



# Noncommunicable diseases: a major health challenge of the 21st century

Of the estimated 57 million global deaths in 2008, 36 million (63%) were due to noncommunicable diseases (NCDs).<sup>11,12</sup> Population growth and increased longevity are leading to a rapid increase in the total number of middle-aged and older adults, with a corresponding increase in the number of deaths caused by NCDs. It is projected that the annual number of deaths due to cardiovascular disease will increase from 17 million in 2008 to 25 million in 2030, with annual cancer deaths increasing from 7.6 million to 13 million. As a result of

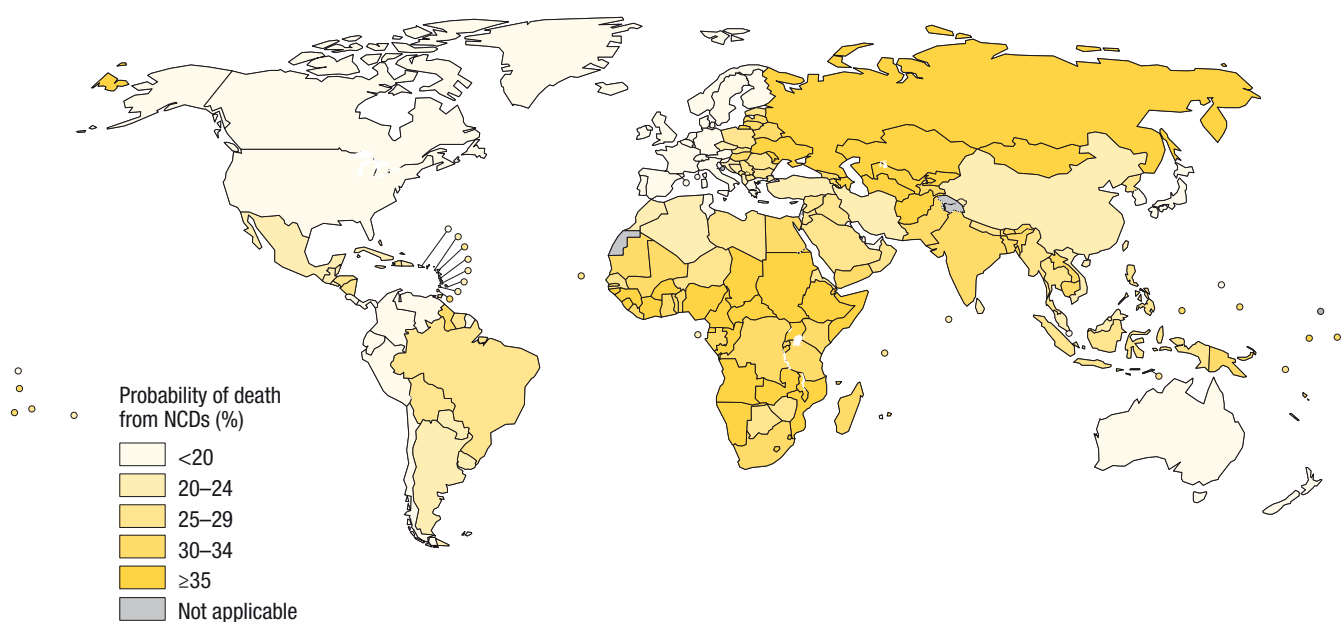
such trends, the total number of annual NCD deaths is projected to reach 55 million by 2030 – whereas annual infectious disease deaths are projected to decline over the next 20 years.

In 2008, around 80% of all NCD deaths (29 million) occurred in low- and middle-income countries. In addition, a higher proportion (48%) of all NCD deaths in low- and middle-income countries are estimated to occur in people under the age of 70 – compared with an estimated 26% in high-income countries and a global average of 44%. Such premature death rates from NCDs are a major consideration in determining their impact. The probability of dying from an NCD between the ages of 30 and 70 is highest in sub-Saharan Africa, Eastern Europe and parts of Asia. (Figure 7).

<sup>11</sup>. *Cause-specific mortality: regional estimates for 2008*. Geneva, World Health Organization, 2011 ([http://www.who.int/healthinfo/global\\_burden\\_disease/estimates\\_regional/en/index.html](http://www.who.int/healthinfo/global_burden_disease/estimates_regional/en/index.html)).

<sup>12</sup>. *Causes of death 2008: data sources and methods*. Geneva, World Health Organization, 2011 ([http://www.who.int/healthinfo/global\\_burden\\_disease/cod\\_2008\\_sources\\_methods.pdf](http://www.who.int/healthinfo/global_burden_disease/cod_2008_sources_methods.pdf)).

**Figure 7.** Probability of death from an NCD between ages 30 and 70 (%), 2008



## NCD risk factors are known

The largest proportion of NCD deaths is caused by cardiovascular disease (48%), followed by cancers (21%) and chronic respiratory diseases (12%). Diabetes is directly responsible for 3.5% of NCD deaths. Behavioural risk factors, including tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol, are estimated to be responsible for about 80% of coronary heart disease and cerebrovascular disease.<sup>13</sup>

Behavioural risk factors are associated with four key metabolic and/or physiological changes – raised blood pressure, increased weight leading to obesity, hyperglycaemia and hyperlipidemia. These changes can have multiple effects. For example, in addition to its direct role in diabetes, raised fasting blood glucose also increases the risk of cardiovascular deaths, and was estimated to cause 22% of coronary heart disease deaths and 16% of stroke deaths.<sup>13</sup> In terms of attributable deaths, the leading behavioural and physiological risk factors glob-

ally are raised blood pressure (to which 13% of global deaths are attributed), followed by tobacco use (9%), raised blood glucose (6%), physical inactivity (6%) and being overweight or obese (5%).<sup>13</sup>

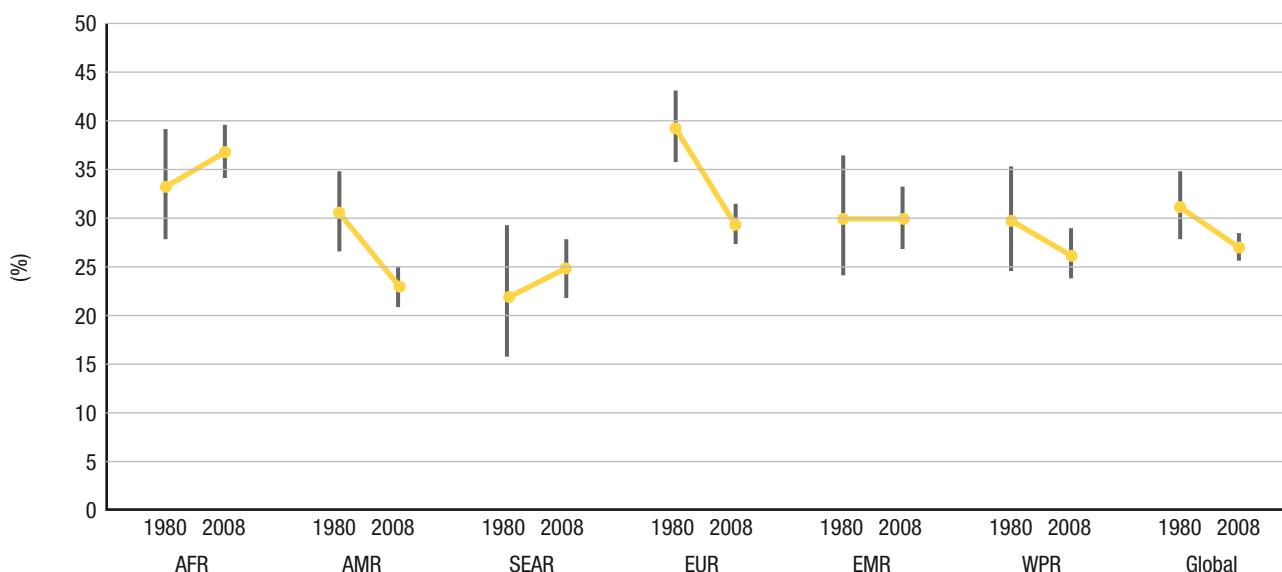
It has been estimated that raised blood pressure causes 51% of stroke deaths and 45% of coronary heart disease deaths.<sup>13</sup> Mean blood pressure has decreased dramatically in nearly all high-income countries. For example, mean age-standardized male systolic blood pressure (SBP) in the United States decreased from 131 mm Hg (95% uncertainty interval 127–135) in 1980 to 123 mm Hg (120–127) in 2008, while mean age-standardized female SBP decreased from 125 mm Hg (121–130) to 118 mm Hg (115–122) mm Hg. In contrast, mean blood pressure has been stable or increasing in most African countries.<sup>14,15</sup> Today, mean blood pressure remains very high in many African and

<sup>13</sup> *Global health risks: mortality and burden of disease attributable to selected major risks*. Geneva, World Health Organization, 2009 ([http://www.who.int/healthinfo/global\\_burden\\_disease/GlobalHealthRisks\\_report\\_full.pdf](http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf)).

<sup>14</sup> Danaei G et al. (2011). National, regional, and global trends in systolic blood pressure since 1980: Systematic analysis of health examination surveys and epidemiological studies with 786 country-years and 5.4 million participants. *Lancet*, 377:568–577.

<sup>15</sup> *Global Health Observatory*. Geneva, World Health Organization, 2011 (<http://www.who.int/gho>).

**Figure 8.** Age-standardized prevalence (%) of raised blood pressure (SBP  $\geq$ 140 mm Hg or DBP  $\geq$ 90 mm Hg) among adults aged 25 years and over by WHO region, 1980 and 2008



some European countries. As shown in Figure 8, the prevalence of raised blood pressure in 2008 (SBP  $\geq 140$  mm Hg or diastolic blood pressure (DBP)  $\geq 90$  mm Hg) was highest in the WHO African Region at 36.8% (34.0–39.7). Applying the lessons learnt in high-income countries to low- and middle-income settings has the potential to significantly reduce the overall rate of adult mortality from cardiovascular diseases.

More than two thirds of all cancer deaths occur in low- and middle-income countries, with lung, breast, colorectal, stomach and liver cancers causing the majority of such deaths. Risk factors for cancer include the four main NCD risk factors. However, infections such as hepatitis B and hepatitis C (both associated with liver cancer), human papillomavirus (associated with cervical cancer) and *Helicobacter pylori* (associated with stomach cancer) also cause 20% of cancer deaths in low- and middle-income countries, and 9% of cancer deaths in high-income countries.<sup>13</sup>

Predominant cancer types vary according to the prevailing underlying risks. In sub-Saharan Africa, for example, cervical cancer is the leading cause of cancer death among women due to a high prevalence of infection with human papillomavirus. In high-income countries,

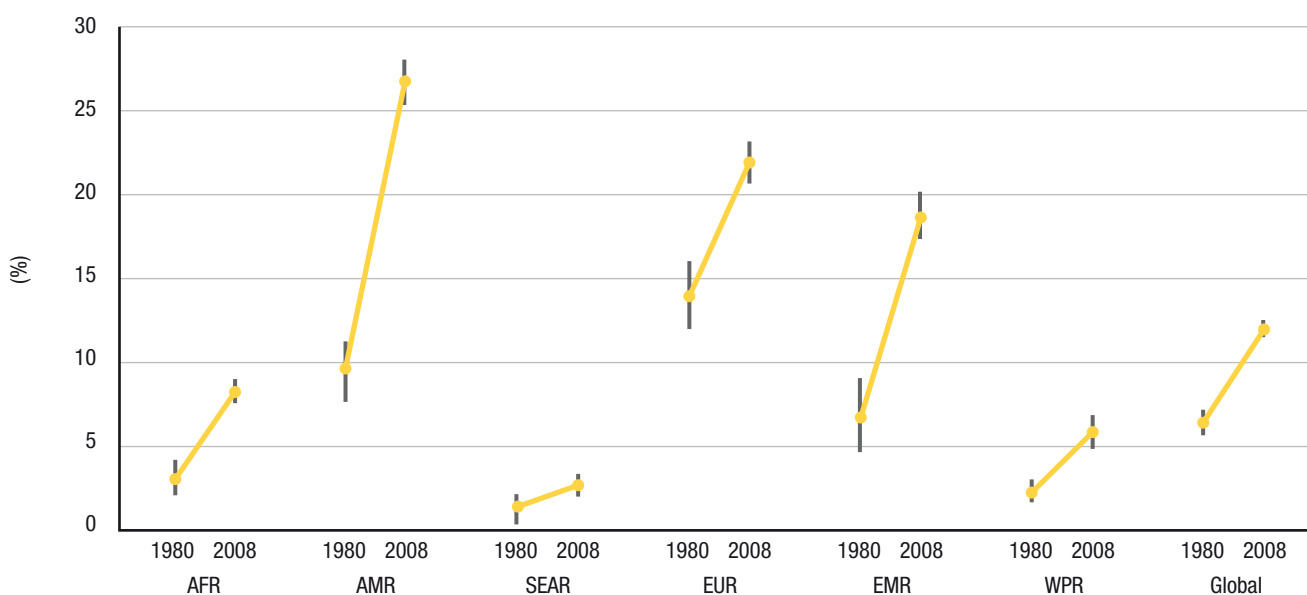
the leading causes of cancer deaths are lung cancer among men and breast cancer among women.

Worldwide, 2.8 million people die each year as a result of being overweight or obese.<sup>13</sup> Being overweight or obese can lead to adverse metabolic effects on blood pressure, cholesterol and triglyceride levels, and can result in diabetes. Being overweight or obese thus increases the risks of coronary heart disease, ischaemic stroke, type 2 diabetes mellitus, and a number of common cancers.

Between 1980 and 2008, the worldwide prevalence of obesity (body mass index  $\geq 30$  kg/m<sup>2</sup>) almost doubled (Figure 9). By 2008, 10% of men and 14% of women in the world were obese, compared with 5% of men and 8% of women in 1980. As a result, an estimated half a billion men and women over the age of 20 were estimated to be obese in 2008. In all WHO regions, women were more likely to be obese than men.

The prevalence of overweight and obese individuals was highest in the WHO Region of the Americas (62% overweight in both sexes, and 26% obese) and lowest in the WHO South-East Asia Region (14% overweight in both sexes and 3% obese). In the WHO European

**Figure 9.** Age-standardized prevalence (%) of obesity (body mass index  $\geq 30$  kg/m<sup>2</sup>) among adults aged 20 years and over by WHO region, 1980 and 2008



Region, WHO Eastern Mediterranean Region and WHO Region of the Americas, over 50% of women were overweight. In all three regions, approximately half of these overweight women were obese (23%, 24% and 29% respectively).

## The United Nations is taking action

To address the prevention and control of NCDs, with a particular focus on developing countries, the United Nations General Assembly convened a High-Level meeting on NCDs in September 2011. The Political Declaration adopted by the General Assembly represents a breakthrough in the global struggle against NCDs. It acknowledges that NCDs constitute one of the major challenges to development in the 21st century, highlights the rapidly growing magnitude of NCDs in developing countries, and recognizes NCDs as a contributing factor to poverty and hunger in developing countries. The declaration outlines ways to strengthen national capacities to address NCDs, and to respond to the challenge through the reduction of risk factors, the strengthening of health systems, and improved monitoring and evaluation. The declaration specifically requests WHO:

- to develop a comprehensive global monitoring framework and recommendations for a set of voluntary global targets for the prevention and control of NCDs;
- to provide guidance to Member States on the development of national targets and indicators;
- to collaborate with the Secretary-General of the United Nations in submitting a report to the United Nations General Assembly in 2012 on options for strengthening and facilitating multisectoral action for the prevention and control of NCDs through effective partnership.

The global monitoring framework, targets and indicators are now being developed with the full participation of WHO Member States and in collaboration with other United Nations agencies, funds and programmes, and with relevant international organizations.

# Health expenditures and universal coverage

Two recent World Health Assembly (WHA) resolutions<sup>16,17</sup> have highlighted the importance of health-financing systems in helping countries attain and maintain universal coverage – sometimes called “universal health coverage” or “social health protection”. Universal coverage has been defined as:

*ensuring that all people have access to needed health services – prevention, promotion, treatment and rehabilitation – without facing financial ruin because of the need to pay for them.*<sup>18</sup>

The two WHA resolutions requested that WHO support countries seeking to modify their health-financing systems in order to achieve this aim – partly through the sharing of information on best practices and country experiences. Drawing on the experiences of countries at all income levels, *The World Health Report 2010*<sup>18</sup> makes the case that all countries could do at least one thing to move closer to universal coverage or to protect the gains already made. Options for immediate action include:

- raising more funds for health domestically;
- reducing financial barriers to services by increasing forms of prepayment and the pooling of funds, rather than relying on direct out-of-pocket payments;
- improving efficiency and equity in the way resources are used.

The report urged that richer countries continue to support lower-income countries in all of these areas. In the

case of the first two options, national health accounts and other forms of expenditure tracking can provide very useful information.

## How much money is available for health?

The overall level of funding allocated to health sets the boundaries that determine which services will be available to the population. This overall level is determined partly by a country's wealth, the proportion of national income devoted to health, and inflows of funds for health from external partners.

Figure 10 shows total health expenditure (US\$) per capita for 2009. Data are unavailable for the Democratic Republic of Korea, Somalia and Zimbabwe. Because of the enormous variation in health expenditures between different countries, the relative values shown by the horizontal bars use a logarithmic scale, with the corresponding absolute figures shown to the left of each bar.

Expenditures per capita from all sources – public, private and external partners – ranged from US\$ 11 in Eritrea to US\$ 8262 in Luxembourg. Average (weighted) per capita expenditures also varied substantially across WHO regions and country-income groupings – ranging from US\$ 48 in the WHO South-East Asia Region to US\$ 3187 in the WHO Region of the Americas; and from US\$ 25 in low-income countries to US\$ 4692 in high-income countries.

The High Level Taskforce on Innovative International Financing for Health Systems<sup>19</sup> suggested that, on average, a country would require a minimum of US\$ 44

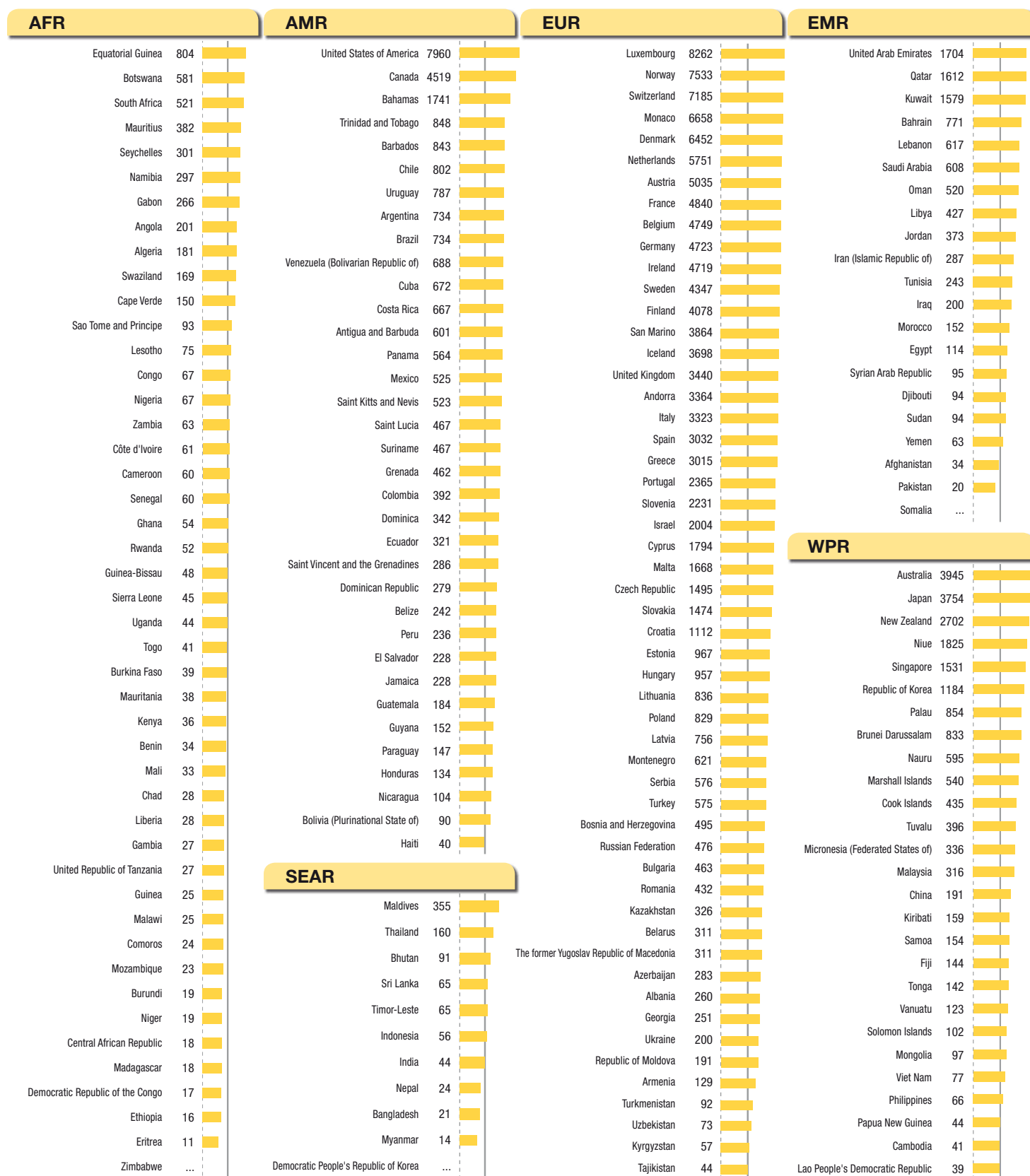
<sup>16</sup> Fifty-Eighth World Health Assembly. Resolution WHA 58.33. *Sustainable health financing, universal coverage and social health insurance*. Geneva, World Health Organization, 2005 ([http://apps.who.int/gb/ebwha/pdf\\_files/WHA58-REC1/english/Resolutions.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA58-REC1/english/Resolutions.pdf) – accessed 8 February 2012).

<sup>17</sup> Sixty-Fourth World Health Assembly. Resolution WHA 64.9. *Sustainable health financing structures and universal coverage*. Geneva, World Health Organization, 2011 ([http://apps.who.int/gb/ebwha/pdf\\_files/WHA64/A64\\_R9-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_R9-en.pdf) – accessed 8 February 2012).

<sup>18</sup> *The World Health Report 2010. Health systems financing: the path to universal coverage*. Geneva, World Health Organization, 2010 (<http://www.who.int/whr/2010/en/index.html> – accessed 8 February 2012).

<sup>19</sup> *Constraints to scaling up the health Millennium Development Goals: costing and financial gap analysis. Background document for the Taskforce on Innovative International Financing for Health Systems*. Geneva, World Health Organization, 2010 ([http://www.internationalhealthpartnership.net/CMS\\_files/documents/working\\_group\\_1\\_technical\\_background\\_report\\_\(world\\_health\\_organization\)\\_EN.pdf](http://www.internationalhealthpartnership.net/CMS_files/documents/working_group_1_technical_background_report_(world_health_organization)_EN.pdf), accessed 8 February 2012).

**Figure 10.** Total health expenditure per capita, 2009<sup>20</sup> (US\$)



<sup>20</sup> The bars show values on a logarithmic scale and the vertical grey lines show the suggested minimum of 44\$ USD per capita. The numerical values show the total health expenditure per capita for 2009.

per capita in 2009 to ensure that everyone could have access to a set of essential health services focusing largely on HIV, tuberculosis, malaria, and maternal and child health, with some preventive activities targeting noncommunicable diseases. This figure incorporates the amount needed by national health systems to simultaneously scale up all the required interventions. On the logarithmic scale shown in Figure 10, this cut-off point of US\$ 44 is shown as a vertical grey line. In 2009, 29 countries spent less than this per capita, despite a substantial increase in external financial support for health-care provision following the United Nations Millennium Declaration of 2000. At this level of funding, it is simply not possible to ensure universal access to even a limited set of essential health services.

In addition, many other low- and middle-income countries are facing severe financial constraints, and their capacity to increase the availability and quality of health services over time will depend on their ability to increase funding from both domestic and external sources, and to use them efficiently and equitably. *The World Health Report 2010* summarized a number of ways that countries could raise more funds for health domestically including giving greater priority to health in the making of government budget decisions.

## Levels of financial risk protection

Information on the extent of financial catastrophe and impoverishment associated with direct out-of-pocket payments for health is available for 89 countries.<sup>21</sup> It is estimated that each year up to 10% of the population in these countries suffers this type of financial catastrophe, with up to 4% pushed under the poverty line. Based on data covering 90% of the world's population, an estimated 100 million people are pushed under the poverty line each year simply because they use health services for which they are forced to pay out of their own pockets.

<sup>21</sup>. Xu K et al. (2007). Protecting households from catastrophic health spending. *Health Affairs*, 26(4):972–983.

Figure 11 shows the levels of out-of-pocket spending on health expressed as a percentage of total health expenditure by country. High relative levels of such payments have been shown to be highly correlated with the incidence of financial catastrophe and impoverishment. The vertical grey lines indicate a cut-off point of 15%, as evidence indicates that below 15–20%, the incidence of financial catastrophe caused by out-of-pocket health expenses is negligible.<sup>22</sup> Forty-seven countries currently fall below the 15% threshold; while in 36 countries, out-of-pocket payments account for more than 50% of total health spending. Prepayment approaches – such as taxes and/or insurance – with subsequent pooling of available financial resources spread the risk across the population, and help to ensure that people can use health services without fear of financial ruin.

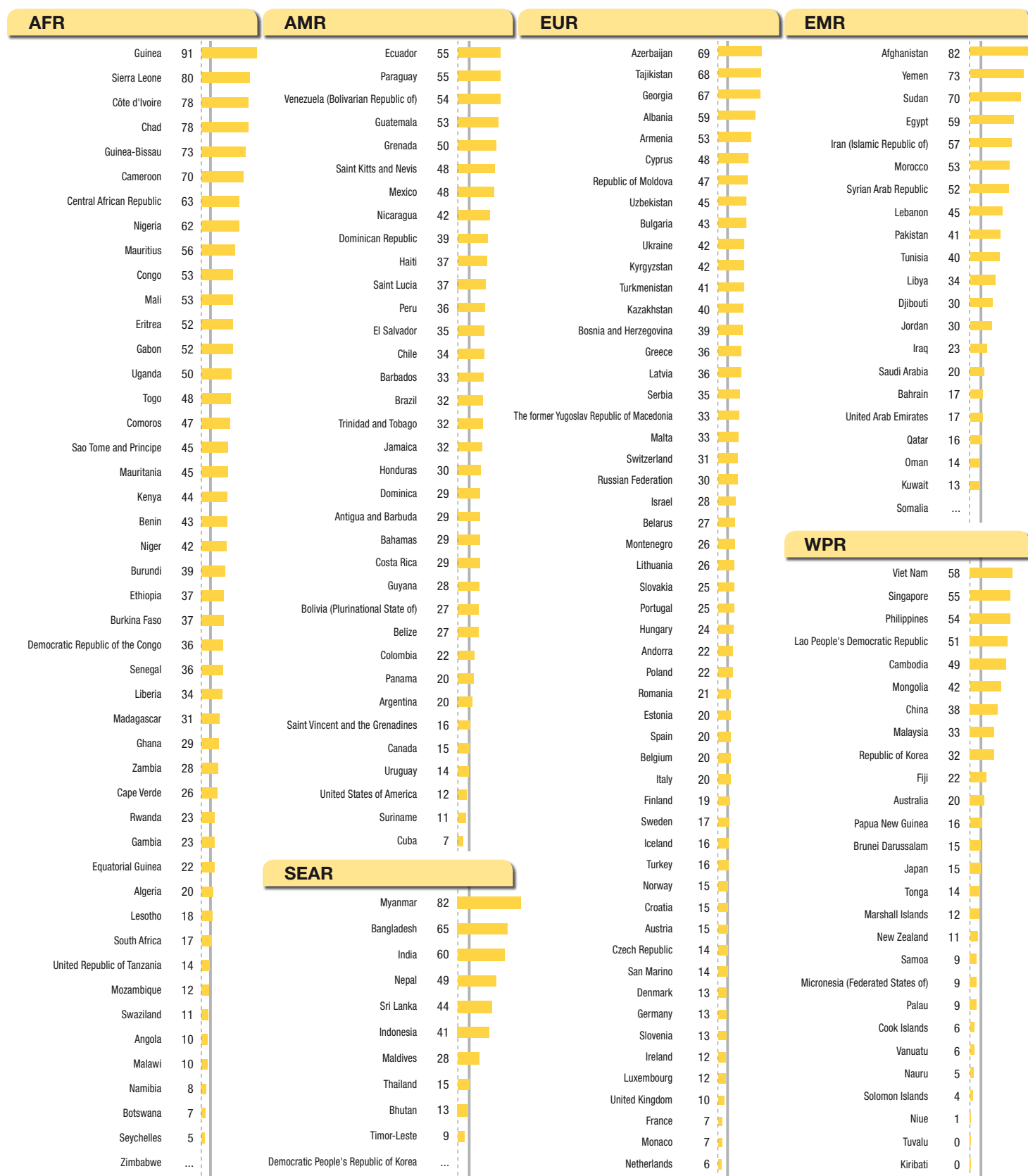
## Conclusion

With very low levels of funding, countries cannot ensure universal access to even a very limited set of health services. On the other hand, higher levels of funding might not translate into better service coverage or improved health outcomes if the resources are not used efficiently or equitably. The two health expenditure indicators presented here do not capture aspects of efficiency, and only partially highlight the issue of equity. However, they still provide valuable information on two of the important areas of health financing for universal coverage.

<sup>22</sup>. Xu K et al. Exploring the thresholds of health expenditure for protection against financial risk. *The World Health Report 2010* background paper no. 19 (<http://www.who.int/healthsystems/topics/financing/healthreport/19THE-thresv2.pdf> – accessed 8 February 2012).



**Figure 11.** Out-of-pocket health expenditure as a proportion of total health expenditure, 2009 (%)



# Civil registration and vital statistics systems

Civil registration and vital statistics systems are the foundation of modern public administration. When properly functioning, such systems are the most reliable source of continuous data on fertility, mortality and causes of death. Cause-specific mortality statistics derived from such systems are instrumental in guiding national and global policies and priorities for health development.

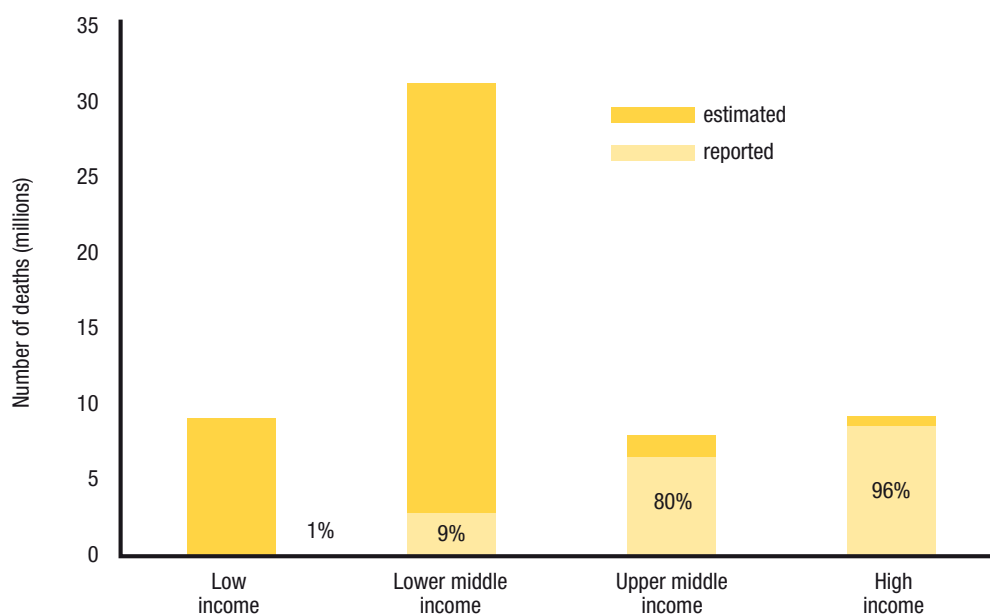
few exceptions – in South Africa, for example, successful efforts were made to increase the coverage of birth and death registrations from about 50% in the mid-1990s to almost 90% by 2008.<sup>23</sup> The two most populous countries of the world, China and India, do not have fully functional civil registration systems, with both countries instead making use of sample registration approaches to generate representative mortality statistics.

## Two thirds of deaths are not counted

Only around a quarter of the global population lives in countries where more than 90% of births and deaths are registered – and these are mostly high-income countries. Figure 12 illustrates the disparities that exist in death registration in different country-income groups. In low- and lower-middle-income countries, only a small proportion of deaths are counted by the system. In recent decades, little progress has been made with only

<sup>23</sup> WHO Mortality Database: Tables. Geneva, World Health Organization, 2012 (<http://www.who.int/healthinfo/morttables> – accessed 30 March 2012).

**Figure 12.** Estimated versus reported number of deaths by country-income group, 2009<sup>23</sup>



## Only one in five countries produces high-quality data on causes of death

Currently, only 34 countries – representing 15% of the world population – produce high-quality cause-of-death data, and almost all of these countries are in Europe and the Americas (Table 2). A further 85 countries – representing 65% of the world population – produce lower-quality cause-of-death data, while 74 countries lack such data altogether.

**Table 2.** Quality of cause-of-death statistics reported to WHO by region, 2009<sup>23,24</sup>

WHO region	No death-registration data	Low quality	Medium quality	High quality	Number of WHO Member States
AFR	42	2	1	1	46
AMR	2	7	13	13	35
SEAR	7	4	0	0	11
EUR	2	11	24	16	53
EMR	9	10	2	0	21
WPR	12	4	7	4	27
<b>Global</b>	<b>74</b>	<b>38</b>	<b>47</b>	<b>34</b>	<b>193</b>

Figure 13 shows the variation that exists between countries and regions in terms of the coverage and quality of cause-of-death data. In terms of progress, the number of Member States reporting causes of death to WHO tripled between 1950 and 2000 (from 36 to 106) but has increased by only 13 countries in the last decade. Despite this generally unsatisfactory situation, there are encouraging signs of increasing awareness among decision-makers and country-development partners of the need for improved vital statistics. There are also signs of a growing political

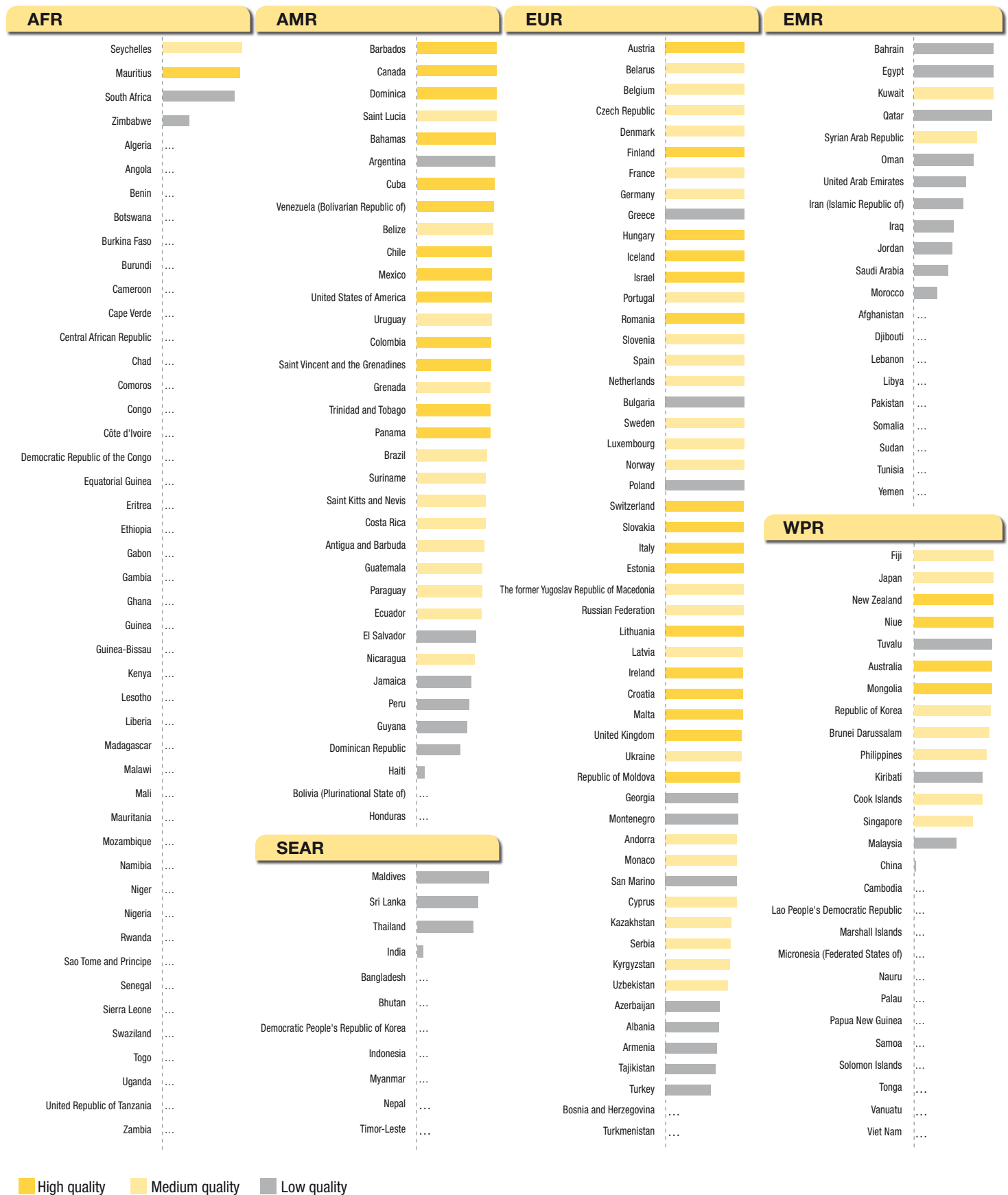
momentum for change following the stagnation of recent decades.

### Modelling to fill data gaps

The weakness of death registration in many low- and middle-income countries has resulted in the need to rely upon extensive statistical modelling to develop internationally comparable mortality estimates. These estimates, in particular for cause-specific mortality (for example, maternal, HIV/AIDS or malaria mortality), are subject to considerable uncertainty and variation due to the different assumptions and methods used. The substantial efforts and attention devoted to the regular updating of these estimates reflect the global need to improve assessment of cause-specific mortality trends. The lack of good quality data underpinning such esti-

<sup>24</sup> “High quality” refers to data coded using ICD-9 or ICD-10 with coverage  $\geq 90\%$  and  $< 10\%$  deaths coded to ill-defined symptoms and signs. “Medium quality” refers to data with coverage of 70–90% with 10–20% of deaths coded to ill-defined symptoms and signs. “Low quality” refers to data with coverage  $< 70\%$  or with  $> 20\%$  of deaths coded to ill-defined symptoms and signs.

Figure 13. Coverage and quality of cause-of-death data



mates highlights the urgent need for investment in improving death registration in countries, as part of overall efforts to enhance civil registration and vital statistics systems.

## The time for improvement is now

There are signs that both the international community and countries are increasingly committed to improving civil registration and vital statistics systems, including death registration with a reliable cause. For example, the Statistical Commission for Africa adopted a resolution<sup>25</sup> in January 2012 which prioritized the strengthening of civil registration and vital statistics for the coming decade. In addition, the United Nations Commission on Information and Accountability for Women's and Children's Health recommended in its 2011 report that, as a foundation of accountability for health:

*...by 2015, all countries have taken significant steps to establish a system for registration of births, deaths and causes of death, and have well-functioning health information systems that combine data from facilities, administrative sources and surveys.*<sup>26</sup>

The focus of the Health Metrics Network (HMN) hosted by WHO (<http://www.who.int/healthmetrics/en/>) is on strengthening civil registration and vital statistics systems. A crucial development in this endeavour is the increasing number of countries that are beginning to review the current situation, and to invest in the systematic strengthening of their national systems.

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<sup>25</sup> *Resolutions of the Seventh Africa Symposium on Statistical Development. Improving Civil Registration and Vital Statistics Institutional and Human Infrastructure.* Cape Town, South Africa, 18–20 January 2012 ([http://www.statssa.gov.za/assd2012/7th\\_ASSD\\_Resolution\\_ECA.pdf](http://www.statssa.gov.za/assd2012/7th_ASSD_Resolution_ECA.pdf)).

<sup>26</sup> *Keeping promises, measuring results.* Commission on Information and Accountability for Women's and Children's Health. Geneva, World Health Organization, 2011 ([http://www.who.int/topics/millennium\\_development\\_goals/accountability\\_commission/Commission\\_Report\\_advance\\_copy.pdf](http://www.who.int/topics/millennium_development_goals/accountability_commission/Commission_Report_advance_copy.pdf)).

