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New Zealand Qualifications Authority

Scholarship 2024
Geography

RESOURCE BOOKLET

Refer to this booklet to answer the questions for Scholarship Geography.

Check that this booklet has pages 2–28 in the correct order and that none of these pages is blank.

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Our growing population

On 15 November 2022, the world's population reached 8 billion people, a milestone in human development. While it took the global population 12 years to grow from 7 to 8 billion, it will take approximately 15 years – until 2037 – for it to reach 9 billion, a sign that the overall growth rate of the global population is slowing. Yet levels of fertility remain high in some countries.

Countries with the highest fertility levels tend to be those with the lowest income per capita. Global population growth has therefore over time become increasingly concentrated among the world's poorest countries, most of which are in Sub-Saharan Africa. Between 2020 and 2100, Africa's population is expected to increase from 1.3 billion to 4.3 billion. Projections show these gains will come mostly in Sub-Saharan Africa, which is expected to more than triple in population by 2100. The regions that include the United States of America and Canada (Northern America) and Australia and New Zealand (Oceania) are projected to grow throughout the rest of the century, too, but at slower rates than Africa.

The world's population is expected to increase by nearly 2 billion people in the next 30 years, from the current 8 billion to 9.7 billion in 2050, and could peak at nearly 10.4 billion in the mid-2080s. This dramatic growth has been driven largely by increasing numbers of people surviving to reproductive age, the gradual increase in human lifespan, increasing urbanisation, and accelerating migration. Major changes in fertility rates have accompanied this growth. These trends will have far-reaching implications for generations to come.

Figure 1: World population by age group.

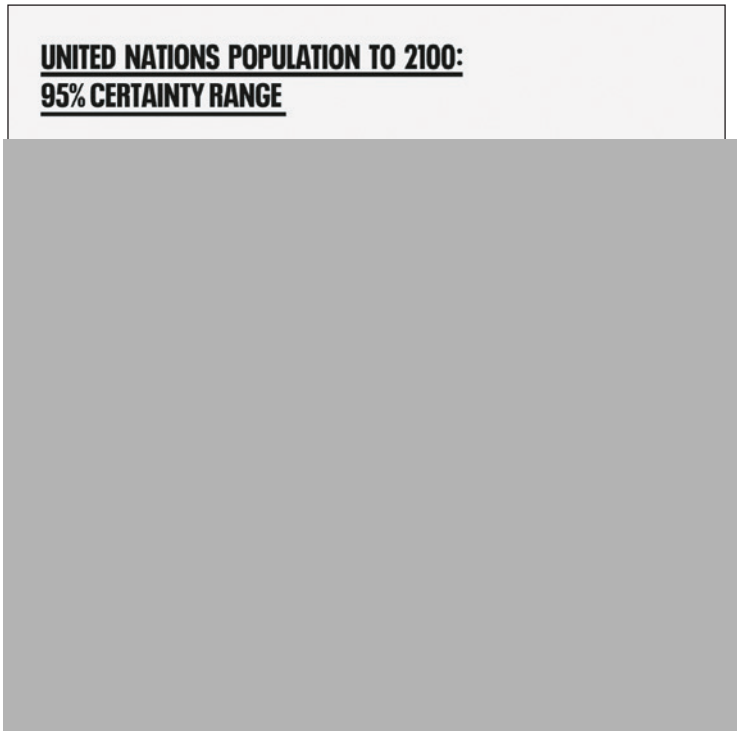


Figure 2: Population projection.

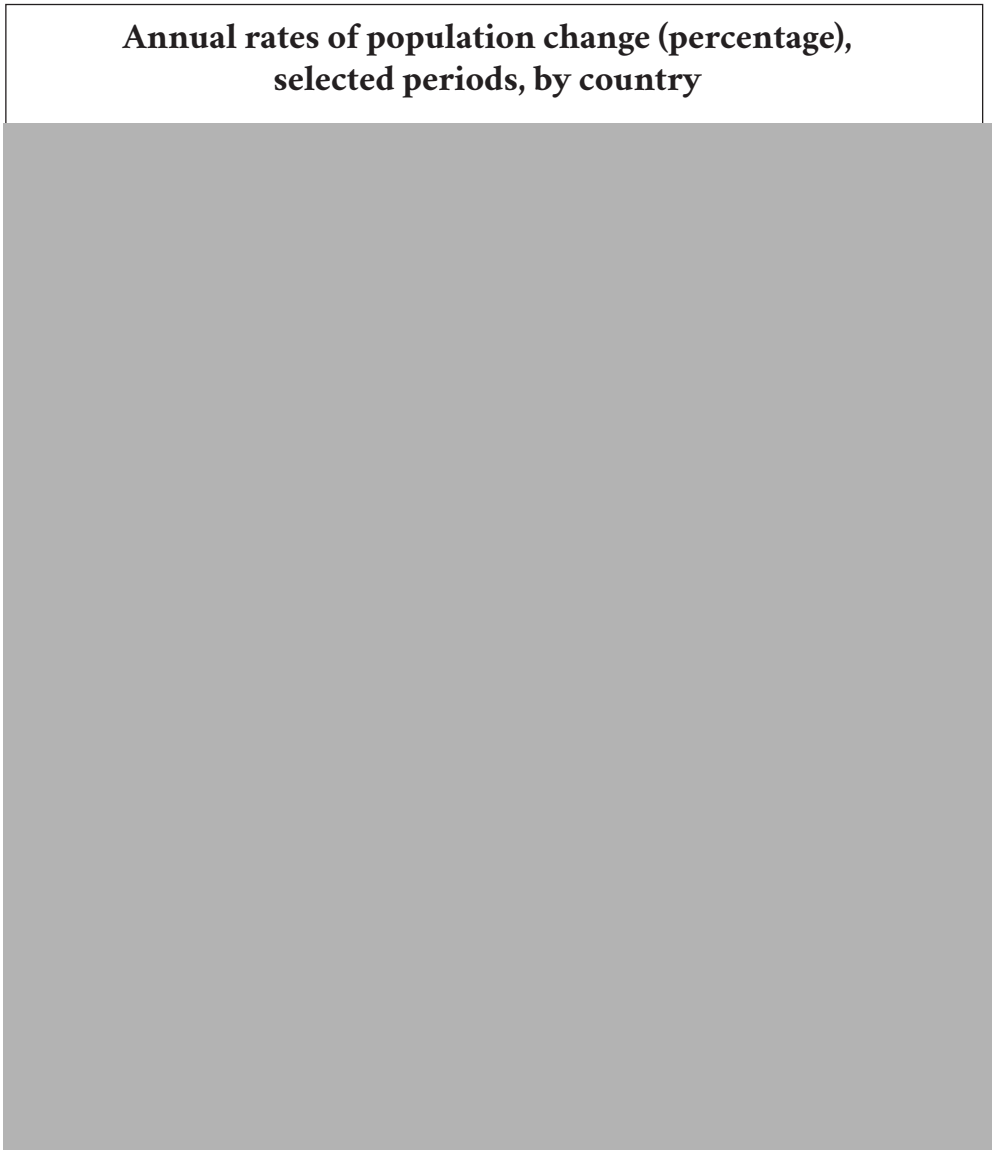


Figure 3: Percentage rates of population change.

Population distribution

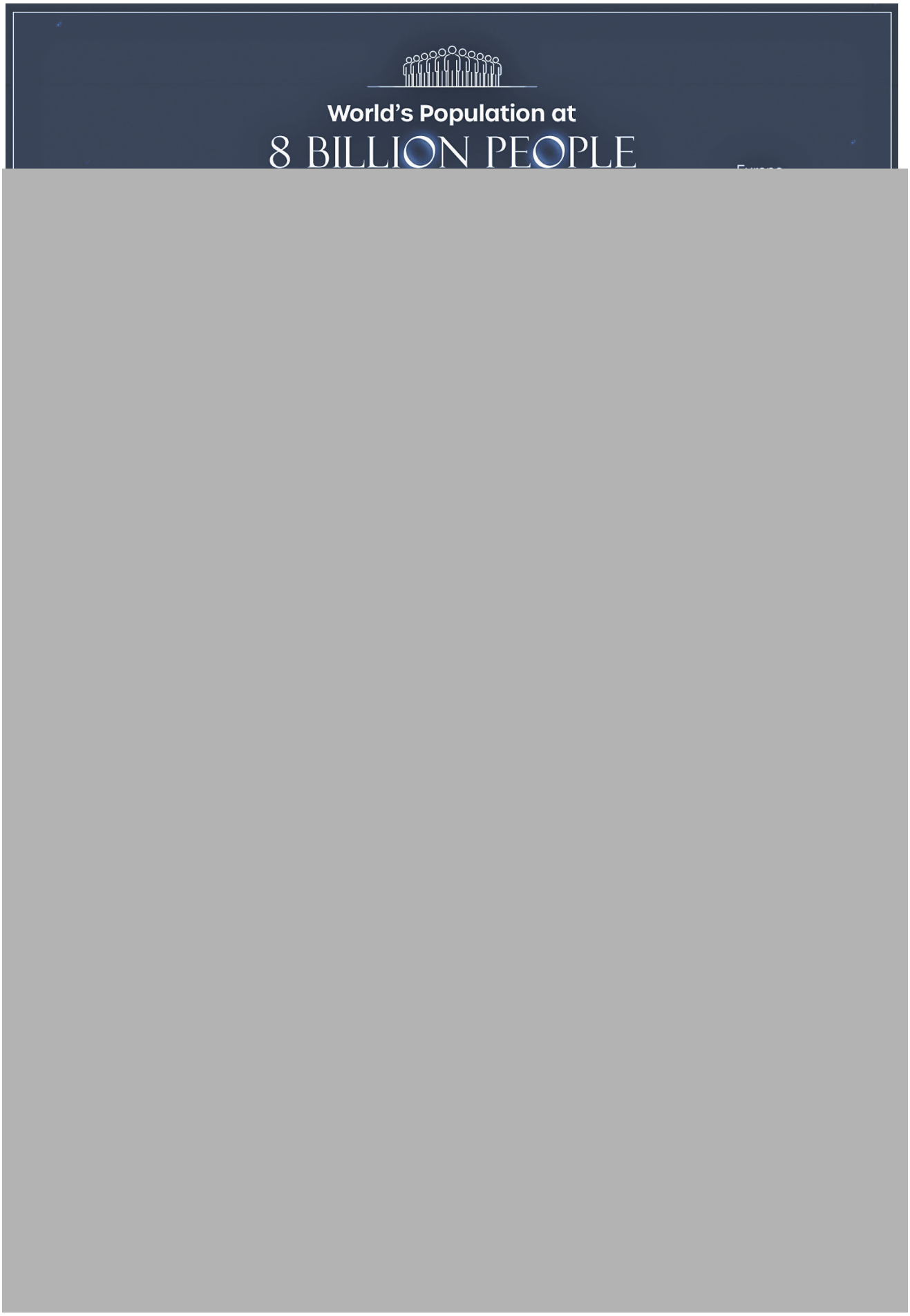


Figure 4: Population distribution.

Emergence of megacities

The term 'megacity' refers to metropolitan areas with a total population of more than 10 million people. The definition of what constitutes a megacity generally refers to the population of an urban agglomeration – that is, it includes people living in the immediate suburbs outside of the established border of the city.

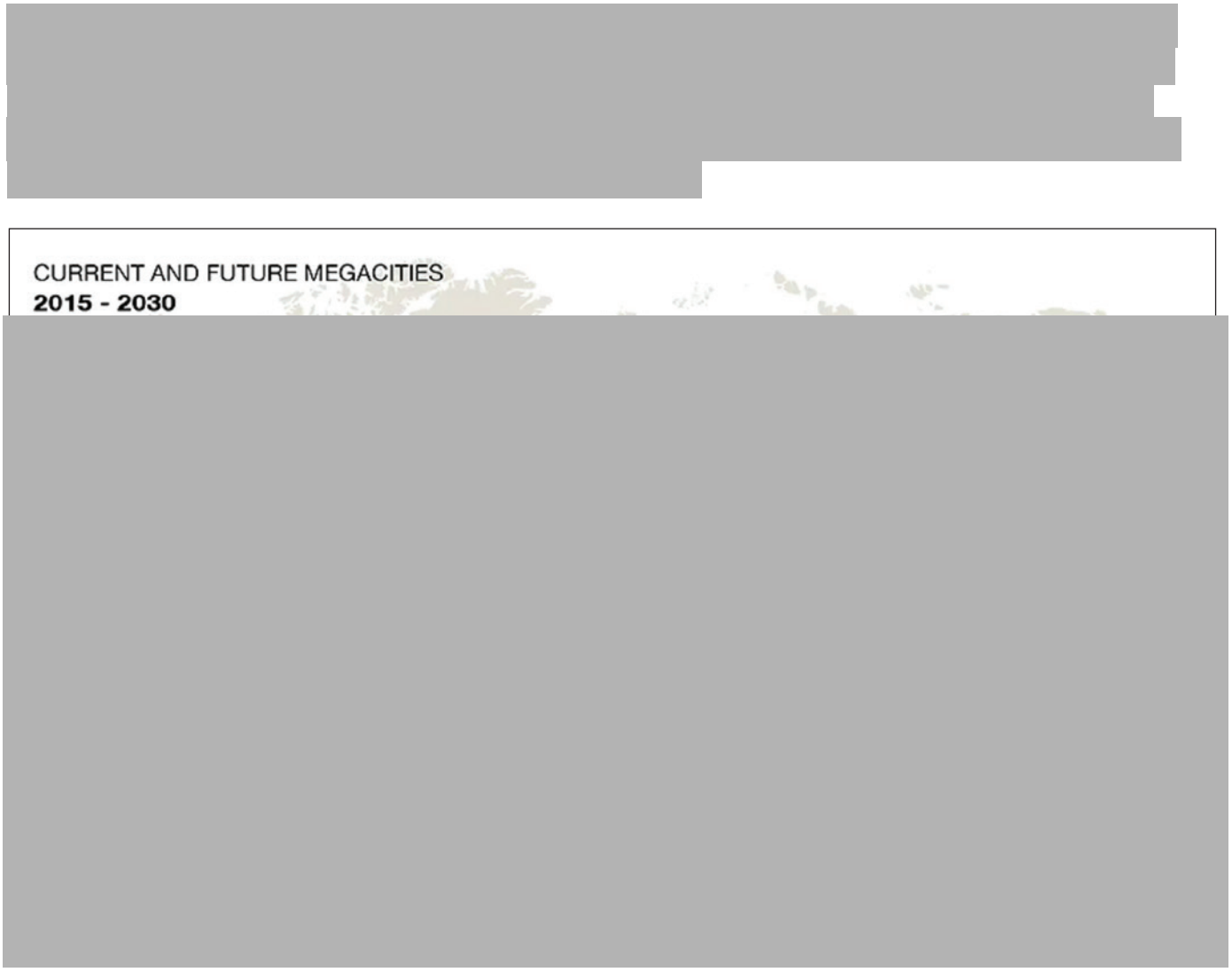


Figure 5: Current and future megacities.

Demographic transition

Rapid population growth is a typical feature of the demographic transition from high to low levels of mortality and fertility. For many countries, this transition has already ended, and the population is no longer growing; for many others, however, the demographic transition is still at an early stage, and the population is projected to grow rapidly.

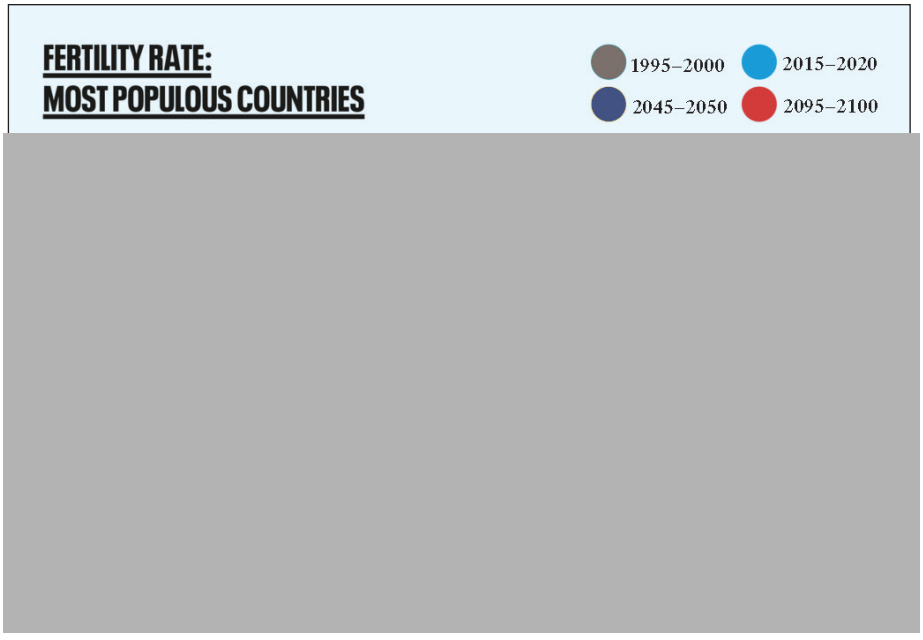
Schematic representation of the demographic transition

"The low birth rate and the rapidly declining birth rate ... [is] ... one of the biggest risks to civilisation."
– Elon Musk

Figure 6: Demographic transition.

Falling fertility rates

Total fertility rate (TFR) is the number of births per woman over the course of her life, and gives an indication of how family size is changing. A TFR of 2.1 is the "replacement rate" – a population with that TFR will eventually stabilise. The latest United Nations estimates for global TFR is just under 2.5. TFR is highest in Sub-Saharan Africa, at 4.6.



Degree of uncertainty

Although long-term population projections involve a considerable degree of uncertainty, both in terms of absolute numbers and between demographic research findings, some key features are worth noting in the projected trends for the second half of the twenty-first century.

Population change by five-year periods 2020–2100 by region and income group

Figure 8: Population change by region and income group.

Youthful vs ageing population

Contrasting case studies – Nigeria and South Korea

Nigeria

Nigeria's population is projected to reach 400 million by 2050, almost doubling the current estimate. This represents a demographic nightmare for the country that is already beset with several development challenges, ranging from acute poverty to governance and political instability.

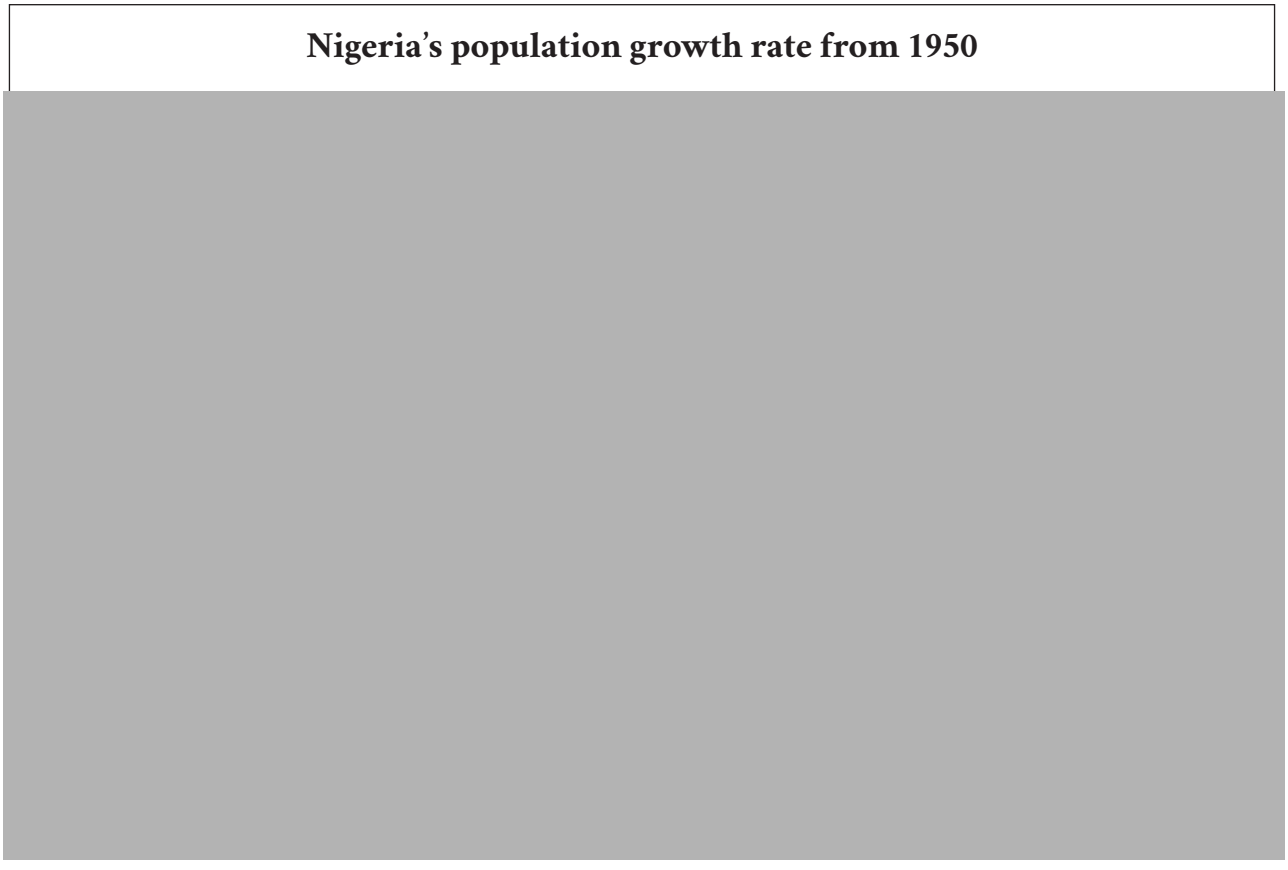


Figure 9: Nigeria's population and annual growth rates.

South Korea

Impact of immigration policy

South Korea, formally known as the Republic of Korea and home to 53.4 million people, is the fourth-largest economy in Asia. The South Korean fertility rate has not increased in the past 16 years. Rather, it has continued to decrease. This is due to what demographers refer to as the "low-fertility trap". The principle, set forth by demographers in the early 2000s, states that once a country's fertility rate drops below 1.5 or 1.4, it is difficult – if not impossible – to increase it significantly.

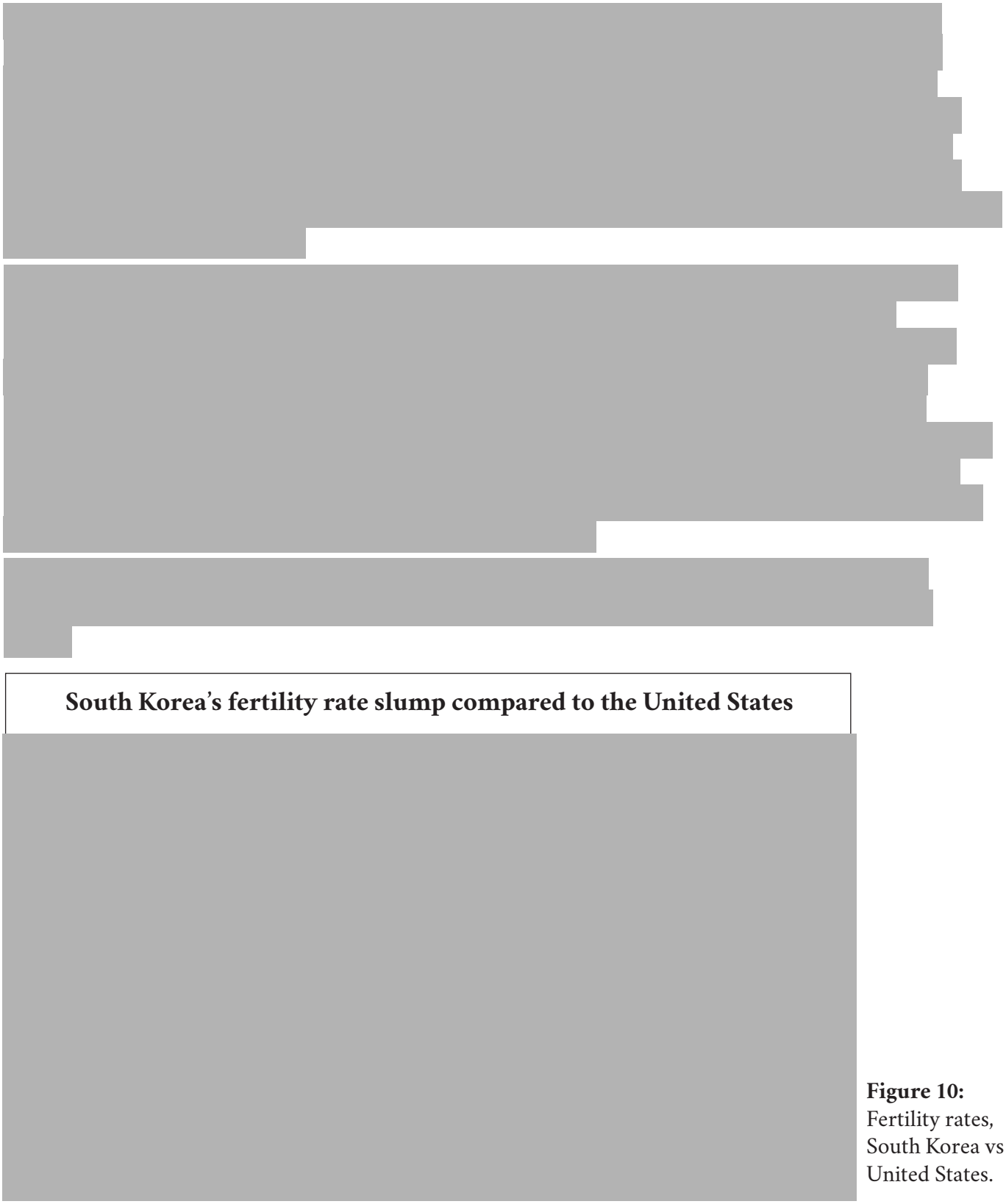


Figure 10: Fertility rates, South Korea vs United States.

Population pyramids – South Korea and Nigeria

Figure 11: South Korea and Nigeria population pyramids.

Changing population structures

Historically, older people made up a much smaller share of the population compared to younger age groups. As fertility rates drop during demographic transition, the shift in the age structure manifests initially as a swelling share of adults in the working and reproductive ages and falling proportions of children and youth. If fertility remains at lower levels, the population begins to age and eventually the share of older people starts to rise. Successive cohorts tend to live longer, increasing the demands on younger generations as potential sources of assistance in old age. Children and older people tend to rely on economically active adults for financial support and care.

Distribution of the global population in broad age groups and total dependency ratios, estimates for 1950–2021 and projections for 2022–2050

Figure 12: Population distribution by age group, and total dependency ratios.

TDR indicates total dependency ratio.

Asia-Pacific – the cost of the elderly

The Asia-Pacific region will see an additional 200 million elderly people by 2030. The healthcare costs related to caring for the elderly across the region are expected to spiral from USD500 billion per year to USD2.5 trillion per year by 2030.

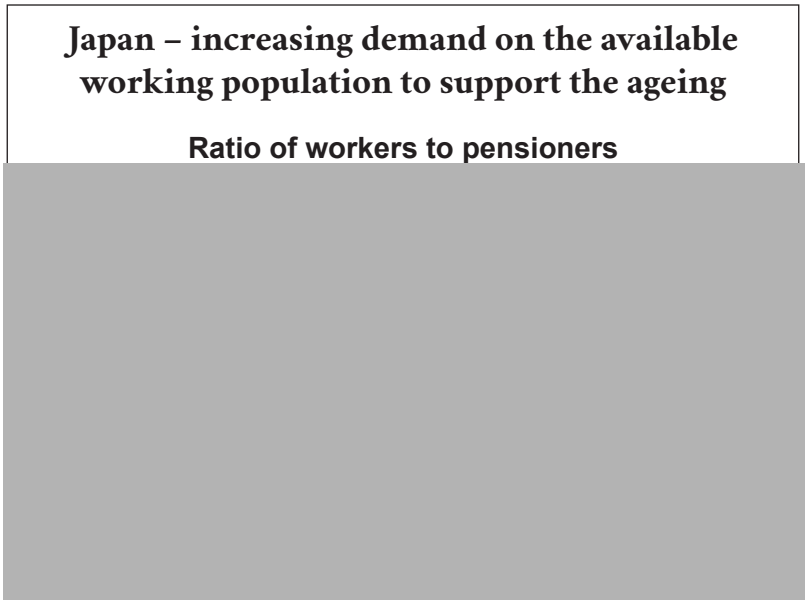


Figure 13: Ratio of workers to pensioners, Japan.

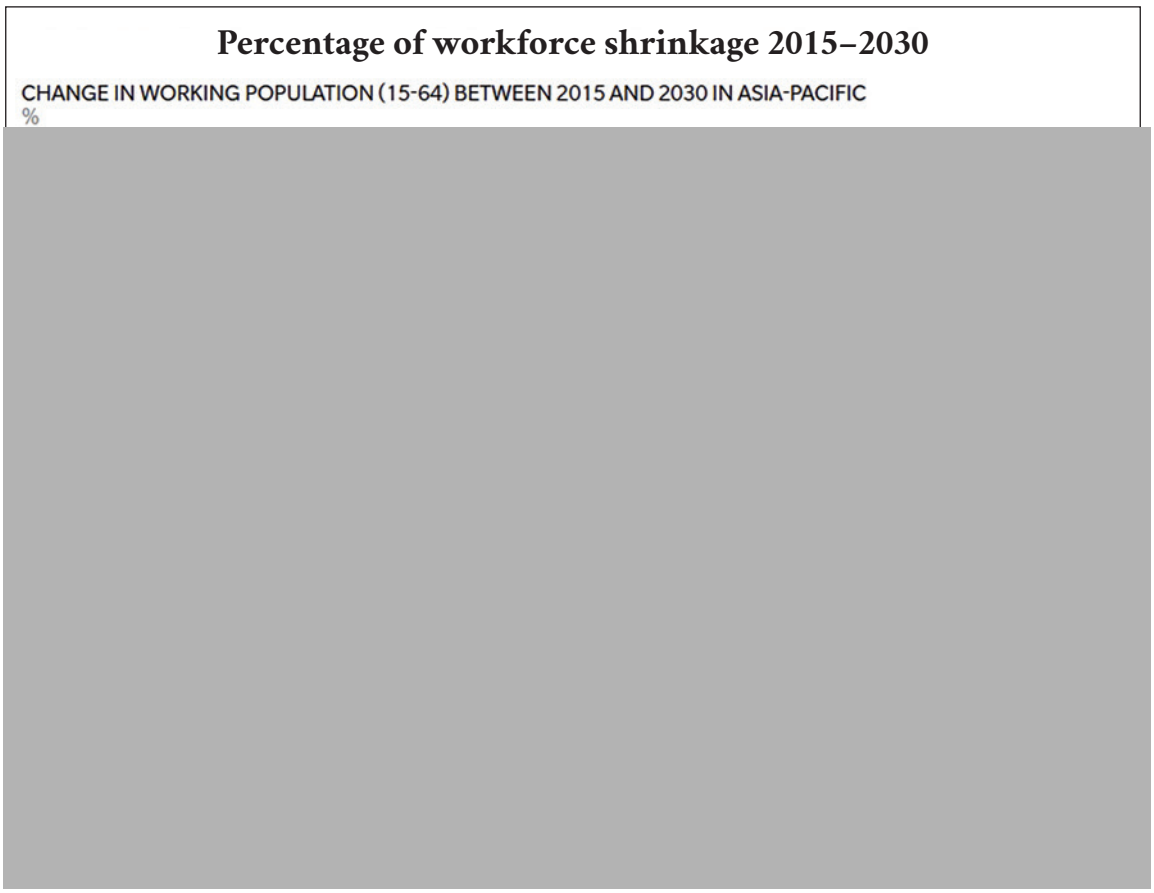


Figure 14: Workforce shrinkage.

Fewer workers for support

The effect of ageing within the region is expected to have a number of effects on key economic factors; the effects are similar across the countries studied. Hong Kong, for instance, will see a considerable decrease in its working-age population, which will fall by -13%.

European population predictions

The European Union is on the brink of a major demographic shift as new projections suggest a significant population decline by the end of the century. These projections, based on the continent's fertility, mortality, and migration patterns, estimate the EU could see its population shrink by 6%, or 27.3 million people, by 2100.

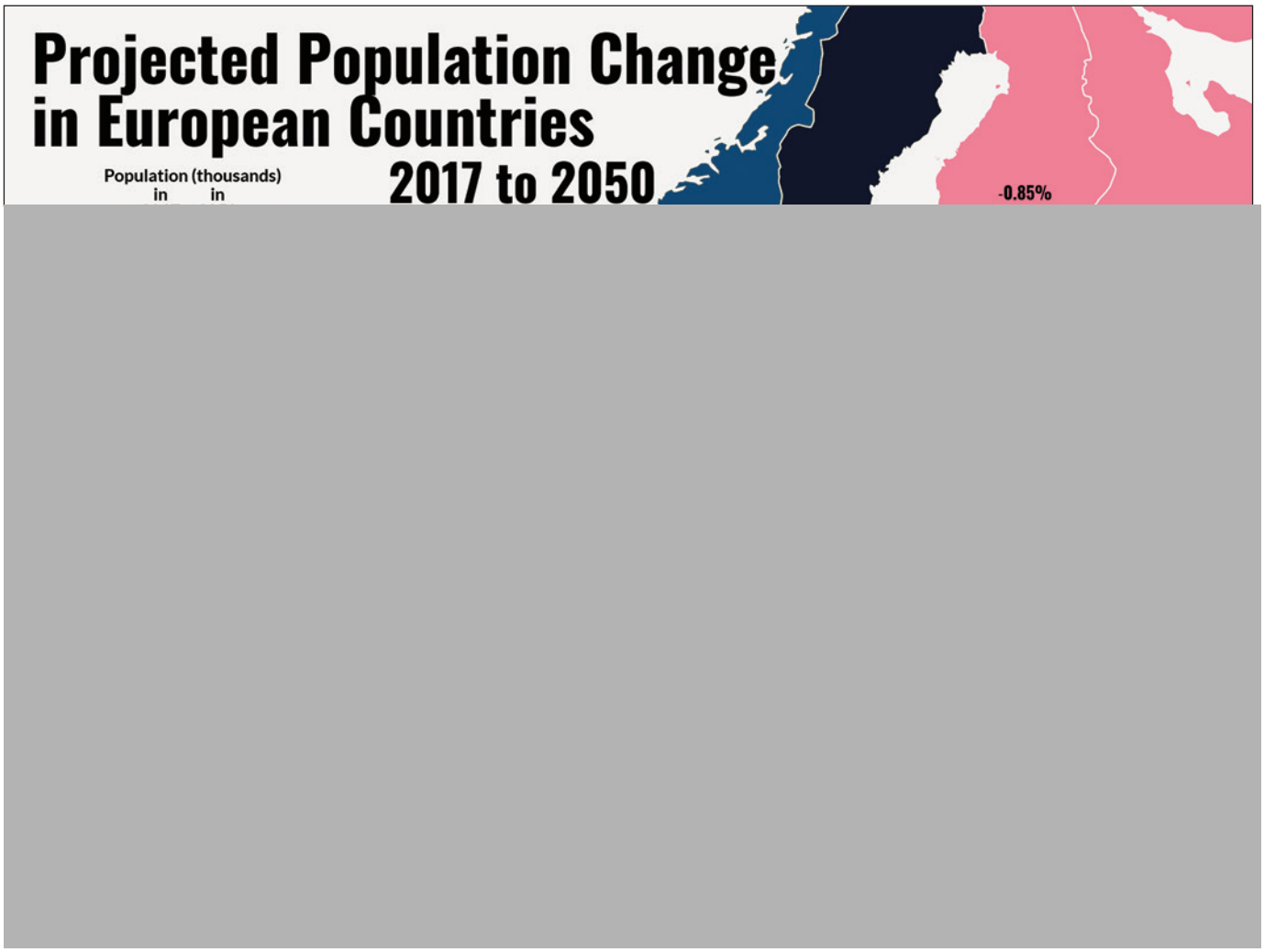


Figure 16: Projected European population change.

Asia's coming demographic divergence

Asia's dominant economies – China, Japan, South Korea, and Taiwan – are together experiencing unprecedented rapid population ageing. It was only in 1999 that any major country had ever reached a median age above 40, with Japan at 40.4. Japan continued to have the highest median age in the world in 2021 at 48.4, and its neighbours are close behind.

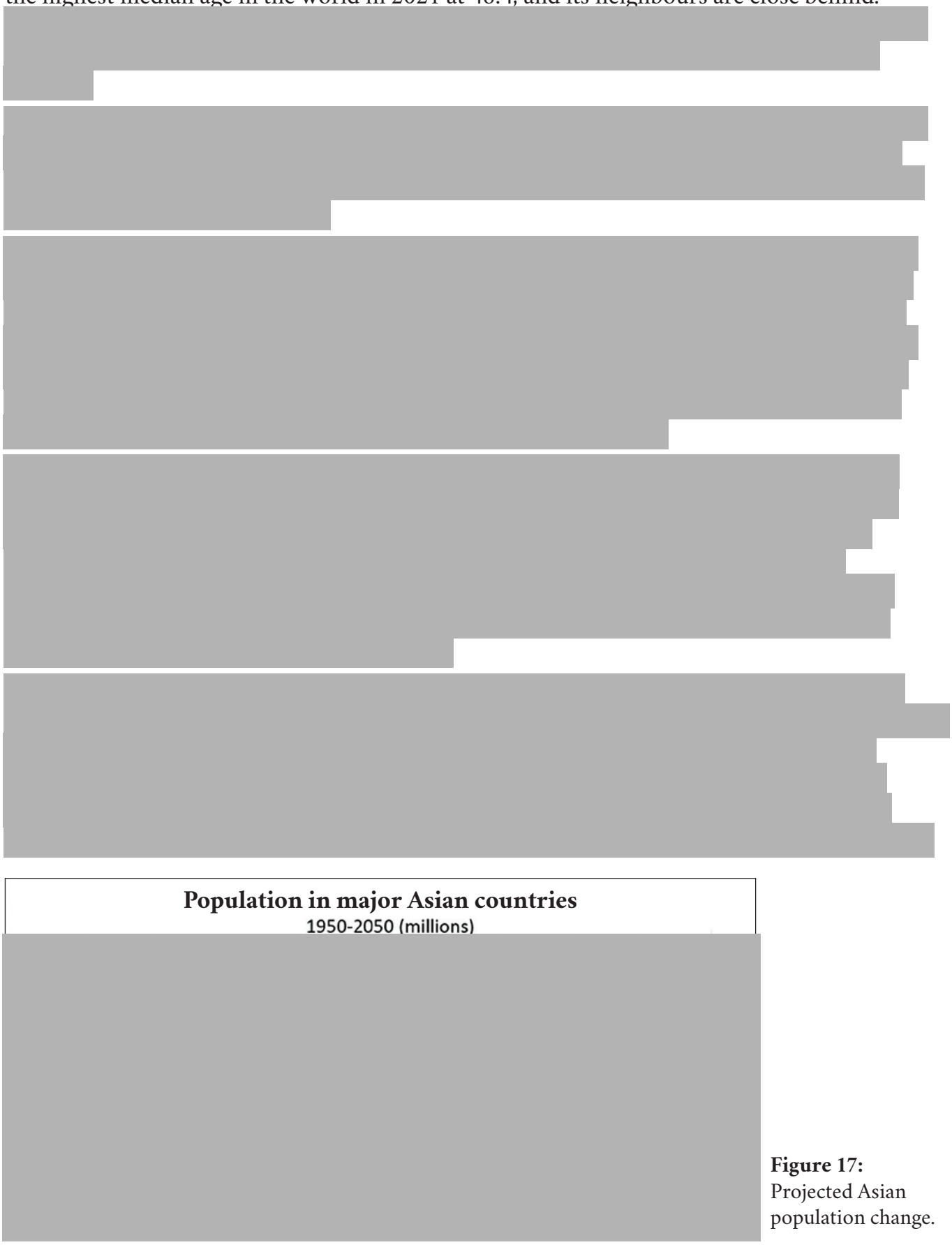


Figure 17: Projected Asian population change.

Historical growth of world population – revolutions

History shows that the evolution of the world's population has not always followed the current dizzying pace. In particular, two historical moments marked this evolution:

- [redacted]

Influences on population growth

International migration

International migration is a much smaller component of population change than births or deaths. However, in some countries and areas, the impact of migration on population size is significant, namely in countries that send or receive large numbers of economic migrants and those affected by refugee flows. Between 2010 and 2021, 17 countries or areas saw a net inflow of more than one million migrants, while 10 countries saw a net outflow of similar magnitude.

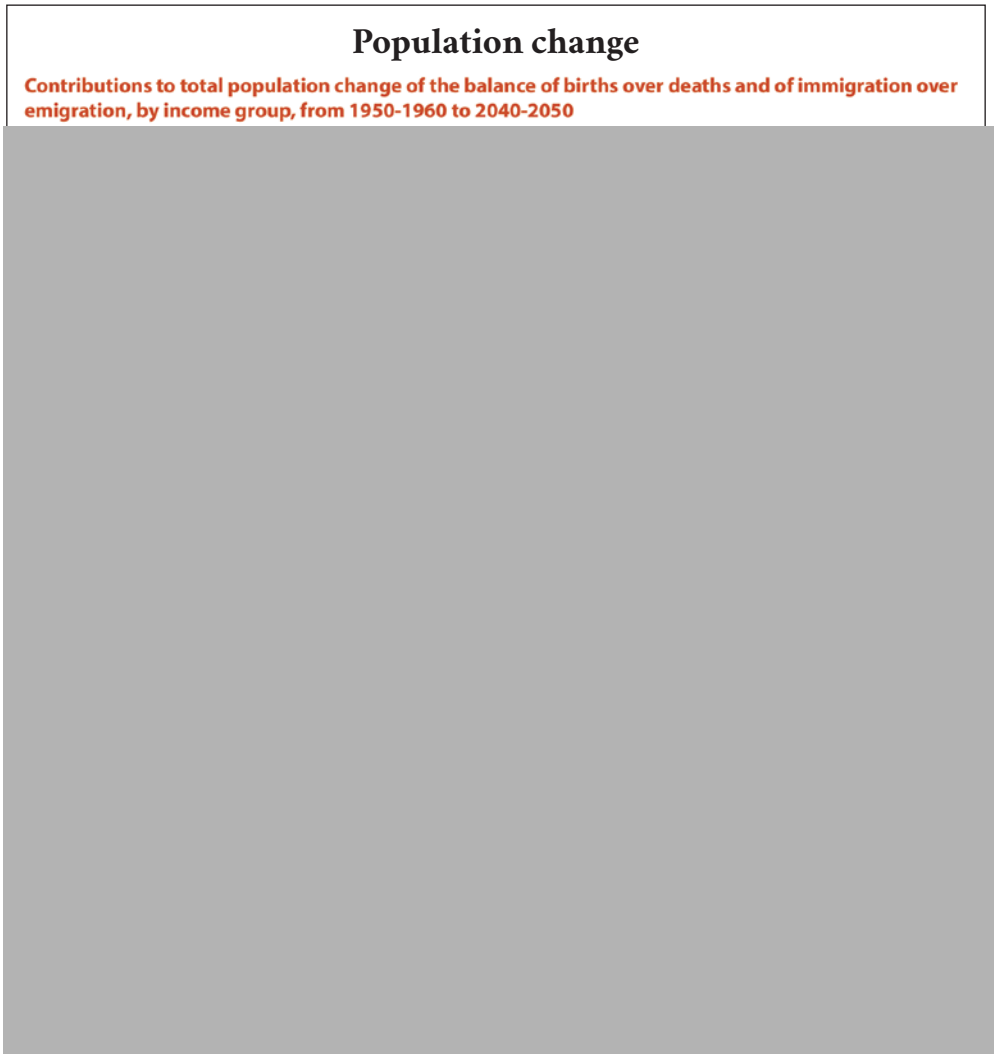


Figure 18: Population-change contributors.

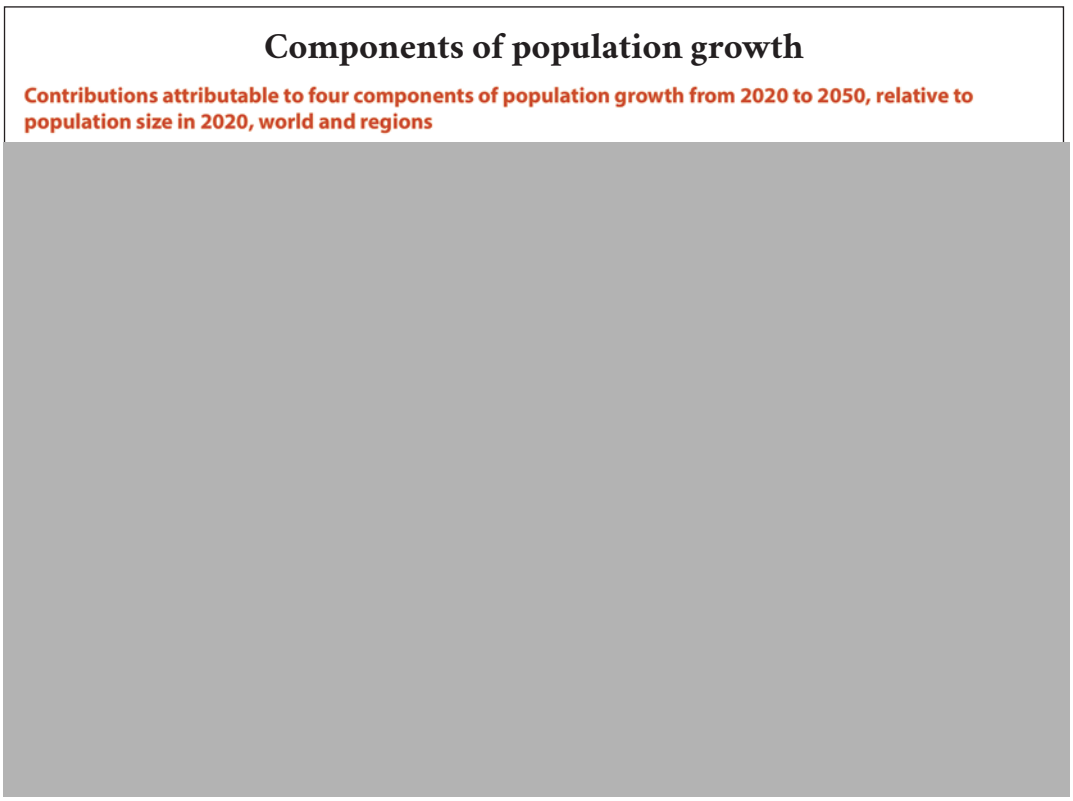


Figure 19: Components of population growth rate.

China's fertility rate

China made headlines in 2023, when it recorded its first population decline in six decades. The country had 1.41175 billion people at the end of 2022, according to figures released by the National Bureau of Statistics, a drop of 850,000, as deaths outnumbered births.

Population growth rate, education funding, and food insecurity

Average funding per student in primary or secondary education, 2013–2017 and population growth rate, 2000–2020, by region

Figure 20: Population growth rate and education funding.

Prevalence of moderate or severe food insecurity around 2018 by annual rate of population growth, 2015–2020

Figure 21: Population growth rate and food insecurity.

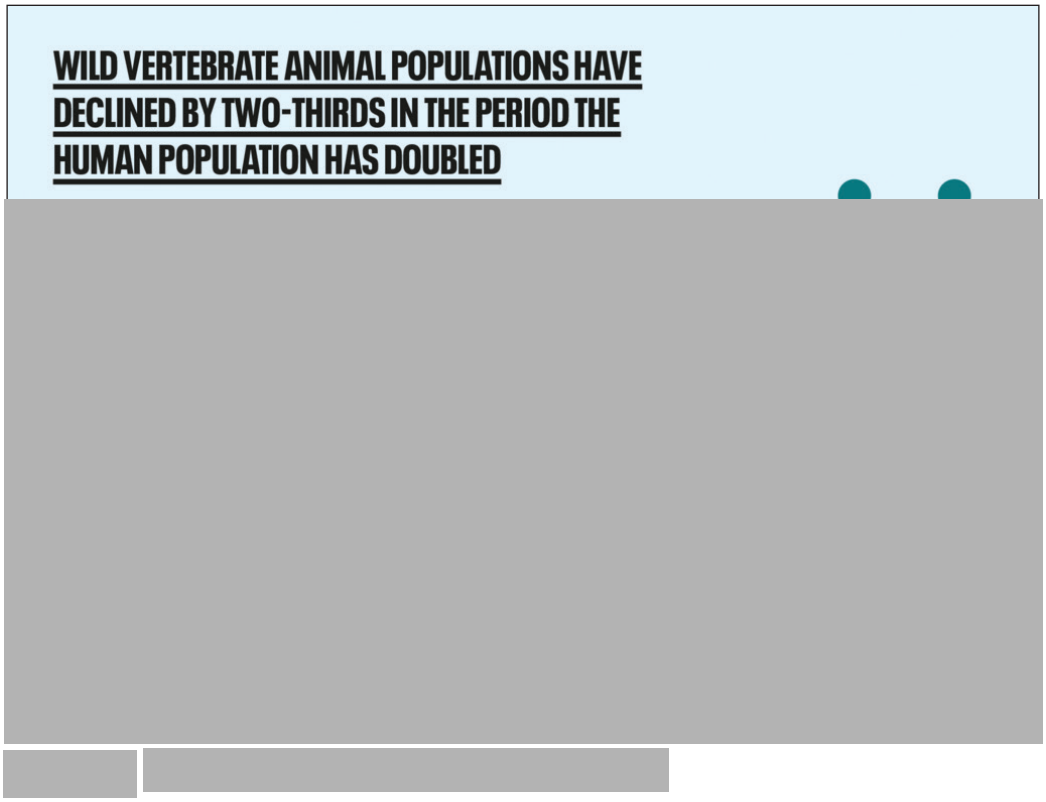
Sustainable populations

Many studies have tried to estimate the world's sustainable population for humans, that is, the maximum population the world can host. A 2004 meta-analysis of 69 such studies from 1694 until 2001 found the average predicted maximum number of people the Earth would ever have was 7.7 billion people, with lower and upper meta-bounds at 0.65 and 9.8 billion people, respectively.

The United Nations' International Resource Panel (IRP) has projected that in 2050, resource use per person will be 71% higher than today.

Consumption growth in richer countries vs population growth in the poorest countries

It has become increasingly clear that human activities are causing climate change. The burning of fossil fuels, which have provided most of the energy needed for economic development, releases greenhouse gases (GHGs), mainly in the form of carbon dioxide (CO_2).



Reducing the size of families

Fertility rates decrease rapidly when women are empowered, when children (especially girls) stay in education for longer, when countries become more affluent, and, crucially, when people can use modern contraception.

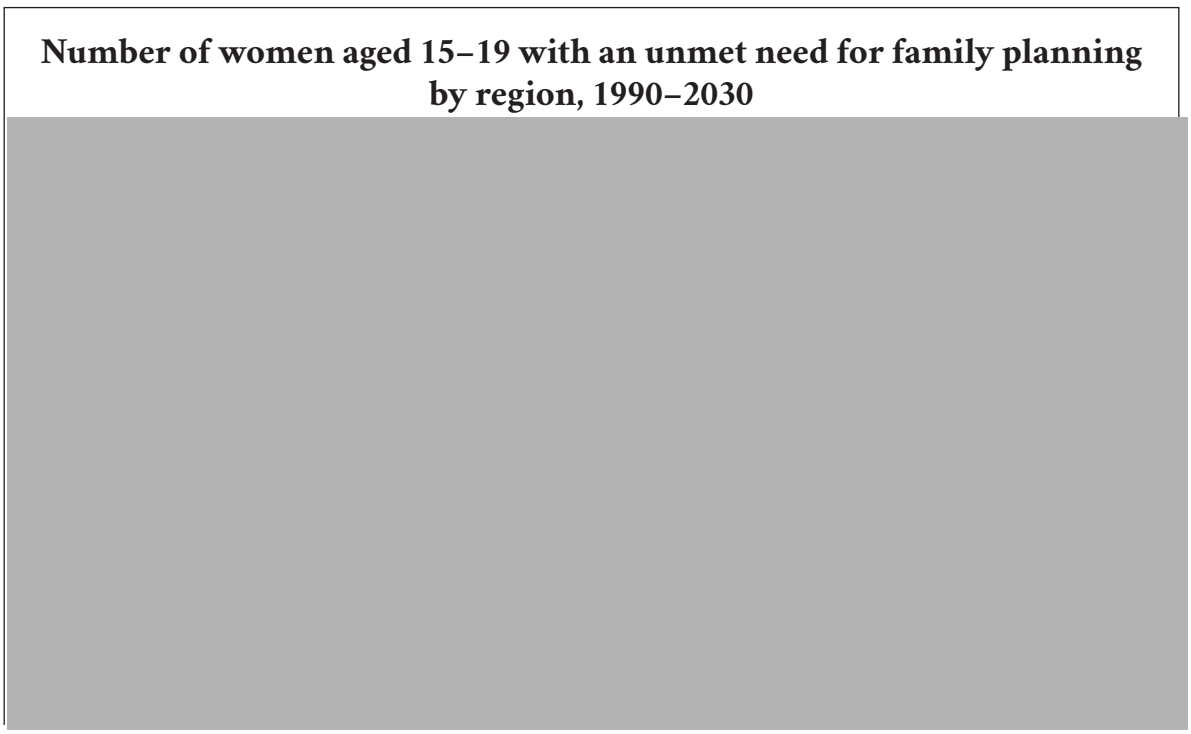


Figure 23: Unmet family planning needs.

Food and water

More than 800 million people currently do not get enough food to meet their nutritional needs every day. Meanwhile, 650 million are obese. People go hungry today not because there is insufficient food but because our global economic system distributes it unfairly.

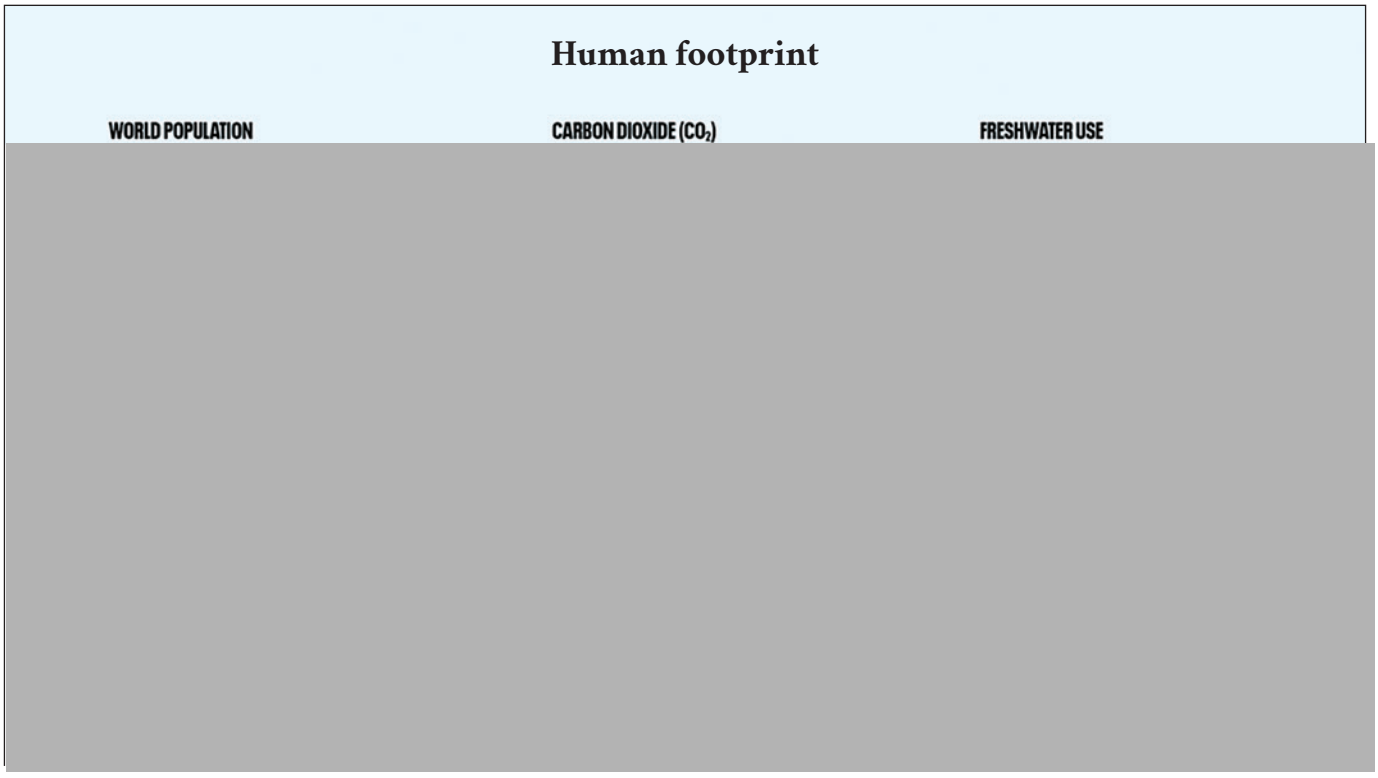


Figure 24: Human footprint.

Government policies

Many governments have taken a neoliberal approach to low fertility rates by offering direct financial incentives to families with children, such as tax breaks, housing assistance, or discounts on public services.

Acknowledgements
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