describe or predict that association. Not surprisingly, the relationship is as complex as the

regional and cultural variations in human societies and the changes in those societies over time.

Nonetheless, important patterns are beginning to develop from the many studies that have been undertaken and the evolving debate around them. An overview of studies conducted in the 1980s and 1990s reveals a strong relationship between population growth and deforestation in Central America, East and West Africa, and South Asia, but a much less clear association in Amazonia (South America) and Central Africa.2 In a number of more developed countries, such as the United States, China and Russia, forest cover has been recovering for some time after extensive earlier deforestation. FAO, The Global Forest Assessment 2000)[53]

Ecosystem and Biodiversity Challenges

It is important to note that planted forests are very different from original forest cover in terms of species composition (planted forests are often monocultures), ecosystem functions, and their ability to support a wide range of plant and animal species and withstand stress such as drought and disease. Natural tropical forests contain a large percentage of the world's remaining biodiversity. More than half of remaining forested land is found in less-developed countries, and many tropical forests are in areas with high population growth rates, high poverty, low access to reproductive health services, and rapid migration.

One conservation challenge is that average population density and growth rates are significantly greater in areas with high biodiversity than in the other habitable parts of Earth's surface. For instance, in sub-Saharan Africa, human population density is greatest in area with the highest number of species of birds, mammals, snakes, and amphibians. Some of these species are threatened with extinction. Nearly 20 percent of the world's population (1.2 billion people) lives in these "biodiversity hotspots." This makes conflicts between biodiversity and forest conservation, population, and development almost impossible to avoid[54].

Water stress

Dwindling water supplies is the environmental issue most often raised in developing countries, both because of the necessity of keeping agricultural land productive to meet the vital food needs of growing populations and the critical reduction of health risks to people crowded into urban areas where public water—and sanitation—services have not kept up with growth. A World Economic Forum report in 2010 said that the demand for water is expected to increase, and analysis suggests that the world will face a 40 per cent global shortfall between forecast demand and available supply by 2030.

An adequate and dependable supply of fresh water is essential for human health, food production and economic development. Though more than two thirds of the planet is covered with water, only a small fraction, under 0.01%, is readily accessible for direct human use. Moreover, no more of this renewable fresh water is available today than existed at the dawn of human civilization. As a result, the size of a country's population and the speed at which it grows help determine the onset and severity of water scarcity. Although recent declines in the rate of population growth have improved the outlook for future water availability in many countries, the problems associated with water scarcity will continue to mount as the size of the world's population increases.

Currently humans are using about half the 12,500 cubic kilometres of fresh water that is readily available. Fresh water is distributed unevenly over the globe, and already there are nearly half a billion people, 8% of the world's population, living in countries affected by water stress or serious conditions of water scarcity, while an additional one quarter live in countries experiencing moderate stress. Given current trends, as much as two thirds of the world population in 2025 may be subject to moderate-to-high water stress. In some regions, groundwater is being depleted much faster than it is being replenished, creating a situation that is clearly unsustainable. The fact that many of the countries facing water scarcity are low-income countries of Africa and Asia makes adaptation more difficult, since these countries often are not in a favourable position to make costly investments in water-saving technologies for irrigation and water recycling. Population is also increasing rapidly in many of these same countries, especially in Africa.

About 300 major river basins, and many groundwater aquifers, cross national boundaries. Therefore the need for cooperative efforts will persist and probably increase, particularly in areas facing water shortages, such as the Middle East, North Africa and certain regions in Asia, and wherever pollution in one area is carried downstream across national boundaries.

The United Nations estimates that over 1 billion people lack access to safe drinking water and 2 1/2 billion lack adequate sanitation. These unsafe conditions, especially

in rapidly urbanizing areas where drinking water and sewage treatment facilities are often inadequate or non-existent, are estimated to cause a death toll per year of more than 5 million people on average of whom more than half are children. Because of the significant link between water resources and agriculture, forestry, ecosystems and urban and rural development, degrading water quality and the misuse of water resources impose a major threat to the health and development possibilities of the population in large areas of the world.[55]

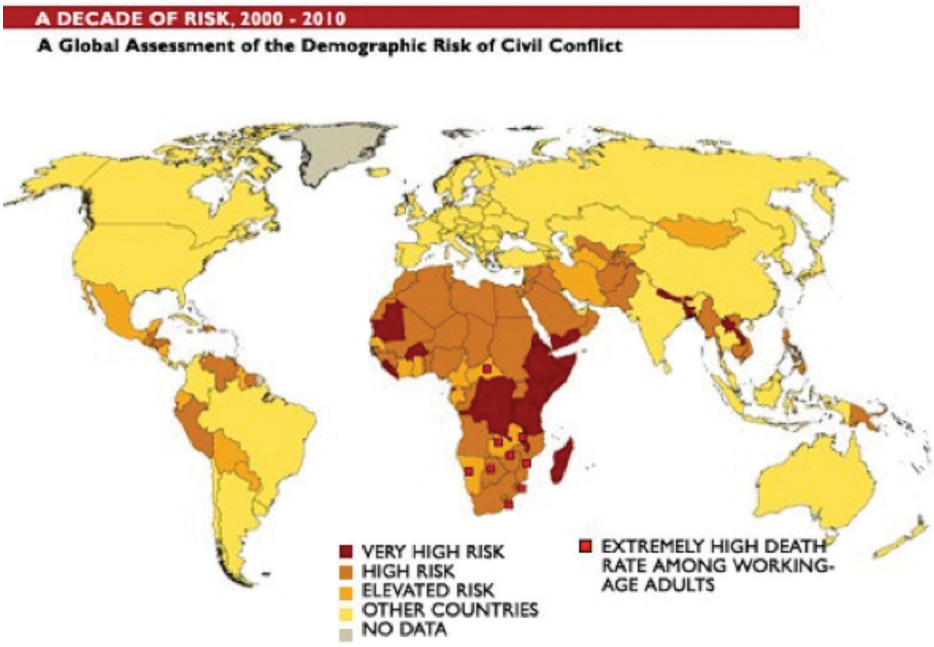
The need to feed a growing population is placing mounting stress on water supplies in many parts of the world. On a global basis, irrigation accounts for more than 70% of fresh water taken from lakes, rivers and underground sources. While water is often inefficiently used, institutional mechanisms for implementing effective water management policies are often time-consuming, expensive and, in some cases, not viable options. Population pressures are thus not the only, or necessarily even the primary, cause of ineffective water use and pollution, but they do aggravate the magnitude of ecological damage. Population growth, through its effects on the expansion of cropland and the harvesting of wood for fuel, is also an important factor contributing to deforestation in some areas. Commercial logging is the predominant cause of deforestation in other areas. Pollution of air and water is the principal environmental threat facing developed countries and a growing number of developing countries. High rates of emission of CO2 and other greenhouse gases are also associated with high levels of development. In general, population growth appears to be much less important as a driving force of such problems than are economic growth and technology. Nevertheless, other things being equal, continued increase in population plays a role by increasing aggregate economic demand and hence the volume of pollution-causing production. There is a special situation with respect to population when the issue is one of preserving a unique, biologically rich, or fragile ecosystem. Such preservation is inherently incompatible with dense human settlement or heavy exploitation of the resources of the protected area. Population growth within and near the preserve can be a factor, among others, placing such areas at risk of degradation. Government regulation is generally needed to exclude or at least limit the number of settlers, animal herders, logging operations and other uses incompatible with preservation of the natural ecosystem. However, few such areas are completely uninhabited. Some are the home of indigenous people, and sometimes established farming communities nearby have traditionally had rights to harvest forest resources. These populations are often very poor and depend on the protected resources for their livelihood. Often it is the women in such communities whose harvesting rights are principally at stake. Increasingly, both Governments and non-governmental organizations concerned with conservation have recognized the need to consider the needs of the local people when implementing preservation programmes. There have been some successes in such programmes, but they are far from universal. Many Governments have had great difficulty in providing effective protection to areas designated for preservation[56].

Population growth and risks of conflict

While the absence of population related pressures does not guarantee peace, these pressures could increase the probability of conflict. This is particularly true when such additional aggravating factors as widening economic disparities, worsening environmental conditions and dwindling natural resources are also present in countries.

The risks of civil conflict (deadly violence between governments and non-state insurgents, or between state factions within territorial boundaries) that are generated by demographic factors may be much more significant than generally recognized, and worthy of more serious consideration by national security policymakers and researchers. Its conclusions — drawn from a review of literature and analyses of data from 180 countries, about half of which experienced civil conflict at some time from 1970 through 2000 — argue that:

Recent progress along the demographic transition — a population's shift from high to low rates of birth and death — is associated with continuous declines in the vulnerability of nation-states to civil conflict. If this association continues through the 21st century, then a range of policies promoting small, healthy and better educated families and long lives among populations in developing countries seems likely to encourage greater political stability in weak states and to enhance global security in the future.



About half of the world's countries exhibit demographic characteristics that add to their risk of a civil conflict during the current decade. This assessment of demographic risk from 2000 to 2010 is based on the intensity of three stress factors: the proportion of those aged 15 to 29 in the adult population, the rate of urban population growth, and the per capita availability of cropland and fresh water[57].

5.2.2 Population growth and climate change linkages

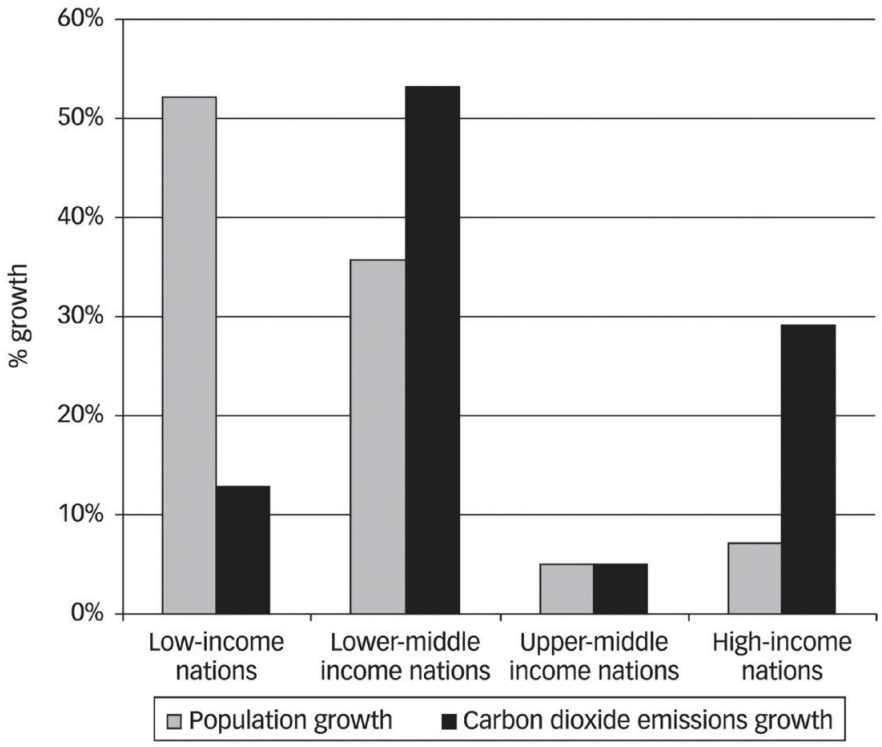
5.2.2.1 The impact of population growth on Climate change

Population growth is one root cause of increases in global greenhouse gas emissions. But the complexity of the mechanisms through which demographic factors affect emissions is not fully taken into consideration in many analyses that influence governments' climate change mitigation efforts. For example, reports by the Intergovernmental Panel on Climate Change include future scenarios where each member of the population is assumed to contribute equally to emissions; thus, population growth affects emissions. It is well known, however, that levels of greenhouse gas emissions depend on consumption and production patterns and that these patterns vary across populations. Changes in the composition of populations will affect global greenhouse gas emissions[58].

According to research findings, it is not correct to suggest that it is the increase in population that drives the growth in GHG emissions, when the lifetime contribution to GHG emissions of a person added to the world's population varies by a factor of more than 1,000 depending on the circumstances into which they are born and their life possibilities and choices. So it is not the growth in the number of people, but rather the growth in the number of consumers and the GHG implications of their consumption patterns that are the issue.

It is not the growth in (urban or rural) populations that drives the growth in greenhouse gas (GHG) emissions but rather, the growth in consumers and in their levels of consumption. A significant proportion of the world's urban (and rural) populations have consumption levels that are so low that they contribute little or nothing to such emissions. If the lifetime contribution to GHG emissions of a person added to the world's population varies by a factor of more than 1,000 depending on the circumstances into which they are born and their life choices, it is misleading to see population growth as the driver of climate change. A review of carbon dioxide (CO2) emissions levels for nations, and how they changed between 1980 and 2005 (and also between 1950 and 1980), shows little association between nations with rapid population growth and nations with high GHG emissions and rapid GHG emissions growth; indeed, it is mostly nations with very low emissions per person (and often only slowly growing emissions) that have had the highest population growth rates.[59]

Table: contribution to the growth in world population and CO2 emissions by group of nations classified according to their average per capita income levels, 1980 - 2005[60]

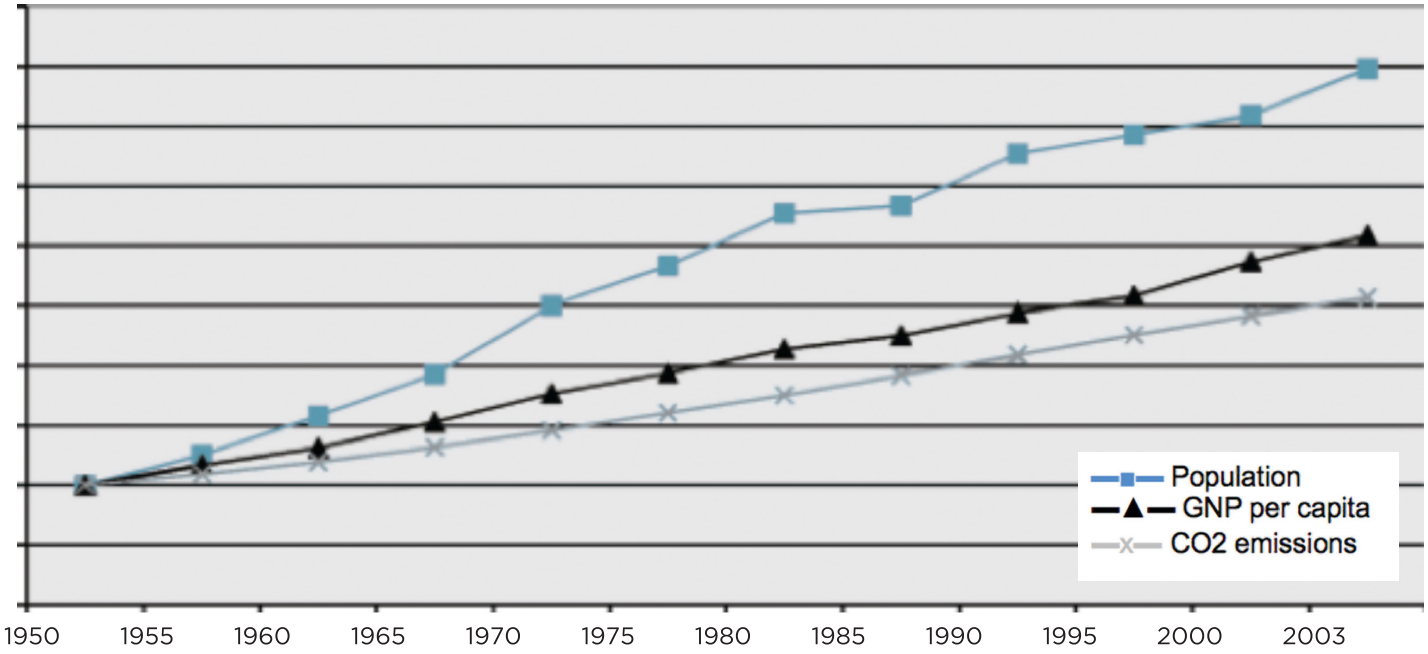


At present, low rates of natural increase (the excess of births over deaths) characterize most high- income countries, whereas low-income countries have both high rates of natural increase and generally high rates of population growth. This negative association between the speed of population growth and per capita income contrasts with the strong positive association that exists between income levels and the production of the greenhouse gases that cause climate change. Thus, as is well known, the countries that produce the lion's share of greenhouse gases are those with high or rapidly increasing per capita incomes and whose populations are generally growing slowly, if at all. In contrast, countries in which the population is still growing fast tend to have low per capita incomes, and their per capita emissions of greenhouse gases are also low. Furthermore, the evidence suggests that rapid population growth in low-income countries can, by itself, be a drag on economic growth, thus further contributing to keeping heir per capita greenhouse gas emissions low.

Consequently, the linkages between population growth and climate change are far from straightforward. In order to consider the potential impact of population growth on climate change, account must be taken of the interrelationships between population growth, economic development, energy use and deforestation, as well as on the impact of all these processes on global warming.

Population growth and its implications for ACP rural development

Table: Figure 1.1 Evolution of Population, GNP Per Capita and CO2 Emissions, World, 1950-2000[61]



Better climate change scenarios also depend on knowing how population composition will change over time. Research on population and climate change has identified three demographic trends that will affect global emissions: urbanization, declining household size, and population aging.

Urbanization

In 2007, for the first time in history, more than 50 percent of the world's population lived in urban areas. MDCs are already highly urbanized with 75 percent of their populations living in urban areas. But in LDCs, medium and small urban areas are growing rapidly. In fact, in the coming 40 years almost all of the world's population growth will occur in urban areas of LDCs. Urbanization leads to higher emissions principally from higher per capita fossil fuel consumption[62].

Urbanization will lead to a rapid expansion of infrastructure and especially transportation uses. In addition, urban households in developing countries use significantly more fossil fuels, as opposed to biofuels, than do rural households. However, the choice of fuel is predominantly an income effect rather than a function of locale, even within urban settings. Hence, urbanization exerts its influence on emissions primarily via higher urban incomes compared to rural ones. Generally, opportunities for higher income are considered an important driver of rural-to-urban migration, and so contribute to rising urbanization rates. Urbanization is obviously an important factor for future GHG emissions. Urbanization might also have a strong effect on emissions because of its effect on income distribution and thus energy consumption patterns around the world[63].

Declining Household Size

Studies have shown that the number of households is more important than the number of individuals in determining emissions. Demographic trends indicate that as population grows in many parts of the world, average household size is decreasing. Thus, an increasing number of households have fewer members per household. Research indicates that the energy consumption of small households per capita is substantially higher than large households. Much of the energy consumption of a household is fixed and depends more upon the actual size of a dwelling and the number of vehicles per household than the number of members in the household[64].

Population Aging

Among the MDCs, populations are aging as older adults make up an increasing proportion of many nations. This trend is also beginning in LDCs such as Brazil and China that have exhibited recent rapid declines in fertility. Research on the United States and China suggests that aging will contribute to a decrease in emissions as the proportion of the population participating in the labor force decreases over time[65].

Interestingly, a case has been made that aging may have significant impacts on future CO2 emissions. The suggested mechanism for this relates to household formation rate. An aging population has a greater proportion of people in older age groups. Assuming age-specific household formation rates remain constant over time, as more people enter the older age cohorts the overall household formation rates will increase. This increase will be accompanied by a decline in the number of people per household (a process already observed in industrialized countries) and is related to reduced fertility rates. As small households consume significantly more energy per person than large households, the various effects suggest CO2 emissions will increase with increased aging. Important uncertainties of this effect remain, not least because household formation rates of aging populations are not well understood[66].

Complex models that take into account the effects not only of population growth but also of changes in the age structure of populations and their distribution between urban and rural areas on economic productivity, economic growth and energy use indicate that population change, driven by changing fertility, can have a sizeable impact on the production of greenhouse gases. Full results of such models have not yet been published, but the preliminary results of scenarios to 2100 show that maintaining a lower population growth rate, particularly in the rapidly growing economies of the developing world and in high-income countries, would by itself make a sizeable contribution to the reduction in greenhouse gas emissions considered necessary to prevent dangerous global warming[67].

Population growth and its implications for ACP rural development

The stark reality is that a reduction of greenhouse gas emissions requires lower overall consumption of energy derived from fossil fuels. Hence, the more people there are on Earth, the more the per capita use of fossil fuels needs to decrease to attain safe emissions levels. Existing disparities in energy use stemming from sharp differences in per capita incomes add complexity to the argument, but do not invalidate the fact that current levels of population growth cannot continue over the long run without endangering the sustainability of the planet, particularly if standards of living are to be improved for a growing population[68]..

It is not correct to suggest that it is the increase in population that drives the growth in GHG emissions, when the lifetime contribution to GHG emissions of a person added to the world's population varies by a factor of more than 1,000, depending on the circumstances into which he or she is born and his or her life possibilities and choices. It is not the growth in the number of people, but rather the growth in the number of consumers and the GHG implications of their consumption patterns that are the issue. In theory (leaving aside the diffi culties in measurement), responsibility for GHG emissions should be with individuals and households and should be based on the GHG implications of their consumption, and not with nations (or cities) based on GHG inventories from the production perspective. From the consumption perspective, the 20 per cent of the world's population with the highest consumption levels is likely to account for more than 80 per cent of all human-induced GHG emissions and an even higher proportion of historical contributions[69].

Population Trends are Critical in Future Scenarios of GHG Emissions

- In future climate scenarios generated by the Intergovernmental Panel on Climate Change (IPCC), higher population growth projections generally result in more GHG emissions. The IPCC scenarios are grouped into four families (A1, A2, B1, and B2) and each makes different assumptions about economic growth, technological change, and population growth. Population assumptions range widely, from a low population projection of 7.1 billion to a high of 15 billion in 2100. Looking at the outputs of climate change models driven by these scenarios, higher population growth is associated with more GHG emissions, with a few key exceptions. For example, the effects of highly carbon-intensive economic growth and technological change can be more substantial than population growth on future carbon emissions, at least for several decades.

- Current climate change models likely underestimate the impact of demographic trends on GHG emissions growth. A weakness of the IPCC's current scenarios is that population size is the only demographic variable considered—no allowances are made for compositional changes within the population as it grows. Energy consumption patterns differ between rural and urban populations, between younger and older populations, and between households with many people versus households with fewer. The world is becoming increasingly urban and older, and household sizes are becoming smaller—but these changes have not yet been accurately accounted for in climate change models[70].

At present, low rates of natural increase (the excess of births over deaths) characterize most high- income countries, whereas low-income countries have both high rates of natural increase and generally high rates of population growth. This negative association between the speed of population growth and per capita income contrasts with the strong positive association that exists between income levels and the production of the greenhouse gases that cause climate change. Thus, as is well known, the countries that produce the lion's share of greenhouse gases are those with high or rapidly increasing per capita incomes and whose populations are generally growing slowly, if at all. In contrast, countries in which the population is still growing fast tend to have low per capita incomes, and their per capita emissions of greenhouse gases are also low. Furthermore, the evidence suggests that rapid population growth in low-income countries can, by itself, be a drag on economic growth, thus further contributing to keeping their per capita greenhouse gas emissions low. Consequently, the linkages between population growth and climate change are far from straightforward. In order to consider the potential

impact of population growth on climate change, account must be taken of the interrelationships between population growth, economic development, energy use and deforestation, as well as on the impact of all these processes on global warming.[71]

Per capita emissions give us a limited perspective on potential emissions growth. Understanding differences in emissions between groups in a population as well as how demographic changes will result in changes in the proportions of each group over time gives a better understanding of each country's role in contributing to climate change[72].

5.2.2.2 The impacts of climate change on population

Population trends play an important role in the larger context of economic, technological, and social trends that affect the climate system. The majority of future population growth is likely to occur in areas of the world that are already beginning to experience climate change impacts, and this growth is likely to be concentrated in areas and among populations—poor, urban, and coastal—that are already highly vulnerable to climate change impacts.

Population trends will expose more people to Climate Change impacts, especially in the developing world: the areas of high population growth and high vulnerability to climate change impacts overlap and evidence suggests that the poorest countries and population groups are most vulnerable to climate change impacts. Population growth is occurring most rapidly in the developing world, increasing the scale of vulnerability to projected impacts of climate change. Other demographic trends, such as urbanization in coastal areas and encroachment of populations into ecologically marginal areas, can exacerbate climate risks. Areas in which population trends are particularly relevant to climate change vulnerability and adaptation include:

- Water stress: Population growth is already putting a strain on the world's limited supply of fresh water. Without taking into account the projected impacts of climate change, five billion people— more than half the world's population—are expected to live in water-stressed countries by 2050. Anticipated changes in climate will exacerbate the problem of water shortages in these areas[73]. Although the state of knowledge of precipitation changes is currently insufficient for confidence in the details, we expect that for many crops water scarcity will increasingly constrain production. Climate change will require a new look at water storage to cope with the impacts of changes in total amounts of precipitation and increased rates of evapotranspiration, shifts in ratios between snowfall and rainfall and the timing of water availability, and with the reduction of water stored in mountain glaciers. Many climate impact studies project global water problems in the near future unless appropriate action is taken to improve water management and increase water use efficiency. Projections suggest that by 2050 internal renewable water is estimated to increase in some developed countries, but is expected to decrease in most developing countries

Moreover, the anticipated retreat of glaciers has both direct impacts on populations such as landslides, flash floods, and glacial lake overflow, as well as indirect effects such as the disruption of water flows in rivers. By the end of the century, an estimated 40% of the world's population could be affected by loss of snow and glaciers in the mountains of Asia.[74]

- Extreme weather and sea level rise: The impacts of extreme weather events and projected sea level rise are particularly significant due to high population density on and near coastlines and low- elevation zones. Climate change will increase heat and drought stress in many of the current breadbaskets in China, India, and the United States and even more so in the already stressed areas of sub-Saharan Africa. Most climate models indicate a strengthening of the summer monsoon and increased rainfall in Asia, but in semiarid areas in Africa the absolute amount of rain may decline, and seasonal and inter-annual variation increase. Reductions in the duration or changes in timing of the onset of seasonal floods will affect the scheduling and extent of the cropping and growing seasons, which may in turn have large impacts on livelihoods and production systems. Extreme climate events

are expected to increase in frequency and severity and all regions will likely be affected by the increase in floods, droughts, heat waves, tropical cyclones and other extreme events with significant consequences for food and forestry production, and food insecurity. Global climate change is expected to alter marine and freshwater ecosystems and habitats. Rising sea levels will alter coastal habitats and their future productivity, threatening some of the most productive fishing areas in the world. Changes in ocean temperatures will alter ocean currents and the distribution and ranges of marine animals, including fish populations. Rising atmospheric CO2 will lead to acidification of ocean waters and disrupt the ability of animals (such as corals, mollusks, plankton) to secrete calcareous skeletons, thus reducing their role in critical ecosystems and food webs It is expected that climate change will lead to significant reductions in the diversity fish species with important changes in abundance and distribution of fresh water fish stocks such as in rivers and lakes in SSA. Low elevation coastal zones cover 2% of the world's land area, but contain 10% of the world's population, and that population is growing fast. In Bangladesh and China, for example, populations living in low elevation coastal zones grew at almost twice the national population growth rate between 1990-2000, exposing disproportionately growing numbers of people to the negative effects of sea-level rise and extreme weather[75].

- Pests and disease: Climate change is affecting and will affect the geographic range and incidence of many human, animal, and plant pests, disease vectors and wide variety of invasive species that will inhabit new ecological niches. These anticipated changes may have a negative impact on agricultural activities through their effect on the health of farmers and ecosystems, particularly in developing countries. For example, an increase in temperature and precipitation is projected to expand the range of vector-transmitted diseases making it possible for these diseases to become established outside limits of their current range, and at higher elevations. In addition, increased irrigation as an adaptive response to better control water scarcity due to climate change may increase incidences of malaria [and other water-related diseases.[76]

- Agricultural production loss: Increases in temperature are expected to negatively affect agricultural production in the tropics and subtropics, where crops already exist at the top of their temperature range. Under middle range projections of population growth, agricultural production loss and an increase in the prices of crops due to climate change will lead to an additional 90 to 125 million people at risk of hunger in the developing world by 2080.

- Soil erosion: Climate simulation models indicate substantial future increases in soil erosion. Tropical soils with low organic matter are expected to experience the greatest impact of erosion on crop productivity. Desertification will be exacerbated by reductions in average annual rainfall and increased evapotranspiration especially in soils that have low levels of biological activity, organic matter and aggregate stability.

In addition, continued migration to urban areas of younger segments of the population can lead to agricultural land degradation thus exacerbating the effects of climate change, as those left on the land are mostly old and the vulnerable. There is a serious potential for future conflict, and possible violent clashes over habitable land and natural resources, such as freshwater, as a result of climate change, which could seriously impede food security and poverty reduction. An estimated 25 million people per year already flee from weather-related disasters; global warming is projected to increase this number to some 200 million before 2050, with semiarid ecosystems expected to be the most vulnerable to impacts from climate change refugees.

6. Some policy issues

Population issues must be seen in the broader context of development, the objective of poverty reduction and the achievement of the MDGs. As long as millions of very poor households in developing countries face poverty, there is a great chance that they will have many children as a source of labour and safety net for their old days, especially in agricultural and livestock activities. The prospects of facing high risks of unemployment is not an incentive for parents to send children to school.

Ensuring child survival also remains one of the greatest impediments to reducing fertility. Increasing household income, especially for subsistence farmers and investing in basic necessities such as food, clothes, health care and school fees are prerequisites to any debate on development.

Population—in terms of size, growth, distribution, and composition—will shape many of the issues with which economic and social policymakers will grapple in the decades to come. An important determinant of reproductive behaviour, as well as of maternal and child health, has been Government policies on providing access to contraceptive methods. Direct support entails the provision of family planning services through Government-run facilities, such as hospitals, clinics, health posts and health centres and through Government fieldworkers. Government support for methods of contraception has been steadily increasing during the last quarter of the twentieth century. By 2001, 92 per cent of all countries supported family planning programmes and contraceptives. Despite the pervasiveness of Government support for contraceptive methods, the demand for family planning services is believed to outstrip the supply. It has been estimated that as of 2000, some 123 million women did not have ready access to safe and effective means of contraception.

Policy-makers need to understand the linkage between population growth and poverty and give support to population research, planning and budgeting. A variety of other factors also need to be considered, including the quality of care, traditional cultural attitudes towards family planning, ensuring client confidentiality, financial constraints, costs to users, the condition of the health care infrastructure, partnerships with non-governmental organizations and international donors, and civil conflicts that may disrupt the provision of supplies and services.

At the beginning of the 21st century, the most significant demographic concern in the world is HIV/AIDS. The HIV/AIDS crisis has spawned renewed interest in barrier methods of contraception, such as the condom. Despite the considerable efforts that have devoted to promoting the use of condoms, as part of HIV/AIDS education and prevention campaigns, condom use among couples remains low in affected countries.

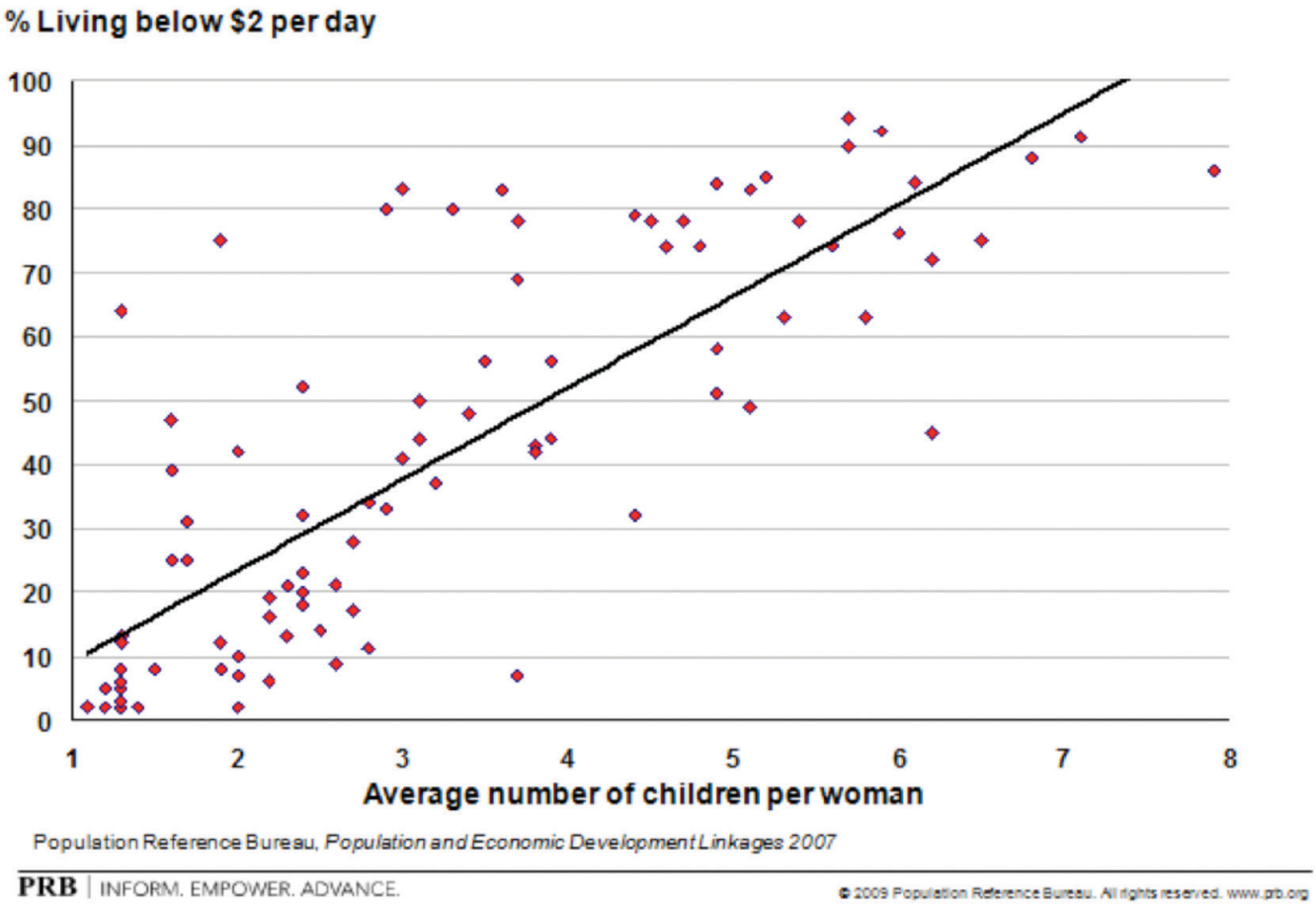
In parallel to government efforts and donors support, educating households on the link between population growth and poverty is needed as household welfare relates to household size and evidence shows that large family sizes have impoverished households. Ensuring sustainable household income and poverty reduction is the paramount strategy for achieving all other population and development programs. Enhancing women's participation in gainful employment so as to enhance their competitive skills and economic status.

Population still matters

Even accepting the likely prospect of eventual global population stabilization, a considerable amount of further absolute growth will occur in the three to four generations required for a global equilibrium to arise. Due to demographic momentum, this growth will continue to put pressure on employment, education, and health (particularly in urban areas) and require continuing and expanding programs already in place, even if this growth is only temporary.

Most of this growth will be in the poorest regions. These policies and programs have barely begun to have an impact on sub-Saharan Africa, parts of South Asia, and the Caribbean. Fertility and potential growth there remain high. Moreover, family planning programs that increase access to needed to deal with the HIV-AIDS epidemic and related health issues in these same regions. These new threats make these programs more imperative than ever.

Table: The association between poverty and fertility 2007[77]



Prospective population increases will continue to power large international migration streams, mainly from the poor areas of Africa, Latin America, and South Asia to the developed nations. Even with no population growth, income differentials would cause such movements but the larger the base population, the greater the migration. These movements will require policy and program reactions at both the sending and receiving ends.

Population movements and climate refugees

There is growing concern that climate change will force hundreds of millions of people to migrate (climate or environmental refugees).[78]

Climate change threatens to cause the largest refugee crisis in human history. More than 200 million people, largely in Africa and Asia, might be forced to leave their homes to seek refuge in other places or countries over the course of the century. Many climate refugees may seek refuge in their own countries; others will need to cross borders to find a new home. Some local refugee crises, in particular in the richer countries in the North, may be prevented through adaptation measures. Many poorer countries, however, are unlikely to be able to initiate sufficient adaptation programmes, and climate-induced migration might be the only option for many communities in the South. In these situations, climate refugees

will need to rely on effective protection and support from the international community.

Most climate refugees will come from Asia, Africa, Latin America and the Small Island States. There are different estimates available pertaining to this emerging problem which differ from 50 million in 2010 to hundreds of millions or even one billion by 2050. This shows that more research is needed to determine a more exact number of climate refugees. Nevertheless, it is clear that there is looming crisis which needs to be dealt with rather sooner than later[79].

According to an Environmental Justice Foundation report, 10% of the global population is at risk of forced displacement due to climate change. Global warming will force up to 150 million "climate refugees" to move to other countries in the next 40 years[80]. In 2008 alone, more than 20 million people were displaced by climate-related natural disasters, including 800,000 people by cyclone Nargis in Asia, and almost 80,000 by heavy floods and rains in Brazil.

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http://www.appg-popdevrh.org.uk

Research Centers

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Glossary[80]

Age-Sex Structure of a Population
The composition of the population by age groups, typically five year age groups such as 0–4, 5–9 up to some terminal age group such as 85+, and by sex. Very young populations have as much as 45–50 percent of their population in the age groups below 15, while "old" populations today have 15–17 percent of their populations age 65 and over. Age-sex structure is often illustrated by a horizontal bar graph referred to as a "population pyramid".

Age-specific fertility rates
Number of births to women in a particular age group, divided by the number of women in that age group. The age groups used are: 15-19, 20-24,....45-49. The data refer to five-year periods running from 1 July to 30 June of the initial and final years.

Age Structure
Today, country populations have more variation in age structure than ever before. In Africa, many countries have as much as 45 percent of their population below the age of 15, a result of high birth rates and very small proportions in the older ages. In developed countries, relatively few are below age 15, only 15 percent in the case of Italy, but one in four or higher are above the age of 60.

Births
Average annual number of births over a given period. Refers to five-year periods running from 1 July to

30 June of the initial and final years. Data are presented in thousands.

Birth and Death Rate
The annual number of births and deaths per 1,000 total population. These rates are often referred to as "crude rates" since they do not take a population's age structure into account. Thus, crude death rates in more developed countries, with a relatively large proportion of high-mortality older population, are often higher than those in less developed countries with lower life expectancy.

Births by age group of mother
Number of births over a given period classified by age group of mother (15-19, 20-24, 25-29, 30-34.....45-49). Refers to five-year periods running from 1 July to 30 June of the initial and final years. Data are presented in thousands.

Contraceptive Use
The percentage of currently married or "in-union" women of reproductive age who are currently using any form of contraception. "Modern" methods include clinic and supply methods such as the pill, IUD, condom, and sterilization. Data are from the most recently available national level surveys, such as Demographic and Health Surveys, Reproductive Health Surveys, Multiple Indicator Cluster Surveys, regional survey programs, national surveys, and the UN Population Division World Contraceptive Use 2007.

Crude Birth Rate (CBR)
The annual number of births per 1,000 population. Currently, it varies from a very low 8 per 1,000 in several countries of the former Soviet Union (such as Latvia and Ukraine) to 50 in several African countries (such as Angola and Mali). In virtually every country, a high crude birth rate indicates a high level of the total fertility rate (see) and a low crude birth rate indicates a low level of the total fertility rate.

Only where the age-sex structure of a population is unusual, such as that caused by high immigration of male workers in Persian Gulf states, will the crude birth not a be a good indicator of fertility.

Crude Death Rate (CDR)
The annual number of deaths per 1,000 population. The crude death rate is heavily influenced by the proportion of elderly in a population and is not, by itself, a good indicator of the overall level of health and mortality in any particular country. For example, life expectancy at birth (see) in Sweden is a high 80 years, but its crude birth rate is 11 per 1,000. In Nicaragua, life expectancy is considerably less, 68 years, but the crude death rate is only 6, due to a much higher proportion of young people in the population.

Demographic dividend is a rise in the rate of economic growth due to a rising share of working age people in a population. This usually occurs late in the demographic transition when the fertility rate falls and the youth dependency rate declines. During this demographic window of opportunity, output per capita rises.

Deaths by sex
Number of deaths over a given period. Refers to five-year periods running from 1 July to 30 June of the initial and final years. Data are presented in thousands.

Deaths under age 1
Number of deaths under age 1 over a given period. Refers to five-year periods running from 1 July to 30

June of the initial and final years. Data are presented in thousands.

Deaths under age 5
Number of deaths under age 5 over a given period. Refers to five-year periods running from 1 July to 30 June of the initial and final years. Data are presented in thousands.

Dependency ratios
The total dependency ratio is the ratio of the sum of the population aged 0-14 and that aged 65+ to the population aged 15-64. The child dependency ratio is the ratio of the population aged 0-14 to the population aged 15-64. The old-age dependency ratio is the ratio of the population aged 65 years or over to the population aged 15-64. All ratios are presented as number of dependants per 100 persons of working age (15-64).

Enrollment Rates
The percentage of children and youth enrolled in a given level of education, such as primary and secondary. Gross enrollment rates (used in this report) are calculated by dividing all students enrolled in a given level by the population appropriate for that level, typically 6–11 for the primary school. Since enrollment often includes children who repeat grades, gross enrollment rates can exceed 100 percent. Net enrollment rates only include enrolled students of the appropriate age for the level, but are less available due to the more detailed data needed to calculate them.

Infant Mortality Rate (IMR)
The annual number of deaths to infants under age one per 1,000 births in the year. The infant mortality rate is often considered a good indicator of health conditions in any country.

Life Expectancy at Birth
The average number of years a newborn baby can be expected to live given the mortality rates prevalent in the year of its birth. During the course of one's lifetime, the number of years one can be expected to live often rises as progress is made against disease. Life expectancy at birth is greatly affected by the level of the infant mortality rate and by deaths from AIDS, which remove people from the population at early ages.

Life expectancy by sex
The average number of years of life expected by a hypothetical cohort of individuals who would be subject during all their lives to the mortality rates of a given period. It is expressed as years.

Median age
Age that divides the population in two parts of equal size, that is, there are as many persons with ages above the median as there are with ages below the median.

Mortality under age 5
Probability of dying between birth and exact age 5. It is expressed as deaths per 1,000 births.

Net Migration
The estimated rate of net immigration (immigration minus emigration) per 1,000 population for a recent year based upon the official national rate or derived as a residual from estimated birth, death, and population growth rates. Migration rates can vary substantially from year to year for any particular country as can the definition of an immigrant.

Net migration rate
The number of immigrants minus the number of emigrants over a period, divided by the person-years lived by the population of the receiving country over that period. It is expressed as net number of migrants per 1,000 population.

Net reproduction rate
The average number of daughters a hypothetical cohort of women would have at the end of their reproductive period if they were subject during their whole lives to the fertility rates and the mortality rates of a given period. It is expressed as number of daughters per woman.

Percent Urban
Percentage of the total population living in areas termed "urban" by that country. Countries define urban in many different ways, from population centers of 100 or more dwellings to only the population living in national and provincial capitals.

Percentage rural
Rural population as a percentage of the total population.

Population
De facto population in a country, area or region as of 1 July of the year indicated. Figures are presented in thousands.

Population by five-year age group and sex
De facto population as of 1 July of the year indicated classified by sex (male, female, both sexes combined) and by five-year age groups (0-4, 5-9, 10-14,....., 95-99, 100+). Data are

presented in thousands.

Population by sex
De facto population as of 1 July of the year indicated classified by sex (male, female, both sexes combined). Data are presented in thousands.

Population change
Population increment over a period, that is, the difference between the population at the end of the period and that at the beginning of the period. Refers to five-year periods running from 1 July to 30 June of the initial and final years. Data are presented in thousands.

Population density
Population per square Kilometer.

Population Dynamics
Country populations grow (or decline) largely in one way: by the difference between births and deaths. Migration in and out can also have an effect, but, in many countries, that effect is relatively small. The number of births is a result of childbearing preferences in the country, i.e., the number of children a woman bears in her lifetime, whether or not that pregnancy was wanted. The number of deaths results

from two chief factors: the age structure of the population – the proportion in the older ages – and the overall level of mortality from disease and other causes. Age structure is one of the more aspects in demography in that the number of deaths that occur is normally dependent on the number of elderly in the population and the number of future births depends on the number of young people below age 15 today. An "old" population, one with relatively few people below age 15, will have relatively few births in the future compared to a population with large proportions below 15 (35 to 50 percent). These three factors, births, deaths, and migration, combine with age structure to produce population change.

Population Growth Rate
The rate of natural increase adjusted for the effects of net immigration or emigration, if any.

Population sex ratio
Number of males per 100 females in thepopulation.

Population under Age 15/Age 65+
The percentage of the total population in these ages, which are often considered the "dependent ages."

Prevalence of HIV/AIDS
The estimated percentage of adults, ages 15-49, and youth, ages 15-24, living with HIV/AIDS.

Projected Population 2025 and 2050
Projected populations based upon reasonable assumptions on the future course of fertility, mortality, and migration. Projections are based upon official country projections, series issued by the UN or the U.S. Census Bureau, or PRB projections.

Rate of Natural Increase (RNI)
The birth rate minus the death rate, implying the annual rate of population growth without regard for migration. Expressed as a percentage.

Replacement Level Fertility
The number of children per woman that will ultimately result in a population that neither increases nor decreases in size. Typically, this is about two children per woman, or per couple. When a couple has two children, they simply "replace" themselves, not increasing or decreasing the size of each successive generation. Expressed in terms of the total fertility rate, replacement level fertility is 2.06 in countries with high life expectancy. The additional ".06" is due to the fact that, worldwide, there are about five percent more male babies born than female (the "sex ratio at birth") and to the fact that not all women live to the end of their childbearing years (conventionally assumed to be 15–49). In countries with low life expectancy, replacement level fertility can be as high as 3.0 children because relatively large numbers of women do not survive until the end of their childbearing years.

Reproductive preferences
The number and timing of births that a woman or couple wishes to have.

Reproductive behavior
The number and timing of sexual activity, contraceptive use, pregnancies and voluntary pregnancy termination.

Reproductive outcomes
The number of births, pregnancy-related morbidity and mortality, and fetal and perinatal morbidity and mortality.

Reproductive health
A broad range of physical health outcomes and conditions that are associated with reproduction and women's reproductive organs; it includes all reproductive outcomes plus cancer of reproductive organs (cervix, uterus, ovary, breast, etc.),

and sexually-transmitted infections including HIV/AIDS.

Reproductive health services refer to the set of health services that are provided to improve or maintain good reproductive health; depending on setting, these may include family planning, safe motherhood/maternal and child health services, adolescent health and well-being services, prevention and treatment of HIV/AIDS and other sexually-transmitted diseases, and reduction in harmful traditional practices.

Rural population
De facto population living in areas classified as urban according to the criteria used by each area or country. Data refer to 1 July of the year indicated and are presented in thousands.

Sex ratio at birth
Number of male births per one female birth.

Total Fertility Rate (TFR)
A summary measure that gives the average number of children a woman would bear during her lifetime, assuming that the birth rate of a given year remains constant. For example, if women in France were to have children at the same rate that all women in France did during 2000, the average French woman would have 1.9 children during her lifetime.

Urban population
De facto population living in areas classified as urban according to the criteria used by each area or country. Data refer to 1 July of the year indicated and are presented in thousands.

Vital Rates
The level of the birth rate, or fertility, is most often expressed as a country's total fertility rate (TFR), or the average number of children a woman can be expected to have in her lifetime at the pace of childbearing of a particular year. The TFR today varies from as low as only 1.1 children per woman (in some countries of Asia and Europe) to over seven children (particularly in Africa), the widest range in history. The level of the death rate, or mortality, is conveniently summarized by life expectancy at birth, or the average number of years a newborn baby can be expected to live. That normally rises during the child's lifetime as progress against various diseases is made. Sadly, it can also decrease, as has happened in countries severely affected by AIDS. Ultimately, fertility, mortality, and migration combine their effects to produce population change:

P(2) = P(1) + Births – Deaths + Immigrants – Emigrants

Women aged 15-49
Number of women aged 15-49 as of 1 July of the year indicated, and that number as a percentage of the total female population as of 1 July of the year indicated. The number of women is presented in thousands.

Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ASRH	Adolescents' Sexual Reproductive Health
CBR	Crude birth rate
CDR	Crude death rate
CMU	Commodity Management Unit (UNFPA)
CPR	Contraceptive prevalence rate
CPT	Contraceptive Procurement Table
CRC	Convention on the Rights of the Child
DHS	Demographic Health Survey
EmOC	Emergency Obstetrics Care
EPI	Expanded Programme on Immunization
FHD	Family Health Division
FP	Family Planning
GDP	Gross Domestic Product
GHG	Greenhouses Gas
GNP	Gross National product
HC	Health centre
HFA	Health for All (WHO Database)
HIV	Human immunodeficiency virus
ICPD	International Conference on Population and Development
IMR	Infant Mortality Rate
IPCC	Intergovernmental panel on Climate Change
IPPF	International Planned Parenthood Federation

IT	Information technology
IUD	Intra-uterine device
LDC	Less developed countries
MCH	Maternal and Child Health
MDC	More developed countries
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MMR	Maternal Mortality Rate
MoH	Ministry of Health
MoE	Ministry of Education
MPS	Making Pregnancy Safer (WHO programme)
NGO	Non-Governmental Organization
OB/GYN	Obstetrician/Gynaecologist
PHC	Primary Health Care
PRSP	Poverty Reduction Strategy Paper
PSI	Population Services International
RH	Reproductive health
RNI	Rate of natural increase
SSA	Sub Saharan Africa
STI	Sexually transmitted disease
TFR	Total Fertility Rate
UNFPA	United Nations Population Fund
UNGASS	UN General Assembly Special Session (on HIV/AIDS)

UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIFEM	United Nations Development Fund for Women UNAIDS Joint United Nations Programme on HIV/AIDS
USAID	United State Agency for International Development
WB	World Bank
WHO	World Health Organization

Footnotes

1 This Reader is not intended to exhaustively cover the issue of population growth in ACP countries but to provide some background information and selected information resources, focusing on the implications for rural development. Most text of this Reader has been directly taken from the original documents or websites. For additional inputs, kindly contact Isolina Boto (boto@cta.int) The Reader and most of the resources are available at http://brusselsbriefings.net/

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42 By the broad MDG regions, MMR in 2005 was highest in developing regions (at 450 maternal deaths per 100 000 live births), in stark contrast to developed regions (at 9) and countries of the commonwealth of independent states (at 51). Among the developing regions, sub-Saharan Africa had the highest MMR (at 900) in 2005, followed by South Asia (490), Oceania (430), South-Eastern Asia (300), Western Asia (160), North Africa (160), Latin America and the Caribbean (130), and Eastern Asia (50). A total of 14 countries had MMRs of at least 1000, of which 13 (excluding Afghanistan) were in the sub- Saharan African region. These countries are (listed in descending order): Sierra Leone (2100), Niger (1800),Afghanistan (1800), Chad (1500), Somalia (1400), Angola (1400), Rwanda (1300), Liberia (1200), Guinea Bissau (1100), Burundi (1100), the Democratic Republic of the Congo (1100), Nigeria (1100), Malawi (1100), and Cameroon (1000). By contrast, Ireland had an MMR of 1. The adult lifetime risk of maternal death (the probability that a 15-year-old female will die eventually from a maternal cause) is highest in Africa (at 1 in 26), followed by Oceania (1 in 62) and Asia (1 in 120), while the developed regions had the smallest lifetime risk (1 in 7300). Of all 171 countries and territories for which estimates were made, Niger had the highest estimated lifetime risk of 1 in 7, in stark contrast to Ireland, which had the lowest lifetime risk of 1 in 48 000

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67 It is worth reviewing the assumptions regarding future population growth underlying the scenarios of future greenhouse gas emissions developed by the Intergovernmental Panel on Climate Change. For the A1 and B1 families of scenarios, the IPCC uses a population projection that combines low fertility with low mortality and migration. World population in that projection peaks at 8.7 billion in 2050 and declines to 7.1 billion in 2100. The A2 family of scenarios is based on a high population projection where world population reaches 15 billion in 2100. The B2 family of scenarios uses a medium population projection in which world population reaches 9.4 billion in 2050 and rises to 10.4 billion in 2100. Because each family of scenarios varies with respect to other assumptions about future economic development, comparing their outcomes does not allow an assessment of the effect that population growth per se would have on greenhouse gas emissions. Furthermore, given that population and economic growth are interrelated, it would be unrealistic to model a future in which only population growth varies from one scenario to the next. In fact, in setting assumptions about future economic growth, the IPCC acknowledges its interrelationships with population trends and therefore assigns the highest economic growth to the family of scenarios with the slowest population growth (A1 with a growth rate of 2.9 per cent per year and B1 with 2.5 per cent per year). The other two families of scenarios are assigned a medium level of economic growth (B2 with 2.2 per cent annually on average) or a low one (A2 with 1.3 per cent annually on average). The fourth assessment report of the IPCC presents the results of the different scenarios with respect to their impact on climate change (IPCC, 2007). Those results are sobering, because they indicate that the impact on climate change is highest in the A2 scenario despite the low economic growth it embodies. Both the rapid population growth it incorporates and its assumption of slow technological change contribute to that result. Only one family of scenarios, denoted A1F1, which incorporates low population growth combined with continued high use of fossil fuels, produces worse effects on the climate than A2.

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