







## SUMMARY

The SDGs position health as a key feature of human development in a more integrated manner than was the case for the MDGs, emphasizing the fact that social, economic and environmental factors influence health and health inequalities and, in turn, benefit from a healthy population.

Major population trends impact health. Fertility rates have fallen substantially almost everywhere, but still remain high in the African Region. Close to 40% of the population growth in 2015–2030 will come from Africa, and more than one quarter of the world's children will live there by 2030. The population aged 60 and over will increase by 50% in the SDG era. This presents many opportunities but will also challenge existing social norms, require a re-aligning of health systems and challenge countries to provide sustainable social security and long-term care. By 2030, 60% of the world's population will live in urban areas.

Poverty eradication is still a priority. The world attained the MDG target – to cut the 1990 poverty rate in half by 2015 – in 2010. Despite positive trends, one in seven people in developing regions still lives on less than US\$ 1.25 per day. In sub-Saharan Africa, more than 40% of the population still live in extreme poverty in 2015.

In 2013, total health spending reached US\$ 7.35 trillion, more than double the amount spent in 2000. Development assistance for health increased dramatically since 2000, but is now flattening and likely to become less prominent in the SDG era. The greatest need – as well as the focus of much traditional development finance – will become increasingly concentrated in the world's most unstable and fragile countries.

Gender inequalities in education, employment and civil liberties not only deprive women of basic freedoms and violate their human rights, but also negatively affect health and development outcomes for societies as a whole. The SDGs expand the focus on gender equity across a range of goals, including health. The right to health has been re-emphasized in terms of the achievement of UHC, but is also closely linked to the realization of other human rights, particularly for women and vulnerable groups such as migrants and people with disabilities.

Education is strongly linked to better health and the MDG goal of universal primary education has been broadened with 10 SDG targets addressing all sectors of education. Just over half of countries achieved the MDG goal, and 70% have achieved gender parity for primary education, but fewer than half have achieved parity for the secondary level.

Environmental sustainability is a central concern of the SDGs and is addressed in goals for water and sanitation, energy, cities and climate change. Climate change will have increasing consequences for health, ranging from the immediate impact of extreme weather events, to the longer term impacts of droughts and desertification on food production and malnutrition, and the increased spread of infectious disease vectors for malaria and dengue. The poorest and most vulnerable populations are likely to be affected most.

Health is central to human development, both as an inalienable right in and of itself and as a key contributor to the growth and development of communities and societies. Health was central to the MDGs, and in the SDGs is positioned as a key feature of human development in a more integrated manner. One SDG is specifically focused on health and several others incorporate actions to improve health and to address its broader social, environmental and economic determinants. These determinants have an impact on health and, in turn, benefit from a healthy population.

While health is still considered an important factor for development, it now finds its place alongside many more development priorities than was the case during the MDG era. This reflects a number of new and growing challenges, including: (i) rising inequalities within and between states; (ii) profound demographic and epidemiological changes; (iii) spiralling conflict, violence and extremism; (iv) increased migratory flows; (v) depletion of natural resources; (vi) adverse impacts of environmental degradation; and (vii) the prospect of irreversible climate change. Needless to say, all of these challenges have profound implications for health, and the SDGs that seek to address them have health concerns woven into their fabric (Table 1.3). This chapter examines the principal trends, determinants and risks that impact health, including:

- population trends, including fertility decline and population growth, changing population structure and ageing, migration and urbanization;
- economic and development trends, including poverty eradication and equity, globalization and trade, and financing for development;
- social determinants such as gender, education and income;
- human rights and equity;
- environmental determinants and other risks, including climate change.

In each section, a brief overview is provided on how these determinants are reflected in the SDGs, and the possible implications for health actions in the coming 15 years are outlined.

## POPULATION TRENDS

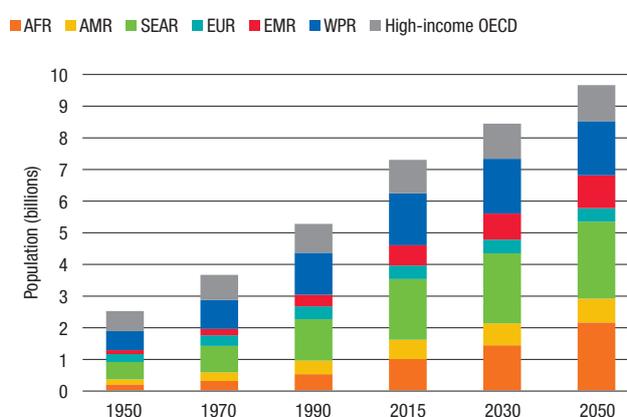
Demographic trends fundamentally influence countries' economic, social and health conditions. Population growth, changes in fertility rates, and population structure, all have a profound influence, as do migration, which is increasingly a cross-border issue, and growing urbanization, which may spur economic growth, but also puts strains on food and water resources. The SDGs are more explicit about population issues than the MDGs. The SDGs outcome document references the Programme of Action of the

International Conference on Population and Development and the Beijing Platform for Action,<sup>1</sup> and Target 5.6 refers directly to this programme of action, calling for efforts to: "Ensure universal access to sexual and reproductive health and reproductive rights...". There is one goal on cities (Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable) that addresses the challenges of rapid urbanization, and two targets specifically refer to migrants (SDG Targets 8.8 and 10.7).

## Fertility and population growth

Fertility rates are falling globally and, as a consequence, population growth is slowing almost everywhere except Africa. In mid-2015, the world population reached 7.3 billion people – almost a tripling of the population in 1950 – of which 60% lives in Asia. Even as population growth rates continue to slow, the world population is projected to reach 8.5 billion by 2030.<sup>2</sup> Close to 40% of the growth in 2015–2030 will come from the African Region (Figure 2.1). The parts of the world where populations are growing fastest are, in many cases, also those most vulnerable to climate change. Rising populations may exacerbate some of the consequences of global warming, such as water shortages, mass migration and declining food yields.

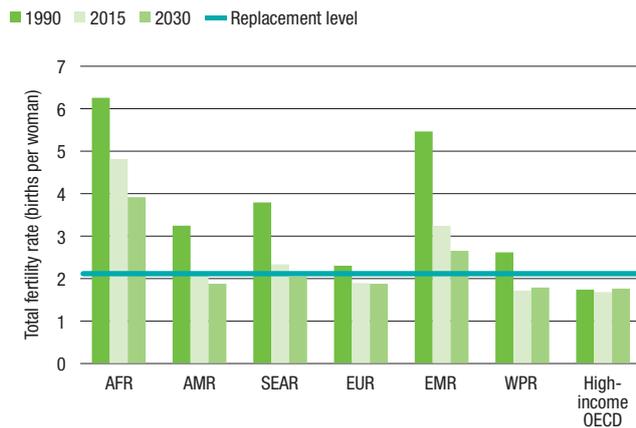
**Figure 2.1**  
World population by region, 1950–2050<sup>2,3</sup>



Between 1990 and 2015, the average expected number of children per woman (total fertility rate) fell close to or below replacement level (2.1 children) in all regions except the African Region and the Eastern Mediterranean Region (Figure 2.2). The fertility rate is now at or below replacement level in 44% of countries, including Brazil, China, the Russian Federation and the United States of America. The total fertility rate for the African Region is projected to remain high until after 2030.<sup>2</sup>

Projections indicate that approximately 2.1 billion babies will be born worldwide during 2015–2030, an increase of almost 3% of the total number of births in the previous 15 year period. Half of these babies will be born in Asia and one third in Africa. Over the same period, the total number

**Figure 2.2**  
Trends in fertility by region, 1990–2030<sup>2,3</sup>



of women of reproductive age is projected to increase by 9% and reach 2.0 billion in 2030. Even though the average births per woman is projected to decline in Africa, the number of reproductive age women is projected to increase by 47% by 2030, which yields a projected increase in numbers of births of 24%.<sup>2</sup>

High fertility has multiple consequences for health and health-related issues. Continued rapid population growth in low- and lower-middle-income countries, along with higher fertility rates in the poorest segments of the population, is likely to make it harder for those countries to eradicate poverty and inequality, combat hunger and malnutrition, invest in education and health, improve access to basic services, plan and develop cities, protect local ecosystems and promote peaceful and inclusive societies.

Global reproductive, maternal, newborn and child health programmes will remain focused on Africa and Asia, which together account for more than four fifths of global fertility. Especially in Africa, high fertility rates and rising numbers of women of reproductive age have considerable implications for the efforts to achieve the SDG targets for ending preventable child and maternal deaths. Investments in reproductive health, especially in family planning, are needed to ensure that all women and men can achieve their desired family size. In addition, reducing child mortality and poverty are critical to reducing fertility and accelerating the demographic and epidemiological transitions.

Interventions before school age have very substantial benefits for children throughout schooling and life.<sup>4</sup> The continued high fertility of Africa makes it more difficult to implement low-cost but effective early childhood development interventions for countries with limited financial and human resources.

For countries in demographic transition, where age structures change rapidly, a reorientation of the health sector is critical. For example, in countries where fertility and mortality levels have fallen, progressively greater resources need to be committed to adult health and ageing

populations as opposed to maternal and child health and to infectious diseases. The demographic transition is accompanied by an epidemiological transition where NCDs, mental health disorders and injuries become much more prominent as a cause of death and disability than infectious diseases. Figure 2.3 shows where countries are in the epidemiological transition, using years of life lost (YLL) due to reproductive, maternal, child health and undernutrition and infectious diseases – the MDG conditions – on the one hand (y-axis), and NCDs and injuries on the other hand (x-axis). At the top, there are 22 African countries where the poverty-related conditions are still responsible for more than 70% of all YLL. At the other end of this epidemiological shift, there are 48 countries where NCDs and injury-related conditions cause at least 90% of all YLL.

## The youth bulge

Globally, the total number of young people is at an all-time high, with 1.8 billion people between the ages of 10 and 24 in 2015 and nearly 2.0 billion projected by 2030. The number of adolescents and youth between ages 10 and 24 in the African Region will increase from 315 million in 2015 to 453 million in 2030.<sup>2</sup>

The youth bulge, where a large proportion of the total population is youths or adolescents between ages 10 and 24 or 15 and 24 (showing a “bulge” in the population pyramid),

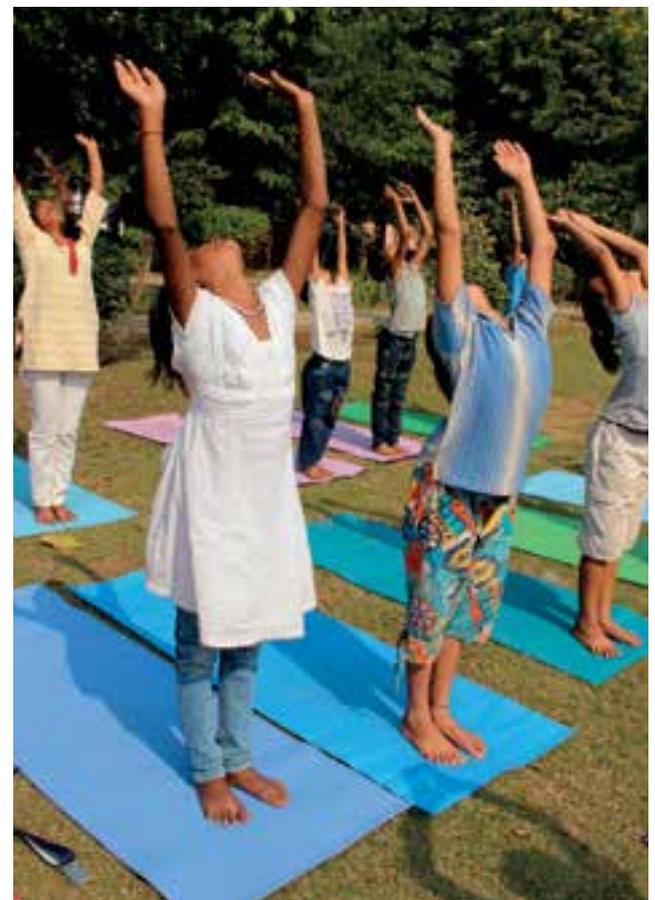


Figure 2.3

Countries at different stages of the epidemiological transition from MDG conditions to NCDs and injuries as the main causes of years of life lost (YLL), 2012<sup>5</sup>



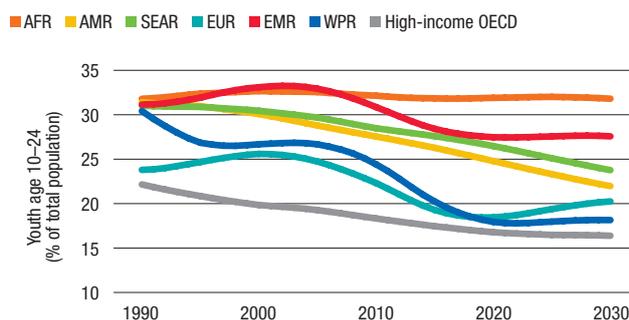
has been a common phenomenon in many countries during the MDG period (Figure 2.4). High fertility and, to a lesser extent, declines in child mortality are the main causes. A rapid fertility decline, such as occurred in the Western Pacific Region, may also give rise to a temporary increase of the youth bulge. In the African Region, more than 30% of the population is between ages 10 and 24, and this proportion will not change much in the coming 15 years. The youth bulge is projected to decline in the Eastern Mediterranean Region, although the proportion of the population between ages 10 and 24 will still be over 30% in 2030 for several countries, including Afghanistan, Iraq, Somalia and Yemen.<sup>2</sup>

In a country with a youth bulge, if most young adults entering the workforce can find productive employment, then the level of average income per capita should increase, producing a “demographic dividend”. However, if many young people cannot find employment or earn a satisfactory income, then the youth bulge may become a potential source of social and political unrest,<sup>6</sup> while young people themselves may become more susceptible to mental disorders such as depression. Globally, the youth unemployment rate is nearly three times higher than the adult rate, and highest in the Middle East.<sup>7</sup>

The prominence of youth in the population and the importance of improving health behaviours and services for adolescents needs much more attention in many countries. This includes extending the improvements in maternal and child health to adolescents, a focus on health promotion and preventive measures, and on intersectoral approaches.<sup>8</sup> For example, reducing road injuries, the top cause of mortality in 10–19-year-olds, will require action across a range of services, from education to transportation. Furthermore, investing in health during adolescence can have critical benefits for health throughout the life course, influencing, for example, behaviours associated with an increased risk of NCDs.

Figure 2.4

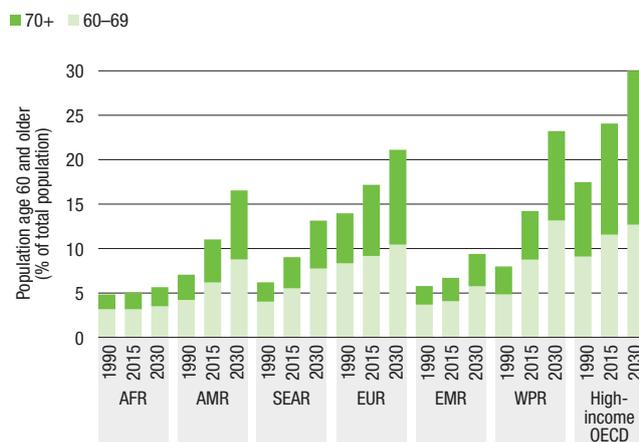
Trends in proportion of youth age 10–24, by region, 1990–2030<sup>2,3</sup>



## Ageing

Populations around the world are rapidly ageing.<sup>9</sup> These older populations are a significant human and social resource, and this demographic transition therefore presents enormous opportunities to society. However, it will also be accompanied by a number of serious challenges. Global life expectancy increased, from 64 to 71 years between 1990 and 2015, an unprecedented rate of increase (see Chapter 1, Box 1.1). The number of people 60 and older reached 901 million in 2015 and will increase by 56% in the SDG era to around 1.4 billion people in 2030, of whom over 650 million will be 70 or older.<sup>2</sup> The dramatic increases will occur in all regions except the African Region, where a modest increase can be expected (Figure 2.5). By 2030, 71% of older people will live in low- and middle-income countries. China will have almost the same proportion of older people as the United States.

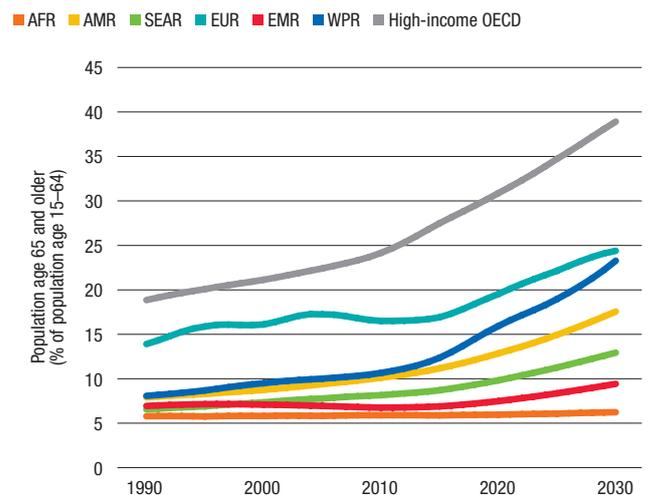
**Figure 2.5**  
Trends in proportion of population age 60 and older, by region, 1990–2030<sup>2,3</sup>



Population ageing will increase the proportion of the older population relative to the younger population, and will challenge the traditional framing of the life course around a defined working age, followed by retirement. The projected trends of the ratio of people over age 65 compared to those aged 15–64 years show the large differences in population age structure between regions. During the MDG period, the ratio increased only slightly or not at all in most developing regions (Figure 2.6). However, the situation is projected to change drastically during the SDG period, with substantial increases in the ratio in all regions except in the African Region.

Despite the fact that many middle-income countries and even some low-income countries have expanded pension coverage through a mix of contributory and non-contributory schemes, nearly half of all older people do not receive any form of pension and, for many of those who do, the level of support is inadequate.<sup>10</sup> Large numbers of older people are entering retirement age in countries where significant social support systems have yet to be put in

**Figure 2.6**  
Trends in the population age 65 and older as a percentage of the population age 15–64, by region, 1990–2030<sup>2,3</sup>



place. There is thus an urgent need to expand coverage, both in countries that have yet to put systems in place and in countries that already have such systems. Clearly, this presents fiscal challenges. However, inadequate social protection constitutes a major obstacle to sustainable development, as it is associated with high and persistent levels of poverty and inequality.

Declining mortality rates at older ages in the last three decades suggest that with appropriate interventions it is possible to sustain longevity gains in all countries.<sup>11</sup> However, it is not at all clear if these gains in life expectancy at older ages have been coupled with increasing years of life gained in good health, mainly because of chronic NCDs such as musculoskeletal conditions and dementia.<sup>12</sup> A recent analysis shows that patterns of limitations in functioning vary across countries and within countries over time to a significant extent, with some suggestion in high-income countries that subsequent generations may live longer in better health than those preceding them.<sup>13</sup> However, recent studies from high-income countries have raised questions regarding these health gains, given rises in obesity and related risk factors in the baby boomer cohort.<sup>14,15,16,17</sup> While health declines as we grow older, this fall is even more significant in the oldest group, the most rapidly growing segment of the older population. The health status of this group is worse in poorer countries, among women, those with lower education and those with lower levels of income across all countries.

The health SDG of ensuring healthy lives and promoting well-being for all at all ages cannot be achieved without attention to the health of older adults, which is now an important agenda for all countries. This will require major shifts in the way health systems are designed. The strategy should include a focus on primary prevention as well as on managing declines in functioning. Poor health is not an inevitable outcome of ageing, and many of the health problems that confront older people are associated

with chronic conditions that can be prevented, delayed or managed. Increasingly, medicine and technology also provide assistive devices that compensate for sensory and motor disabilities. Environmental interventions can ensure that even those with significant losses in capacity can still get where they need to go and do what they need to do.

In general, health systems will need to find effective strategies to extend health care and respond to the needs of older adults. In order to meet the target on UHC, the specific needs of older adults, often with complex, multiple chronic health conditions, will have to be addressed by health systems.<sup>18,19</sup> This will also require financial protection against catastrophic health spending to ensure that health interventions produce equitably distributed health gains. All societies also need sustainable models of long-term care and support that allow everyone to maintain lives of dignity and meaning, even in the presence of significant losses in functioning. The number of people requiring long-term care and support is forecast to double by 2030.<sup>9</sup>

## Migration

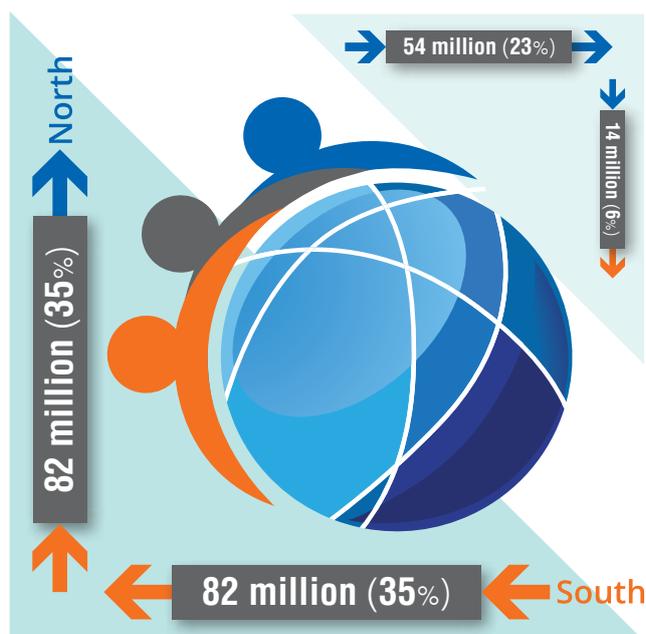
We live in an era of great human mobility, with more people on the move today than ever before. The total number of international migrants is estimated to be 232 million or 3.2% of the global population for 2013. Half of international migrants who were born in the developing regions (the “global South”) moved to the developed regions (the “global North”) in 2013 (Figure 2.7).<sup>20</sup>

While no substitute for development, migration can be a positive force for development when supported by the right set of policies. For example, migration could help harmonize the very different economic and demographic conditions across countries as the world moves towards its peak population. At the same time, the emigration of highly skilled workers such as doctors and nurses can have considerable negative impact.<sup>21</sup>

Migration could also re-emerge as both a cause and result of conflict within and between countries. Some high-income countries are already drastically limiting the rights of refugees to seek asylum. The rise in global mobility, the growing complexity of migratory patterns and their impact on countries, migrants, families and communities have all contributed to international migration becoming a priority for the international community.

The factors promoting cross-border migration are likely to remain strong or intensify and international migration is set to grow even faster than it did in the past quarter-century.<sup>23</sup> Determinants of migration levels include disparate age structures and income inequalities between richer and poorer countries, easier transportation at lower cost, the presence of migrant networks that link sending and receiving countries, and improved communications. Internal

**Figure 2.7**  
South–South migration is as common as South–North migration<sup>a,20,22</sup>



<sup>a</sup> Based on migrant stock data, 2013; North: developed regions; South: developing regions

migration affects much larger numbers of people, and generally takes the form of rural to urban migration in low- and middle-income countries.

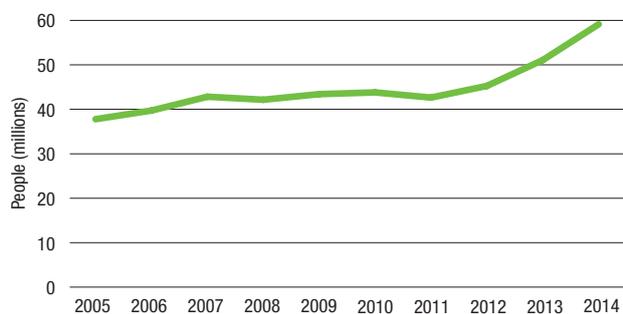
Conflict and persecution also drive migration and, in 2014, the total number of people displaced by war, conflict or persecution reached a record high of nearly 60 million globally, an increase of 8.3 million from the previous year<sup>24</sup> (Figure 2.8). Of these 60 million displaced persons, almost 20 million are refugees, 38 million are displaced inside their own countries and 1.8 million are awaiting the outcome of claims for asylum. The global number of refugees, asylum seekers and internally displaced people had ranged between 38 and 43 million for most of the past decade, but started to increase in 2012, due to conflicts in the Central African Republic, Iraq, South Sudan, the Syrian Arab Republic and Ukraine among others.

In some countries, towards the end of the SDG timeframe, environmental factors and climate change may play a greater role as a driving force, as they will almost certainly have greater adverse impacts in poorer countries of Africa and Asia.

Many migrants, especially victims of human trafficking, run increased health and mortality risks. For instance, over 2700 migrant deaths have been recorded in the first half of 2015, the majority of these in the Mediterranean Region.<sup>25</sup> Migrants often have little or no access to health and social services, although they have much greater health risks related to exploitation, dangerous working circumstances and substandard living conditions. Eliminating human trafficking is a priority task for the global community.

The recent influx of refugees into Europe is a vivid reminder for all countries of the importance of preparedness. All countries will need to have measures in place to minimize the potential adverse health consequences of migration, including protective laws and policies and health services in refugee settings. Health issues associated with migration present key public health challenges faced by governments and societies, as was reflected in a resolution on the health of migrants that was endorsed by the Sixty-first World Health Assembly in May 2008.<sup>26</sup> Many migrants do not have access to health care and longer-term migrants may also face difficulties in getting legal identity and citizenship. It will be important to ensure that UHC is interpreted as relating to all de facto residents, not just citizens.

**Figure 2.8**  
Trends in number of people displaced by conflict, 2005–2014<sup>24</sup>



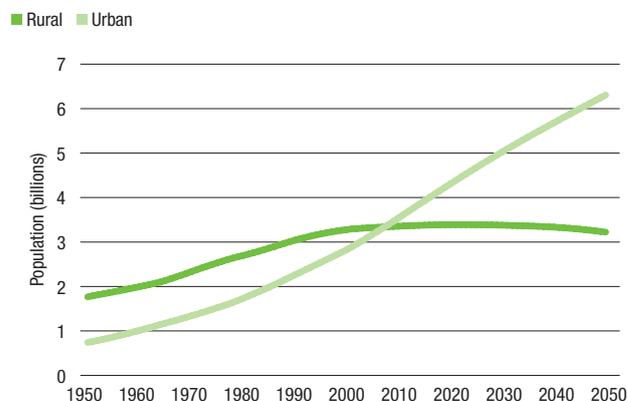
The SDGs include several targets relating to migration generally (8.1, 10.7, 10.c) as well as one (3.c) explicitly relating to the health worker “brain drain” from low- and middle-income countries to high-income countries, a phenomenon that has increased with globalization. The 2010 WHO Global Code of Practice on the International Recruitment of Health Personnel<sup>27</sup> highlighted these issues, drawing attention, in particular, to the problem of richer countries recruiting from poorer nations that are struggling with health worker shortages. The Code was voluntarily adopted in 2010 by all of the then 193 WHO Member States, but thus far implementation has been disappointing. Greater collaboration among state and non-state actors is needed to raise awareness of the Code and reinforce its relevance as a potent framework for policy dialogue on ways to address the health workforce crisis.<sup>28</sup> The Code links directly with SDG Target 3.c.

## Urbanization

Since the MDGs were adopted in 2000, urban areas have grown by more than 1 billion new inhabitants. The urban proportion of the global population increased from 43% in 1990 to 54% in 2015, and it is projected that by the time the SDG draw to a close in 2030, 60% of the world’s population will live in urban areas. The world’s rural population is expected to reach its peak in a few years and will gradually decline to 3.2 billion by 2050 (Figure 2.9).<sup>29</sup> This leaves virtually all of global population growth in the projectable

future in urban areas. This is still due in greater part to cities’ natural growth, where fertility outpaces replacement level,<sup>30</sup> but is also explained by migration. More than 1 billion people on the planet are, or were migrants, the majority of which settle in urban areas.<sup>31</sup>

**Figure 2.9**  
Trends in urban and rural population of the world, 1950–2050<sup>29</sup>



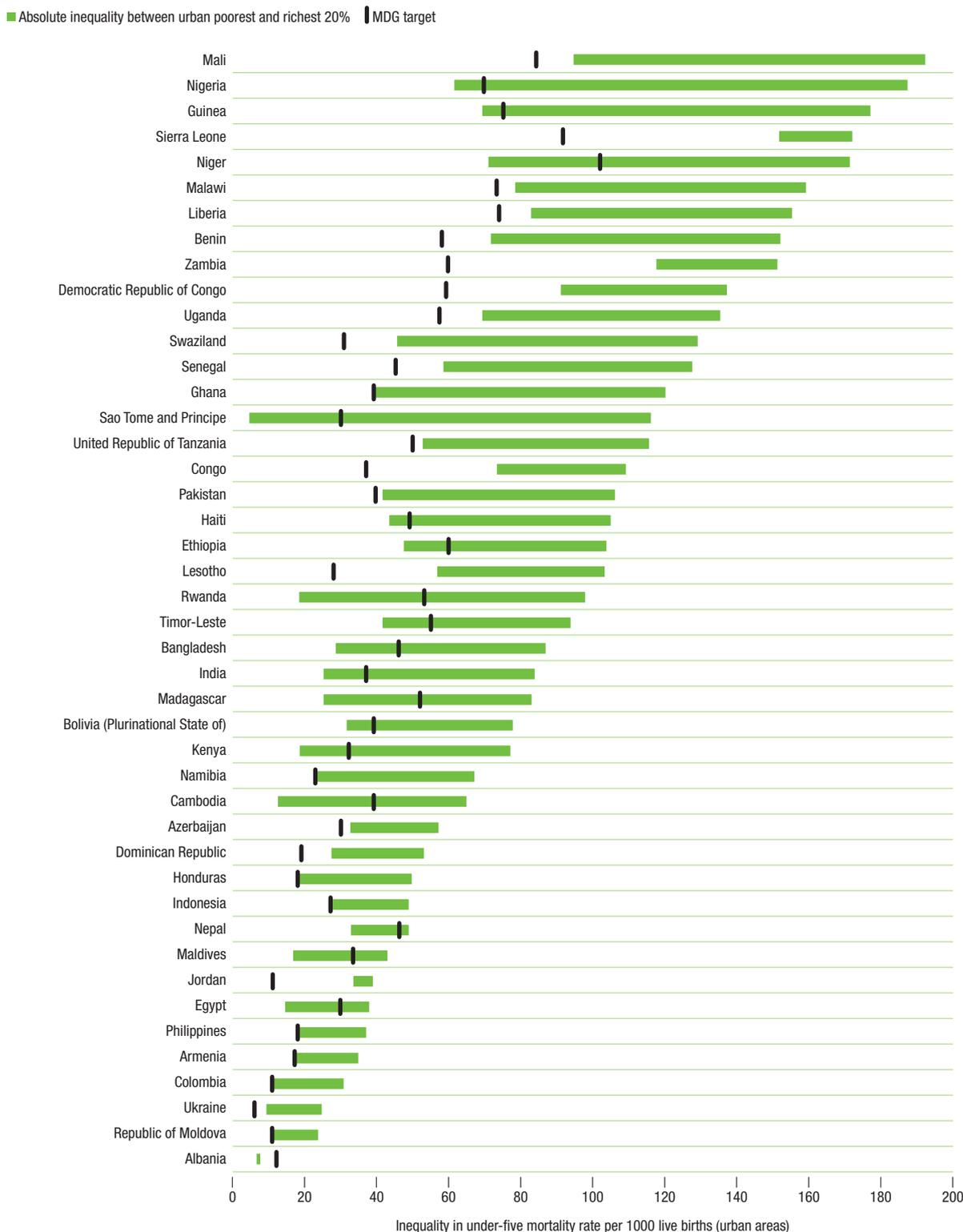
Urbanization is occurring across all world regions. Africa and Asia, where urbanization is just below 50%, are projected to experience the most rapid urbanization in coming years. The number of cities with a population of 1 million or more increased from 270 to 501 during the MDG period, and is projected to increase to 662 by 2030. The number of mega cities of more than 10 million people will increase from 29 in 2015 to 41 in 2030, and more than half of these cities will be in Asia.<sup>29</sup>

Urbanization has been accompanied by an increase in urban slums. Slums are characterized by overcrowding, poor access to safe drinking-water or sanitation, poor housing conditions and lack of secure tenure. In 2000, the number of slum dwellers in developing countries was estimated to be 767 million; by 2010 it rose to an estimated 828 million, and by 2020 is projected to reach 889 million. More than 60% of sub-Saharan Africa’s urban inhabitants and more than 30% of urban populations of Southern Asia and South-East Asia live in slums.<sup>32</sup>

Urban health inequalities are a growing concern.<sup>33,34</sup> For example, Figure 2.10 shows that in urban areas of selected 46 countries, children in the poorest quintile were more than twice as likely to not survive till their fifth birthday compared to children in the richest quintile. In only one country was the national MDG target for reducing under-five mortality achieved for children in the poorest wealth quintile.

About half of urban dwellers live in smaller cities of less than half a million. It is in these cities that most urban growth will occur as they expand along highways and coalesce around crossroads and coastlines, often without formal sector job growth and without adequate services.

**Figure 2.10**  
**Socioeconomic inequality in under-five mortality between richest and poorest 20% of households in urban areas<sup>35</sup>**



The provision of health services for the urban poor is a critical part of the SDG health targets, including UHC, and of SDG Target 11.1: “By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums”. Urbanization brings opportunities for health, through the concentration of people, resources and services, which results in better access to health services and more scope for public health interventions. However,

rapid unplanned urbanization may also increase the risks of infectious disease transmission, promote adverse trends in NCD risk factors such as obesity and increase the risks of road injury and violence, and exacerbate environmental degradation with impacts on health such as air pollution, poor water quality, and unavailable sanitation. Therefore, special attention will need to be given to better monitoring of the health situation of the urban poor, and to establishing

and implementing policies and programmes that reduce the risks of illness and death due to unsafe water and sanitation, violence and injuries, poor housing conditions and air pollution. Strong health promotion (e.g. for HIV and NCDs) and affordable health services will be an important part of any response, and need to be driven by local governments and communities.

## ECONOMIC DETERMINANTS OF HEALTH AND FINANCING FOR DEVELOPMENT

The MDGs mobilized the collective efforts of countries and the development community to end extreme poverty, reduce hunger, promote gender equity and improve education and health. Despite substantial progress in reducing the numbers of people living in extreme poverty, many millions of people around the world continue to suffer from deprivation. Some countries, especially those affected by conflict and civil strife, remain trapped in a vicious spiral of underdevelopment, inequity and grinding poverty.

The social gradient in health that runs from top to bottom of the socioeconomic spectrum is a global phenomenon that is seen in low-, middle- and high-income countries. Specific examples of this phenomenon, relating to child and maternal health outcomes, are presented in Chapter 4.

The world has changed, and no longer consists of a large group of poor countries and a small group of rich ones. Today, many low-income countries have “graduated” from the World Bank Group’s low-income classification group to reach middle-income status. In fact, between 2000 and 2013, the number of low-income countries fell from 63 to 34 such that there are now 105 middle-income countries. This group of countries are very diverse and include populous countries such as China and India and many small island states, as well as countries with stable economies and countries in conflict.<sup>36</sup> Moreover, progress for many socioeconomic development targets in relation to health and development vary widely across these countries. This means that extreme poverty is no longer concentrated in poor or fragile states but in richer middle-income countries. While only relatively few countries are the main contributors to levels of extreme poverty (i.e. India, Nigeria, China, Bangladesh and the Democratic Republic of Congo) – poverty also continues to persist among the most disadvantaged within several high- and middle-income countries. As a result, around three quarters of the world’s absolute poor live in middle-income countries that are today less dependent on (and no longer eligible for) development assistance.<sup>37</sup>

As such, an approach to poverty reduction based on externally financed development is becoming rapidly

outdated. Rather than thinking about poor countries perhaps the approach should focus on poor individuals. In other words, attention to reducing poverty in low-income countries should be expanded to middle-income countries and concerns for the distribution of poverty internationally should consider the distribution of poverty *within* national boundaries. In addition, provision of “traditional” aid in the form of transferring resources could increasingly adapt to today’s global context and take the form of supporting the development of national policies and institutional structures to use available resources well, regardless of the source.

The SDGs reflect this change by emphasizing a much broader approach to poverty reduction strategies to improve not only health, but also to enhance progress across the full range of SDGs relating to health and nutrition, education, governance, economic reform, marginalized populations, gender discrimination, and violence and conflict. The first MDG was to eradicate extreme poverty and hunger, and had three targets, including one on nutrition. In contrast, there are several SDG targets that focus directly on eradication of poverty and hunger, and many other targets that will also contribute to poverty reduction and development. Moreover, inequality is more central in the SDGs than in the MDGs, especially in SDG 10, which calls for efforts “to reduce inequality within and among countries”. Similarly, while globalization and trade-related issues were addressed as part of MDG 8, they have a more prominent position in the SDGs, reflected in the multiple targets on economic, social and environmental issues (e.g. Target 17.10 on trade and Target 3.b on research and access to essential medicines and vaccines).

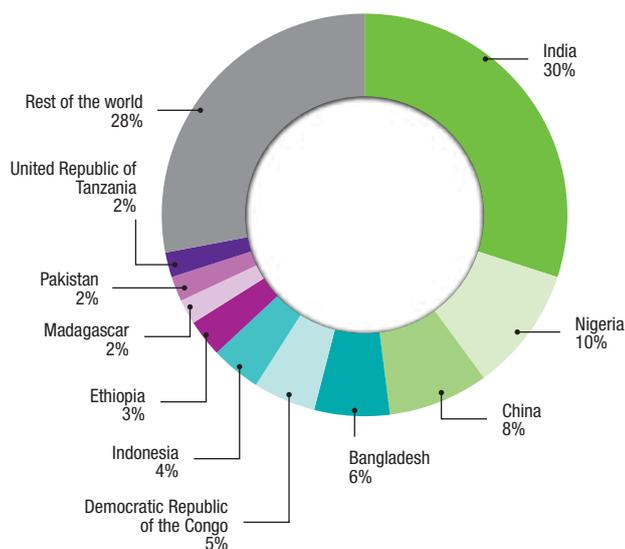
This next section focuses on poverty eradication and income inequality, globalization and trade, and global financing for health and development.



## Poverty eradication and income inequality

The world attained the MDG target – to cut the 1990 poverty rate in half by 2015 – in 2010, and the target was met in all regions, except sub-Saharan Africa. In 2015, 836 million people globally live on less than US\$ 1.25 per day, compared with 1.9 billion in 1990. In the developing world, 14% of the population live on less than US\$ 1.25 per day in 2015, down from 47% in 1990.<sup>38</sup> Progress has been harder won at higher poverty lines, such as US\$ 2 per day. The world's most populous countries, China and India, have played a central role in the global reduction of poverty (although India still has 30% of the world's extreme poor; Figure 2.11) and most of that reduction is related to growth in labour-intensive sectors of the economy. Direct income transfers to the poor, remittances and changes in demographic patterns have contributed much less.<sup>39</sup> Despite positive trends, about one in seven people in developing regions still lives on less than US\$ 1.25 per day. In sub-Saharan Africa, more than 40% of the population still lives in extreme poverty in 2015.<sup>38</sup> Middle-income countries are home to 73% of the world's poor people.<sup>40</sup>

**Figure 2.11**  
Top 10 countries with largest share of the global extreme poor,<sup>a</sup> 2011<sup>41</sup>



<sup>a</sup> People living on less than US\$ 1.25 per day.

Poor people become “trapped” in poverty for a number of reasons, including the inability to access credit or own land, governance failures, and because low levels of education, skills or health hinder their ability to seize opportunities arising from a general expansion of economic activity. The poor also tend to be more vulnerable to economic “shocks” – mainly due to health events as well as weather-related natural disasters and broad economic crises – that push households below the poverty line and keep them there.<sup>42</sup> While globalization is associated with increasing average incomes in many countries, there is concern that it is also causing widening income inequality between and within countries.<sup>43,44,45</sup> Income inequality affects all countries

around the world, and there is clear evidence that people with lower income have worse health outcomes across a broad range of indicators.<sup>46,47</sup> In developed and developing countries alike, the poorest half of the population often controls less than one tenth of the country's wealth.<sup>48</sup> Failure to address income inequality is likely to reduce the sustainability of economic growth, weaken social cohesion and security, and increase risk of conflict.

MDG Target 1.C, which called for a halving of the proportion of people who suffer from hunger was almost achieved, with a reduction from 23.3% in 1990-1992 to 12.9% in 2014-2016 (projected).<sup>38</sup> This occurred despite major global challenges such as natural disasters and adverse weather events, volatile commodity prices, higher food and energy prices, rising unemployment and economic recessions in the late 1990s and in 2008-2009. There has also been significant progress on the child nutrition indicators (underweight and stunting in children under five years), an issue that is presented in Chapter 4. The current trends and projections indicate the importance of continued targeting of programmes for the poor, whether directed at the poorest countries, poorest regions or poorest populations within countries. Progress needs to be measured based on disaggregated health and nutrition indicators.

The 2001 report of the Commission on Macroeconomics and Health made a valuable contribution to global and country dialogues regarding the economic benefits of better health and the costs of achieving it,<sup>49</sup> showing, among other things, the large economic returns to be derived from investing in health. It is estimated that reductions in mortality account for about 11% of recent economic growth in low- and middle-income countries as measured by their national income accounts.<sup>50</sup> Subsequently, the 2008 report of the Commission on Social Determinants of Health complemented this message, by adding to evidence on the health returns, in particular in relation to reducing health inequalities from optimizing policies in other sectors.<sup>51</sup> A common theme related to optimizing policies in other sectors was to address inequalities in power, money and resources, which was one of the three overarching recommendations. It is estimated that health gains from policies in other sectors have been considerable. Of improvements in child under-five mortality rates between 1990 and 2010, 50% were attributed to non-health sector investments.<sup>52</sup> Also, reducing inequalities in NCDs requires substantial non-health sector investments, especially for cardiovascular diseases and lung cancer.<sup>53</sup> Policies and programmes addressing income inequalities, such as cash transfers and active labour policies, have demonstrated benefits for health and the economy.<sup>54</sup>

Ensuring that investing in health is perceived as a necessary and effective way to combat poverty and ensure economic progress requires an ongoing dialogue between health and finance executive bodies. One way to open and maintain

that dialogue is to demonstrate an awareness of fiscal constraints to establish credibility by generating and using evidence to show that we can make efficient use of resources to deliver optimal services. To deliver, in other words, “more health for the money”.<sup>55</sup>

## Globalization and trade

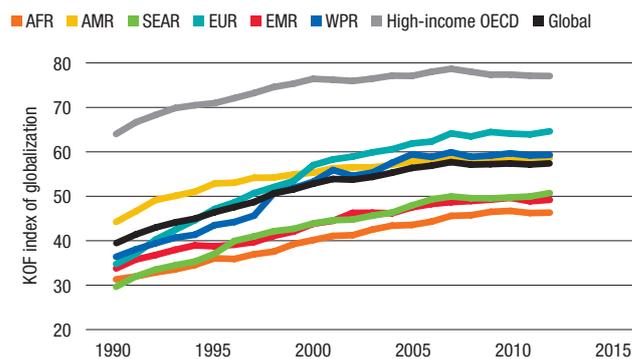
In the past few decades, and in all parts of the world, there has been an increase in global economic, financial, political and social integration and cooperation, as attested by the KOF index of globalization, which combines a set of relevant economic, social and political indicators in a synthetic index on a scale of 0 to 100 (Figure 2.12).<sup>56,57</sup> High-income OECD countries have experienced the highest levels of globalization, and the African Region and Eastern Mediterranean Region the lowest.

Increasing global economic integration is associated with the development of global forms of governance related to trade and intellectual property, as well as transnational standards and actions in the political, social, human rights and environmental spheres. Globalization comprises, among other things, growing integration of markets and nation states, receding geographical constraints on social and cultural arrangements, broader dissemination of ideas and technologies, growing threats to national sovereignty by transnational actors and the transformation of the economic, political and cultural foundations of societies.

Globalization has both positive and negative implications for global health. It is likely that the growth in world trade has also led to job and income growth, and has stimulated the growth in labour-intensive sectors of developing country economies that have been responsible for much of the progress in poverty reduction. On the other hand, global connectedness helped spread the impact of the global financial and economic crisis of 2008–2009 to countries that had nothing to do with it. Many governments underwent expenditure contractions, which dragged down economic growth prospects and cast doubts on the ability of markets to generate new and decent jobs.<sup>59</sup> In 2014, 201 million people were unemployed worldwide; this is 31 million more people than before the global crisis in 2008. Global unemployment is expected to continue to increase by 3 million in 2015 and another 8 million over the next four years.<sup>60</sup> Youth unemployment is a matter of particular concern (see also the section on population trends in this chapter), and prominent in SDG 8 on sustained inclusive growth and employment.

The new century has also seen a transformation in the relative power of the state on the one hand, and markets, civil society and social networks of individuals on the other. The role of the private sector as an engine of growth and innovation is not new, often transcending borders through multinational companies. Governments retain the power

**Figure 2.12**  
Trends in index of globalization, by region and globally, 1990–2012<sup>58</sup>



to steer and regulate, but it is now difficult to imagine significant progress on issues of global importance, such as health, food security, sustainable energy and climate change mitigation, without the private sector playing an important role. Similarly, in low-income countries, resource flows from foreign direct investment and remittances far outstrip development support and, in the case of remittances, have often proved to be more resilient than aid in the face of an economic downturn.<sup>61</sup>

Globalization also has implications for epidemiology, notably by facilitating the spread of communicable diseases and associated risks due to increased movement of people and goods around the globe – for example, through international travel and migration and trade in animals and goods. In addition, the globalization of markets (and marketing) supports the spread of NCDs by changing diets and lifestyles. Globalization may also have mixed impacts on health and health systems. For instance, low-income countries may lose health workers, but globalization may enable faster, coordinated action against health threats.

The World Trade Organization (WTO) was established in 1995 to govern global trade, including areas that have direct and indirect implications for public health. Around the same time, the emerging agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) established minimum standards of protection for each category of property rights and stimulated debate on pharmaceutical patents. In 2001, the Doha Ministerial Declaration on the TRIPS Agreement and Public Health granted increased flexibility for Member States to take measures to protect public health and promote access to medicines in certain circumstances.<sup>62</sup>

In 2003, the World Health Assembly expressed concerns about access to medicines in developing countries and the implications of the current patent protection system, and urged Member States to adapt national legislation to exploit the flexibilities contained in the TRIPS Agreement. In 2004, Member States were further encouraged to ensure that bilateral trade agreements take into account the flexibilities contained in the WTO TRIPS Agreement as recognized by the Doha Declaration.

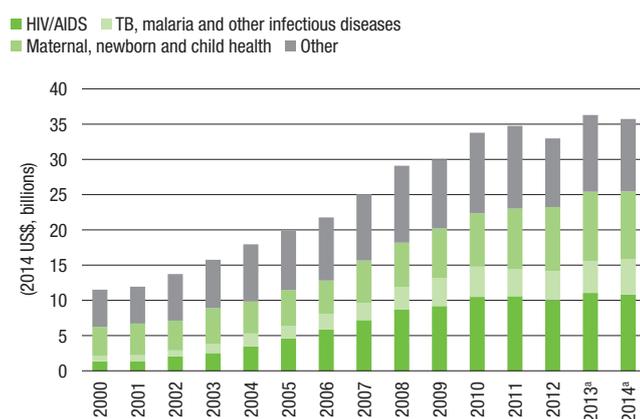
The main outcome of these various initiatives and discussions was a significant drop in the price of certain drugs. For example, the 100-fold reduction in the price of antiretroviral medicines against HIV/AIDS since 2000 and the global effort to increase access to such therapies, notably in sub-Saharan Africa, was made possible by the successful implementation of the TRIPS Agreement, including the production of much cheaper but nevertheless high-quality generics (see Chapter 5). However, the failure to complete the Doha Round, and the increase in mega-regional trade agreements such as the Trans-Pacific Partnership (TPP) and European Union–United States agreements, could strengthen intellectual property protection in ways that could undermine access to medical products.

Within the SDG health goal, Target 3.b reiterates the importance of access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health. Reducing the costs of essential medicines, vaccines and technologies in developing countries continues to be a major priority as globalization and trade liberalization continue.

## Development assistance for health

Much of the improvement in the availability and use of services and in health and development outcomes since 2000 was facilitated by a substantial increase in development financing, including for health. In 2013, total health spending reached US\$ 7.3 trillion, more than double the amount spent in 2000<sup>63</sup> and the increase in development assistance for health has been one of the features of the MDG era. Disbursements for development assistance for health tripled after 2000 (Figure 2.13), growing at a faster rate than domestic health spending, although the rate of growth has slowed since the financial crisis of 2008–2009. This external financial support for health was targeted particularly at initiatives related to the three health goals highlighted in the MDGs, representing an estimated 61% of all development assistance for health disbursed from 2000 to 2014.

**Figure 2.13**  
Development assistance for health by health focus area, 2000–2014<sup>64</sup>



<sup>a</sup> Preliminary estimates.

Domestic spending – both government and private – also increased substantially and, despite growing more slowly than development assistance for health, remains the dominant source of health financing even in low-income countries, where it represented 75% on average in 2013. This growth in domestic spending was facilitated by continued strong economic growth in most low- and middle-income countries despite the economic crisis.

Nevertheless, total health spending from domestic and external sources combined remained below a proposed target of US\$ 86 per capita<sup>65</sup> in 39 countries in 2013, and included six countries that spent less than US\$ 20 per capita.<sup>63</sup> On the other hand, the dependence of health systems on out-of-pocket spending has also fallen during this period. At the population-level, this facilitates people’s ability to use needed health services and reduces financial catastrophe and impoverishment. However, this spending remains high for many individuals in many countries, so still constitutes a barrier to access for many, and poses a risk of impoverishment and long-term financial problems for those who do get care.

The contributions from public–private partnerships, such as GAVI and the Global Fund, and nongovernmental organizations (including foundations) have expanded.<sup>66</sup> This has brought in new funding, while also supporting innovative approaches and the large-scale introduction of new technologies into routine systems at affordable prices; but it has also focused resources on vertical disease programmes, in some instances unbalancing and fragmenting health systems, leaving multiple gaps such as weak disease surveillance and response systems – as were exposed by the recent Ebola epidemic in West Africa – or inadequate resources to meet the rapidly growing NCD epidemic.

The SDGs present an opportunity for a shift in emphasis away from the funding of vertical programmes towards more system-wide, cross-cutting support, consistent with the aim of UHC. For example, health Target 3.c specifically calls for efforts to “substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing states”. There are also multiple targets under other goals that are relevant in this context that encourage states to commit funds according to their own priorities such as Target 10.b to “encourage ODA and financial flows, including direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes”. Other references, such as Target 17.2, encourage high-income countries to maintain their commitment to ODA.

One of the challenges we face as we move into the SDG era is the increasingly complex and fragmented institutional global health landscape; and incentives that favour the creation of new organizations, financing channels and monitoring systems over the reform of those that already exist risk exacerbating tendencies to overlap, duplicate and interfere.

Financing for development is also diversifying beyond ODA, and sources of development financing of growing importance include funds and foundations, nongovernmental organizations, civil society organizations and direct giving platforms. For instance, the contribution of philanthropic organizations to development increased by a factor of 10 between 2003 and 2012, notably among them the Bill & Melinda Gates Foundation. In the context of the Paris Declaration on Aid Effectiveness and the Accra Agenda for Action, health has had a combined leadership and tracer role. It was also demonstrated, through initiatives such as the International Health Partnership and related initiatives (IHP+)<sup>67</sup> and Harmonization for Health in Africa, that despite the many different players, coordination around national health strategies can be improved. Such approaches extend beyond the UN to include bilateral development agencies, development banks and nongovernmental organizations, and can show increases both in efficiency and in health outcomes.

Global revenue flows for health financing are likely to continue to change<sup>50</sup> as the principles underlying development aid shift from an emphasis on donor-recipient relations based on financial contributions to reflect concepts of cooperation and partnership, involving diverse types of support and exchanges.<sup>68</sup> After a period of dramatic growth in development assistance since 2000, it is possible that the lower growth rates evident since 2009 will continue. More importantly, the economic growth in many low- and middle-income countries has provided, and will continue to provide, major opportunities for increasing domestic health investments. Increased domestic efforts to mobilize more government revenues and increase the priority for health in public resource allocation, alongside efforts to improve efficiency in the use of funds, would accelerate this progress.

As part of the Addis Ababa Action Agenda,<sup>69</sup> countries agreed on a broad package of over 100 measures that draw upon all sources of finance, technology, innovation, trade and data to support the implementation of the SDGs. Notable among these measures are the promotion of more efficient government revenue collection and a reduction in tax avoidance and illicit financial flows. These measures are essential for expanding the fiscal space and thus vital to making progress on the health goal and targets in the SDGs, and in particular UHC. Strengthening domestic resource mobilization in low- and middle-income countries should enable ODA to be focused on mainly the poorest countries.<sup>68</sup> However, for other low- and some lower-middle-income countries, the need for external financial assistance will not be eliminated.

The composition of development assistance for health also needs to adapt to the rapidly changing epidemiological transition away from infectious diseases towards NCDs and injuries, and the complex socioeconomic patterns of disease and risk factors that appear in different countries. It also needs to address emerging global threats such as antimicrobial resistance, emerging infections and climate change. The world must ensure that global public goods such as health research and development for diseases that affect developing countries and the setting of global norms and standards are adequately financed.<sup>50</sup>

Many of the world's poorest people will remain dependent on external financial and technical support. It is, therefore, likely that the greatest need – as well as the focus of much traditional development finance – will become increasingly concentrated in the world's most unstable and fragile countries, which are often unpopular with donors in terms of fiduciary risk. As a result, donors are likely to favour their own parallel systems over national ones and thus limiting their contribution to strengthening national capacity. This also raises important questions about how the work of the UN in other, less poor, countries will be financed. The Busan Partnership for Effective Development Co-operation, which was formed after the meeting on development in the Republic of Korea in 2011, signalled that a framework based on “aid” has given way to a broader, more inclusive, international consensus that emphasizes partnership approaches to cooperation, particularly South-South and triangular relationships.<sup>70</sup>

## SOCIAL DEVELOPMENT

In addition to the direct continuation of MDGs 2 and 3 in the SDGs 4 and 5, on education and gender equality, respectively, the SDGs also give much greater weight to human rights and to equity – particularly with Goal 10 to reduce inequality – than was the case with the MDGs.

### Gender equality and rights

Gender inequality is expressed in a variety of ways, including mistreatment of one sex by another, differences in power and opportunities in society, and differences in access to health services. Gender inequalities in education, employment and civil liberties carry a cost. They not only deprive women of basic freedoms<sup>71</sup> and violate their human rights, but also negatively affect development outcomes for societies as a whole. Gender inequities have adverse impacts on health, especially for women. In many countries and societies, women and girls are treated as socially inferior. Behavioural and other social norms, codes of conduct and laws perpetuate the subjugation of females and condone violence against them. Unequal power relations and gendered norms and values translate into

differential access to and control over health resources, both within families and beyond. Across a range of health problems, girls and women face differential exposures and vulnerabilities that are often poorly recognized.<sup>72</sup>

The MDGs included a gender equality goal focused on gender disparity in education, although it also included indicators for female workforce participation and female representation in parliament. The SDGs also target gender equality (Goal 5) and gender equality is specifically referred to in several targets of other goals, including education, economic and other rights, as well as targets related to violence against women (see Chapter 8) and sexual and reproductive rights (see Chapter 4).

During the MDG era, substantial gains were made on several fronts. Gender parity in school enrolment for primary education in the developing regions as a whole was reached by 2015. Women's access to paid employment in non-agricultural sectors increased globally from 35% in 1990 to 41% in 2015, with increases, although unequal, observed in almost all regions. The average proportion of women in parliament has nearly doubled over the past two decades, but still only one in five members is a woman.<sup>38</sup> Despite these gains, much remains to be done as we move forward into the SDG era, as was underlined by the Commission on the Status of Women in 2015, which concluded that progress since the 1995 Beijing Declaration and Platform for Action had been slow and uneven, with major gaps remaining.<sup>73</sup> Similar conclusions were reached by the Commission on Population and Development in a 2014 review of the implementation of action of the International Conference on Population and Development.<sup>74,75</sup>



The strong relationship between the status of women and health forms the basis for integrated action. Actions for the health sector include:

- *Enhancing data and statistics:* Disaggregation of key statistics by gender is critical for monitoring progress, identifying key gaps, targeting, etc.,<sup>76</sup> including health data.<sup>72</sup> This includes targets on infectious diseases (3.3), NCDs and mental health (3.4), substance abuse and harmful use of alcohol (3.5), injuries (3.6) and UHC (3.8).
- *Increasing access to quality health care:* Comprehensive strategies to target gender inequality in health care and put into practice policies to ensure equal access for women, adolescents and youth to affordable and adequate health-care services, including primary health care and basic nutrition.
- *Supporting caregiving roles:* Approaches to strengthen human resources for health must acknowledge the critical role played by women as informal caregivers in the home and community, whether it concerns HIV/AIDS in low-income countries or elderly care in high-income countries.<sup>72</sup>
- *Eliminating harmful practices:* Policies and strategic actions that transform discriminatory social norms and gender stereotypes, and eliminate harmful practices including, child, early and forced marriage, honour crimes and female genital mutilation.
- *Combating violence against women:* Violence against women remains a substantial obstacle to reaching gender equality, and the health sector plays a key role in violence prevention and in treating the consequences of violence.
- *Introducing gender-sensitive policies:* Improvement and strengthening of gender responsive national policies, programmes and strategies.

## Human rights

The right to the enjoyment of the highest attainable standard of physical and mental health was first articulated in the 1946 Constitution of WHO,<sup>77</sup> and has been echoed in many other legally binding human rights conventions.<sup>78,79</sup> In 2000, the United Nations Committee on Economic, Social and Cultural Rights adopted a General Comment on the Right to Health, stating that this right extends beyond timely and appropriate health care to the underlying determinants of health, such as: access to safe drinking-water and sanitation; adequate supply of safe food, nutrition and housing; health occupational and environmental conditions; and access to health-related education and information, including sexual and reproductive health.<sup>80</sup>

Most recently, the right to health has been re-emphasized in terms of the achievement of UHC (see Chapter 3), while the SDG declaration stresses the importance of the Universal Declaration of Human Rights (as well as other international instruments relating to human rights and international law) in a number of places, as a key underlying principle. The right to health is closely related to and dependent upon the realization of other human rights, as contained in the International Bill of Rights, such as the right to food, housing, work and education. Human rights, including the right to health, are especially important for vulnerable groups, such as women, migrants or people with disabilities, who may be more likely to face discrimination, stigma and/or socioeconomic hurdles.

People with disabilities are a particular matter of concern, often facing discrimination and barriers that restrict them from participating in society on an equal basis. WHO estimates that about 1 billion people worldwide live with disability or impairment with a larger proportion living in low- and middle-income countries.<sup>81</sup> Disability was not mentioned in the MDGs, but is implicitly included in SDG Goal 3, which is concerned with the health and well-being for all, at all ages. Disability is also specifically mentioned in other targets on education (4.a), social, economic and political inclusion (10.2), sustainable cities (11.7), and equity monitoring (17.18). In addition, people with disabilities are obviously included in the UHC target, since people with disabilities are more likely to have higher health-care expenditures with higher out-of-pocket payments.<sup>82</sup> The explicit recognition that people with disabilities need to have access to appropriate health interventions, including interventions for rehabilitation and assistive health technologies and products, as part of the goal of moving towards UHC provides a major impetus for disability-related health initiatives.

The main strategy going forward is to accomplish the objectives of the WHO Global Disability Action Plan 2014-2021 as agreed by all countries and implement the actions required.<sup>83,84</sup> The objectives of the action plan are threefold: (i) to remove barriers and improve access to health services and programmes; (ii) to strengthen and extend rehabilitation, assistive technology, assistance and support services, and community-based rehabilitation; and (iii) to strengthen the collection of relevant and internationally comparable data on disability and support research on disability and related services.

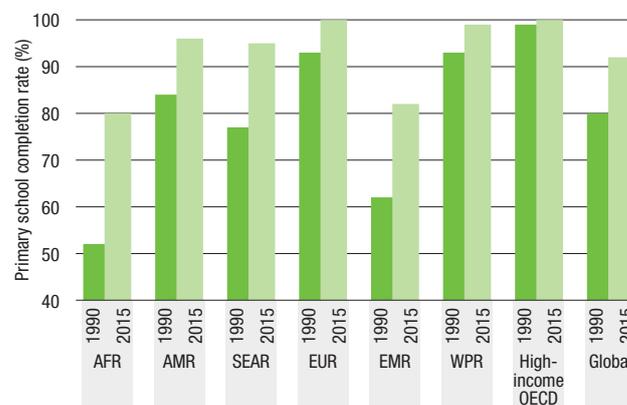
## Education

Education is strongly linked to health and other determinants of health, contributing directly and indirectly to better health.<sup>54</sup> For example, education has an independent and substantial causal effect on adult mortality and morbidity,<sup>85</sup> and also affects health indirectly through proximate determinants such as nutrition, sanitation and prevention

and treatment practices. Reciprocally, good health permits people to fully benefit from education, while poor health is directly associated with poor educational attainment. Female education is one of the strongest determinants of child survival in all societies.<sup>86,87,88</sup> Female education is thus a key strategy for ending preventable maternal and child deaths, as well as reducing fertility and improving child, adult and family health and nutrition.

The completion of basic education is also widely regarded as essential to literacy, numeracy and informed citizenship. The participation of at least some proportion of adults at the more specialized upper secondary and tertiary levels is also critical for promoting individual opportunity, economic development and societal well-being. Recent evidence also shows some direct links between secondary education and health, such as protection against HIV risk.<sup>89</sup>

**Figure 2.14**  
Primary school completion rate by region and globally, 1990 and 2015<sup>90</sup>



The MDGs contained a single target to achieve universal primary education. Primary school net enrolment rate in developing regions reached 91% in 2015, up from 80% in 1990, which means that more children than ever are attending primary school. However, just over half of all countries have achieved universal primary enrolment by 2015; with 10% close and the remaining 38% far or very far from achieving it. This leaves 57 million children out of school globally and almost 100 million adolescents in low- and middle-income countries not completing primary education in 2015. A lack of focus on the marginalized has left the poorest five times less likely to complete a full cycle of primary education than the richest. A high and growing proportion of out-of-school children live in conflict-affected zones. As a result, completion rates (Figure 2.14) and the quality of primary education are regarded as unsatisfactory in large parts of the world.<sup>4,38</sup>

Gender parity has been achieved at the primary level in 69% of countries by 2015. At the secondary level, only 48% of countries will reach the goal. Child marriage and early pregnancy continue to hinder girls' progress in education. Girls remain less likely than boys to ever enter school,

this is even more the case among girls from poor families. By contrast, in many wealthier middle- and high-income countries, in Europe and the Americas, girls outperform boys in some subjects, and boys are at higher risk of failing to complete a cycle of secondary education.<sup>4</sup>

By 2015, lower secondary enrolment increased by 27% globally and more than doubled in sub-Saharan Africa compared with the levels in 1999. Nonetheless, one third of adolescents in low-income countries will not complete lower secondary school in 2015. If current trends continue, universal lower secondary completion will only be achieved towards the end of this century.

While globally the percentage of illiterate adults fell from 18% in 2000 to 14% in 2015, this progress is almost entirely attributed to more educated young people reaching adulthood. Women continue to make up almost two thirds of the illiterate adult population. Half of sub-Saharan African women do not have basic literacy skills.

The SDGs have substantially expanded the focus on education, with nine targets addressing not only primary education and literacy, but also access to quality early childhood development, care and pre-primary education, secondary and tertiary education and vocational training, improved access for marginalized groups, and teacher supply. The agenda is ambitious, not just in terms of finding the resources to meet the additional costs, but also in terms of feasibility, given current rates of progress. The United Nations Educational, Scientific and Cultural Organization (UNESCO) has estimated that an extra US\$ 22 billion per year is needed on top of already ambitious government contributions in order to achieve the new SDG education targets for quality pre-primary and basic education for all by 2030.<sup>4</sup>

## ENVIRONMENT AND CLIMATE CHANGE

The environment is under pressure from human activity and the climate is changing. Driven largely by economic activity and population growth, anthropogenic greenhouse gas emissions have increased since the pre-industrial era, leading to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800 000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to be the dominant cause of the observed warming since the mid-20th century.<sup>91</sup> In many parts of the world, climate change will jeopardize the fundamental requirements for health, including clean air, safe and sufficient drinking-water, safe excreta management, decent work, a secure and nutritious

food supply, protection from extreme weather events and adequate shelter. Addressing the relationship between health, climate change and other major environmental factors, such as air pollution, will be of growing importance in the coming years.<sup>92,93</sup>

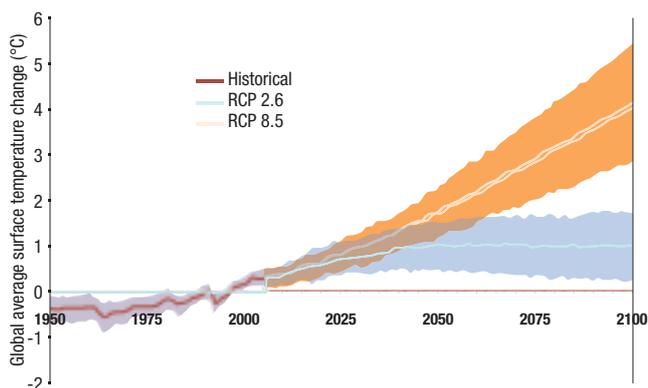
MDG 7 addressed sustainable development and had one environmental target that was specific to human health – the halving of the proportion of the population without sustainable access to safe drinking-water and basic sanitation. The target on drinking-water has been met, although disparities persist within and between countries. With regard to basic sanitation, however, 2.4 billion people still lack access to improved sanitation facilities.<sup>94</sup>

The SDGs include several targets relating to environmental sustainability and human health, notably Target 3.9 “By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination”, targets relating to water and sanitation (SDG 6), energy (SDG 7), exposure to chemicals and all wastes (SDG 12), and natural disasters and climate change (SDG 13). Environmental determinants of health also have a bearing on a number of other SDGs. For example, they are an important consideration in the poverty/hunger goal (SDG 1) given that environmental risks, such as use of solid fuels for cooking or unsafe water and sanitation disproportionately affect the poor. The same is true regarding gender inequality (SDG 5) since women and girls are the ones most likely to be doing the cooking. Those already vulnerable to food insecurity will be at increased risk of reduced crop yields linked to climate change (SDG 2). The link between decent work (included in SDG 8) and occupational health and safety is another example and, finally, SDG 11 addresses the safety and sustainability of cities and settlements, which is related to environmental health determinants such as access to safe water and sanitation, road traffic, air pollution and physical activity. The following section addresses climate change and other environmental risks to health not already covered in dedicated sections. Safe water and sanitation are addressed in Chapter 5, air pollution in Chapter 6, and natural disasters in Chapter 8.

### Climate change

According to a growing body of evidence, the climate is warming. The globally averaged combined land and ocean surface temperature data show a warming of 0.85 °C (from 0.65 to 1.06) from 1880 to 2012. In the northern hemisphere, the 30-year period from 1983 to 2012 was likely the warmest of the last 1400 years.<sup>95</sup> It is extremely likely that human activity has been the dominant cause of the observed warming since the mid-20th century. Models now reproduce observed continental-scale surface temperature patterns and trends over many decades, including the more rapid warming since the mid-20th century and the

**Figure 2.15**  
Global average surface temperature change under two scenarios for turning around global greenhouse gas emissions, 1950–2100<sup>96</sup>



RCP: representative concentration pathway

cooling immediately following large volcanic eruptions. The Intergovernmental Panel on Climate Change's (IPCC) most recent projections cover a range of scenarios for future greenhouse gas emissions, known as representative concentration pathways (RCP). These range from RCP 2.6, which assumes that global greenhouse gas emissions will peak between 2010 and 2020 and decline substantially after 2020, to RCP 8.5, in which greenhouse gas emissions continue to rise throughout the 21st century. Intermediate scenarios RCP 4.5 and 6.0 assume emissions peak in 2040 and 2080, respectively.<sup>96</sup>

The global mean surface temperature change for during 2016–2035 relative to 1986–2005 will likely be in the range from 0.3 °C to 0.7 °C. The increase of global mean surface temperatures for 2081–2100 relative to 1986–2005 is projected to range from 0.3 °C to 1.7 °C (RCP 2.6) to 2.6 °C to 4.8 °C (RCP 8.5) (Figure 2.15). The Arctic region will warm more rapidly than the global mean, and mean

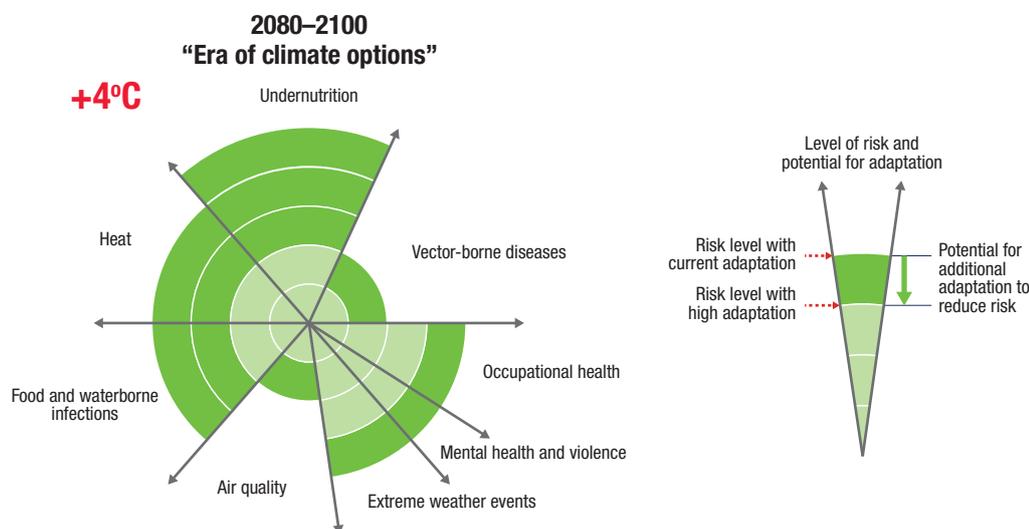
warming over land will be larger than over the ocean. Across all RCPs, global mean sea level is projected to rise from 0.26 to 0.82 metres by the late 21st century.

It is virtually certain that there will be more frequent hot and fewer cold temperature extremes over most land areas on daily and seasonal timescales as global mean temperatures increase. It is very likely that heat waves will occur with a higher frequency and duration. Occasional cold winter extremes will continue to occur.

Climate variability and climate change has important consequences for health, ranging from the immediate impact of extreme weather events, to the longer term impacts of droughts and desertification on food production and malnutrition, and the increased spread of infectious disease vectors for malaria and dengue.<sup>97</sup> Long-term climate change threatens to exacerbate today's problems, while undermining tomorrow's health systems, infrastructure, social protection systems and supplies of food, water and other ecosystem products and services that are vital for human health. The poorest and most vulnerable populations are likely to experience the most severe impacts. These may be worsened by rapid and unplanned urbanization, the contamination of air and water, and other consequences of environmentally unsustainable development.

Successive assessments by WHO<sup>98</sup> and the IPCC<sup>96</sup> have concluded that climate change presents significant risks to health, but that much of the potential burden could be averted through reinforcement of key health system functions, including improved management of environmental determinants of health such as water and sanitation and food security, improved disease surveillance and preparedness and response for extreme weather events (Figure 2.16).

**Figure 2.16**  
Primary prevention is key to protecting from climate risks<sup>102</sup>



IPCC assessment of the expected increase in the various health risks from climate change by the end of the century. The size of each wedge is roughly proportional to the expected size of the specific impact. The dark shaded part is the proportion that is assessed as avoidable through strengthening and adaptation of health protection measures.

There is increasing evidence that actions to mitigate climate change could also bring immediate health benefits, most notably through reductions in the burden of air pollution. These include moving towards cleaner sources for household energy and electricity generation as well as promoting safe public and active transport.<sup>99</sup>

During the MDG era, climate change risks have become a key consideration in the global health agenda. For example, WHA resolution 61.19 (2008)<sup>100</sup> calls for measures to assess the implications of climate change for health and health systems, and put in place appropriate response measures. This has been reinforced through frameworks for action in all WHO regions, the development of health sections within national adaptation plans and large-scale adaptation projects in low- and middle-income countries. WHA resolution 68.8 (2015)<sup>101</sup> states that there are meaningful opportunities to simultaneously improve air quality and reduce emissions of climate-altering pollutants.

According to WHO estimates, climate change will cause an additional 250 000 deaths per year between 2030 and 2050.<sup>97</sup> Most will likely perish from malaria, diarrhoeal diseases, heat exposure and undernutrition. With regard to the last, the greatest impact is expected in Africa and Asia, where most lower and lower middle-income countries are, and by children, the elderly and vulnerable populations. Undernutrition already contributes to almost half of all child deaths each year,<sup>103</sup> and rising temperatures and more variable rainfall patterns are expected to reduce crop yields, further compromising food security. Climate change-driven migration is also most likely to affect Africa and Asia because of dependence on agriculture in those regions.

Financial support for adaptation to climate change remains much lower than is required by agreed targets or needs, and less than 1.5% of multilateral climate adaptation funds have gone to health projects.<sup>104</sup> In addition, the potential health gains from climate mitigation policies are rarely included in policy evaluation or design.

## Pollution and contamination

SDG Target 3.9 aims to substantially reduce the number of deaths and illnesses from hazardous chemicals, and air, water and soil pollution and contamination. Indoor and outdoor air pollution are jointly responsible for about 7 million premature deaths annually.<sup>105</sup> Chapter 6 provides further discussion on the consequences of air pollution for health. In some areas there has been progress in the past 15 years. For example, since 2002, the number of countries using leaded gasoline for vehicles has dropped from 82 to 6, including the phase-out of leaded gasoline in 48 sub-Saharan African countries between 2002 and 2005. Lead is a cause of reductions in intelligence and of neuropsychiatric disorders, particularly in children, and causes an increased risk of cardiovascular diseases. In sub-

Saharan Africa alone, unleaded gas has been estimated to result in nearly US\$ 100 billion of health benefits.<sup>106</sup>

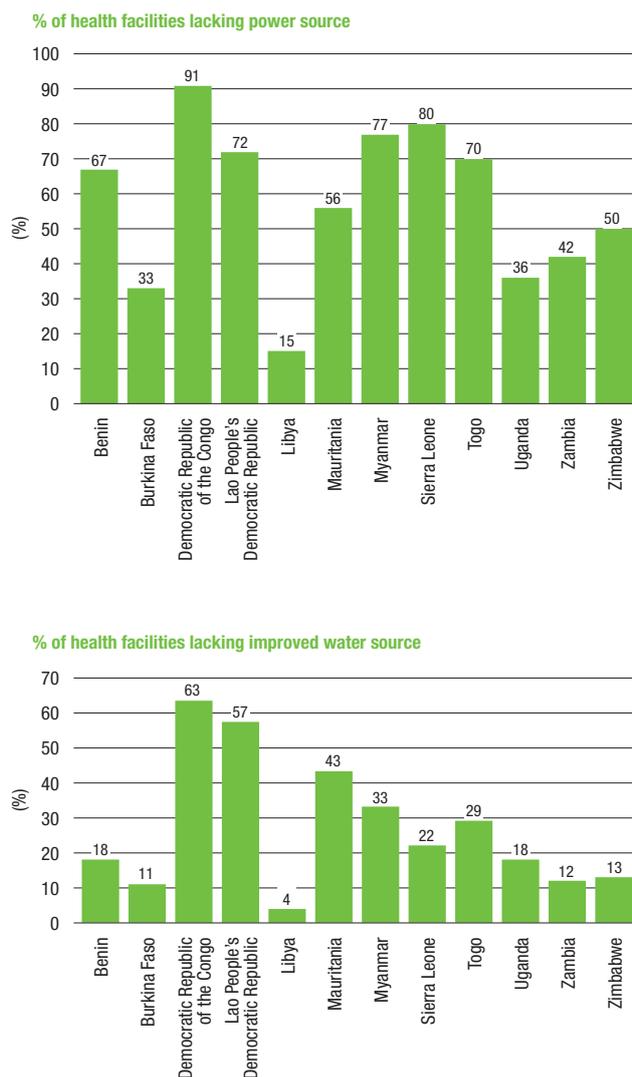
The main health impact of water pollution and contamination are associated with increased levels of mortality due to waterborne diseases, most notably diarrhoeal diseases which are associated with 1.5 million deaths every year. More than half of that burden, or 842 000 deaths per year, are attributable to unsafe water supply, and lack of sanitation and hygiene.<sup>107</sup> Chapter 5 deals with waterborne diseases in greater detail. The burden of disease due to hazardous chemicals and soil pollution and contamination is less well known than that due to water and air pollution. In 2001, the legally binding Stockholm Convention on Persistent Organic Pollutants (POPs), was adopted by most countries to protect health and the environment from POPs by reducing or eliminating their release. POPs are chemicals of global concern due to their negative health impacts, their persistence in the environment, potential for long-range transport and dispersal, and capacity to accumulate in ecosystems. As part of the WHO and the United Nations Environment Programme (UNEP) collaboration for the global monitoring plan under the Stockholm Convention, human milk surveys provide results that indicate success in eliminating certain persistent pesticides, such as aldrin, dieldrin, mirex and toxaphene, but also the ubiquitous presence of unintentional by-products.<sup>108</sup>

Within the health sector, priority concerns will be ensuring access to clean energy for health facilities and lowering the climate footprint of the health sector in developed countries, for example by reducing energy consumption, reducing toxic waste, using safer chemicals and purchasing eco-friendly products.

## Occupational health

The SDGs have no specific target on occupational health. Target 8.8, however, refers to “Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment”. In 2007, Member States endorsed WHA resolution 60.26 Workers’ Health: Global Plan of Action to cover all workers with essential interventions and basic occupational health services for primary prevention of occupational and work-related diseases and injuries. A framework for the development, implementation and evaluation of healthy workplace programmes in different sectors and sizes of companies ensures the protection and promotion of the health of workers. The Minamata Convention<sup>109</sup> was signed in October 2013, its main objective being to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. The Convention includes an article dedicated to health aspects. While initiatives are being undertaken to improve environmental conditions in the workplace generally, many

**Figure 2.17**  
**Proportion of health facilities lacking power source or improved water source,<sup>a</sup> 2010–2015<sup>110</sup>**



<sup>a</sup> Data from most recent survey in each country.

health facilities in low- and lower-middle-income countries continue to lack safe water and basic sanitation or, for that matter, access to electricity (Figure 2.17). This affects the risks of infection for both service providers and clients, as well as the quality of services.

## Intersectoral action

Addressing the issue of environmental determinants of health requires a concerted, intersectoral response, involving, at the very least, transport and urban development. The main strategy for managing the health risks associated with

disasters in the post-2015 era is supported by the Sendai Framework for Disaster Risk Reduction 2015–2030<sup>111</sup>, which is discussed in Chapter 8. It provides general guidance for the reduction of risk and loss through integrated and multisectoral actions to prevent new disasters, mitigate existing disaster risk, reduce hazard exposure and enhance preparedness for response and recovery. In line with the Sendai framework, WHO and others should aim to position health as a central concern in climate policy, and a prime object of technical and financial support mechanisms. More generally, climate must be brought into the development discourse. The SDGs have made a first step in that direction.

Progress in this area will require support for a comprehensive approach to building health system resilience to climate change, including technical support for development of the health components of national adaptation plans, an operational framework to build climate resilience into the core building blocks of health systems, and large-scale projects, for example, focusing on integrating climate change and health into water and sanitation investments. Surveillance systems for climate-sensitive infectious diseases such as malaria and cholera also need to be strengthened. Countries should make better use of early-warning information to predict the onset, intensity and duration of epidemics. Such predictions allow health officials to pre-position medicines and vaccines, which can reduce the death toll.

Intersectoral actions need to take appropriate account of health effects in policies, for example, in the provision of fossil fuel subsidies, the reduction of which would be expected to significantly reduce both air pollution deaths and emissions of greenhouse gases.<sup>112</sup> More targeted policies, for example, reducing emissions of short-lived climate pollutants such as black carbon and methane through cleaner electricity generation, household energy and transport policy, would slow the rate of global warming, while also saving nearly 2.5 million lives per year.<sup>113</sup> Sustainable, low-carbon urban transport – such as cycling or walking – could further lead to reductions in heart disease, stroke, breast cancer and other ailments. The importance of intersectoral action for health has been supported by WHO since the 1978 Declaration of Alma-Ata.<sup>114</sup> More recently, the 8th Global Conference on Health Promotion in Helsinki stressed the importance of taking health into account in other policies, what has come to be termed Health in All Policies.<sup>115,116</sup> Going forward, it seems clear that strategies based on such policies will play an important part in advancing the SDG agenda in this crucial area.

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