



World Population Day, 11 July 2017

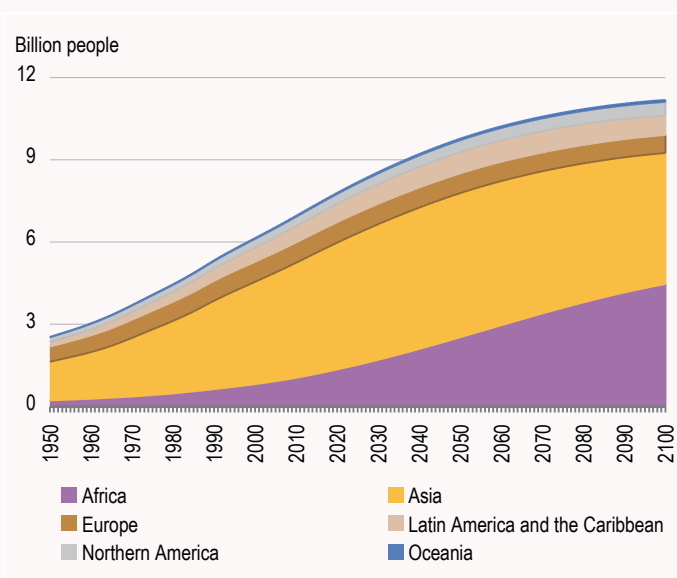
Contents

Introduction	1
World population trends.....	1
Rearrangement among continents.....	2
Change in the age structure, ageing world population.....	3
Fertility prospects.....	4
Trends in life expectancy	4
Population of the European Union.....	5
Member states with increasing or declining population number...5	
The future of the EU population.....	6

level fertility variant, the world's population will reach its maximum with 8.8 billion people in 2053, then it will begin to decline, and the 7.3 billion people in 2100 will be slightly below the present figure.

Figure 1

The world's population by continents



Introduction

The United Nations (UN) published its most recent estimate of the world population on 21 June 2017. The primary goal of the current population projection, which is the 25th since 1950, is to draw attention to the more and more demanding demographic challenges, such as overpopulation and ageing society. The estimates prepared by UN experts also provide important information for achieving the 2030 sustainable development goals¹ whose main objective is to ensure a better future for our planet as a whole and for billions of people worldwide.

World population trends

Based on UN calculations², the world's population was nearly 7.6 billion people on 1 July 2017. The population of slightly more than 2.5 billion in 1950 has tripled by now. The population number will continue to increase, although its growth rate will diminish first of all because of declining fertility. Despite the deceleration, according to the projection calculating with a medium-level fertility³, the world's population will be 9.8 billion by 2050, and by 2100, it will increase to 11.2 billion, i.e. one and a half times as high as the current figure. UN projection based on high-level fertility forecasts a population number of 10.8 billion for 2050 and 16.5 billion for the end of the century, while, according to the low-

Looking back over the past centuries, the population grew at an accelerating rate, the extent of which was the most significant in the second half of the 1960s when the population number increased by more than 2% per year. After some fluctuations, the growth rate has steadily decreased since the second half of the 1980s, first of all because of the declining fertility. Nowadays, the world's population is increasing by 1.1% per year, which is about half of the growth rate in the 1980s. The population growth rate is expected to decline further, and the projections calculate with only 0.5% by 2050 and about 0.1% by the end of the century. The growth in absolute terms increased steadily from 47 million people per year in the first half of the 1950s until the end of the 1980s when the annual average population growth was 91 million. At present, the growth is still significant, 82 to 83 million people per year, but according to estimates, a considerable reduction is expected also in absolute terms in the future, and the annual growth will be only 50 million in 2050 and fewer than 10 million at the end of the century.

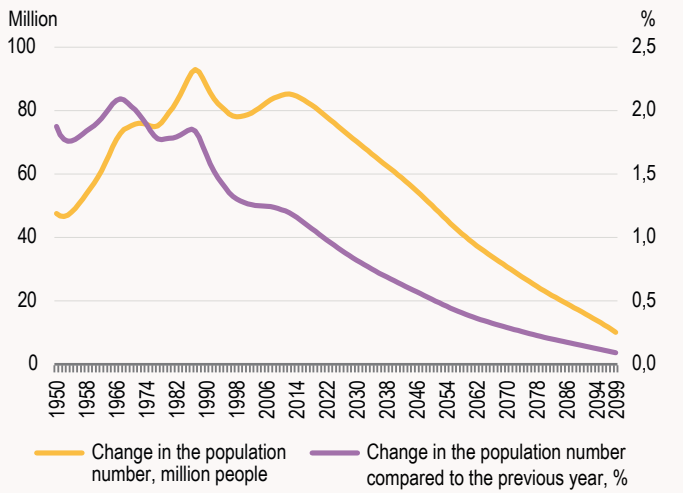
¹ Sustainable Development Goals (SDG).

² Source: World Population Prospects. The 2017 revision. <https://esa.un.org/unpd/wpp/>

³ Population projection is the forecast of the number and composition of the population for future dates, which is generally made in more than one variant based on assuming different future development of basic demographic processes (fertility, mortality, migration). UN projections mentioned in this publication were prepared on the basis of the medium-level fertility variant.

Annual growth of the world's population

Figure 2

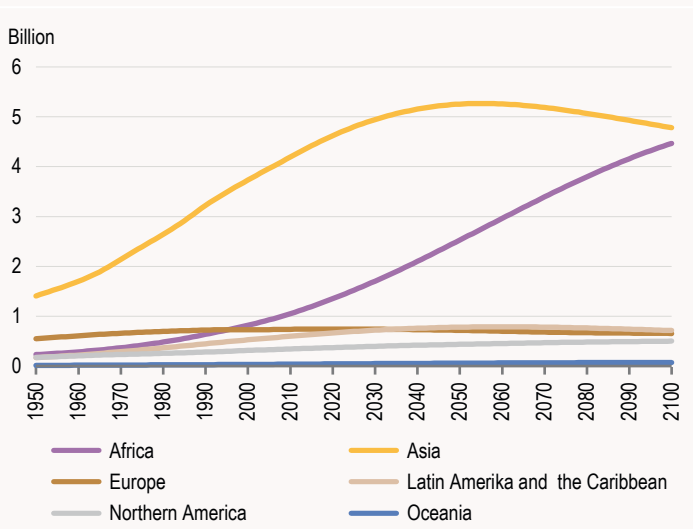


Rearrangement among continents

The population evolution is very different in each continent depending on in which stage of demographic transition the continent is. Demographers distinguish four stages of demographic transition. The first stage is characterized by high and unchanged mortality and fertility for a long time, which ensures a slow growth in the population number. In the second stage, primarily due to the development of public health, mortality is decreasing considerably, while fertility remains unchanged. As a result, the population growth rate accelerates. In the third stage of transition, mortality continues and fertility begins to decline, as a consequence of which, the increase in the population number slows down. Finally, in the last stage, mortality and fertility are stabilized at a low level in a way that the initial level of the population growth is restored. All this has a major impact on the distribution of the world's population by continents. The most significant population explosion took place mainly on the African continent where the population number increased 5.5-fold between 1950 and 2017, but the population number of Latin America and the Caribbean, Asia and Oceania also more than tripled over the same period. The lowest, only 1.4-fold growth was observed in Europe. Meanwhile, the population number of Northern America doubled.

Change in the population number of continents

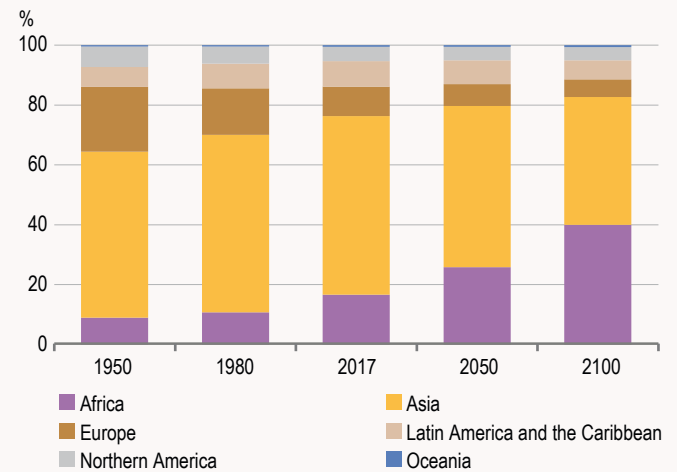
Figure 3



In 1950, the population of Asia accounted for 33% of the world's population, this increased to 60% (4.5 billion people) by 2017. Over the same period, the share of the population of Africa grew from 9% to 17% (1.3 billion people). Europe accounted for more than one-fifth (22%) of the world's population in 1950, but nowadays its share is less than one-tenth (9.8%) with 742 million people. This means that the population number of Africa is at present 1.7 times the population number of Europe, while in 1950 it was less than half (42%) of that. The rearrangement is even more spectacular compared to Asia: in 1950, the population number of Asia was slightly more than 2.5 times the population number of the old continent, but today it is more than six times as high as that. The combined share of the other three continents (Latin America and the Caribbean, Northern America and Oceania) remained unchanged at 14%. Within Asia, it is worth highlighting China and India, the two most populous countries of the world where 19% (1.4 billion people) and 18% (1.3 billion people) live, respectively. In both of these countries, more people live than in the three continents with the smallest population number taken together.

Figure 4

Distribution of the world's population by continents



According to the UN projection, further radical changes will take place in the population number of the continents⁴ until the end of the century. Asia will remain the most populous continent with 4.8 billion people, but this will already mean a decreasing trend compared to the peak of about 5.3 billion people in the mid-2050s. Meanwhile, the weight of Africa will increase significantly, its current population number will double by 2050, and by another 77% growth, it will be nearly 4.5 billion people at the end of the century. By 2100, the projected 40% share of people living in the black continent within the world's population will be just below the 43% share of Asia. With a steady rise, the population number of Northern America will also increase 1.4-fold exceeding 499 million people until the end of the century. Europe is the only continent where a lower population number, about 653 million people, is projected for the end of the observed period. Not only the population number of the old continent will decline by nearly 9%, but also its share will shrink from 10% to 6%. In addition to Europe, a decline is also expected in the population number of Asia and Latin America and the Caribbean in the last fifty years of the century.

The now published projection forecasts remarkable changes at country level as well. Between 2017 and 2050, half of the global increase will be attributed to only nine countries⁵, including India and Nigeria as the main drivers of the population growth. These two countries will account for more than one-fifth of the increase in the world. The population number of India is expected to reach that of China by 2023 when the population number of both countries will be around 1.43 billion. Then, the number of people living

⁴ The evolution of fertility and life expectancy together determine the number and composition of the world's population. The evolution of the population number by continents and countries is also influenced by international migration, the third factor of the projections which is considered the most uncertain.

⁵ In the sequence of the size of their expected contribution: India, Nigeria, Congo, Pakistan, Ethiopia, Tanzania, the United States of America, Uganda and Indonesia.

in India will exceed the number of those living in the currently most populous country. From the beginning of the 2030s, the population number of China will slightly decrease, while India is expected to reach its maximum population number, 1.68 billion people, by the beginning of the 2060s. Nigeria is at present the seventh most populous country of the world, but, as the growth rate is the highest there, it will be the third one by 2047 overtaking even the United States.

Table 1

The world's population by the economic development of regions

(million people)

Area	2017	2050	2100
World	7 550	9 772	11 184
More developed regions	1 260	1 298	1 285
Less developed regions	6 290	8 474	9 899
Less developed regions without least developed regions	5 288	6 557	6 701
Least developed regions	1 002	1 917	3 199

According to projections, population growth is expected in the less developed regions⁶ of the world, where the population number will increase from the current 6.3 billion to 8.5 billion by 2050. Within this, despite the fact that the growth rate is steadily decreasing, the population number is growing the most dynamically in the least developed countries: from the current 1 billion people, it will nearly double by the middle of the century and more than triple by 2100. Not only the population number but the share of these regions

in the total population of the world is continuously increasing and will be nearly 30% by the end of this century. In the same period, less than a 2% growth can be predicted in the more developed regions where nearly 1.3 billion people will live at the end of the 21st century.

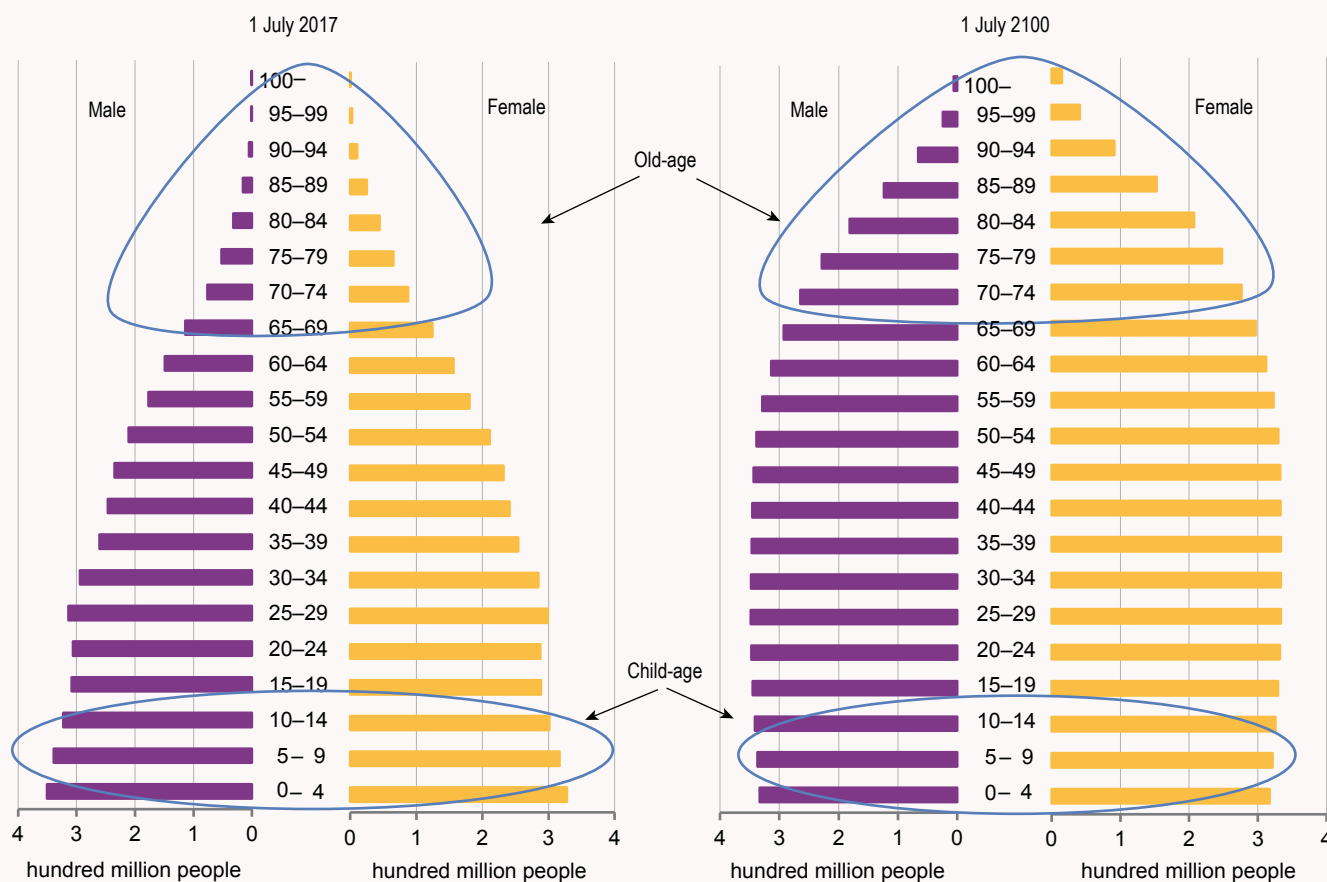
At present, the population number of the poorest regions is 80% of that in the richest ones, but this proportion is rapidly increasing, and 2.5 times more people will live in the least developed regions at the end of the observed period. While more developed countries have to face problems related to the low fertility, the decrease of the working-age population, the accelerating ageing of the population and the sustainability of the different social provision systems, in the developing regions of the world, poverty, unemployment, the reduction of inequalities, food shortages, education, teenage pregnancy and the provision of basic health and social services represent a serious challenge.

Change in the age structure, ageing world population

The world's population growth takes place in parallel with the ageing of the population. Due to the decreasing fertility and the significant improvement of life expectancy, the age structure of the population is getting older and older. The changes can be well traced by the share of the three main age groups within the population: from 1950 until the end of the century, the proportion of children under 15 years of age will be nearly halved (from 34% to 18%), while that of people aged 65 years and older will increase 4.5-fold (from 5% to 23%). The proportion of the intermediate age group, the 15–64 year-olds, increased somewhat in the past decades, a slight decrease is expected until 2100 and, finally, it will be again on the initial level of around 60%. It is worth examining separately the 80 year-old and older people, i.e. the so-called 'oldest elderly' in the population. In 1950, their proportion did not even reach 1% within the population, and their number was only slightly more than 14 million. Their

Figure 5

The world's population number by sex and age group



⁶ More developed regions: Europe, Northern America, Australia, New Zealand and Japan. Less developed regions: Africa, Asia (except Japan), Latin America and the Caribbean, Melanesia, Micronesia and Polynesia. Least developed regions are the 47 countries in the resolutions of the UN General Assembly (59/209, 59/210, 60/33, 62/97, 64 / L.55, 67 / L.43, 64/295, 68/18): 33 in Africa, 9 in Asia, 4 in Oceania, 1 in Latin America and the Caribbean.

number of 137 million at present will triple by 2050 and increase 7-fold by the end of the century exceeding 909 million, and their share will increase to 8.1%.

The median age⁷ of the world's population increased by 6 years between 1950 and 2015 and is expected to grow by another 12 years by 2100 approaching 42 years. In the more developed regions of the world, this change has already been experienced for a longer time. In the developing regions with high fertility, the ageing of the population is expected later, at a slower pace. Until the end of the century, the highest growth rates are projected for Africa as well as for Latin America and the Caribbean. The latter continent – overtaking even Europe – can expect the highest median age of 49 years. The median ages of continents gradually converge to each other, and the difference between the two extremes will decrease from 22 years in 2015 to 14 years by 2100.

Change in median ages by continents

Table 2

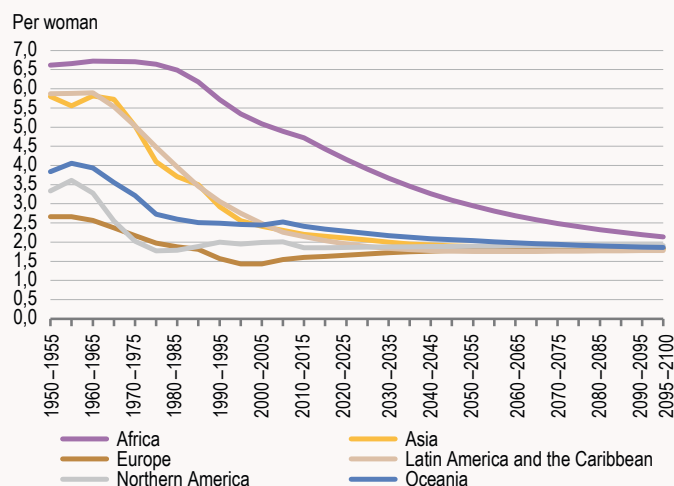
Area	1950	2015	2050	2100
World	23.6	29.6	36.1	41.6
Africa	19.3	19.4	24.8	35.2
Asia	22.1	30.3	39.7	46.1
Europe	28.9	41.6	46.6	47.8
Latin America and the Caribbean	19.9	29.2	41.1	49.2
Northern America	30.0	37.9	42.4	45.6
Oceania	27.9	32.8	37.4	43.8

Fertility prospects

The most expressive synthetic indicator of fertility is the total fertility rate.⁸ In the 1950s and 1960s, the average number of children per woman was about 5 in the world, while this has fallen by half to 2.5 by now. Regarding the continents, there were significant differences at the beginning of the observed period, with a nearly 2.5-fold difference between the highest (Africa 6.6) and the lowest (Europe 2.7) figures. In the second half of the 1960s, the rate started to decrease everywhere except Africa, and the black continent followed the other ones with a delay of nearly twenty years. Nowadays, fertility is still the highest in Africa, the number of children per woman is 4.4 there as opposed to the lowest figure of 1.6 in Europe. At present, in nearly half of the countries, women do not have as many children as would be necessary for the replacement of the population, i.e. 2.1 children on average. However, not only the most developed, as well as the European countries belong to this group, but, among others, South Korea, Mauritius, Thailand, Iran, China, Brazil, Cuba and Ukraine as well.

Total fertility rate by continents

Figure 6



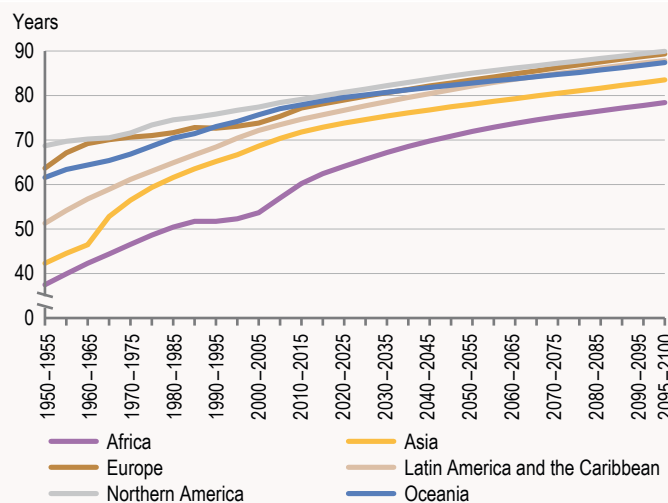
According to the projection, the world's population growth will take place along with a further decline in the fertility level; the average number of children per woman will be slightly below the replacement level (2.0) by the end of the century. In parallel with this, the fertility levels of the different continents will strongly converge to each other: the difference between the highest and the lowest figures will be 11.7-fold by 2050 and only 1.2-fold by the end of the century. While the average number of children will steadily decrease in the currently high-fertility countries until the end of the century, the indicator is expected to increase in the low-fertility countries. Accordingly, the fertility level of Europe will increase by 13%, from 1.6 at present to more than 1.8, thus overtaking the rates of Asia and Latin America and the Caribbean. Among the continents, only the fertility of Africa is expected to be on the replacement level, and among the countries, only 26 – with the exception of one, all African – countries will reach the replacement level of 2.1. The significant decline in fertility described above will only slow down the population growth rate, as, even in case of fertility below the replacement level, the larger generations born earlier will give birth to more children than the number of those who decrease under the improving mortality conditions.

Trends in life expectancy

In addition to fertility, mortality has also an important role in the evolution of the world's population number, and average life expectancy at birth is the most suitable indicator to illustrate this. Average life expectancy at birth grew almost steadily from 1950 up to now, and became 25 years higher approaching 72 years of age. Along with the generally upward trend, there are significant differences among continents in this indicator as well, but they have been steadily declining: in 1950, a newborn baby in Northern America could expect by more than 31 longer life years than an African baby, while the difference is 17 years at present. The most significant growth occurred in Asia, Africa and Latin America and the Caribbean, which were in the worst position, and where people live 31, 25 and 24 years longer, respectively than sixty-five years earlier. The life prospects of those who live in Northern America and have the highest life expectancy improved the least, by only 11 years.

Life expectancy at birth by continents

Figure 7



The UN projection anticipates that mortality will improve and life expectancy will continue to increase until the end of the century: as opposed to the nearly 72 years at present, it will approach 83 years. The largest growth is expected in Africa and Latin America and the Caribbean where the life expectancy of a newborn baby will be 16 and 12 years higher, respectively than now. As a result, life expectancy measured in years will more than double on the black continent. Considering average life expectancy at birth, differences between continents will continue to

⁷ Median age of the population: the age that divides the population into two numerically equal groups – that is, half the people are younger than this age and half are older.

⁸ Total fertility rate: it expresses to how many children a female would give birth during her life at the birth frequency by age in the given year.

decrease, so, the difference between Northern America having the highest value (90 years) and Africa, where, despite the considerable increase, life expectancy will be still the lowest (78 years), will decrease by one-third to 12 years.

Within mortality and life expectancy at birth, infant mortality has a key role. The level of health care improved considerably in the past decades, and as a result, newborns have more and more chances to reach adulthood than decades ago, however, the differences are still significant. From the beginning of the observed period until now, out of thousand newborns, the number of those who died under the age of one year fell from 142 to 31 in the world. The indicator decreased considerably on the two continents representing the two extremes alike: from 188 to 50 in Africa and from 31 to 5 in Northern America. According to the projection, infant mortality will continue to decrease to nearly one-fourth of the current value (8 infant deaths per thousand live births) by the end of the century.

Population of the European Union⁹

According to the data of Eurostat¹⁰, on 1 January 2016, the population number of the EU-28 member states was 510.3 million, 1.8 million more than a year earlier. Since 1960, the population growth has been unbroken, and the number of people living here increased by nearly 104 million or 20% in the last more than half a century.

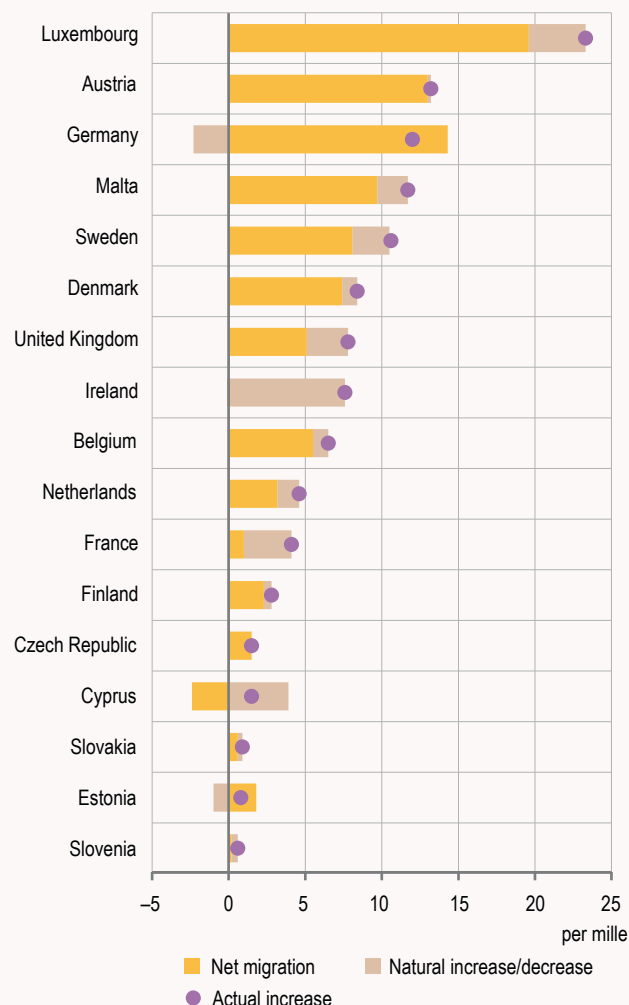
As a balance of births and deaths, the population number rose by 73.2 million accounting for 71% of the total increase over the same period. As a result of declining fertility and strengthening migration in the past decades, the effect of natural increase on population growth decreased steadily. In 2015, the increasingly shrinking positive balance turned to natural decrease. Primarily, the significant mortality surplus in almost all member states (5.7% on the whole) was in the background of this. The highest number of deaths in the last decades exceeded the number of births by 117 thousand, so 2015 was the first year when the population growth of 1.8 million was entirely due to the positive balance of international migration.

Member states with increasing or declining population number

The direction and factors of changes in the population number develop variously in the different member states. In 2015, out of the EU-28 member states, 11 were characterized by actual population decrease and 17 by actual population increase. In 13 out of the latter counties, both natural increase and immigration surplus contributed to the growth, but immigration played the major role in most of them. The largest immigration surplus was recorded in Luxembourg (20 per mille), Germany (14 per mille) and Austria (13 per mille), and natural increase was the highest in Ireland (7.6 per mille), Cyprus (3.9 per mille), Luxembourg (3.7 per mille) and France (3.1 per mille). Among countries with growing population number, the population decline resulting from natural decrease could be offset by the immigration surplus in Germany and Estonia, while in Cyprus and Ireland, the positive balance of births and deaths compensated the net international migration loss.

Figure 8

EU member states with actual population increase, 2015



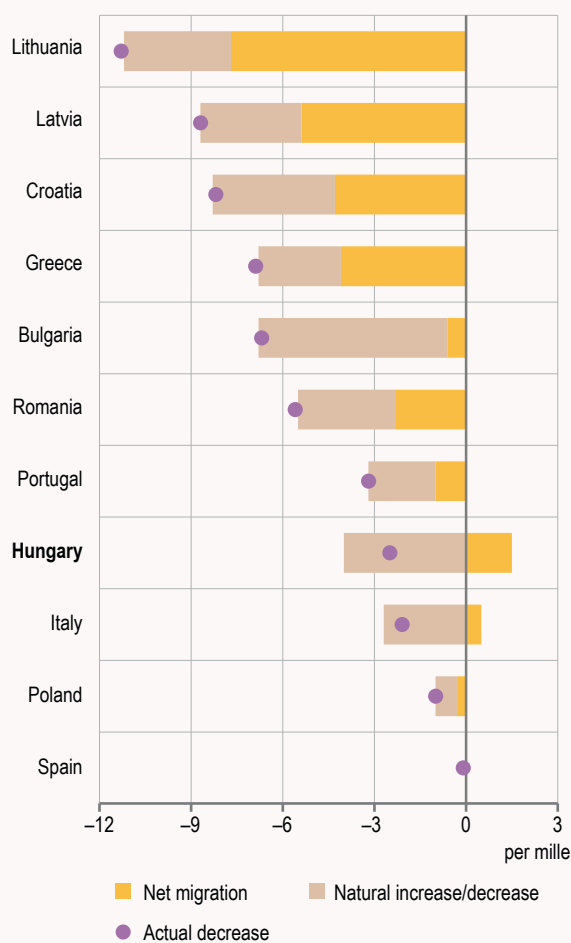
In the minority of the EU-28 member states, in 11 countries, the population number declined. Except for four Mediterranean, Southern European countries, most of them were new accession countries from Central and Eastern Europe. In nine of the countries with decreasing population number, both natural vital events and net migration developed unfavourably. The population number of Lithuania fell at the fastest pace (-11 per mille) where the largest emigration in the EU (-7.7 per mille) was associated with the fourth most considerable natural decrease (-3.5 per mille). Among countries belonging to this category, positive net international migration could moderate the population decline only in Hungary and Italy.

⁹ Calculations treat the composition of EU member states as unchanged.

¹⁰ Source of data referring to EU-28 member states is the Eurostat database: <http://ec.europa.eu/eurostat/data/database>.

EU member states with actual population decrease, 2015

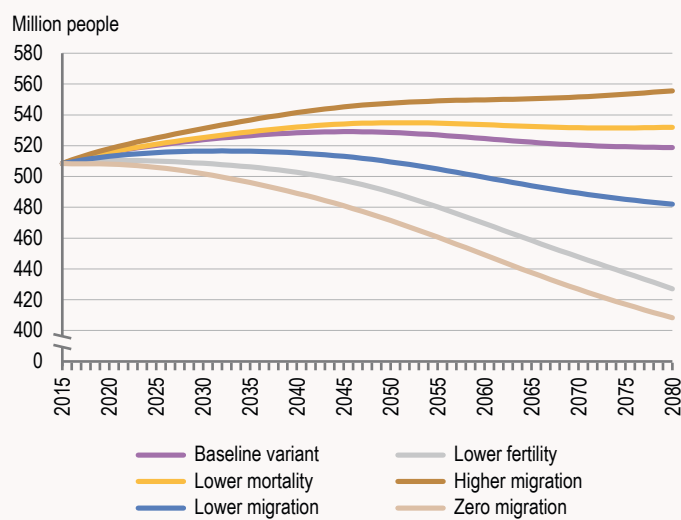
Figure 9



the two countries with the highest fertility, i.e. in Ireland and France. Assuming lower fertility, the total population of the EU would be also significantly, by 18% lower than in the most probable variant. At the same time, the rise in life expectancy would only increase the final figure by 2.6%. It seems that mostly changes in international migration and fertility will determine the evolution of the EU population in the coming decades.

Evolution of the EU-28 population according to the different projection variants

Figure 10



In the more developed Northern and Western European countries, the relatively higher fertility is combined with longer life expectancy and immigration surplus. At the same time, the less developed regions in Eastern and Southern Europe are characterized by lower fertility, shorter life expectancy and the emigration of young people. All this further increases the regional inequalities within the EU.

The future of the EU population¹¹

According to the baseline variant of the population projection prepared by Eurostat, the population number of the EU continues to grow slowly until the middle of the 21st century and will reach the maximum of 529.1 million by 2045 which will represent a 3.7% growth compared to 2016. Following this, the trend turns into a slow decline, then to a stagnation, and finally, the population number will decrease to 518.8 million by 2080. By the end of the projection period, the estimated population number will be only 8.5 million, 1.7% more than the number of people living in the EU-28 member states at present. Due to the slightly increasing but still below replacement level fertility and improving life expectancy, natural decrease is projected for the EU as a whole which, after some time, cannot be fully compensated by the positive international net migration any more.

Eurostat also prepares population projection along several hypotheses¹² assuming lower fertility, lower mortality, as well as lower, higher or zero migration. Among the scenarios, the population number would be the highest in case of high migration, and the most pessimistic variant would occur by assuming zero migration. In the latter case, the population number would be more than one-fifth lower than in the baseline variant, and a population number higher than the current one would be achieved only in

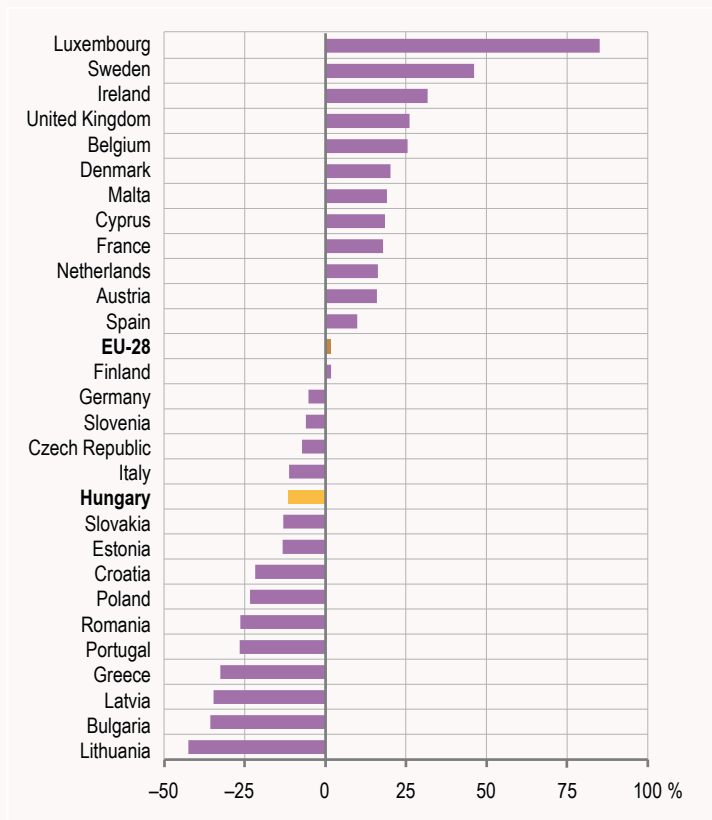
In 15 EU member states a growth and in the other 13 ones a decline is expected in the population number until 2080. All Central and Eastern European countries having joined the EU since 2004 are among the member states with declining population number. Natural decrease, which is characteristic of each country with declining population number is further increased by international migration loss in four member states, i.e. in Lithuania, Latvia, Bulgaria and Romania, while in the other countries, the immigration surplus mitigates the unfavourable demographic processes. The largest decline of 43% is expected in Lithuania, followed by Bulgaria (36%), Latvia (35%) and Greece (33%) in the ranking of countries. A significant population decline of between 20% and 30% is projected for Portugal, Romania, Poland and Croatia as well. In Hungary, the population decline is still halted by the positive international net migration. According to the projection of Eurostat, along with a 12% decline, the population number of Hungary is projected to be 8.7 million by 2080. According to the data of 2015, Spain is still characterized by an actual population decrease, but its population number will increase by 10% by the end of the period due to its net gain from international migration. However, among countries having increasing population number at present, fewer people will live in Estonia, Slovakia, the Czech Republic, Slovenia and Germany at the end of the period.

¹¹ The projection for the EU-28 member states is the baseline variant of the population projection EUROPOP2015 prepared by Eurostat. Source: <http://ec.europa.eu/eurostat/data/database>.

¹² Lower fertility: fertility rate is 20% lower over the full projection period. Lower mortality: mortality is gradually decreasing, life expectancy at birth is increasing by 2 years until 2070. Lower migration: net migration surplus decreases by one-third over the full projection period. Higher migration: net migration surplus increases by one-third over the full projection period. Zero migration: net migration is zero over the full projection period.

Figure 11

Change in the population number of EU-28 member states between 2016 and 2080



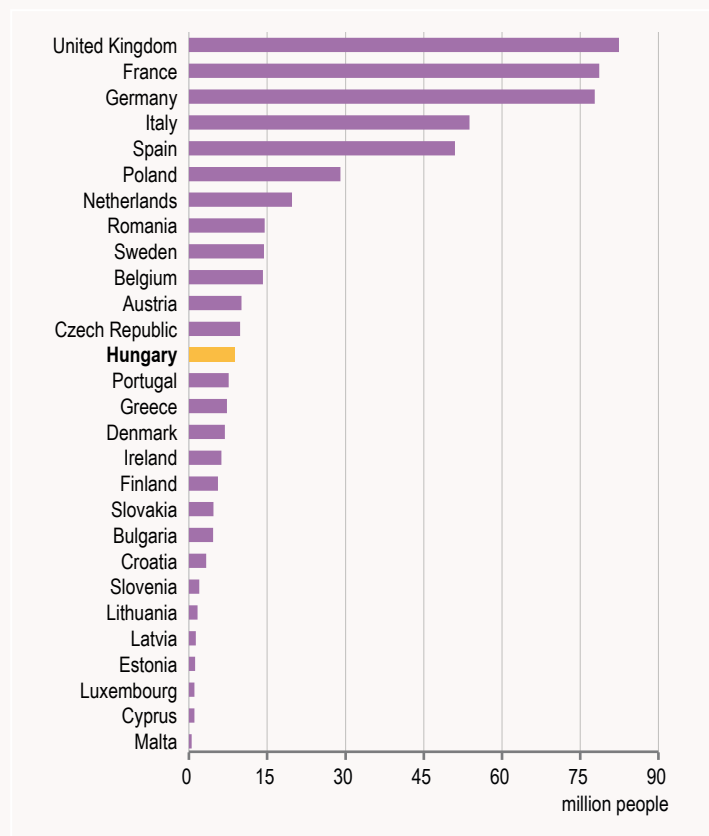
Positive international net migration is forecasted in each country with growing population number. Among them, natural increase is expected only in eight countries, in those more developed Western and Northern European countries, e.g. in France and Ireland where fertility was near the replacement level already at the beginning of the period. The largest population growth is expected in Luxembourg, considered as the main target area of immigration, where the population number will nearly double. Sweden (46%), Ireland (32%), the United Kingdom (26%) and Belgium (25%) can also expect considerable population growth. Apart from them, natural increase will be associated with immigration surplus in the Netherlands, France and Denmark.

As a result of all this, Germany, the most populous EU member state at present, will lose its leading position. In the coming decades, it has to face with a decline of nearly 4.4 million people, and by 2080, it will be the third in the ranking with its population number of 77.8 million.

According to the calculations of Eurostat, the population number of 82.4 million in the United Kingdom will be the highest in the EU in 2080 with a share of 16%. Due to its increasing population number, France – retaining its second place – will even further increase its share to 15% within the total population of the EU-28. Hungary will retain its 13th place in the ranking based on its estimated population number of 8.7 million, but its share will decrease from 1.9% to 1.7%.

Figure 12

Expected population number of EU-28 member states, 2080



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