

# Strategic Analysis Paper

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## World Population Trends Towards 2050 and Beyond

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### Summary

The world's current population of 6.83 billion people is projected to grow by more than a third and reach 9.15 billion in 2050. While much discussion is directed toward how the planet will be able to cope with the burden of this additional population growth, examination of more specific population trends shows that gross disparities exist between population growth in the world's most and least developed countries. This disparate distribution of population growth will present complex challenges as populations rapidly grow in the areas that can least support them and decline in the richest and most developed countries.

### Analysis

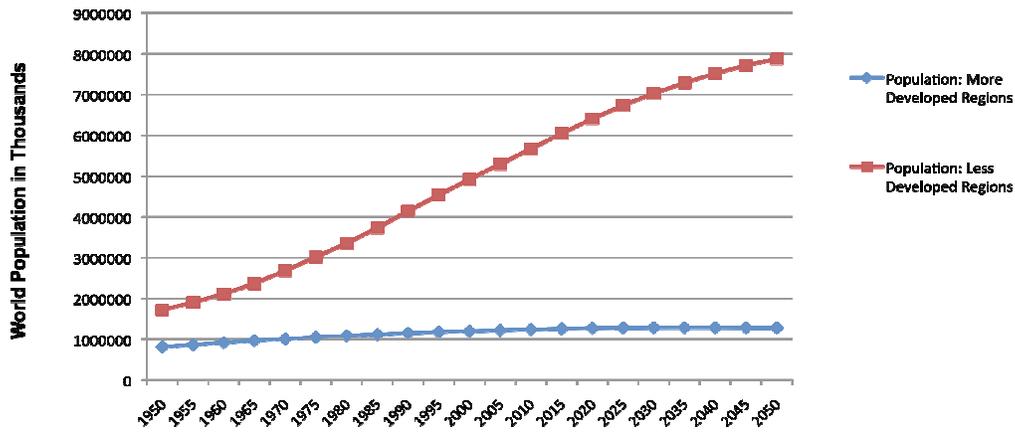
#### *Historical Perspective*

In 1798 the Reverend Thomas Robert Malthus first published *Principles of Population*. In it, he proposed that population growth is limited by its means of subsistence. Malthus believed that while populations grew geometrically (2, 4, 8, 16, 32...), food production was limited to growing arithmetically (2, 4, 6, 8, 10...). Thus, as a population grew, over time it would outstrip the supply of food it could produce to support itself and eventually collapse.

One hundred and seventy years later, in 1968, Paul Ehrlich's best selling book *The Population Bomb* drew heavily on these Malthusian principles to reach its conclusion that the world would face mass famine and starvation in the 1970s and 1980s as the population crossed its provisional Rubicon and grew too large to sustain itself.

Most scholars agree that the two most important reasons why Ehrlich's predictions did not come to be were the start of the Green Revolution (the dramatic rise in crop yields science and technology brought to agriculture during the 1970s) and aggressive measures to curb population growth in some of the world's then poorest countries (particularly India and China). Today, with the world's population roughly seven times the size it was when Malthus published *Principles of Population* and twice the size it was when Ehrlich published his work, the world once again faces challenges from an exploding population.

### World Population Growth: More Developed vs Less Developed Regions

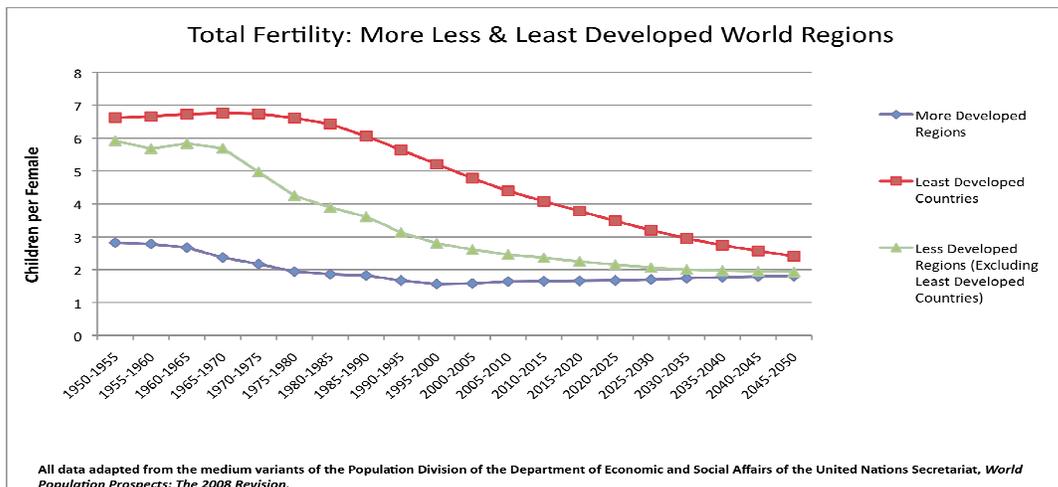


All data adapted from the medium variants of the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision*.

#### Population Growth Disparity Between the World's More and Less Developed Regions

More than 70 per cent of the world's population growth between 2010 and 2050 will occur in 24 of the world's poorest countries. According to the United Nations' *World Population to 2300* population estimates, this trend of poorest countries seeing most rapid population growth and highest total fertility rates will continue until 2080 when total fertility rates will reach a rough parity with those of the world's richer countries.

Conversely, only 0.4 per cent of the world's population growth between 2010 and 2050 will occur in the 57 countries that comprise the More Developed Regions of the world<sup>1</sup>. Population in some of these countries (Northern and Eastern Europe, in particular) is projected to decline until it stabilises in the middle in the second half of this century. While migration from Less Developed Regions<sup>2</sup> may be able to offset some of this decline, the economic challenges that declining (and increasingly elderly) populations will impose upon society will be focused on the most developed countries of world for the foreseeable future.



All data adapted from the medium variants of the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision*.

<sup>1</sup> More Developed Regions: All regions of Europe (including Russia), Northern America, Australia, New Zealand and Japan.

<sup>2</sup> Less Developed Regions: All regions of Africa, Asia (excluding Japan), Latin America and the Caribbean plus Melanesia, Micronesia and Polynesia.

### *Total Fertility and Population Rate Disparities*

Some time in 2010, for the first time in history the world's total fertility rate (the total number of children, on average, that a woman will have during her lifetime), will fall to less than replacement level for a majority of the world's population. While the macro interpretation of this milestone infers that the world's population appears to be stabilising as fewer children per female are born, as with population growth, fertility rates between countries are not homogeneous.

The world's least developed countries currently have, on average, over two and a half times the fertility rate of the world's more developed regions. As fertility rates in the less developed regions and least developed countries decline, population growth rates, after a lag of approximately 50 years, will decline as well. Fertility rates in the world's least developed continent (Africa) are projected to remain above that of the rest of the world until 2080.

In contrast to the comparatively high fertility rates of the world's least developed countries, certain countries in the world's more developed regions currently suffer from fertility rates that have dipped to below replacement levels. Long-term effects of fertility rates that remain below replacement levels can mimic certain trends in countries with very high fertility rates. These trends include economic stagnation, lower per capita GDP and decreasing percentages of productive, employed working age adults.

### *Security and Rapid Population Growth*

Populations in developing countries such as Afghanistan, Bangladesh, Egypt, Nigeria and Pakistan are, on average, predicted to more than double between now and 2050. As these countries already struggle with high rates of unemployment, poor education opportunities and poverty, their rapidly increasing populations will place further burdens on their already scarce resources, disaffecting even larger numbers of their populations. The threat to security from civil unrest and terrorism in these conditions is likely to rise substantially.

### *Capital Growth*

It is impossible for poor countries to improve the economic conditions of their populations without significant capital accumulation. As a country's population increases, a proportional amount of additional capital must be infused into the economy to maintain per capita GDP. When population growth outpaces capital accumulation, there is less money per capita in the economy, making a country poorer in per capita terms. The world's poorest countries with their rapidly increasing populations run the risk of diluting their capital stocks, making it all but impossible to improve the living conditions of their inhabitants.

### *Breaking Free from the High Fertility-High Poverty Rate Trap*

Many of the failed Utilitarian based assistance programmes have had the negative consequence of encouraging long-term aid dependency and have provided little success in breaking the cycle of poverty typically seen in countries with high fertility rates. Programmes that have proven most successful at reducing poverty have been based upon educating and empowering women. New aid initiatives that link aid distribution to Kantian models of independence and self-sufficiency offer the most sustainable model for assisting developing countries escape the cycle of high fertility rates leading to high poverty rates.

### *Malthusian Theory Revisited*

Modern farming techniques (primarily fertilisation and mechanisation) have enabled the world to achieve dramatically increased crop yields. Despite these dramatically improved yields, today there are almost one billion people who struggle to find enough to eat. The vast majority of these people are in the world's poorest countries.

Many of the world's poorest countries will see their populations triple or quadruple by 2050. Of the 25 countries for which the UN projects the fastest population growth between 2010 and 2050, 23 are in Africa. These countries include Niger, Burundi, Liberia, Democratic Republic of the Congo, Mali, Sierra Leone, Uganda, Chad and Somalia which today face widespread challenges feeding and providing security for their populations. As their populations continue to swell, their capacities to raise and effectively distribute the requisite foodstuffs to prevent famine while maintaining order in their populations will face ever more difficult challenges.

### *An Increasingly Urbanised World*

In 1950 less than 30 per cent of the world population lived in urban areas. According to the 2007 Revision of *The United Nations' World Urbanization Prospects*, 2008 marked the first time that the population of urban surpassed that of rural areas. By 2050 the same report projects that more than 70 per cent of the earth's people will live in urban areas. This shift is driven primarily by two factors:

- 1) Agriculture becoming less labour intensive, and
- 2) Employment opportunities shifting to industrial and service sectors of the world's economy.

Traditionally, urbanisation has been responsible for capital growth and increased per capita income as people move from lower paying agrarian based labour into higher paying industrial based jobs. The industrial revolution in Europe and the USA is a good example of how this transition has raised the living standards of the developed world. Now, however, the rate of urbanisation in the world's least developed countries is occurring more than three times faster than that experienced by today's developed countries.

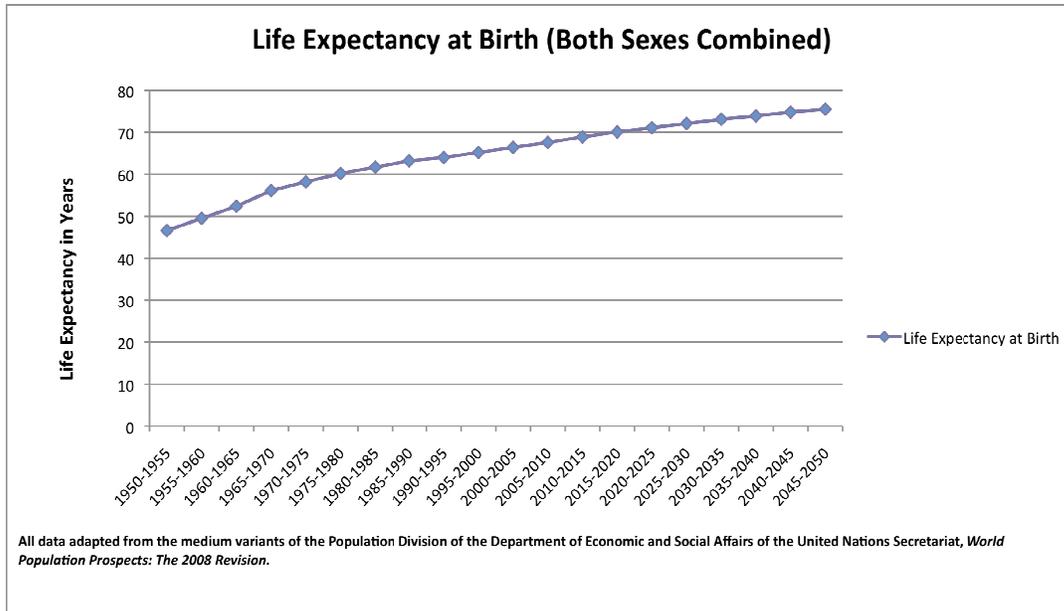
When people migrate from the countryside to cities in such large numbers, the support capacity of cities is stretched and in many cases cannot cope with such large of influxes of people seeking improved living and working conditions. Some of the toxic side-effects of overly rapid urbanisation can be seen in the rapid growth of slum areas in today's mega-cities such as Mumbai, New Delhi, Calcutta, Karachi, Dhaka, and Lagos. As more and more city migrants crowd into already crowded areas, the challenges of providing effective food distribution, health services and education to these already large cities will be substantial.

### *World's Ageing Population*

The world's average life expectancy at birth (both sexes combined) has increased from 46.6 years in 1950 to 67.6 years in 2010. By 2050, the world's average life expectancy at birth will be 75.5 years. By 2300, life expectancy in developed countries is projected to be 106 years.

As the world's population lives longer and total fertility rates decrease, the average age of the world's population will continue to increase. This will create economic and fiscal stresses for governments as they struggle to meet the needs of ever more elderly populations with ever fewer prime working-age adults to support them.

While felt acutely in the world's most developed regions, this worldwide demographic shift will dramatically change the fabric of how societies function. Rates of GDP, future labour supply, public and private savings rates, consumption patterns, pensions and medical care will all need to be adapted to accommodate these shifts in order that our social institutions continue to function effectively.



*Editor's Note: All population data up to and including projections through 2050 are from the medium population variants of the database maintained by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision unless otherwise noted. Any projections beyond 2050 are from the medium population variants of the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population to 2300.*

**About the author:** Aric Bendorf is a Doctoral Scholar at the Centre for Values, Ethics and the Law in Medicine (VELiM) at the University of Sydney.