

# Global Population Trends and Implications

## SUMMARY

Population dynamics at the global level are slow-moving and demographic foresight to support forward-looking and proactive planning and policy-making should recognise that the global population is very likely to continue to grow over the short and medium term of the next 30 to 40 years.

However, long-term projections on the global demographic future start diverging considerably over the second half of the 21<sup>st</sup> century demonstrating that demography is not destiny. The inertia of population change also means that the future world population will depend on its interplay with political, social, environmental and economic parameters negotiated from today.

Countries continue to span a wide variety of the demographic continuum from population decline and ageing societies to rapid population growth and the demographic window of opportunity. Most of future population growth will come from sub-Saharan Africa, which is projected to continue growing throughout the 21<sup>st</sup> century and triple or quadruple in size.

Rapid population growth exacerbates the challenge of achieving sustainable development targets in low-income countries. From a demographic perspective, the key strategies to support development are the reduction of child and maternal mortality; the provision of universal access to education; gender equality; and the provision of universal access to reproductive health services, including family planning.

Ageing is occurring in all societies, at different pace, and brings with it challenges related to retirement systems, the provision of social security, and the care and support for the older population within the intergenerational contract. Many high-income countries are already facing these challenges now but they will also increasingly affect low-income countries where the financial and physical infrastructure is much less developed.

International migration is becoming a more sizeable demographic factor that attenuates or counteracts population decline in low-fertility countries. Disparate population growth is likely to increase the relative importance of migration as a driver of population in low-fertility countries, which are also opening up to address shrinking workforces and labour shortages. However, international migration is unlikely to offset population decline in low-fertility countries. Most migration takes place within the region or origin contradicting common perceptions, for example, of Europe as the main destination for African migrants.

Migration is more difficult to predict than mortality and fertility trends. There have been assumptions from mass-migration due to climate change, over trapped populations, to an era of immobility with advances in telecommunication and a digital revolution. While migration has become a sizable factor in high-income countries with stagnant or declining populations, natural growth from the balance of births over deaths remains the more important demographic factor for most countries around the world.

Urbanisation processes are slowing down globally with reduced population growth rates, yet most of the increase in global population will be accounted for by urban areas. The major driver of this process is natural growth (the difference between births and deaths) in urban areas of low-income and lower-middle income countries with lesser contributions from internal migration and the transformation of rural areas to urban areas. The expansion of cities to accommodate the increasing urban population will require substantial investments in planning and infrastructure with well-managed urban growth also having the potential to positively influence the population and development nexus.

A major challenge to achieve a sustainable future of human activity is to compensate economic growth, urbanisation and development in emerging economies with a reduction in energy intensity and emission intensity. Population is a lesser contributor to global emissions than wealth and the

age structure of the global population and its momentum will continue population growth, even if fertility levels fell much faster than expected. Therefore, affluent regions need to intensify their efforts in greening their economies and in adopting sustainable consumption patterns.

The areas of the world most exposed to a changing climate are also those where populations are expected to grow the fastest. Exposure to climate change can be reduced through mitigation strategies but adaptation to climate change of vulnerable populations will ultimately depend on policy interventions to enhance socio-economic condition in developing countries.

The geographic centre of the global population will shift towards Africa and Southern and Western Asia and away from major political powers today. The imbalance in demographic trends puts pressure on the state of democracy and challenges the representativeness of the global population in international institutions.

## INTRODUCTION

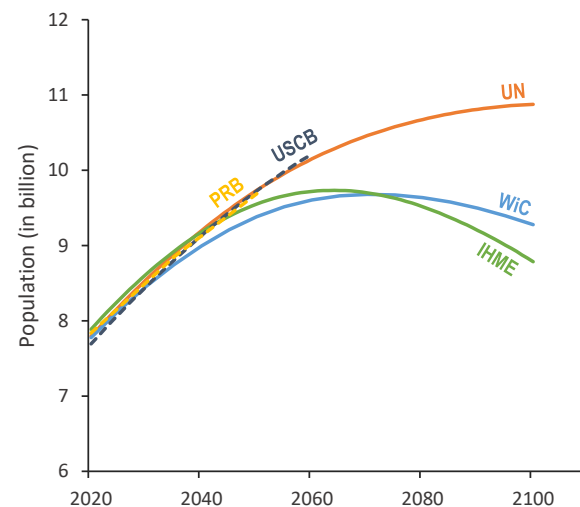
This science for policy brief gives an overview of global population trends. It focusses on disparate demographic dynamics across world regions and the links between population and development. It outlines connections to migration and urbanisation processes and points to implications for climate change, economics and geopolitics.

## CONTINUED GLOBAL POPULATION GROWTH

Since the middle of the twentieth century, the world has experienced unprecedented population growth that is projected to continue, albeit at progressively slower pace, over the coming decades before reaching a peak in the late twenty-first century. The rate of global population growth is slowing down since the 1970s, but absolute growth remains strong and an increase of another about 2 billion people is projected until 2050. The youthful age structure of today's global population entails a population momentum that makes a significant reduction in the projected increase unlikely. However, long-term projections of the global demographic future have less predictive power and diverge considerably over the second half of the 21st century (Figure 1).

The unprecedented growth of the global population since the 1950s is a result of two factors: advances in human longevity from improvements in public health, nutrition, personal hygiene and medicine; and continued high levels of fertility.

**Figure 1 – Projections of the Total Population of the World from selected Institutions: United Nations (UN), Wittgenstein Centre (WiC), Institute for Health Metrix Evaluation (IHME), US Census Bureau (USCB), and Population Reference Bureau (PRB).**



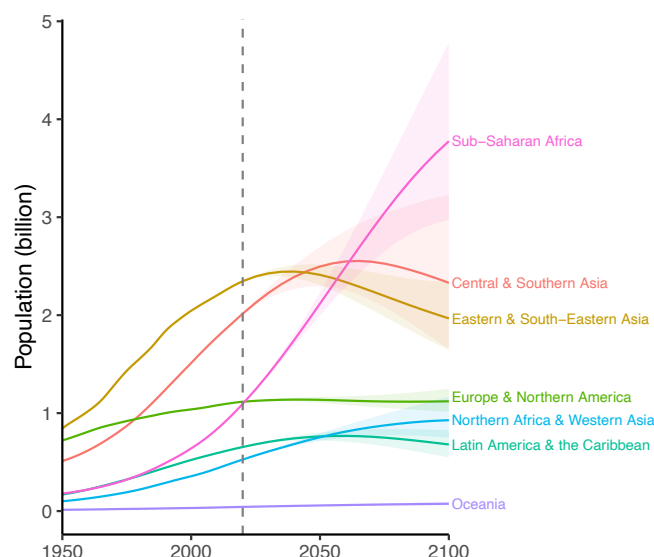
## DISPARATE REGIONAL AND NATIONAL DEMOGRAPHIC DYNAMICS

Countries span a wide demographic continuum, from countries that have only recently started the demographic transition<sup>1</sup> from high to low levels of mortality and fertility and projected to grow rapidly to countries where the transition has concluded and populations have started to decline. This leads to diverging population futures across world regions (Figure 2). Sub-Saharan Africa is projected to continuously grow from 1.1 billion people today to 3.8 billion (3.0-4.8 billion, 95 per cent prediction interval) in 2100; becoming the most populous world region and accounting for around 80% of future global population growth. Other regions with projected sustained growth are Oceania and Northern Africa and Western Asia. All other regions in Asia, Europe and Northern America and Latin America and the Caribbean will likely start declining in population size before the middle of the century.

Different stages in the demographic transition entail specific challenges, but also opportunities. During the period of population growth, changes in age structure from a sustained decline in fertility increase the proportion of people of working age in the population and open a time-bound window of opportunity for accelerated economic growth. However, this requires investments in social security systems such as education, health, infrastructure and the economy while population growth increases the demands on services and infrastructure. Rapid population growth exacerbates

1. Demographic transition describes the shift towards longer lives and smaller families connected to social and economic development over the last two centuries that all countries have entered-in or already completed today. Before the onset of the demographic transition, levels of fertility and mortality are high in a population and its size relatively stable. In the early stages, mortality rates begin to decline, especially among infants and children, while fertility remains high leading the population to expand in size. In the intermediate stage, mortality levels drop further and fertility levels start to decline. Population growth accelerates due to a large and sustained excess of births over deaths. In the later stages, population growth slows down and eventually level-off. Fertility and mortality have reached low levels and a larger proportion of the population becomes concentrated in older ages. In a post-transition stage, populations have stopped growing and may experience a decline in size if fertility falls to low levels.

**Figure 2 – Population estimates and Projections for World Regions (Geography of UN Sustainable Development Goal Framework), 1950 to 2100. Solid line shows median projection. Shaded areas show 95 percent prediction interval. Source: United Nations Department of Economic and Social Affairs, Population Division (2019) World Population Prospects 2019.**



the challenge of achieving sustainable development in low-income countries,<sup>2</sup> which are projected to double in population size between 2020 and 2050. Continued strong growth concentrated in the poorest regions of the world, brings additional challenges to the efforts of eradicating poverty, achieving greater equality, combatting hunger and malnutrition and providing education and social protection. An accelerated transition to lower levels of fertility, together with appropriate social and economic policies, can contribute to prevent countries from being trapped in a vicious cycle where economic growth cannot keep pace with population growth.<sup>3</sup> The key targets to address the challenges are: the reduction of child and maternal mortality; the provision of universal access to quality education; gender equality; and the provision of universal access to reproductive health services, including family planning.

In the later stages of the demographic transition, a continuously larger proportion of the population concentrates in older age groups. This process of population ageing stems from lengthening the human lifespan and is a major achievement of the last 200 years. It can positively influence educational outcomes, gender equality in the labour market,

and wealth building in countries. However, it also represents a challenge for national economies to accommodate shrinking workforces and declining support ratios.

## INTERNATIONAL MIGRATION

In most countries and regions, international migration is a much smaller factor for demographic change on the national level than fertility and mortality. International migration has become a sizable factor for population change in high-income countries (Figure 3). In countries with sustained low-levels of fertility, international migration is projected as an increasingly important driver in attenuating or counteracting population decline. However, migration is unlikely to offset projected long-term decreases from low-levels of fertility.

The majority of migration takes place within the same world region. About half of international migrants are living within their region of origin. The highest such share is in Europe with about 70% of migrant being born in another European country followed by sub-Saharan Africa with about 63% of intra-regional migrants. Destination countries for the majority of refugees and asylum seekers are also clustered around the origin country within the same region.

The number of international migrants in the world has increased at a faster pace in recent times than the total global population. In 2020, 281 million people lived outside their country of origin compared to 173 million in 2000 accounting for a rise in the proportion of migrants from 2.8% to 3.6%. The main regions of destination have been Europe, Northern America and Western Asia, especially high-income countries such as the USA, the UK, France or Germany or the Gulf countries, where the change in the number of international migrants has now come to a larger part from interregional migrants (Figure 4). An increase in refugees and asylum seekers<sup>4</sup> from 13.1 million to 24.5 million accounted for 11.4 million in the increase of the number of international migrants globally. Refugee movements have remained mostly directed to neighbouring countries within the same region and accounted for mostly by people displaced from Syria and Venezuela.

Developments in global governance<sup>5</sup> have recognised the breadth and complexity of the benefits and challenges of international migration. Taking into considerations demographic and labour market trends, an increasing number of countries are looking to provide pathways for safe, orderly and regular migration<sup>6</sup> in recognition of the skill and

<sup>2</sup> World Bank Income Groups: <https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html>

<sup>3</sup> United Nations Department of Economic and Social Affairs, Population Division (2021). Global Population Growth and Sustainable Development.

<sup>4</sup> Includes Venezuelans displaced abroad as defined in UNHCR refugee statistics

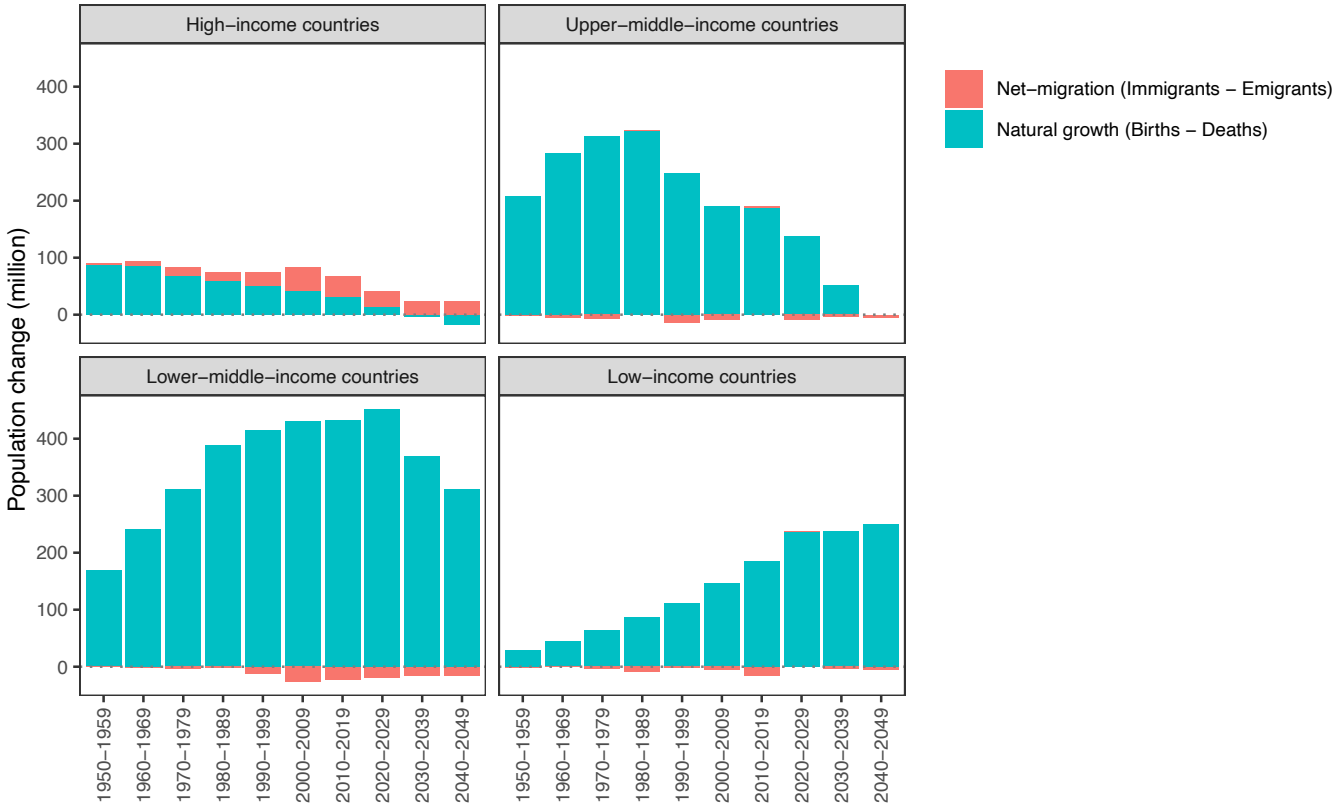
<sup>5</sup> The Global Compact on Safe, Orderly and Regular Migration, the first negotiated global agreement aiming to cover all dimensions of migration in a holistic and comprehensive manner; and the The Global Compact on Refugees, a framework aimed to respond to needs of refugees, were adopted in 2018. Also, the UN 2030 Agenda on Sustainable Development has included the topic of migration.

<sup>6</sup> For a review of policies to facilitate orderly, safe, regular and responsible migration, see: United Nations Department of Economic and Social Affairs, Population Division (2020). International Migration 2020 Highlights

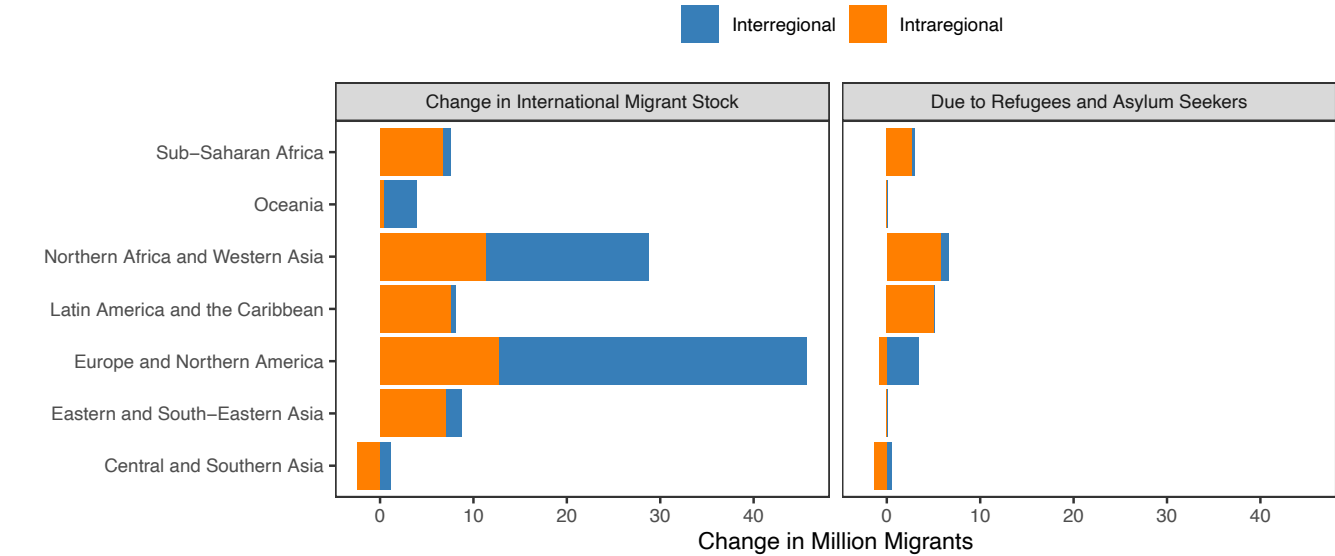
fiscal contribution especially labour migrants make to their economies. At the same time, the responsibility to provide assistance to refugees, asylum seekers, and other displaced persons lie to the most part with low-income and lower-middle income countries in Africa, Asia and Latin America.

The support of large refugee populations can pose an additional challenge to development. The Global Compact on Refugees recognised a need for equitable responsibility sharing across countries and international cooperation in order to achieve sustainable solutions for displaced populations.

**Figure 3 – Decadal population change accounted for by natural growth (the balance of births and deaths) and net-migration (the balance of immigration over emigration) by World Bank income group, 1950-1959 to 2040-2049.** Source: United Nations Department of Economic and Social Affairs, Population Division (2019) World Population Prospects 2019.



**Figure 4 – Change in the international migrant stock between 2000 and 2020, by region of destination and type of movement.** Source: United Nations Department of Economic and Social Affairs, Population Division (2020). International Migrant Stock 2020; and, UNHCR (2022) Refugee Data Finder. Note: Numbers of Refugees and Asylum Seekers include Venezuelans displaced abroad. Interregional migrants are international migrants who reside in a country outside their region of origin. Intraregional migrants are those who reside in a country within their region of origin.



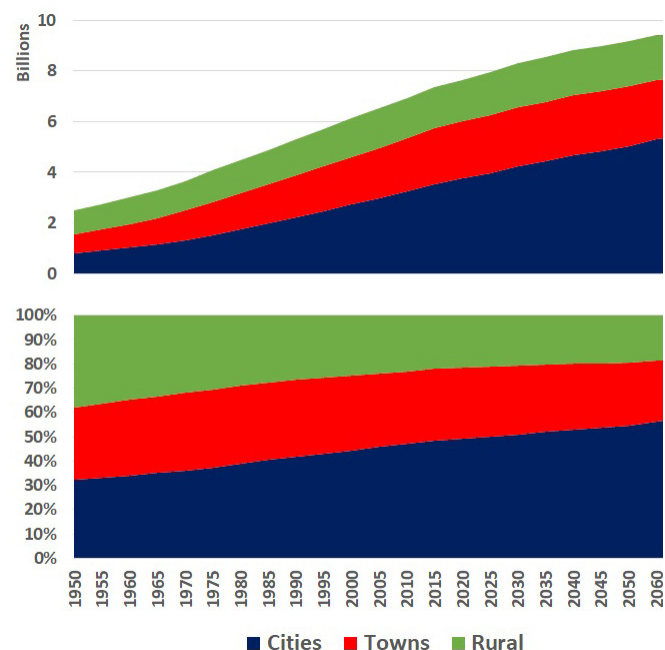
## URBANISATION

The number of people living in the urban areas continues to increase but it is slowing down with higher urbanisation rates. The number of city dwellers is projected to rise from 3.7 billion in 2020 to about 5.5 billion in 2070, bringing the share of global population living in cities from 49% in 2020 to 58% in 2070 (Figure 5).

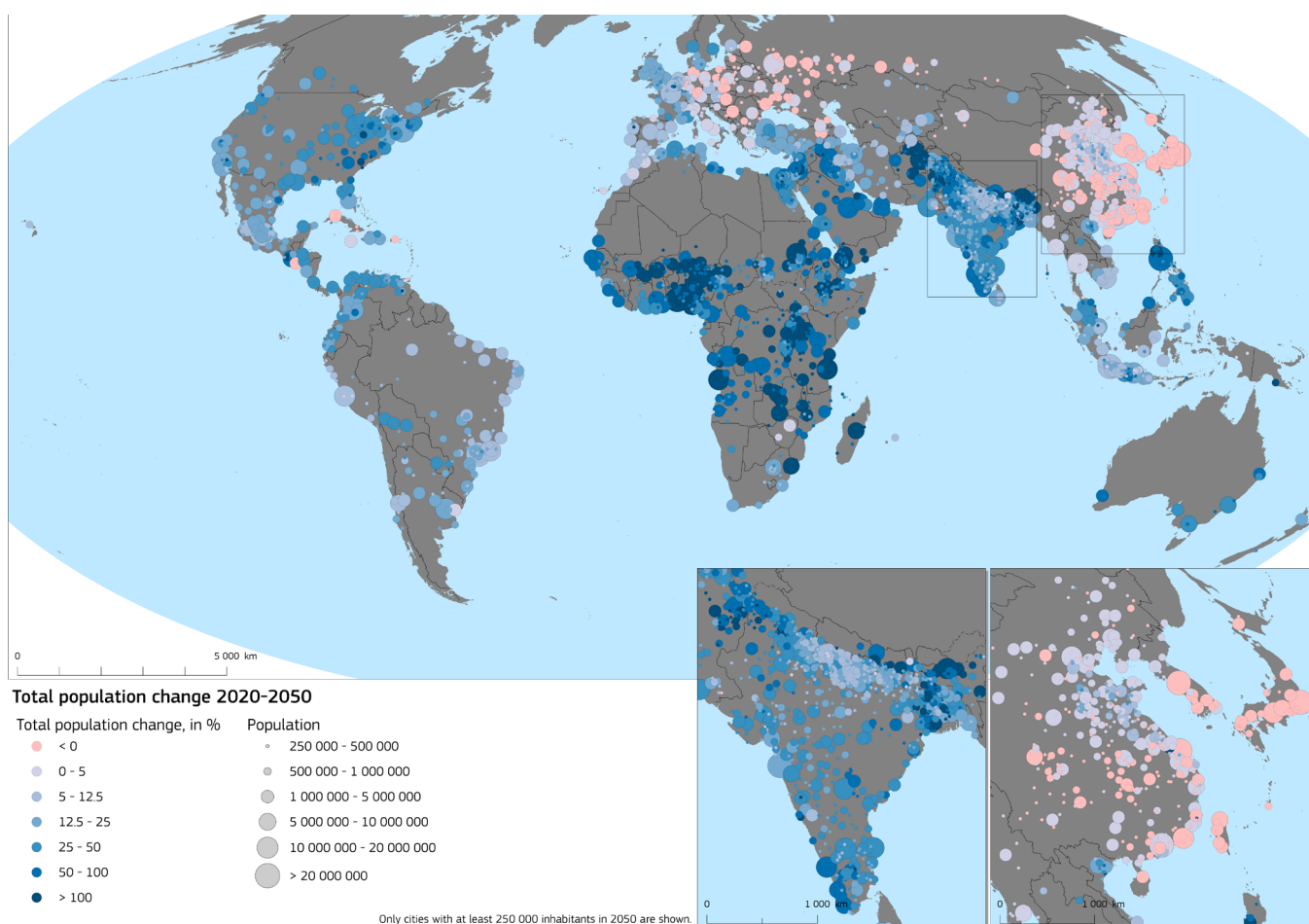
The population growth in low income and lower-middle income countries in Africa and Asia accounts for most of the future increase in global city dwellers (Figure 6). Their continued strong natural growth (population growth from birth exceeding deaths, not from migration) drives the urbanisation processes. In upper-middle income countries, where urbanisation levels are already high, internal migration is a sizeable factor for urban growth. In high-income countries, internal movements to urban areas are offset by reverse flows to rural areas, yet international migration has emerged as a driver of continued urbanisation.

Urbanisation can play a key role in accelerating the demographic transition. Urban fertility rates are often lower than rural ones, and urban areas tend to display higher standards of living, better access to education and health

**Figure 5 – Degree of urbanisation: Number and share of the global population living in cities, towns, and rural areas.** Source: EC JRC (Forthcoming) Scenarios of Urban Futures. Chapter in UN-HABITAT Report on the Future of Cities.



**Figure 6 – Population change in cities, 2020 to 2050.** Source: EC JRC (Forthcoming) Scenarios of Urban Futures. UN-HABITAT Report on the Future of Cities.



services, and better labour market opportunities especially for women. Yet, without appropriate investments in planning and infrastructure, the concentration of population in large cities and rapid urban growth and expansion may also impede development.

## CLIMATE CHANGE – EMISSIONS

Carbon dioxide emissions are determined by the interaction between population size, GDP per capita (or consumption) and technology. The technology component can be further decomposed in energy consumed per unit of income (energy intensity) and the CO<sub>2</sub> emitted per unit of energy (emission intensity).

This simple equation indicates that an increase in population in the future will expand proportionally the level of emissions. For 1% of increase in population, an increase of 1% of emissions can be expected. Looking into the future, the level of emissions will increase mostly due to the faster rate of growth of GDP per capita compared to total population growth (Figure 7).

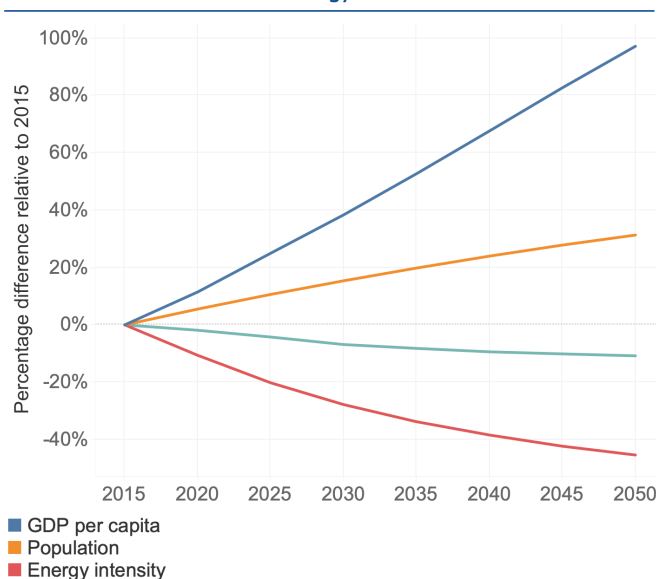
An often-overlooked impact of demographic change on emissions, is through indirect effects on consumption patterns deriving from changes in age structure, household composition and urbanisation. Younger populations, smaller households and a larger share of population in urban areas are all factors expected to lead to higher per capita emissions.

The challenge for sustainability will be to compensate for the economic growth and urbanisation in less developed countries, with reductions in energy intensity and emission intensity starting from developed economies. With the likely continued population growth until well into the 21st century, and GDP as the main driver of emissions, it lies with the affluent regions of the world to intensify their efforts in greening their economies and adopting sustainable consumption patterns.

## CLIMATE CHANGE – EXPOSURE AND VULNERABILITY

Exposure to climate change can have different implications across regions. According to climate scenarios, the level of agriculture productivity is expected to decrease in tropical and subtropical regions, while in the Northern hemisphere global warming might lead to slight increase in agriculture productivity.<sup>7</sup> The areas that are expected to experience the largest impacts from climate change in terms of disruption of agriculture productivity are also those which will experience the largest increase in population in the coming decades (i.e. sub-Saharan Africa and Southern Asia). Estimates from different combinations of socio-economic pathways and environmental change show that between 9% and 13% of

**Figure 7 – Projections of Population, GDP per capita and Energy from the EIA's International Energy Outlook 2017.**



population in Africa, Asia and Latin America and the Caribbean could be exposed to a strong decrease and agriculture productivity due to climate change by 2070 (Figure 8).

The adoption to climate change is influenced by conditions of vulnerability (living in rural areas, with low education and in poverty) – in particular in Africa and Asia. There is little evidence that vulnerable populations exposed to the effects of climate change avail of international migration as an adaptation strategy on a large scale. The interplay of population projections using different combinations of emission scenarios and socio-economic pathways in terms of exposure and vulnerability points away from 'mass exodus' induced by climate change and shift the focus to adaptation needs of locally displaced and trapped populations. While the overall exposure can be reduced through mitigation policies, adaptation to climate change of vulnerable populations will ultimately depend on policy interventions to enhance socio-economic condition in developing countries.

## ECONOMICS

Rapid population growth, prevalent in most low-income and lower-middle-income countries, is challenging for the increase in public expenditures on a per capita basis that would be needed to achieve development goals such as universal social protection and quality education for all. Low-income countries are experiencing a substantial expansion in population across all age groups (Figure 9). Middle income-countries show a more marked shift in the projected age structure with young age cohorts no longer expanding in size. With falling fertility and mortality levels in the course of the demographic

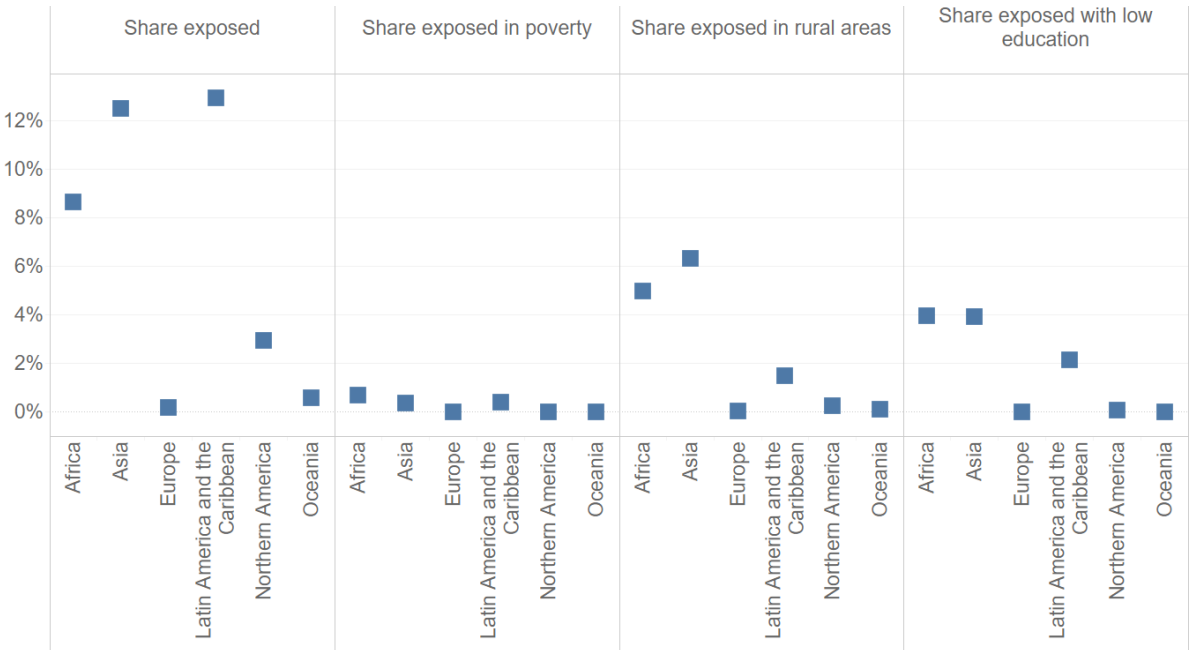
<sup>7</sup> For more details see Projecting populations exposed and vulnerable to climate change, in: McMahon, S., Tintori, G., Perez Fernandez, M., Alessandrini, A., Goujon, A., Ghio, D., Petroliaqkis, T., Conte, A., Minora, U. and Kalantaryan, S., Population exposure and migrations linked to climate change in Africa, Migali, S. and Natale, F. editor(s), EUR 30881 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-43304-0, doi:10.2760/4151, JRC126594

transition, changes in the population age structure and the increase in the size of the productive working-age population, can potentially contribute to increased well-being and socio-economic development, if investments in people and the economy are implemented.

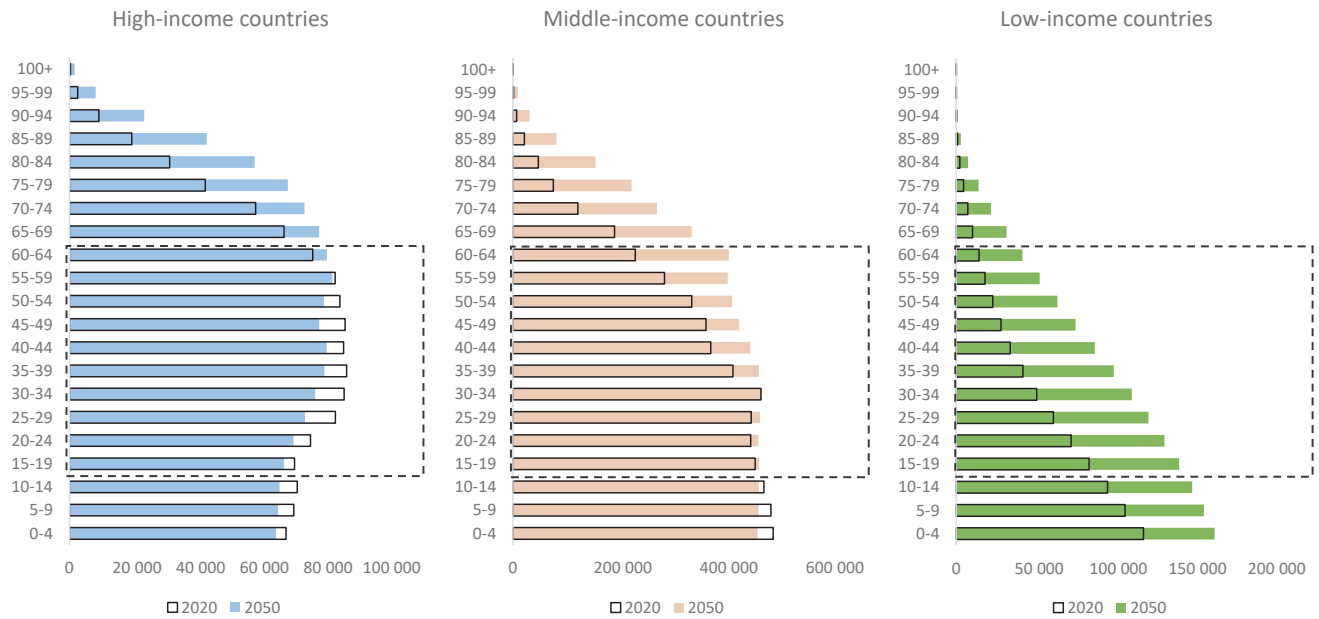
For high-income countries, that already experience fertility levels below replacement level (around 2.1 children on average per woman), and sometimes ultra-low fertility (below

an average of 1.3 children per woman), and low mortality, population ageing has become the prevalent demographic issue, posing a challenge to the sustainability of countries' economies. The enlarging proportion of the population in retirement ages puts health and pension systems under stress and affects the security of older people, labour supply, tax revenue, public debt, private savings, and income growth. However, these trends are counteracted by an increased participation of women in the labour market, rising

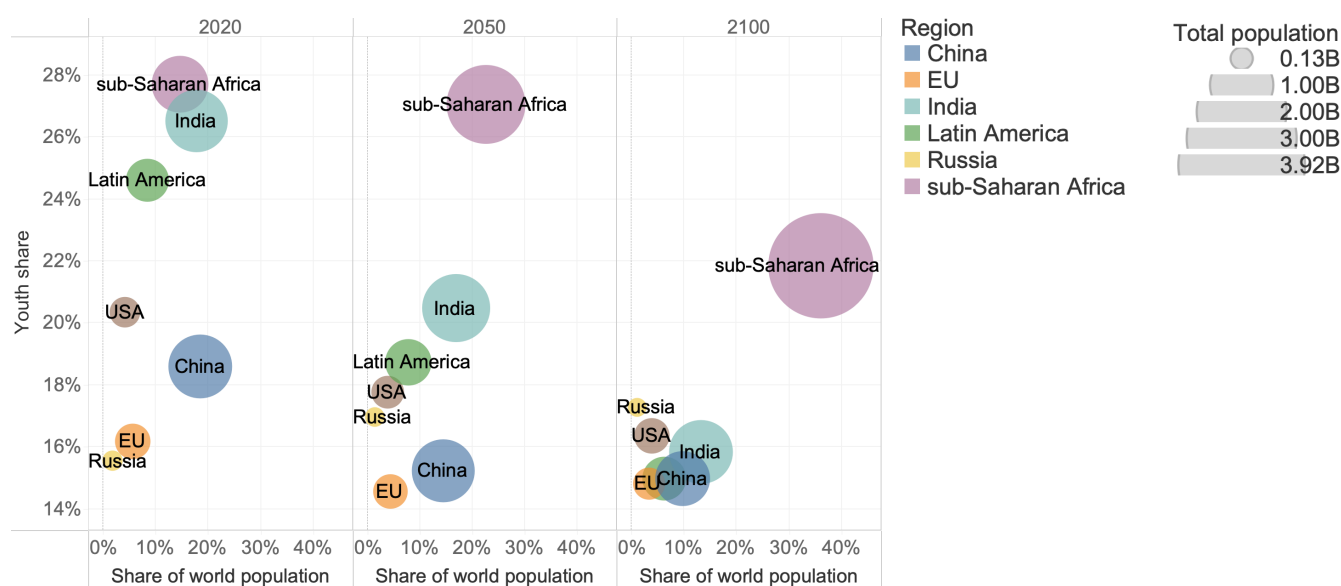
**Figure 8 – Share of exposed and vulnerable population considering impacts from climate change on agricultural productivity.** The shares are calculated considering scenarios of socio-economic pathways (SSP3) and environmental change (RCP6.0) until 2070 and aggregating the resulting demographic and environmental projections at high spatial resolution. Source: EU JRC (2021) CLICIM Project ([https://knowledge4policy.ec.europa.eu/migration-demography/climate-change-induced-migration-clicim-project\\_en#reportsdata](https://knowledge4policy.ec.europa.eu/migration-demography/climate-change-induced-migration-clicim-project_en#reportsdata)).



**Figure 9 – Total population by age and income groups.** The countries are clustered according to high-income, middle-income and low-income countries following the World Bank classification. The box points at the population working-population (in the 20-64 age group). Source: United Nations Department of Economic and Social Affairs, Population Division (2019) World Population Prospects 2019.



**Figure 10 – Share of the population in the world population (x-axis) by the share of the youth, in selected countries and regions, 2020, 2050 and 2100, United Nations medium variant. Source: United Nations, Department of Economic and Social Affairs, Population Division (2019) World Population Prospects 2019.**



investments in human capital, higher rates of retirement savings, and a decrease in the proportion of people in younger age groups due to falling fertility levels.

## GLOBAL POLITICS

Most of future growth in global population is expected in low and lower-income countries shifting the geographic centre of the global population towards Africa and Southern and Western Asia away from major political powers. The share of the EU population in the world is foreseen to halve by 2100, shrinking to 3% from 6% today. The share of China of the global population is expected to decrease from 19% in 2020 to 10% in 2100, of the United States from 4.2% to 3.9%, of Russia from 2% to 1%, and of India from 18% to 13%. These decreases are contrasted by a large increase in the share of sub-Saharan Africa in the world, tripling from 15% in 2020 to 36% in 2100. Furthermore, there will also be a marked difference in age structure. By 2100, the population

in sub-Saharan is projected to remain relatively youthful with about a quarter of the population between 15 and 29 years old of age. The EU, China, India, Russia and the United States will likely all have relatively older populations with only about 1 in 6 people between 15 and 29 years old (Figure 10).

While the number of democratic countries has been increasing, the share of world population living in democratic countries is decreasing. In a scenario where only population changes but not the number of countries providing political freedom to its citizens, the proportion of the global population living in freedom will reduce from 20% today to 15% by 2100 due to population growth differentials. Similarly, the share of the global population represented by the five veto-powers in the UN Security council, which already declined from about a third in the 1970s to a fourth today, is likely to reduce further to less than 20%.

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