

Global megatrends

Diverging global population trends (GMT 1)

The world population may rise beyond 9.6 billion by 2050, despite a slowing rate of growth. Most of the increase is likely to occur in urban areas in developing regions. Growing and younger populations in the developing world, the global growth of an affluent middle class, and ageing populations in developed countries will influence migration flows, creating a mixture of benefits and risks in developed and developing regions.

Demographic trends are also likely to increase global resource demand and related environmental pressures. This points to the need for Europe to persist with efforts to decouple resource use from economic development.

Drivers

The interaction of fertility and mortality rates^[1] influences population size. By 2005–2010, the global fertility rate had declined to 2.5 and is expected to fall to 1.8 by 2050, other than in Africa where it is unlikely to fall below 3.0 before 2050. Mortality, including childhood mortality, rates have also decreased resulting in global average life expectancy rising to 69 in 2005–2010, with significant regional variations, and is expected to reach 75 by 2045–2050.^[2]

Research suggests strong links between fertility levels and economic development. As per person incomes rise, fertility tends to fall, and eventually reach, and then maintain, replacement levels. Economic growth also impacts migration patterns, as development discrepancies seem to be a driver of migration.^{[3][4]}

Education, especially of girls and women, is associated with lower fertility, better health and reduced levels of morbidity and disability.^[5] Lutz and Samir^[6] show how different levels of education could result in a difference in the global population of more than 1 billion by 2050 depending on whether the world follows a high- or low-education scenario.

Access to nutrition, clean water, sanitation, and health services all reduce mortality, especially childhood mortality, and drive longevity – with health programmes targeting women's reproductive health playing a key role. Universal health coverage, however, remains a distant goal, while estimates suggest that more than 222 million women have an unmet need for modern contraception.^{[7][8]}

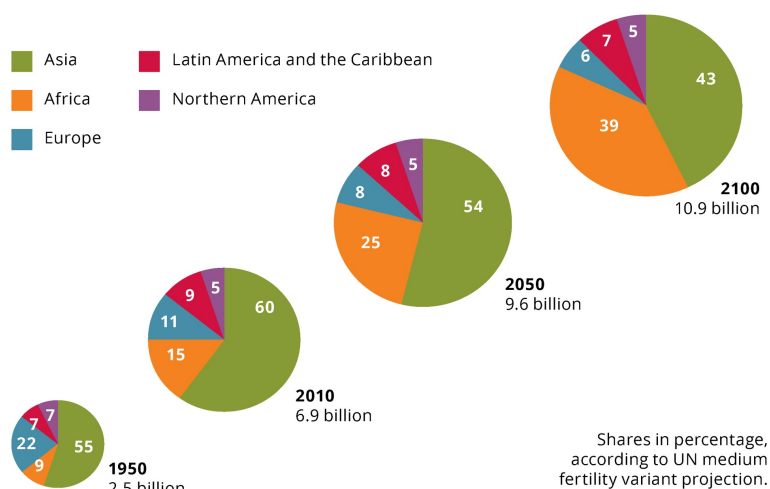
Trends

The world population has more than doubled since the 1960s, exceeding 7 billion in 2013.^[2] It will continue to grow, but at a slower rate, reaching 8.3–10.9 billion by 2050, with a medium variant^[9] of 9.6 billion^[2], depending on the policies pursued today.^[10]

Virtually all growth is projected to occur in developing countries, and particularly their cities, with population in these countries rising from 5.9 billion in 2013 to 8.2 billion in 2050, changing the global balance (Figure 1) – population in developed regions is likely to stagnate or grow slightly, mostly due to immigration (Figure 1).

Some regions, however, where the population is still growing are expected to move towards decline – it has already begun in the Caribbean, Japan, Russia and South America.^[2]

Figure 1: World Population Projections^[2]



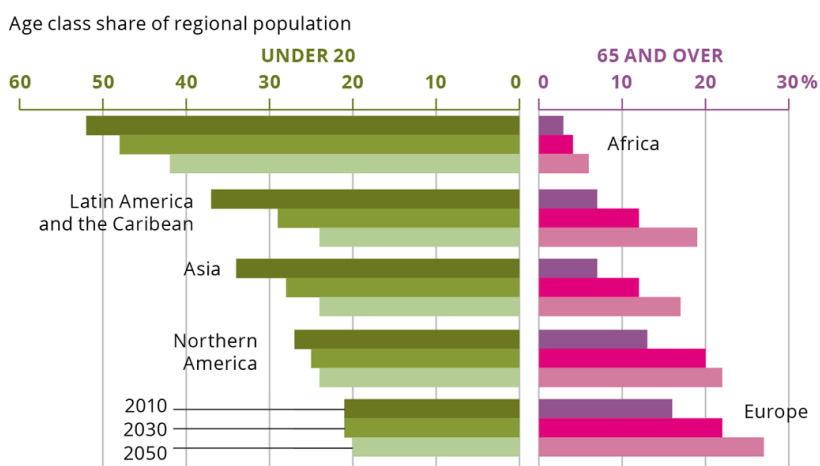
Source: UN World population prospects: The 2012 revision

Note: The population of Oceania (not shown), which represents less than 1% of the world population, rises five-fold over the period.

Declining fertility levels, coupled with gains in life expectancy, are increasing the world's median age, which is expected to increase from 28 to 36 between 2010 and 2050, and raise the percentage of over 65s from 8–16 % of the global population by 2050.^[2]

Contrary to the aging population of developed regions, some developing-world countries are or will soon experience substantial youth bulges (Figures 2, 3). Providing educational and employment opportunities for these young people will be challenging, but critical if political and social stability is to be ensured.^[11]

Figure 2: Share of population under age 20 and over age 65 by regions in 2010, 2030 and 2050^[2]



Source: UN World population prospects: The 2012 revision

Since the 1960s, there has been a trend of migration from less developed to more developed regions. In 2010, however, the growth rate of the international migrant stock in developing countries surpassed that of developed countries for the first time. Several countries in developing regions (e.g. Kuwait, South Africa and Thailand) have been attracting significant numbers of migrants, including refugees from neighbouring countries.^[12] China, India and

South America could attract more migrants as growth in their working-age population slows and wages rise.^[11]

Although economic and social motives are still key drivers for migration, environmental degradation and climate-change impacts are becoming increasingly important due to increased exposure to natural hazards and the corresponding threats to livelihoods.^{[13][14]} In some instances, however, climate change impacts and environmental degradation can actually deter migration if communities lack the resources to meet the costs of relocating.^[14] Due to the high degree of complexity and uncertainty in calculations, projections for climate change-induced migration by 2050 vary from 25 million people to one billion people.^[15]

Implications

UNEP assesses population growth and patterns of production and consumption as the main drivers of environmental and land-use change. Population growth and related economic development boost humanity's use of and competition for non-renewable resources while escalating the consumption of biotic resources, the production of harmful emissions and waste, and the disruption or destruction of natural habitats (GMTs 8, 10). Environmental damage may become particularly significant in sub-Saharan Africa and parts of south-east Asia, where high population growth rates coincide with a direct dependency on natural capital – forests, fisheries, freshwater etc.^{[15][16]}

In the longer term, changing patterns of consumption, in part driven by the development of a growing, increasingly affluent middle class in developing regions (GMTs 2, 5) are likely to boost unsustainable practices that erode essential and irreplaceable natural resources and increase pollution, processes which will undermine the very basis for economic growth and social progress.^[17]

Population trends directly influence economic activity, shaping the size and age structure of working populations (Figure 3). In many countries, strong growth in the working-age population, alongside improvements in health and education, and investment in infrastructure and technology, have contributed to rapid economic growth.^{[11][18]} The share of the population with secondary and tertiary education is projected to increase everywhere by 2050, particularly in Asia and Africa, potentially boosting further economic growth (Figure 3). China, for example, is expected to have more educated people of working age than Europe and North America combined by 2030.^[19]^[20] This trend is already apparent. While advanced economies dominated growth during the 20th century, emerging economies are rapidly gaining prominence, partly by providing a production centre for developed economies. Brazil, Russia, India, Indonesia, China and South Africa (BRIICS) accounted for 21 % of global output in 2000, 32 % in 2010 and, according to projections, their economic production will exceed the GDP of OECD members by around 2030, and will account for 56 % of global GDP by 2050.^[19]

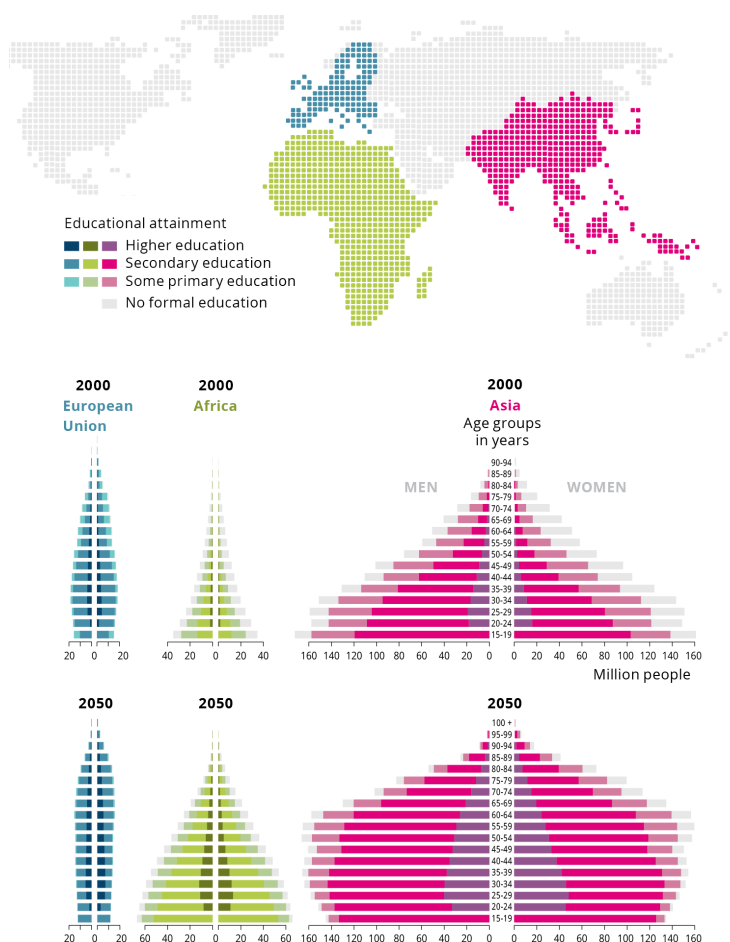
The world reached a peak in its share of 15–24 year-olds around 1985, but in the least-developed countries it only occurred in 2005 and the proportion of young people will remain high in the coming decades with the largest youth bulges likely in sub-Saharan Africa and the Middle East (Figure 2). Failing to create employment opportunities for young people is both a waste of human resources and a source of potential conflict.^[11]

Policies supporting an increase in choices and opportunities, including the provision of contraceptive services, can support desirable population trends and mitigate negative effects in the future.^[7] In developed countries, social cohesion is more likely to be threatened by an aging population and population decline (Figures 1, 2, 3). These may alleviate some of the demands on ecosystems, and the right policies could ensure that the growing number of older but active people provide an economic dividend.^[4] Nevertheless, an aging population can threaten social security, taxation, and public health systems. Policy-makers will have to make difficult trade-offs, some of which can be mitigated by early action on structural reforms.^[19]

Immigration may alleviate some of these pressures by putting more people of working-age, often with higher education, into employment. It is estimated, for example, that 30 % of migrants in the OECD have tertiary education.^[21] In developing regions, however, the emigration of highly skilled people is a major concern; for example one in nine tertiary-educated people born in Africa now resides in OECD countries.^[21] Migration of young workers

can, nonetheless, deliver economic benefits to their native countries; the World Bank estimates that remittance flows to developing countries in 2013 were nearly three times the size of official development assistance and will increase.^[22]

Figure 3: Population pyramids for Europe, Africa and Asia for 2000 and 2050 by age, sex and education attainment



Source: Samir et al., 2010^[20]

Europe's population is aging rapidly (Figure 2), and is likely to stagnate – significant increases in some Member States balancing declines in others. This may ease, though not curb, environmental pressures, but much depends on environmental policies to address such issues as urban sprawl and production and consumption habits. One environmental concern is the decline of household size, which has accelerated since 1900.^[23]

Furthermore, likely demographic trends will create other challenges – an expanded workforce during recent decades has underpinned improvements in living standards and the development of the welfare state. Sustaining these may be difficult in the light of population dynamics.^[4] EU Member States may be able to pre-empt some challenges, for example through integrated urban management or effective support structures for older populations. Nonetheless, keeping the global nature of environmental issues in mind, Europe should persist, both through its own policies and engagement in international dialogue on environmental issues, with efforts to decouple natural resource use and the production of pollution from economic development in the move towards a green economy.^[4]

SOER 2015 Global Megatrends assess 11 global megatrends of importance for Europe's environment in the long term. They are part of the EEA's report SOER 2015, addressing the state of, trends in and prospects for the environment in Europe. The EEA's task is to provide timely, targeted, relevant and reliable information on Europe's environment.

For references, see www.eea.europa.eu/soer or scan the QR code.

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