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Population and sustainable development, in particular, sustained and inclusive economic growth

Report of the Secretary-General

Summary

In its decision 2020/101, the Commission on Population and Development decided that the theme for its fifty-fifth session in 2022 would be "Population and sustainable development, in particular, sustained and inclusive economic growth" (see E/2020/25). The present report has been prepared to inform the Commission's deliberations on that topic.

In the report, the Secretary-General examines linkages between population and sustainable development, with an emphasis on the implications of population change for macroeconomic growth and fiscal sustainability, and for inequalities and social inclusion in the context of the coronavirus disease (COVID-19) pandemic. He investigates the relationships linking selected demographic patterns and trends to poverty and inequality, and highlights the unpaid contributions of women to general housework and direct care. In addition, the Secretary-General reviews evidence on the connections between population and environmental sustainability, including the relative importance of population growth as a driver of climate change.



* E/CN.9/2022/1.



I. Introduction

1. As the population of the world approaches 8 billion, its growth rate continues to slow. The global population was increasing by around 1.5 per cent per year in the early 1990s, compared with less than 1 per cent at present, and the rate of increase is projected to continue to fall over the coming decades. Decelerating growth is common during the later stages of the demographic transition from high to low levels of fertility and mortality.

2. Diversity in the timing, speed of change and other characteristics of the transition has generated considerable demographic heterogeneity around the globe, from the fast-growing and youthful populations of sub-Saharan Africa and Southern Asia to the slow-growing and older populations of Europe, Northern America and parts of Eastern Asia and the Caribbean. For some countries in the latter group, the growth rate is now negative, and the population is decreasing in size.

3. All components of population change have been affected by the coronavirus disease (COVID-19) pandemic. By the end of 2021, countries around the world had reported 5.4 million deaths attributed to the disease. In 2020 and 2021, the number of births declined more than expected in some countries, while the number of international migrants increased more slowly than expected, and may even have fallen, owing to travel restrictions imposed during the pandemic. Beyond these short-term effects, it is unclear whether the pandemic will have an impact on long-term trends in mortality, fertility and migration.

4. Population growth has significant built-in inertia, because it skews the population towards younger ages. Consequently, short- and medium-term population trends are difficult to influence through public policies. Nonetheless, using population projections and other available information, Governments can anticipate demographic trends and prepare for their consequences.

5. Once fertility begins to fall, partly in response to improved survival rates among infants and children, the changing age distribution of the population becomes a positive force for economic growth, provided that labour markets successfully absorb the rapidly growing number of people in the working age ranges. During this intermediate stage of the demographic transition, population dynamics facilitate an accelerated increase in income and consumption per capita, often referred to as the first demographic dividend.

6. The first dividend gives way to a second demographic dividend as populations shift towards older ages. Population ageing can lead to increased capital intensity in the economy, which may be enhanced further if individuals who anticipate longer lifespans and more time in retirement respond by increasing their asset accumulation accordingly.¹ Individuals and couples with fewer children can devote more resources to preparing for old age by saving and accumulating wealth over the course of their lives.

7. The decline in fertility also facilitates increasing investments in human capital. Women may encounter more and better economic opportunities as they redirect more of their time to education and paid work. Smaller families can and often do invest more per child in health and education (see E/CN.9/2017/2), and these investments also contribute to achieving sustained and inclusive economic growth.

8. At the beginning of the demographic transition, gains in life expectancy at birth are driven mostly by declines in infant and childhood mortality, leading to an increased share of the population at younger ages. Later in the transition, further improvements

¹ Andrew Mason and others, "Support ratios and demographic dividends: estimates for the world", Population Division Technical Paper, No. 2017/1 (New York, 2017).

are driven mostly by reductions in mortality at older ages. While living longer and healthier lives brings potential economic benefits and personal opportunities,² increased longevity together with declining fertility boosts the proportion of older persons in the population, which can increase fiscal pressures on public budgets depending on the choices made by Governments in the allocation of resources to different age groups.

9. Such pressures are affected by levels of economic activity and productivity across all age ranges. A common approach to alleviate some of the fiscal pressures associated with an increasingly older population is to increase the statutory, or official, age of retirement.³ While such changes may be beneficial from an aggregate fiscal perspective, they may also exacerbate pre-existing inequalities related to differences in life expectancy across social groups⁴.

10. In virtually all societies, the public sector has a central role in planning for, regulating and providing various essential services, including health care, education, social protection and public infrastructure, the demand for which is affected by changing population age structures. However, the public sector is not the sole mechanism or institution facilitating inter-age transfers or other reallocations of resources. The market and family networks also play a role, and they too can be affected by demographic changes.

11. Population dynamics and social inclusion are interlinked. High fertility and rapid population growth continue to be associated with a high prevalence of poverty, especially in countries at the early and intermediate stages of the demographic transition.

12. For countries at later stages of the demographic transition, the progressive ageing of the population can lead to increasing capital intensity⁵ and may exacerbate economic inequality, since inequality tends to be greater in the ownership of assets and capital than in labour income (the so-called "Piketty effect"). At the same time, trends in inequality and social inclusion in health care, education and other sectors affect demographic trends.⁶

13. Significant progress towards the reduction of gender inequality has taken place in recent decades, as reflected in the levels of educational achievement and the adoption of laws to protect against domestic violence. Yet discriminatory legislation and practices remain in place in many countries, affecting not only education but also employment, legal protection, access to services and political participation. For economic growth to be truly inclusive, it must create decent work and productive employment opportunities for both women and men, and it must recognize and value general housework and direct care.

14. Although there has been a significant decrease in global poverty in the past two decades, progress was uneven across regions and has been interrupted globally by the pandemic.⁷ The pandemic has had a devastating impact on vulnerable social groups and amplified pre-existing inequalities within and across countries, including inequalities in access to health care.

² World Health Organization (WHO), "Decade of healthy ageing 2020–2030", December 2020; and Jean-Marie Robine, "Ageing populations: we are living longer lives, but are we healthier?", UN DESA/POP/2021/TP/NO.2, September 2021.

³ United Nations, "Demographic trends in an ageing world", in *Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of Our Time* (United Nations publication, 2020).

⁴ National Academies of Sciences, Engineering and Medicine, *The Growing Gap in Life Expectancy by Income: Implications for Federal Programs and Policy Responses* (Washington, D.C., National Academies Press, 2015).

⁵ Capital intensity is defined as the amount of capital available in the economy relative to other factors of production, including the number of workers.

⁶ United Nations (2020), "Demographic trends in an ageing world" (see footnote 3 above).

⁷ World Economic Situation and Prospects 2021 (United Nations publication, 2021).

II. Population trends: convergence and heterogeneity

15. Life expectancy at birth has been converging across countries of different income levels. Between the periods 1950–1955 and 2015–2020, the gap between the least developed countries and the more developed regions was nearly halved, from 29 to 15 years (upper panel of figure I), driven mainly by sharp declines in child mortality. Nevertheless, significant differences remain: the least developed countries have overall mortality levels similar to those of the more developed regions in the 1950s.

16. There was also some convergence in levels of fertility between the least developed countries and the more developed regions, although the average gap remains quite large (lower panel of figure I). There are, however, some notable exceptions. In Bangladesh, for example, the most populous of the least developed countries, the total fertility rate was 6.9 births per woman in the period 1970–1975, more than three times the level of the most populous developed nation, the United States of America; by the period 2015–2020, the gap in total fertility between the two countries had narrowed to 0.28 births per woman.

Figure I

Trends in life expectancy and total fertility in more and less developed regions, from the periods 1950–1955 to 2015–2020



Source: World Population Prospects 2019 (United Nations publication, 2019).



Source: World Population Prospects 2019 (United Nations publication, 2019).

17. Regional and local idiosyncrasies regarding the timing, pace and other characteristics of the demographic transition have generated considerable demographic heterogeneity worldwide. Countries that entered the process later, many of which are in sub-Saharan Africa, are growing rapidly and have youthful population age structures, with median ages between 15 and 19 years. Countries from the more developed regions, with fertility levels around or below the replacement threshold of 2.1 births per woman,⁸ are growing slowly, if at all, and have much older age distributions, with median ages between 45 and 48 years. The size of the older population in these countries continues to increase, driven by continuing reductions in mortality across the age range, including at older ages.

18. By 2050, the share of the population 65 years of age or older is expected to reach 27 per cent in high-income countries, whereas in low-income countries, it will remain at around 5 per cent. However, there will be some convergence in these trends between certain groups of countries: for example, between upper-middle-income and high-income countries.

19. In addition, there is considerable heterogeneity regarding health status. Ageing is associated with an increased prevalence of non-communicable diseases, declining cognitive function and increased disability at older ages, but these issues affect people to varying degrees across countries.⁹ Overall, the loss of years of life owing to premature death or disease is much higher in low-income and lower-middle-income countries than in high-income and upper-middle-income countries, especially among older persons. A useful benchmark for international comparisons is the average prevalence of age-related health conditions for the average 65-year-old worldwide. The average Japanese person reaches a similar health status at the age of 76, ¹⁰ while the same benchmark is reached at the age of 46 in Papua New Guinea. In other words, there is a full 30-year gap in the two countries that separates the highest and lowest ages at which people experience the health status of an average 65-year-old globally. Similar differences can be observed in cognitive functioning, with persons in developing countries exhibiting lower scores overall.

20. International migration affects the population size and other characteristics of some countries. Between 1990 and 2017, the net inflow of migrants was larger than the excess of deaths over births for most countries of Western, Northern and Southern Europe, so migration helped to ensure continuing population growth when the size of these populations might otherwise have fallen. Immigration also kept these societies slightly younger than they would otherwise have been, since migrants are typically younger than the population at destination.

21. By contrast, many countries of Central and Eastern Europe experienced a net outflow of migrants between 1990 and 2017. Therefore, the loss of population resulting from an excess of deaths over births in that period was reinforced by international migration. In Bosnia and Herzegovina, Latvia and Lithuania, for example, populations have declined by more than 25 per cent over the past three decades.

⁸ The replacement level of total fertility, which equals 2.1 births per woman in low-mortality settings, ensures a population growth rate of zero in the long run.

⁹ Robine, "Ageing populations" (see footnote 2 above); and André Cezar Medici, "Health sector challenges and policies in the context of ageing populations", UN DESA/POP/2021/TP/NO.3, November 2021.

¹⁰ Angela Y. Chang and others, "Measuring population ageing: an analysis of the Global Burden of Disease Study 2017", *The Lancet: Public Health*, vol. 4, No. 3 (2019).

III. Population, macroeconomic growth and fiscal sustainability

Population and macroeconomic dynamics

22 The decline of fertility during the demographic transition typically results in a temporary increase in the size of the working-age population as a proportion of the total population. This change provides a time-bound opportunity for the accelerated growth of economic output on a per capita basis, known as the first demographic dividend. The dividend allows the population to enjoy higher living standards and invest in the future.

23. At the global scale, the boost in economic growth associated with the first demographic dividend was highest during the last few decades of the twentieth century, mainly owing to demographic trends in Eastern Asia and in Latin America and the Caribbean. Increasing productivity (output per worker) was a major driver of global economic growth between 1950 and 1975; however, during the last quarter of the century, growth in global gross domestic product (GDP) was driven more by demographic changes than by increasing productivity.¹¹

24. The first demographic dividend is driven by regional trends that vary in terms of timing, duration and magnitude. In Africa, the period of the first dividend began in 1993 and is expected to last for 92 years; its cumulative impact will be an additional growth of 35 per cent in income per capita. In Asia, the dividend is also projected to boost personal income by around 35 per cent but over a period that began in 1975 and is predicted to last for 58 years.¹²

25. The next set of figures illustrate recent and projected economic growth for different groups of countries, considering the proportion of the population in the working age ranges together with other key economic variables. Figure II shows that, until recently, only the euro area countries were experiencing a negative contribution to growth in per capita GDP owing to a declining share of the working-age population.

26. The "non-Organisation for Economic Co-operation and Development" (non-OECD) countries depicted in figure II (see the definition in the accompanying note) can expect a positive contribution to per capita economic growth as a result of increases in the proportion of the working-age population up to and including 2030, but this effect is expected to diminish over time. Beyond 2030, the projections suggest that, for all country groupings depicted in figure II, changes in the share of the working-age population will have a negative impact on the growth of per capita income. Figure III suggests that, for all groups of countries considered in this analysis, future economic growth will depend primarily on capital intensification and gains in labour efficiency.

¹¹ Mason and others, "Support ratios and demographic dividends" (see footnote 1 above).

¹² For a complete description of the size and timing of the demographic dividends, see United Nations, "Demographic trends in an ageing world" (see footnote 3 above).

Figure II

Contribution of the changing share of the working-age population to the annual growth of real output per capita, for the world and selected groups of countries, estimates from 2000 to 2018 and projections from 2018 to 2060



Source: Yvan Guillemette and David Turner, *The Long View: Scenarios for the World Economy to 2060*, OECD Economic Policy Papers, No. 22 (Paris, OECD Publishing, 2018).

Note: "World" represents 46 countries that account for 82 per cent of total world output. "Non-OECD" refers to Brazil, Russian Federation, India, Indonesia, China and South Africa plus Argentina and Saudi Arabia.

Figure III

Projected contributions of four components to the annual growth of real output per capita, for the world and selected groups of countries, 2030–2060



Source: Guillemette and Turner, *The Long View*. *Note*: For country groupings, see figure II and the note thereto. 27. Countries at more advanced stages of population ageing are projected to experience declining economic support ratios ¹³ in the coming decades, with implications for how individuals will be able to finance their consumption after they stop working. Some older persons, especially in high-income and upper-middle-income countries, draw significant income from assets and therefore are less dependent on private or public transfers. Within countries and at the global scale, however, this group of people is typically a wealthy minority. In countries whose pension systems have broad coverage and adequate benefits, the flow of resources between generations that is necessary to support consumption at older ages is achieved largely or entirely through public transfers.

28. In addition, the macroeconomy is affected by international migration, which brings benefits to countries of origin and destination in many, but not all, cases. Since migrants bring with them the human capital acquired earlier, countries of origin forfeit the return on their investment, while destination countries benefit from increased production and tax revenues. In some cases, there may also be a "brain drain" resulting from the emigration of highly skilled workers that can lower productivity in origin countries. For example, emigration from countries of Central and Eastern Europe has had various adverse economic effects. According to the International Monetary Fund, the loss of highly educated individuals through emigration poses a significant challenge to the health-care, social security and pension systems of the countries in the region.¹⁴

29. Nevertheless, countries of origin can also benefit from migration, because the productivity of migrant workers is typically higher in destination countries and generates higher earnings, which migrants often share by sending remittances to family members who remain in the country of origin. Origin communities can also benefit from foreign direct investments associated with the transnational population and from skills and education acquired abroad by returning migrants.¹⁵

Fiscal sustainability

30. It has been noted above that, as societies go through the demographic transition, survival rates typically increase first for children and young people and, to a lesser degree, for adults of working age; however, at higher levels of life expectancy, subsequent increases have been driven mainly by substantial and unprecedented reductions in mortality rates at older ages.¹⁶ The progressive lengthening of the average life span would raise the cost per worker of supporting the older population if the age marking the transition from active to inactive periods of the lifecycle were fixed. For countries in this situation, unless the average age of retirement increases, the pressure on public budgets could become unsustainably high in the future. For example, in the 2021 Ageing Report of the European Commission,¹⁷ it is indicated that the share of GDP spent by the Government on age-related programmes in Luxembourg and Slovakia, respectively, could increase by 10 percentage points by 2070. The growth of

¹³ For the ratio of effective producers to effective consumers, see Mason and others, "Support ratios and demographic dividends" (see footnote 1 above).

¹⁴ Cristina Batog and others, *Demographic Headwinds in Central and Eastern Europe*, European Department Series, No. 19/12 (Washington, D.C., International Monetary Fund (IMF), 2019).

¹⁵ Michael A. Clemens, "Migration is a form of development: the need for innovation to regulate migration for mutual benefit", United Nations, Department of Economic and Social Affairs, Population Division Technical Paper, No. 2017/8 (2017).

¹⁶ Karen N. Eggleston and Victor R. Fuchs, "The new demographic transition: most gains in life expectancy now realized late in life", *Journal of Economic Perspectives*, vol. 26, No. 3 (Summer 2012).

¹⁷ European Commission, The 2021 Ageing Report: Economic and Budgetary Projections for the EU Member States (2019–2070), Institutional Paper, No. 148 (Luxembourg, 2021).

public spending in European Union countries is mostly in the areas of health care and long-term care, which is only partially offset by reduced spending on education and by reform proposals or measures already in place to balance pension budgets.

31. Public debt is also affected by demographic trends. For example, Eastern Asia is experiencing very rapid population ageing, which is projected to have significant impacts for the public finances of countries in the region. As a result of anticipated budget deficits in the Republic of Korea, net public debt as a percentage of GDP is projected to more than double, from 12 per cent in 2020 to 29 per cent in 2050, in the absence of compensatory changes in relevant policies and programmes.¹⁸ In the same scenario, net public debt in Japan is projected to increase from 175 per cent of GDP in 2020 to an unprecedented 424 per cent in 2050. Policy options for responding to such scenarios include investing in lifelong learning, promoting healthy lifestyles across the age range and raising the official retirement age.

32. Higher levels of education and better health throughout life can help to delay the age-related decline of physical and cognitive functioning and enable people to work until later in life. A roughly parallel increase in life expectancy and the average retirement age has been observed, for example, in some countries of Central and Eastern Europe. In a group of eight countries in that region, the average age of retirement increased by 3.5 years over 15 years, from 58.4 in 2001 to 61.9 in 2016, while remaining life expectancy at the average age of retirement was almost unchanged: 20.6 years in 2001 versus 20.5 years in 2016. Since gains in life expectancy at older ages were offset almost exactly by the postponement of retirement, the further ageing of the population in this situation did not translate into added pressure on Government budgets.

33. The increase of the average retirement age in the eight countries of Central and Eastern Europe was facilitated by a substantial rise in the educational levels of retiring cohorts. In 2001, 37 per cent of persons 55-64 years of age had a lower secondary education at most; by 2016, that proportion had dropped to 13 per cent. Over the same period, the proportion of persons 55-64 years of age who held the equivalent of a *matura, Abitur* or *baccalauréat* as their highest academic qualification grew from 49 to 65 per cent, while the proportion with tertiary degrees rose from 14 to 22 per cent. Higher levels of education made it possible for more people to remain employable at older ages following the transition to knowledge-based economies.

34. However, human capital-induced improvements in the employability of the older population have not always been followed by increases in the average age at which people retire. A divergence between trends in longevity and the average retirement age has resulted in an "untapped work capacity" of an estimated 4.12 million older workers in Japan, whose potential labour income was estimated to be between three and six per cent of GDP in 2015.¹⁹ The mobilization of the untapped work capacity of older persons could relieve the pressure on public budgets by increasing the size of the labour supply that helps to fund the pension and health-care systems while postponing pension payments.

35. The presence of an untapped work capacity may also provide a political opening for policymakers to raise the official retirement age and make other adjustments to benefits and contributions in order to ensure the long-term sustainability of pension systems. There are, however, important issues of equity that require consideration when contemplating an increase in the retirement age. As there are differences in remaining life expectancy across social and economic groups, a uniform, constant

¹⁸ S.-H. Lee, A. Mason and D. Park, "Aging and debt", in *The Sustainability of Asia's Debt*, Benno Ferrarini, Marcelo M. Guigale and Juan J. Pradelli, eds. (forthcoming).

¹⁹ Naohiro Ogawa and others, "Population aging and the three demographic dividends in Asia", *Asian Development Review*, vol. 38, No. 1 (2021).

increase in the retirement age would mean that the loss in years of retirement as a fraction of the total years of retirement would differ across groups.

36. While the importance of equity as a consideration in proposals for pension reform is widely acknowledged, and while some theoretical remedies have been proposed,²⁰ there are conceptual and practical challenges for establishing a fair and politically acceptable adjustment scheme. In this context, some countries have moved forward to raise the retirement age despite potentially unequal impacts across the population. When setting in motion a uniform two year increase in the official retirement age of the United States, the Government mandated a study of the impact of raising the retirement age on older workers in physically demanding jobs or ill health.²¹ Other countries, such as France, have different minimum retirement ages depending on the physical requirements of the work.²²

Familial support networks

37. In addition to the public sector, market institutions and familial networks play important roles as providers or agents of intergenerational transfers. Their relative weight depends on a country's history, social norms and technology. Figure IV depicts the contribution of four mechanisms to consumption in each age group, using data for the European Union. It illustrates the salient role of private transfers within families as well as transfers within the public sector for the support of children and adolesc ents. Conversely, among older persons in Europe, consumption is financed almost entirely through a combination of public transfers and revenues from their own assets.

Figure IV

Four mechanisms for financing per capita consumption (labour income, public transfers, private transfers and asset-based revenues), by age, for the European Union, 2010



Source: Tanja Istenič, Bernhard Hammer and Alexia Prskawetz, "European national (time) transfer accounts", in Vienna Yearbook of Population Research 2019, vol. 17, Bernhard Hammer, Ronald Lee, Alexia Prskawetz and Miguel Sanchez-Romero, eds. (Vienna, Austrian Academy of Sciences Press, 2019).

²⁰ Geoffrey T. Sanzenbacher and others, "Calculating neutral increases in retirement age by socioeconomic status", Centre for Retirement Research Working Paper, No. 2015-22 (Chestnut Hill, Massachusetts, 2015); and Congressional Research Service, "The social security retirement age", 8 January 2021.

²¹ Social Security Administration, United States of America, "Increasing the social security retirement age: older workers in physically demanding occupations or ill health", *Social Security Bulletin*, vol. 49, No. 10 (October 1986).

²² See www.service-public.fr/particuliers/vosdroits/F2786.

38. Familial networks offer obvious advantages in the provision of personal care and operate with low transaction costs. However, individual families comprise relatively small risk pools. While support for the older population has gradually shifted to public or market-based systems in many countries, the family remains the primary mechanism for supporting children and child-rearing in all countries.

39. Data for Japan shed light on the connections between the various channels of inter-age transfers and changing social norms and expectations. In a periodic survey of married Japanese women of reproductive age, the respondents were asked about personal expectations concerning the support they would receive at older ages. In 1950, about two thirds of respondents expected to rely on their children. However, as the coverage of medical and pension programmes increased, especially after 1961 when such programmes became universal, those expectations started to be eroded. Today, only around 5 per cent of respondents expect to depend on their children when they are older. Similarly, from the early 1960s to the mid-1980s, between 75 and 80 per cent of respondents considered giving support to their older parents to be a "good custom" and a "natural duty". However, that proportion dropped precipitously by about 25 percentage points after 1986, when public in-home care services were introduced; it oscillated between 45 and 50 per cent from 1990 to 2010 before dropping further after 2010 to its current level of about 20 per cent.

IV. Population, sustained and inclusive economic growth

40. Inequality and inclusive growth are receiving renewed attention in the context of sustainable development. By definition, a central objective of sustainability is equity between generations and over time, or at least the absence of severe inequities. If sustainability implies the avoidance of inequality across time, it becomes difficult to justify a tolerance for extreme levels of inequality in the present.²³ In this way, the objectives of sustainability, equity and inclusion are closely intertwined.

Population dynamics and social inclusion

41. Researchers often describes an inverted U-shape in the evolution of inequality during the demographic transition.²⁴ In the early stages of the transition, fertility differences across socioeconomic strata tend to increase, as fertility control is typically adopted first by people in the higher socioeconomic groups, creating fertility differences that can exacerbate other social and economic inequalities. As family planning becomes more widely available and used across population groups, differences in reproductive behaviour tend to diminish, narrowing the fertility gap across socioeconomic groups.

42. Another mechanism through which the demographic transition affects inequality is the increased capital intensity associated with population ageing. Since assets are generally more concentrated than human capital, asset income is more unequally distributed than labour income. In developed countries, the extensive capital accumulation during the decades that followed the Second World War, as well as changes in the tax system, resulted in steadily growing shares of asset-based income in total personal and household income since the 1970s, which was associated with an increasing concentration of income among the top earners. For example, between 1970 and 2010 the share of total income received by the top income decile increased from 33 to 47 per cent in the United States and from 31 to 37 per cent in

²³ Robert M. Solow, "Inter-generational equity, yes-but what about inequity today?", United Nations Development Programme (UNDP), 1996.

²⁴ Frank-Borge Wietzke, "Poverty, inequality, and fertility: the contribution of demographic change to global poverty reduction", *Population and Development Review*, vol. 46, No. 1 (March 2020).

Europe.²⁵ The slowdown in population growth and population ageing have reinforced this process.²⁶ Levels of economic inequality have risen also in other affluent and in developing countries as well.²⁷

43. Changing patterns of social inclusion have impacts on demographic trends. For example, expanded access to health care, education and pensions has contributed to mortality and fertility declines in many countries. Conversely, fertility declines have helped to improve health conditions, expand access to education and reduce the prevalence of poverty (see E/CN.9/2009/3).

44. Nevertheless, lack of inclusion continues to be a problem in many countries, and access to basic services remains highly unequal. Several Sustainable Development Goal targets calling for increased coverage or universal access to essential services remain unfulfilled and will be difficult to achieve by 2030 in some cases. For example, target 3.7 of the Goals (ensuring universal access to sexual and reproductive health-care services), is off track in many countries and regions and will require accelerated progress to be reached by 2030. Stalled or slow progress in this area is likely to impede progress in gender equality, education and other areas as well.

Gender, inclusive growth and inclusive data

45. The assessment of inequality has traditionally been based on the analysis and comparison of households. As gender inequality has received greater attention in the global development agenda, the insufficiency of household-level measures of economic well-being and levels of poverty have become more evident. Standard national statistics do not capture the economic and social value of unpaid labour, in particular for general housework and direct care.

46. Despite inherent difficulties, there has been progress in measuring unpaid work thanks to recent initiatives in gender statistics. Examples include the Global Gender Statistics Programme led by the Statistics Division of the Department of Economic and Social Affairs of the Secretariat, the Counting Women's Work project²⁸ and the Gender Group of the World Bank.

47. Currently available data point to a slight overrepresentation of women among people living in poor households.²⁹ Gender differences seem to be most prominent in the prime productive and reproductive ages, between the early 20s and mid-30s, when women are two percentage points more likely than men to live in poor households. The gap is partly explained by the significant number of women living with children but no partner, in contrast to non-partnered men, most of whom live in households without children.

48. Gender gaps are also well-documented for non-monetary dimensions of wellbeing. For example, adult women are less likely to be literate than adult men in many less developed countries, although this is changing rapidly as female enrolment rates have risen among younger cohorts. Moreover, in some countries the average educational achievement of girls exceeds that of boys. Women, on average, are more "time-poor"

²⁵ Thomas Piketty, *Capital in the Twenty-First Century* (Cambridge, Massachusetts, Harvard University Press, 2014), p. 324, fig. 9.8.

²⁶ Joshua R. Goldstein and Ronald D. Lee, "How large are the effects of population aging on economic inequality?", *Vienna Yearbook of Population Research*, vol. 12 (2014).

²⁷ See www.un.org/en/un75/inequality-bridging-divide.

²⁸ See www.countingwomenswork.org/about/who-we-are.

²⁹ Isis Gaddis, "Gender and age differences in poverty: measuring inequality within households", presentation during the virtual Expert Group Meeting on Population and Sustainable Development, July 2021.

than men due to the double burden of paid and unpaid work, and they are less likely to own property and other assets that would make them financially independent.

49. A significant source of gender inequality is the typical division of labour, with men doing more paid work and women doing more unpaid work, including general housework and direct care. Data from the Counting Women's Work project covering 18 countries from different regions suggest that the share of unpaid work represents over half of the total working hours in some countries, with proportions ranging from around 30 to 60 per cent.³⁰ Valuing time at an imputed market wage suggests that the aggregate value of unpaid care work is equal to between 12 and 55 per cent of GDP in the countries studied.³¹

50. Age profiles of the amount of time spent doing unpaid work varies from one country to another. Countries such as Bangladesh, India and Mexico have a single peak in the age profile of hours of housework per week, which is concentrated among women of reproductive age (see figure V). In other countries, for example Germany and Spain, the age profile has a double hump, reflecting the concentration of caregiving in two phases of life, one related to childbearing and child-rearing, and the other to caring for older spouses and grandchildren.

Figure V

Levels of unpaid general housework and direct care by age and sex for selected countries (average hours per week)



Source: www.countingwomenswork.org/data.

³⁰ See the results compiled by the Counting Women's Work project, available at www.countingwomenswork.org.

³¹ The Counting Women's Work project applies a novel methodology, the National Time Transfer Accounts, based on time-use surveys, to: (a) separate activities representing work from other daily activities; (b) assign them monetary values; and (c) identify the consumers of the goods and services produced by this labour.

51. Children benefit the most in this regard, as they consume (receive) on average the largest amount of unpaid care work per week in the 18 countries. By contrast, net time transfers (time received minus time given) remain negative for older persons, since they tend to make time transfers to others that exceed those received until reaching very old ages.

Social inclusion and the coronavirus disease (COVID-19) pandemic

52. Although COVID-19 has exacerbated various types of inequalities, global inequality in income and wealth was on the rise before the pandemic hit and is currently at record levels.³² By the early 2010s, almost half of the world's wealth was owned by just 1 per cent of the population, and 7 out of 10 people lived in countries where economic inequality had increased in the previous 30 years.³³ The Inequality-adjusted Human Development Index, which adjusts the standard Human Development Index by the level of inequality within a country for each component of the index (longevity, education and income), suggests that levels of human development are diminished on average by 20 per cent globally due to inequality.³⁴

53. The steady reduction in poverty before the emergence of COVID-19 has been interrupted by the multi-pronged crises produced by the pandemic, which has reversed much of the progress made over the past few decades. More than half of the world's population remains uncovered by social protection, especially in developing countries with a large informal sector. As a result, more than 100 million people have been pushed into extreme poverty since the COVID-19 outbreak, reversing decades of progress. Yet the goal of ending poverty by 2030 was already off track before the pandemic, reflecting the influence of broader structural factors that have been limiting progress.

54. In addition to the direct impact of COVID-19 on mortality, the pandemic has critically affected the health status of the population, beyond the direct impact of COVID-19 itself ³⁵ Hospitals and outpatient units cancelled elective medical procedures and surgeries to slow transmission of the virus. Most of these cancellations reduced medical care for non-communicable diseases, worsening the health conditions especially of older people and generating an increase in premature mortality associated with such diseases. In addition, many older people were vulnerable to mental illness, negligence and abuse as a result of isolation and physical distancing measures.

55. The pandemic may have exacerbated the gender gap along several dimensions. Women represent 70 per cent of the health and social sector workforce globally. In addition, since most housework and direct care are carried out by women, school closures to prevent transmission of the virus increased the burden on women and limited their access to economic opportunities in the labour market. ³⁶ Data from 40 (mostly developing) countries indicate that women were eight percentage points more likely than men to stop working in the initial phase of the pandemic.³⁷

³² UNDP, Human Development Report 2020: The Next Frontier – Human Development and the Anthropocene (New York, 2020).

³³ Oxfam, Working for the Few: Political Capture and Economic Inequality, Oxfam Briefing Paper, No. 178 (Oxford, United Kingdom of Great Britain and Northern Ireland, 2014).

³⁴ UNDP, Human Development Report 2019: Beyond Income, Beyond Averages, Beyond Today – Inequalities in Human Development in the 21st Century (New York, 2019).

³⁵ Medici, "Health sector challenges" (see footnote 9 above).

³⁶ United Nations Population Fund, "COVID-19: a gender lens – protecting sexual and reproductive health and rights, and promoting gender equality", March 2020.

³⁷ Maurice Kugler and others, *How Did the COVID-19 Crisis Affect Different Types of Workers in the Developing World*?, Jobs Working Paper, No. 60, (Washington, D.C., World Bank, 2021.

V. Population, climate change and environmental sustainability

56. Environmental damage often arises from economic processes that lead to higher standards of living for the population, especially when the full social and environmental costs, such as damage from pollution, are not factored into economic decisions about production and consumption. Population growth amplifies such pressures by adding to total economic demand.

57. With the continuing growth of populations and economies during the twentieth and twenty-first centuries, it has become increasingly clear that human activities are warming Earth's climate, mainly because the fossil fuels providing most of the energy that drives economic development are increasing the atmospheric concentration of greenhouse gases. There is a near-linear relationship in fact between cumulative anthropogenic carbon dioxide emissions and the global warming they cause.

58. In its latest report, entitled *Climate Change 2021: The Physical Science Basis*, the Intergovernmental Panel on Climate Change documents major changes of climate in every region and throughout the global climate system. It indicates that the existence of human-induced climate change is undisputed among scientists. Moreover, the scale of recent changes is unprecedented over centuries or millennia, and many changes are irreversible on a similar time scale, especially those affecting the ocean, ice sheets and global sea level. According to the Panel, by 2019, the Earth's average temperature had already risen by about 1.1° C above pre-industrial levels, rapidly approaching the threshold of 1.5° C identified in the 2015 Paris Agreement.

59. Although the combustion of fossil fuels has been adding carbon dioxide to the atmosphere for centuries, most of the emissions have occurred since 1950, and most have been contributed by today's high-income and upper-middle-income countries. These two groups of countries, which together contain half the world's population, were responsible for about 85 per cent of the CO_2 added to the atmosphere in 2020. Lower-income and lower-middle-income countries, in which most future population growth is projected to take place, have so far contributed significantly less to these emissions, both in total and on a per capita basis.

60. There is also a strong correlation between income and emissions within countries since the lifestyles of the rich tend to be much more energy-intensive than those of the less affluent. It is estimated that the richest 10 per cent of the global population accounts for nearly half of the carbon dioxide emissions, and that the top 1 per cent alone is responsible for more annual emissions than the bottom half.

61. Climate change is likely both to amplify existing risks and to create new risks for natural and human systems such as human health, food security and the security of societal conditions. While all parts of the world will be affected by rising surface and ocean temperatures as well as increased frequency of extreme weather events, including heat waves and severe storms and droughts, the negative impacts of global warming will be unevenly distributed and are likely to be greater for disadvantaged people and communities and for low-income countries that lack resources to adapt to a changing climate. In his report entitled "Our Common Agenda" (A/75/982), the Secretary-General proposed a solidarity package of support to developing countries for climate finance that included the goal of providing \$100 billion per year, of which half would be allocated to strengthening adaptation and resilience, as well as the provision of technological support and capacity-building.

62. In its report, the Panel affirmed that human action could still alter the future course of climate trends by achieving rapid reductions in emissions of carbon dioxide and other greenhouse gases. It emphasizes that urgent action was needed to mitigate further change and to avoid scenarios of severe and irreversible damage. The risk of

passing the threshold of 1.5 degrees Celsius above pre-industrial levels is imminent. As the Panel made clear, emissions must be reduced dramatically, to achieve a 45 per cent reduction by 2030 and net zero emissions by 2050.

63. In working to achieve sustainable patterns of consumption and production and to reduce the impacts of human activity on the environment, it is important to recognize that plausible future trajectories of world population lie within a relatively narrow range, especially in the short or medium term. Over the next 30 or 40 years, a slowdown in global population growth that is substantially faster than anticipated in United Nations projections seems highly unlikely.

64. Even though the pace of global population growth will continue to decline in the coming decades, world population is likely to be between 20 and 30 per cent larger in 2050 than in 2020. In this context, the extent and severity of climate change will depend largely on the scope and effectiveness of measures to decouple economic activities from carbon dioxide emissions, both through improved energy efficiency and by switching away from fossil fuels to zero-carbon or low-carbon energy sources, including renewables, nuclear energy, and fossil or bioenergy coupled with carbon dioxide capture and storage.

65. To achieve the Sustainable Development Goals related to poverty, hunger and malnutrition, health, education, gender equality and decent work, among others, the economies of low-income and lower-middle-income countries will need to grow much more rapidly than their populations in the coming years, requiring greatly expanded investments in infrastructure as well as increased access to affordable energy and modern technology in all sectors. Wealthy countries and the international community can help to ensure that these countries receive the necessary technical and financial assistance so that their economies can grow using technologies that will minimize future greenhouse gas emissions.

VI. Conclusions and recommendations

66. As the world's population approaches 8 billion, its growth continues to decelerate; the annual growth rate fell from around 1.5 per cent in the early 1990s to less than 1 per cent at present. While the populations of most countries are increasing, a small but growing number have started to experience population decline.

67. Population projections can help Governments to anticipate future demographic trends and prepare for their consequences. Effective use of such projections can facilitate the integration of population into development planning, as called for by the Programme of Action of the International Conference on Population and Development. Similarly, in "Our Common Agenda", the Secretary-General highlighted the importance of strengthening capacities to understand and assess the future and to build long-term thinking into policies and decision-making.

68. Lower fertility and slower population growth produce a more aged population distribution, which can increase fiscal pressure on public budgets depending on choices made by Governments in the allocation of resources to different age groups. Fiscal pressures associated with population ageing have been evident for many years in countries of the more developed regions, where persistent low levels of fertility have been common for several decades and where Governments spend more per capita on older persons than on children. Such pressures have started to emerge more recently in some middle-income countries. 69. In many middle- and low-income countries, the coverage and adequacy of social protection is limited. Promoting retirement savings can improve the financial independence of individuals and increase capital accumulation.

70. Sustainable development, which is based on a long-run and generational perspective, can be achieved only if Governments and the international community act swiftly to address major challenges, including economic inequality and social exclusion, fiscal and macroeconomic disequilibria, and environmental degradation, including climate change.

71. Global population growth is slowing down, and the rate of increase is projected to continue to fall through 2100. Plausible future trajectories of world population lie within a relatively narrow range over the next 30 or 40 years, suggesting that renewed efforts to constrain growth would contribute relatively little, compared with potential changes in patterns of production and consumption, to mitigating the threat posed by climate change over the next few decades. Nevertheless, the cumulative effects of slower population growth over many decades could help to mitigate the further accumulation of environmental damage in the second half of the current century.

72. Countries of the more developed regions have historically contributed the most to cumulative greenhouse gas emissions and, by international consensus, are expected to take the lead in reducing them; their populations are now growing slowly if at all, whereas countries with rapidly growing populations tend to have low incomes and low emissions.

A. Embracing the generational perspective

73. Governments and the international community are urged to adopt best practices in the use of long-term demographic, economic and climate forecasts to inform ongoing efforts to build inclusive and sustainable societies.

74. Member States and other stakeholders are invited to consider taking concrete steps to account for the interests of future generations in national and global decision-making, for example by establishing committees for the future or future generations of commissioners who would advise Governments and public bodies on the effects of present decisions on people in the future, including for sustained and inclusive economic growth.

B. Sustained economic growth and fiscal sustainability

75. Countries should give priority to developing the human capital of all residents, including by increasing access to high-quality education and lifelong learning, taking into account present and future skills requirements and employment opportunities.

76. Governments should promote retirement savings by ensuring universal access to financial investments that are safe, affordable and actuarially fair, starting at young working ages, and by making efforts to enhance financial literacy and providing incentives to encourage savings through the use of incentives and convenient enrolment options.³⁸

77. Governments may wish to consider increasing the retirement age in proportion to anticipated increases in life expectancy at older ages to support the

³⁸ World Population Ageing 2019: Highlights (United Nations publication, 2019).

fiscal sustainability and generational equity of public pension systems. In doing so, Governments are encouraged to consider the impact of differences in life expectancy between social groups and to explore ways of ensuring that changes in the statutory retirement age do not amplify existing inequalities.

C. Inclusive growth

78. In their efforts to eradicate extreme poverty, Governments should be aware of linkages between demographic variables and poverty. They may wish to acknowledge, for example, that reductions in fertility and in child and maternal mortality resulting from increased access to sexual and reproductive health care, including for family planning, also contribute to the reduction of poverty and to the attainment of sustained and inclusive economic growth

79. Governments are urged to take affirmative steps to keep children and adolescents in school, to eliminate barriers to women's participation in the workforce and in decision-making, to promote a more equal sharing of household duties and family responsibilities between women and men, and to recognize and value unpaid housework and direct care in the provision of public services, infrastructure and social protection.

80. Governments are encouraged to increase the coverage of social protection floors to design policy measures that extend social protection to workers in the informal economy, to foster the progressive formalization of enterprises and employment, including for the care economy, and to develop a sound financial architecture to mobilize investments in support of decent jobs, universal social protection, and a just transition towards equitable and sustainable economies.

D. Climate change and environmental sustainability

81. Governments should promote the adoption of sustainable lifestyles, including the consumption of less resource-intensive but more nutritious diets and the use of public transportation and energy-efficient appliances, in order to reduce the carbon footprint of the population.

82. Both high-income and upper-middle-income countries, which produce over 80 per cent of greenhouse gases worldwide, and low-income and lower-middleincome countries, which are at greatest risk from the effects of climate change, should cooperate in order to strengthen climate action in the context of sustainable development and efforts to eradicate poverty. Governments should work together to avoid worst-case scenarios of global warming and climate change, according to the principle of common but differentiated responsibilities.

83. Governments are urged to ensure that the most vulnerable populations receive priority attention when taking action to address climate change.

E. Evidence base to integrate population in development planning and programmes

84. Governments are urged to support the production, dissemination and analysis of economic data disaggregated by age, sex, socioeconomic status and other relevant characteristics, which are needed to facilitate an assessment of well-being that goes beyond GDP and to inform the design of policies for sustained and inclusive economic growth that benefit all population groups. 85. The United Nations should continue to support the development of the evidence base and analytical methods needed to assess the full economic contributions of women, including for unpaid housework and direct care, and to incorporate those valuations into discussions and recommendations on the provision of public services, infrastructure and social protection policies and on the sharing of responsibilities within households and families, as nationally appropriate.