

## Chapter 3

# Education

### Key findings

- Two thirds of the 774 million adult illiterates worldwide are women – the same proportion for the past 20 years and across most regions.
- The global youth literacy rate has increased to 89 per cent, while the gender gap has declined to 5 percentage points.
- Gaps between girls' and boys' primary enrolment have closed in the majority of countries, but gender parity is still a distant goal for some.
- 72 million children of primary school age are not attending school, out of which over 39 million (or 54 per cent) are girls.
- While secondary school enrolments show improvement, fewer countries are near gender parity than for primary education.
- In tertiary enrolment, men's dominance has been reversed globally and gender disparities favour women, except in sub-Saharan Africa and Southern and Western Asia.
- Women in tertiary education are significantly underrepresented in the fields of science and engineering; however, they remain predominant in education, health and welfare, social sciences, and humanities and arts.
- Worldwide, women account for slightly more than a quarter of all scientific researchers – an increase compared to previous decades but still very far from parity.
- Use of and access to the Internet grew exponentially in the past decade, narrowing the gender digital divide – however, women still do not have the same level of access as men in most countries, whether more or less developed.

### Introduction

Education imparts skills and competencies that are central to human development and enhanced quality of life, bringing wide-ranging benefits to both individuals and societies. Investing in girls' and women's education in particular produces exceptionally high social and economic returns. Educated women invest more in their children and contribute to the welfare of the next generation. They are more likely to participate in the labour force, allowing them to earn an income, know and claim their rights, and attain greater influence in the household and public life. Education is essential for empowering women and for closing the gap between women and men in respect of socio-economic opportunities; it can reduce inequalities based on gender and alter the historical legacy of disadvantage faced by women.

Education has long been recognized as a fundamental right with far-reaching consequences for human development and societal progress. The right to education is proclaimed in the Universal Declaration of Human Rights and various international covenants. The importance of education for the advancement of women was highlighted in the Beijing Platform for Action,<sup>1</sup> in which it was identified as one of 12 critical areas of concern and affirmed as central for gender equality and women's empowerment. The Platform for Action called for eliminating discrimination in education on the basis of gender at all levels, eradicating illiteracy among women and improving women's access to vocational training, science and technology and continuing education. With the adoption of the Millennium Development Goals (MDGs),

<sup>1</sup> United Nations, 1995.

Table 3.1  
Number of adult illiterate women and men by region, 1990 and 2007 (in millions)

	Both sexes		Men		Women	
	1990	2007	1990	2007	1990	2007
<b>World</b>	<b>870.1</b>	<b>774.4</b>	<b>321.3</b>	<b>278.5</b>	<b>548.8</b>	<b>495.9</b>
Less developed regions	860.3	768.1	318.6	276.2	541.7	491.9
More developed regions	9.8	6.2	2.7	2.3	7.1	4.0
<b>Africa</b>	<b>175.0</b>	<b>207.2</b>	<b>68.0</b>	<b>77.3</b>	<b>107.0</b>	<b>129.9</b>
Eastern Africa	55.6	69.3	22.1	26.5	33.5	42.8
Middle Africa	16.9	22.9	5.7	7.3	11.2	15.6
Northern Africa	41.0	43.8	15.3	15.5	25.7	28.3
Southern Africa	5.3	4.7	2.4	2.2	2.9	2.5
Western Africa	56.1	66.5	22.5	25.9	33.6	40.7
<b>Asia</b>	<b>645.0</b>	<b>523.6</b>	<b>232.4</b>	<b>182.1</b>	<b>412.6</b>	<b>341.5</b>
Eastern Asia	185.6	72.2	56.0	19.7	129.6	52.4
South-Central Asia	395.5	394.6	155.7	144.6	239.8	250.0
South-Eastern Asia	42.3	34.7	14.0	11.6	28.3	23.2
Western Asia	21.5	22.1	6.8	6.3	14.8	15.8
<b>Europe</b>	<b>8.6</b>	<b>4.8</b>	<b>2.2</b>	<b>1.6</b>	<b>6.4</b>	<b>3.2</b>
Eastern Europe	3.9	1.6	0.7	0.5	3.3	1.1
Northern Europe	0.2	0.2	0.1	0.1	0.1	0.1
Southern Europe	3.8	2.4	1.1	0.8	2.7	1.6
Western Europe	0.6	0.6	0.3	0.3	0.3	0.3
<b>Latin America and the Caribbean</b>	<b>39.9</b>	<b>36.5</b>	<b>18.0</b>	<b>16.4</b>	<b>21.9</b>	<b>20.1</b>
Caribbean	3.7	3.7	1.9	1.9	1.9	1.8
Central America	10.7	10.0	4.3	4.0	6.4	6.1
South America	25.5	22.7	11.9	10.5	13.7	12.2
<b>Northern America</b>	<b>0.3</b>	<b>0.5</b>	<b>0.1</b>	<b>0.2</b>	<b>0.1</b>	<b>0.3</b>
<b>Oceania</b>	<b>1.3</b>	<b>1.8</b>	<b>0.6</b>	<b>0.8</b>	<b>0.7</b>	<b>1.0</b>

Source: UNESCO Institute for Statistics (2009a).

Note: Adult illiterates refer to women and men aged 15 and over.

the aim of eliminating gender disparities in education has been further intensified as it is essential to the Goals' achievement. Goal 3 calls for achieving gender parity in primary and secondary education, preferably by the target date of 2005, and in all levels of education no later than 2015.

## A. Educational outcomes

### 1. Literacy

The global number of adult illiterates has declined modestly over the past two decades

Progress has been achieved in raising literacy levels for both women and men around the world. However, despite the gains registered, the

number of adult illiterates is very high – and is likely to remain so – due to the impact of population growth. In 1990, an estimated 870 million adults in the world were illiterate (see table 3.1). By 2007, the number was estimated to be about 774 million, showing a slight decline by about 96 million or 11 per cent. Over the same period, the number of illiterate women declined from about 549 million to 496 million (about 10 per cent), while the number of illiterate men declined from 321 million to 279 million (13 per cent). It should be cautioned here that changes in population size strongly influence these statistics. Interpretation of headcount comparisons of illiterate populations should be made with this caveat in mind.<sup>2</sup>

Most sub-regions of the world have registered at least modest decreases in the size of the illiterate population, with Eastern Asia registering one of the most rapid and substantial declines, partly due to the significant advances being made in China. Contrary to these trends, however, the size of the illiterate population increased in several countries in Africa (except Southern Africa), Northern America, Oceania and Western Asia. In the period 1990–2007, Africa added over 32 million illiterates, of which about 23 million or 72 per cent were women. The growth of the illiterate population in Oceania was almost entirely the contribution of the countries of Melanesia. The sub-regions of South-Central and Western Asia likewise saw a slight rise in their female illiterate populations despite showing a reduction in the number of illiterate men. About 99 per cent of the world's illiterate population is concentrated in the less developed regions, and nearly three quarters of them live in South-Central Asia and sub-Saharan Africa, with the former accounting for over half of the total. The size of the illiterate population in South-Central Asia is primarily a reflection of the situation in the populous countries of Bangladesh, India and Pakistan.

Women comprise the majority of the illiterate population in most sub-regions of the world

Nearly two thirds of the world's illiterate population is composed of women (see figure 3.1). This proportion has held steady across several sub-regions in Africa, Asia and Europe and over the entire period between 1990 and 2007, pointing to the persistent disadvantages faced by women. With the exception of the Caribbean, women

<sup>2</sup> UNESCO, 2003.

comprised more than half the illiterate population in every sub-region. Disparities to the disadvantage of women are particularly marked in Eastern Europe, Eastern and Western Asia and Middle Africa where women's share of the illiterate population exceeds two thirds. Where the proportion of the illiterate population is high, women are more likely than men to be illiterate.

UNESCO projections<sup>3</sup> point to slow overall improvements over the period to year 2015, with women continuing to account for nearly two thirds of the world's illiterate population. The largest overall reduction among women illiterates aged 15 years and older will be in East Asia and the Pacific.<sup>4</sup> However, in sub-Saharan Africa, where many girls still do not go to school and populations are growing fast, an increase is projected. Very little movement is expected for South-Central or Western Asia.

**Literacy rates for women and men are improving but achieving universal literacy remains a significant challenge, particularly in Africa and South-Central and Western Asia**

Focusing on literacy rather than illiteracy, it can be seen that – owing to increases in access to primary education and improved literacy programmes – significant gains have been made in raising this across the world. Between 1990 and 2007, the literacy rate increased from 76 to 84 per cent.<sup>5</sup> Over the same period, the global literacy rate for adult women increased from 70 to 79 per cent, while for men the rate rose from 82 to 88 per cent (see figure 3.2). Women's literacy rates in Europe and Northern America are generally well above 95 per cent, with very few exceptions. They are also generally high throughout much of Latin America and the Caribbean as well as the sub-regions of Eastern and South-Eastern Asia and Southern Africa. However, in most of sub-Saharan Africa (excluding Southern Africa) and South-Central Asia, women's literacy rates are much lower and range from about 50–60 per cent.

Most regions registered progress in raising rates for both women and men between 1990 and 2007. Rapid gains, measuring as large as 15 percentage points or more, were registered in Northern and

<sup>3</sup> UNESCO Institute for Statistics, 2008.

<sup>4</sup> These regional groupings correspond to those used by UNESCO and differ from those used in other parts of this section.

<sup>5</sup> UNESCO Institute for Statistics, 2009b.

### Box 3.1

#### Literacy

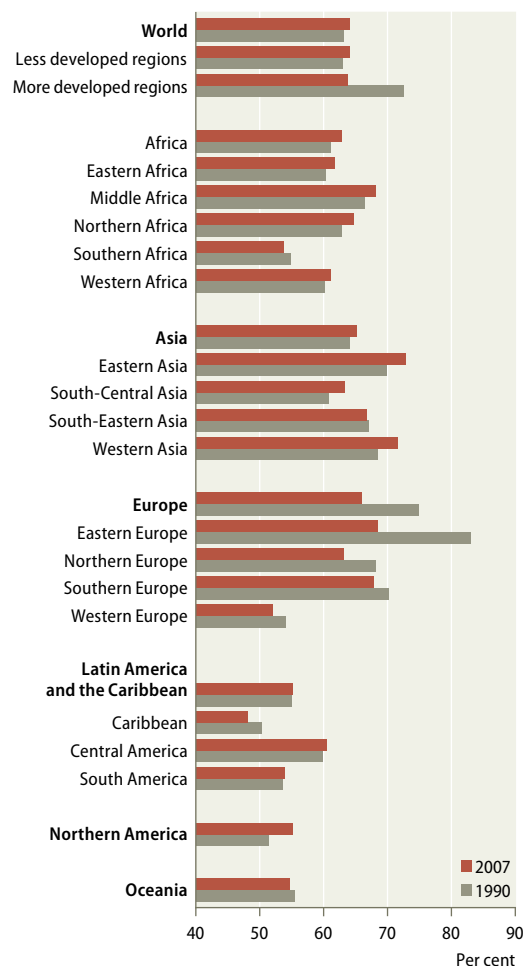
UNESCO defines a **literate** person as one who can with understanding both read and write a short simple statement on his (her) everyday life, and an **illiterate** person as one who cannot with understanding both read and write a short simple statement on his (her) everyday life.

One alternative and broader definition of literacy, **functional literacy** – used in some countries that have already attained universal literacy – emphasizes the use of literacy. A person is functionally literate who can engage in all those activities in which literacy is required for the effective functioning of his (her) group and community and also for enabling him (her) to continue to use reading, writing and calculation for his (her) own and the community's development. Generally, literacy also encompasses 'numeracy', the ability to make simple arithmetic calculations.

The **adult literacy rate** is the percentage of the population aged 15 and over who are literate, while the **youth literacy rate** is the percentage aged 15–24 years who are literate.

Figure 3.1

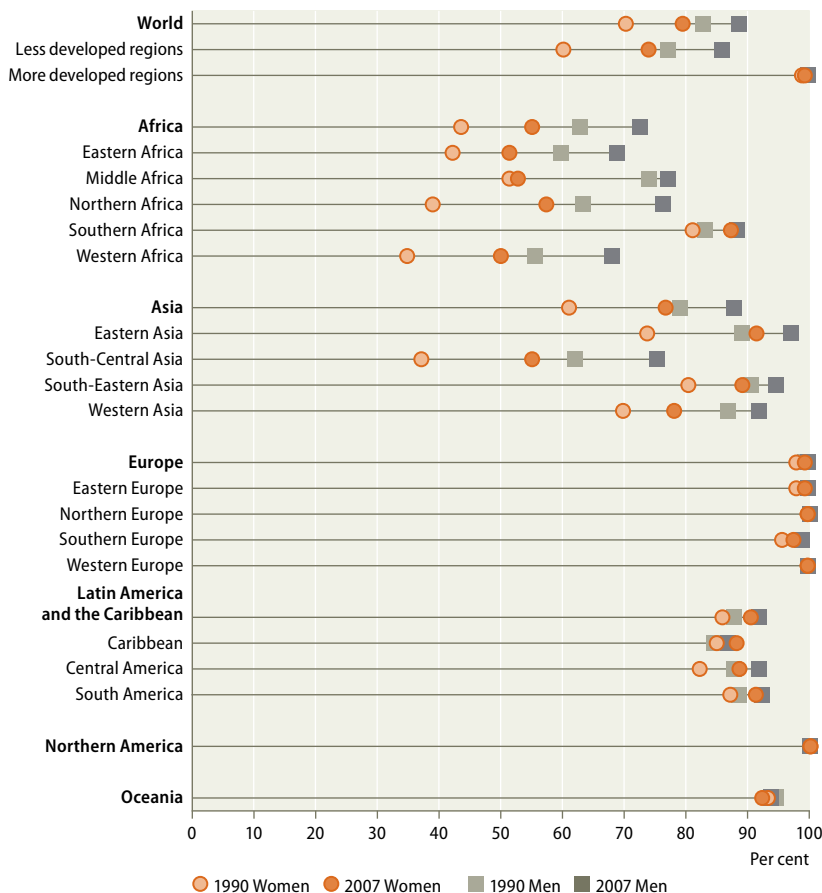
**Women among adult illiterates by region, 1990 and 2007**



Source: UNESCO Institute for Statistics (2009a).

Note: Adult illiterates refer to women and men aged 15 and over.

Figure 3.2  
Adult literacy rates by sex and region, 1990 and 2007



Source: UNESCO Institute for Statistics (2009a).

Note: Adult literacy rates refer to the literacy rates of women and men aged 15 and over.

Western Africa and Eastern and South-Central Asia. However, universal literacy still remains a distant goal for several less developed regions. Sub-Saharan Africa (except Southern Africa) and the sub-regions of Melanesia and South-Central Asia are the farthest from achieving this, showing a deficit greater than 30 percentage points. The sub-regions of the Caribbean, Central America, Micronesia, Southern Africa and Western Asia are next with deficits in the range of 10 to 15 percentage points. All the other sub-regions where illiteracy has not been eradicated are less than 10 percentage points away from universal literacy. To accelerate progress, governments need to show stronger political and financial commitment and attach more weight to literacy in national planning.<sup>6</sup>

<sup>6</sup> UNESCO, 2010.

### Gender gaps in adult literacy are narrowing globally but remain wide and persistent in the less developed regions

Gender gaps in adult literacy rates have decreased globally from 12 percentage points in 1990 to 9 in 2007 (see figure 3.2). For the less developed regions taken together they declined from 17 percentage points to 12, while they have narrowed, and in several cases almost closed, in the more developed regions of Europe, Northern America and Oceania as well as in Southern Africa, Eastern and South-Eastern Asia and much of Latin America and the Caribbean. In contrast, reflecting the long-term result of having no or limited educational opportunity for women, gender gaps in literacy rates remain wide and show persistence in Africa (excluding Southern Africa) and South-Central and Western Asia, ranging from 7 to 24 percentage points. Lower overall literacy rates are almost always accompanied by large differences between the rates for women and men. In those regions where progress has been slow, the disadvantages faced by women are difficult to reverse. Without sustained and effective adult literacy programmes, the majority of older women in these regions are likely to remain illiterate over the course of their lives.

### Adult women's literacy rates are usually much lower in rural areas than in urban areas

National averages in literacy rates mask considerable sub-national differences. Many countries have significant urban-rural literacy gaps, with rural areas lagging behind in most cases because educational opportunities are more limited. This discrepancy is revealed by a review of literacy data from the 1990 and 2000 rounds of population censuses<sup>7</sup> from Africa and Asia (see figure 3.3). The urban-rural differences are larger than 30 percentage points in Egypt, Ethiopia, Morocco, Mozambique, Pakistan, Uganda, Yemen and Zambia. On the other hand, in countries where the overall literacy levels are relatively high – such as Armenia, China, Kyrgyzstan, Mongolia, Sri Lanka and Viet Nam – the urban-rural differences are less than 10 percentage points.

### Literacy rates for young women and men have shown significant improvement over the past two decades and the gender gap has narrowed

<sup>7</sup> United Nations, 2009.

The vast majority of young people in the world are literate. The worldwide youth literacy rate rose from 84 to 89 per cent from 1990 to 2007.<sup>8</sup> Over the same period, it increased from 81 to 87 per cent in the less developed regions as a whole. The global literacy rate for young women stood at 87 per cent in 2007, up from 79 per cent in 1990 (see figure 3.4). Correspondingly, young men's worldwide literacy rate stood at 91 per cent, having increased by 3 percentage points over the same period. Youth literacy is almost universal in the more developed regions of Europe, Northern America and Oceania, and rates are lower than 90 per cent only in Africa (excluding Southern Africa), South-Central Asia and the Oceania sub-regions of Melanesia and Micronesia. In parts of the world where many boys and girls do not attend school or drop out too early, youth literacy rates are much lower than the global averages. In Africa, where the rates are among the lowest in the world, only 70 per cent of young women and 79 per cent of young men are literate. The youth literacy rate is one of the indicators used to monitor progress towards MDG 2 of achieving universal primary education.<sup>9</sup> Many countries have made substantial progress by expanding access to education and taking measures to eliminate gender disparities. Nevertheless, many countries in these regions remain far from achieving the Goal.

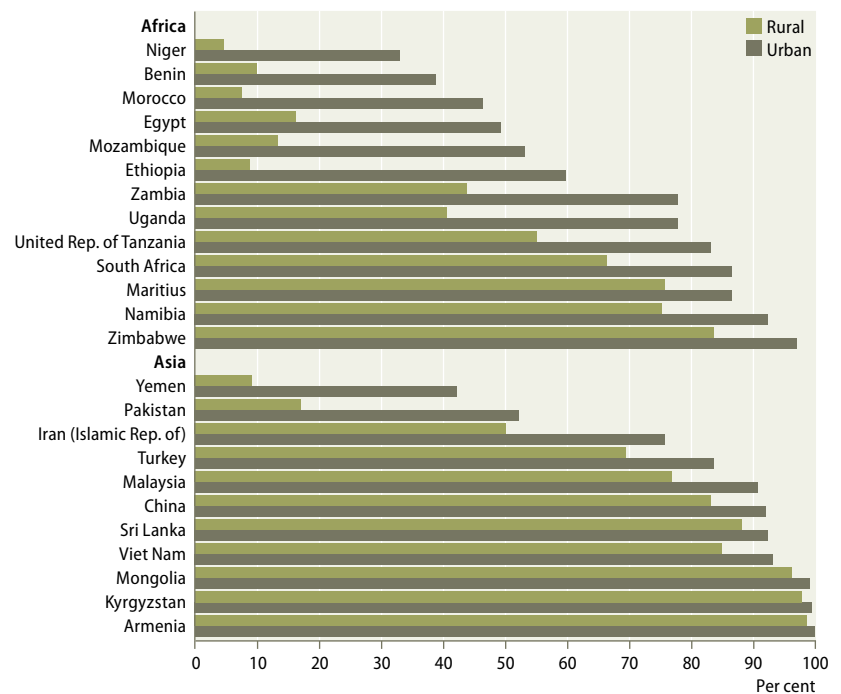
Gender differences in youth literacy rates – as compared to those for adults – are not substantial in most regions (figure 3.4). Globally, the gender gap in youth literacy has declined from 9 percentage points to 5 over the period 1990–2007. Gender gaps are not significant in all the more developed regions and in several of the less developed ones. In the sub-regions of the Caribbean, Melanesia and Southern Africa gender gaps are slightly in the favour of young women (2–4 percentage points). However, gender gaps to the disadvantage of young women remain significant in the sub-regions of Africa (excluding Southern Africa), South-Central and Western Asia and Micronesia, where they range from 4–16 percentage points in favour of young men. Gender disparities in literacy are diminishing in these regions, but at a slow pace. Substantial progress in expanding school enrolments and improving school completion rates needs to be made in order to eliminate

<sup>8</sup> UNESCO Institute for Statistics, 2009b.

<sup>9</sup> Millennium Development Goal 2: Achieving universal primary education – Target 2.A: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.

Figure 3.3

Adult literate women in urban and rural areas in selected countries, latest census



Source: United Nations, *Demographic Yearbook* data collections (2009).

Note: Latest available census is from either the 2000 or 1990 census round. Adult literates refer to those aged 15 and over.

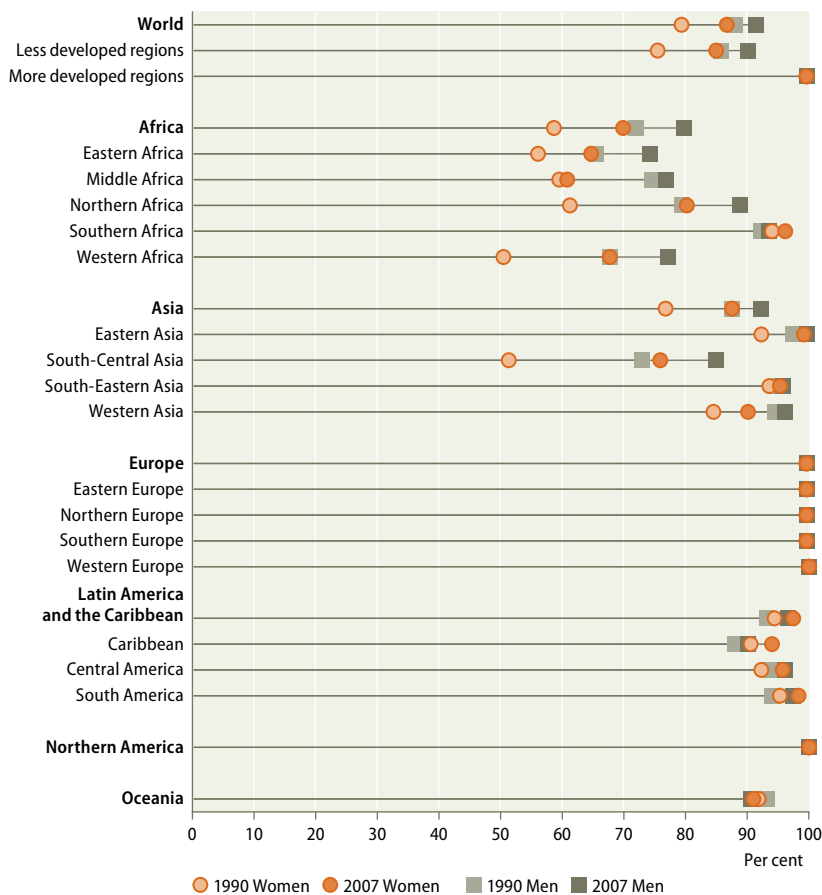
gender disparities in youth literacy. The greatest challenge in this regard is to enrol girls and young women in school – particularly those from poor and rural households – and to ensure that, once enrolled, they remain in school.

#### Literacy levels of women in younger age groups are generally much higher than those in older age groups

In general, literacy levels are higher among younger age groups than among older ones, and those for younger women are often much higher than those for older women. In Europe, Northern America and other more developed countries where both the youth and adult literacy rates are very high, these differences are not very significant. However, a review of literacy data from the 2000 round of population censuses<sup>10</sup> for African and Asian countries shows that the percentages of young women aged 15–24 who are literate are almost always larger than those of women aged 25 and above. In countries where the overall literacy levels are relatively lower, the percentage of

<sup>10</sup> United Nations, 2009.

Figure 3.4  
Youth literacy rates by sex and region, 1990 and 2007



Source: UNESCO Institute for Statistics (2009a).

Note: Youth literacy rates refer to the literacy rates of young women and men aged 15–24.

women aged 15–24 who are literate is typically twice as high or more than that for women aged 25 and over (figure 3.5). These large differences in the rates underscore the structural difficulty of achieving rapid progress in literacy due to the preponderance of older generations in the illiterate population and the fact that the majority among this age group are women. School enrolments have a significant impact on the literacy rates for younger age groups but not for older ones, among whom the incidence of literacy is the lowest. Improving literacy levels among older age groups will not be possible without renewed urgency and larger investments in adult literacy programmes.

## 2. Educational attainment

Educational attainment refers to the highest level of education an individual has completed. Aggregated at the societal level, statistics on edu-

cational attainment can give an indication of the stock of human capital – the knowledge and the skills available in a population. A higher level of educational attainment indicates the availability of a relatively high level of skills and knowledge in the labour force. Gender differences in educational attainment are one determinant of gender-based differences in labour market participation and outcomes. An increase in the proportion of highly educated women will likely lead to greater opportunities for more diverse and higher paying employment for women. Beyond labour markets, high levels of educational attainment also have a positive impact on broader social development goals. As noted in the Introduction, raising educational attainment is a key mechanism for empowering women. Without education of comparable quality and content to that given to men, women cannot access well paid, formal sector jobs, advance within them, participate in and be represented in government and gain political influence.<sup>11</sup>

### Levels of educational attainment are associated with levels of socio-economic development

Figure 3.6 presents a regional comparison<sup>12</sup> of women's and men's educational attainment according to four levels: "no schooling", "any primary", "any secondary" and "any tertiary".<sup>13</sup> It is apparent from the chart that the distribution of educational attainment varies substantially across regions depending on the general level of socio-economic development. In the more developed regions, where universal primary education has been attained, the proportions of women and men with no schooling or whose highest attainment is at the primary level are low and the proportions whose highest attainment is at or above the sec-

<sup>11</sup> Lopez-Carlos and Zahidi, 2005.

<sup>12</sup> It should be noted that the regional averages, which were computed unweighted by the population sizes of constituent countries, should not be regarded as exact because of the lack of data for some countries. However, they provide a basis for broad comparison of educational attainment across regions. It is also important to bear in mind that comparability of data is limited because of differing definitions pertaining to educational attainment used by countries and because educational systems in different countries do not necessarily impart the same amount of skills and knowledge at each level of education.

<sup>13</sup> The educational attainment category of "no schooling" refers to all persons who have attended less than one grade at the primary level; "any primary" comprises those who completed primary education (ISCED 1) or least one grade of primary; "any secondary" includes those who attended lower secondary (ISCED 2), upper secondary (ISCED 3) or post-secondary non-tertiary (ISCED 4); and "any tertiary" comprises those who attended any tertiary education (ISCED 5-6).

ondary level are very substantial. Most countries in Europe, Northern America, Oceania and the sub-regions of the Caribbean and Central, Eastern and Western Asia display such a profile of educational attainment. Conversely, in the less developed regions where universal primary education remains a distant goal, the proportions of women and men without schooling or whose highest attainment is capped at the primary level are vast and the proportions whose attainment is at the secondary or tertiary level are dismal. This profile of educational attainment is pervasive in most of the countries in Africa and the sub-regions of Central and South America and Southern and South-Eastern Asia. The same general pattern is discernible in the chart presenting national educational attainment for countries with data (see figure 3.7).

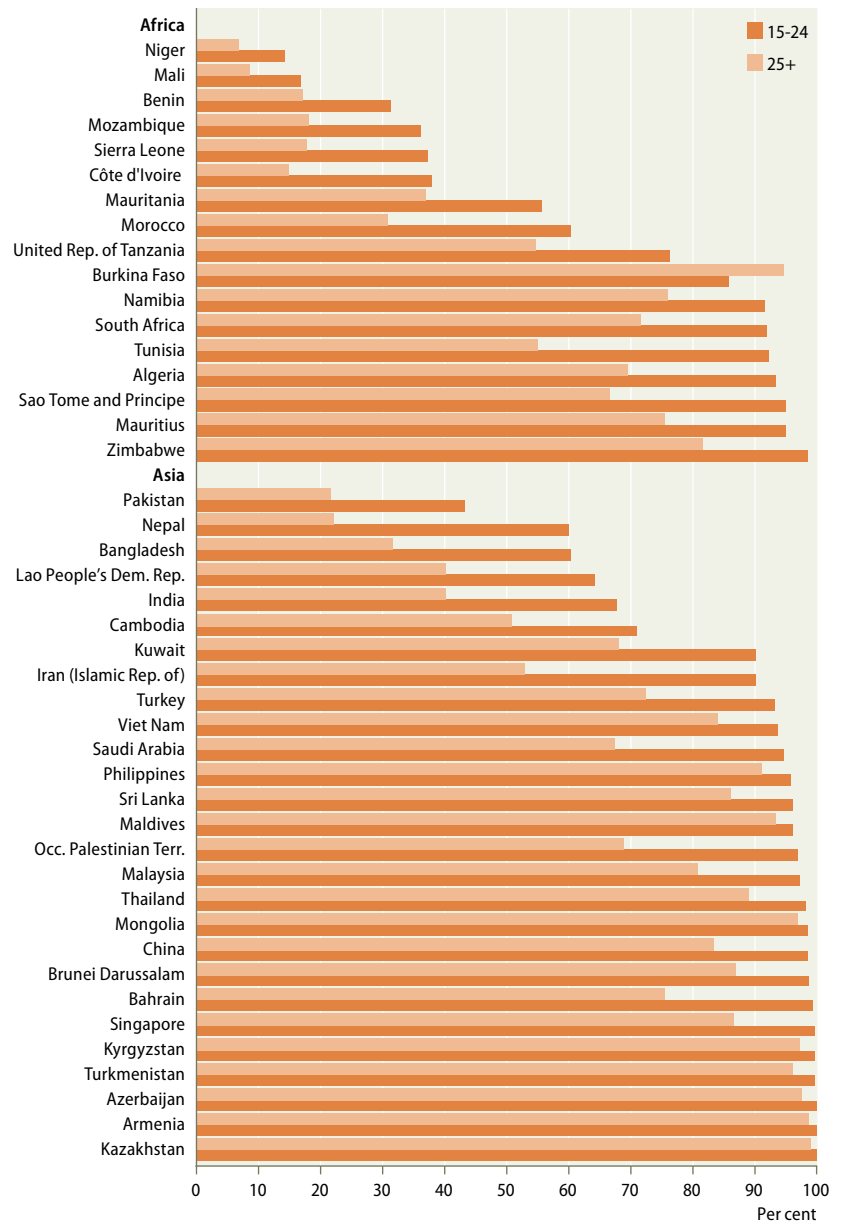
#### Gender disparities in educational attainment are substantial in the less developed regions

There are significant differences between the educational attainment of women and men (see figures 3.6 and 3.7). In general, gender gaps across all educational attainment categories are more substantial in the less developed regions than in the more developed. Some of the largest gaps are found in Africa where on average 41 per cent of women have never attended school, compared to 24 per cent of men. In Benin, over 80 per cent of women have no schooling while for men the comparative figure is only 57 per cent. More than half the women in Malawi (55 per cent) have not attended school, while the figure is 46 per cent in Algeria and 45 per cent in the United Republic of Tanzania, all with a gender gap in the range of 20–25 percentage points in favour of men. Gender differences are also large in Southern Asia where on average 49 per cent of women have no education at all, compared to 36 per cent for men. In Bangladesh and Maldives, more than 50 per cent of women have no education. In Pakistan, 67 per cent of women have never attended school, 32 percentage points higher than for men. Most countries in Central America and South-Eastern and Western Asia show moderate gender gaps in the range of 5–10 percentage points, all in favour of men.

Substantial proportions of women and men in the less developed regions have not advanced beyond the primary level – over 30 per cent in Africa, Latin America and the Caribbean and the sub-regions of South-Eastern and Western Asia. In the case of Africa, 38 per cent and 46 per cent of

Figure 3.5

Literacy among women aged 15–24 and 25+ in selected countries or areas, 2000 census



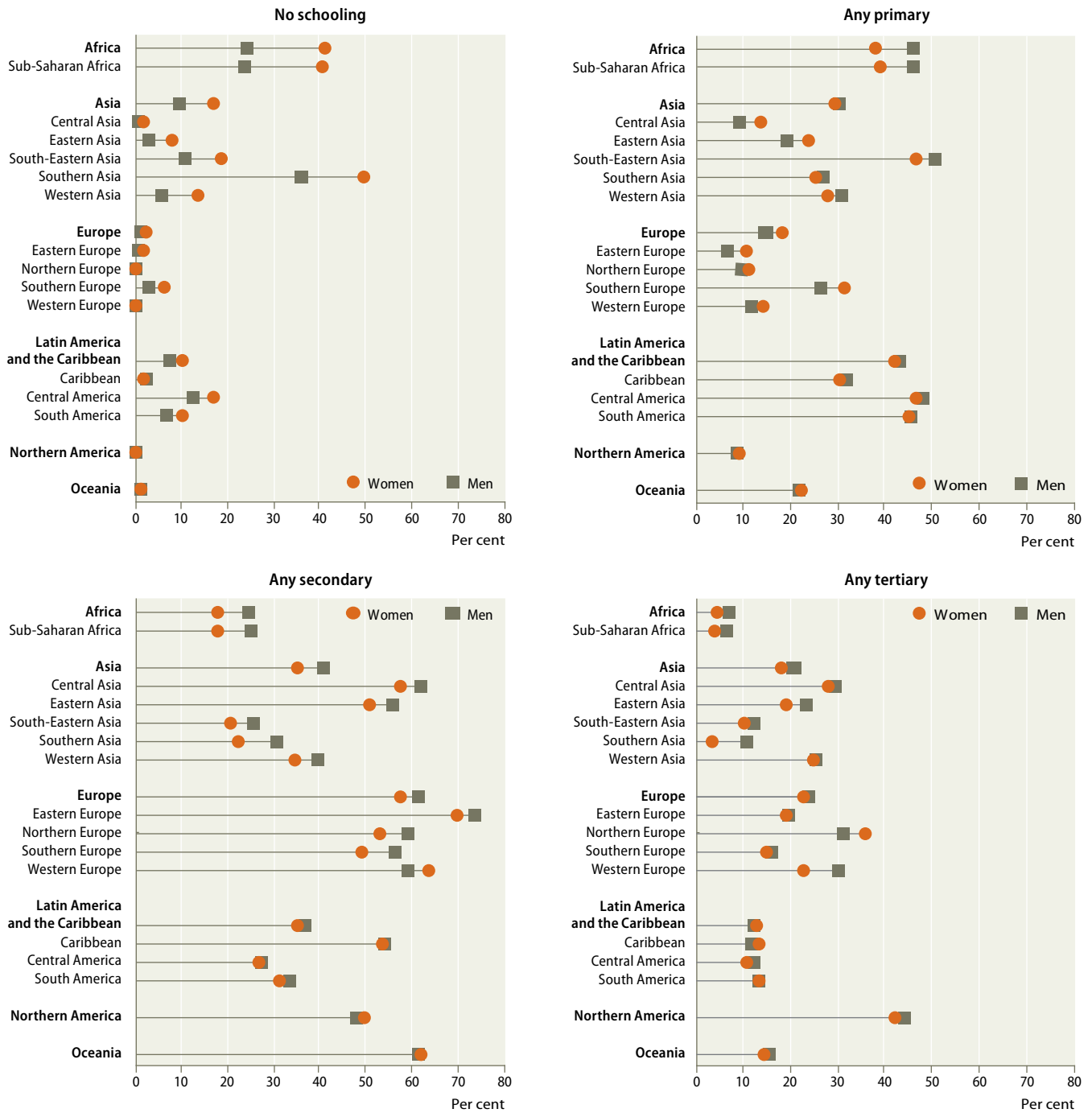
Source: United Nations, *Demographic Yearbook* data collections (2009).

women and men respectively have attained education only up to the primary level. In contrast, in Europe (except Southern Europe), the proportions are less than 15 per cent for both women and men. In Northern America they are below 10 per cent for both women and men.

Beyond primary education, 21 per cent of women in Africa on average have obtained secondary or tertiary education, compared to 30 per cent of men. The combined secondary and tertiary level

Figure 3.6

Distribution of population by the highest level of education attained, sex and region, 1995–2007 (latest available)



Source: Computed by the United Nations Statistics Division based on data from UNESCO Institute for Statistics (2009a) and United Nations, *Demographic Yearbook* data collections (2009).  
 Note: Data refer to educational attainment of population aged 25 and over. The regional averages are unweighted. The averages calculated for Africa include the values of eight countries. The averages for Oceania are based on data for four countries (Fiji, French Polynesia, New Zealand and Tonga).

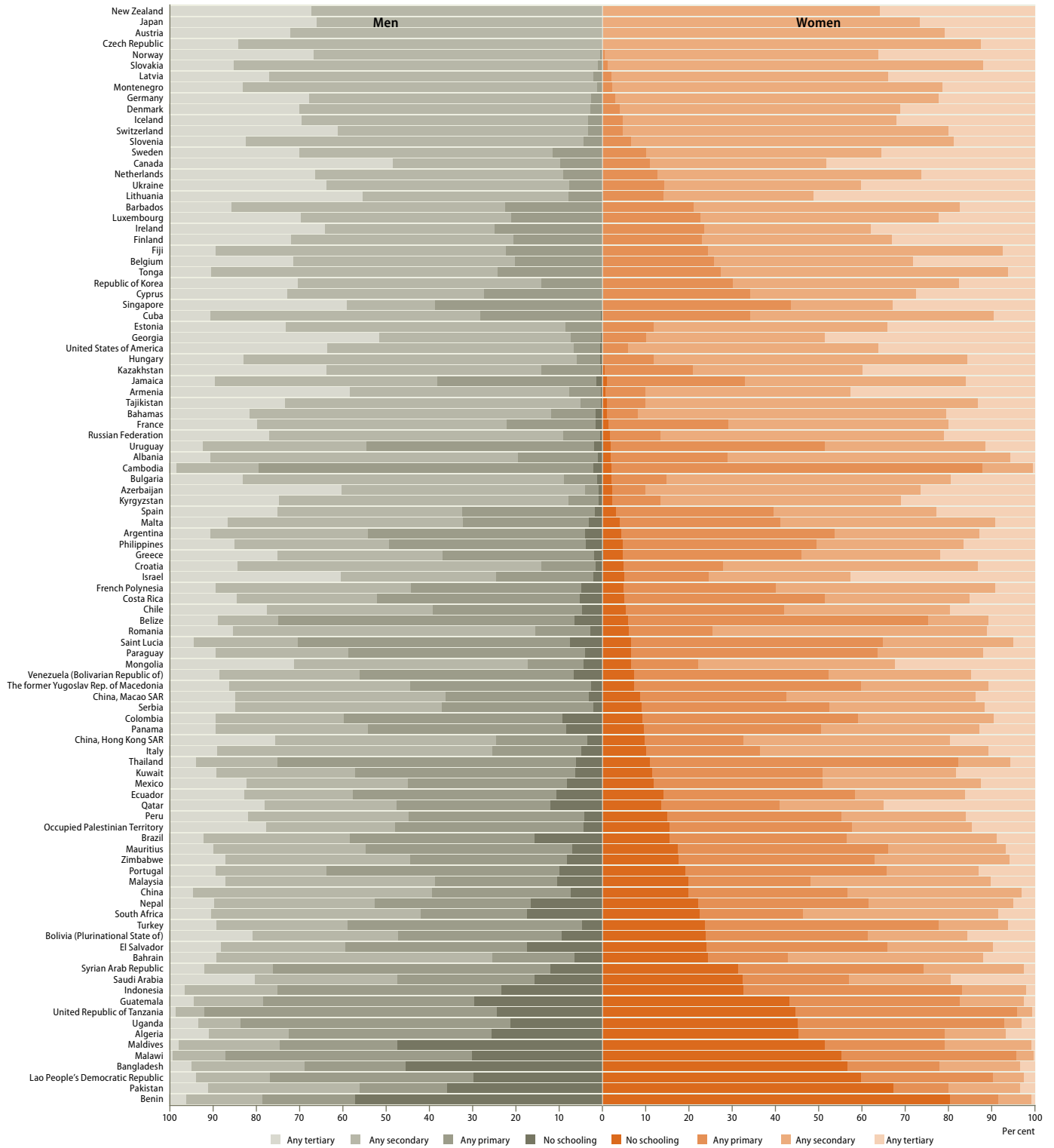
attainment of women was 25 and 30 per cent in Southern and South-Eastern Asia respectively, whereas this was 41 and 37 per cent for men. In Bangladesh, Cambodia, Indonesia, Lao People's

Democratic Republic, Maldives, Pakistan, Thailand and Turkey, the percentage of women with secondary or tertiary attainment was less than 25 per cent. These countries display a large gender gap



Figure 3.7

Distribution of population by sex and the highest level of education attained, 1995–2007 (latest available)



Source: Compiled by the United Nations Statistics Division from UNESCO Institute for Statistics (2009a) and United Nations, *Demographic Yearbook* data collections (2009).  
 Note: Data refer to educational attainment of population aged 25 and over. The population whose education level is unknown has been proportionately distributed over the four categories of educational attainment.

in the range of 10–22 percentage points, revealing a severe educational disadvantage to women.

Gender gaps across all categories of educational attainment are less pronounced in regions where levels are generally high among the population. In Europe (except Southern Europe), Northern America and several countries in Latin America and the Caribbean as well as Oceania, the proportions of women and men with combined secondary and tertiary educational attainment are almost the same, with a few exceptions. Educational attainment at the secondary and tertiary levels in Eastern Asia and Southern Europe is quite substantial at more than 60 per cent; nevertheless, these sub-regions display large gender gaps. China and the Republic of Korea from Eastern Asia and Albania, Croatia, Italy, Romania, Serbia and the former Yugoslav Republic of Macedonia from Southern Europe show gender gaps in the range of 10–17 percentage points, all to the disadvantage of

women. In contrast to the general pattern of gender disparities observed in both the more and less developed regions, in several Latin American and Caribbean countries (Bahamas, Jamaica, Panama, Saint Lucia, Uruguay and Venezuela (Bolivarian Republic of)) women have surpassed men in educational attainment at the secondary and tertiary levels. Moderate gender gaps are also present to the advantage of women in the Western Asian countries of Kuwait, Qatar and the Syrian Arab Republic.

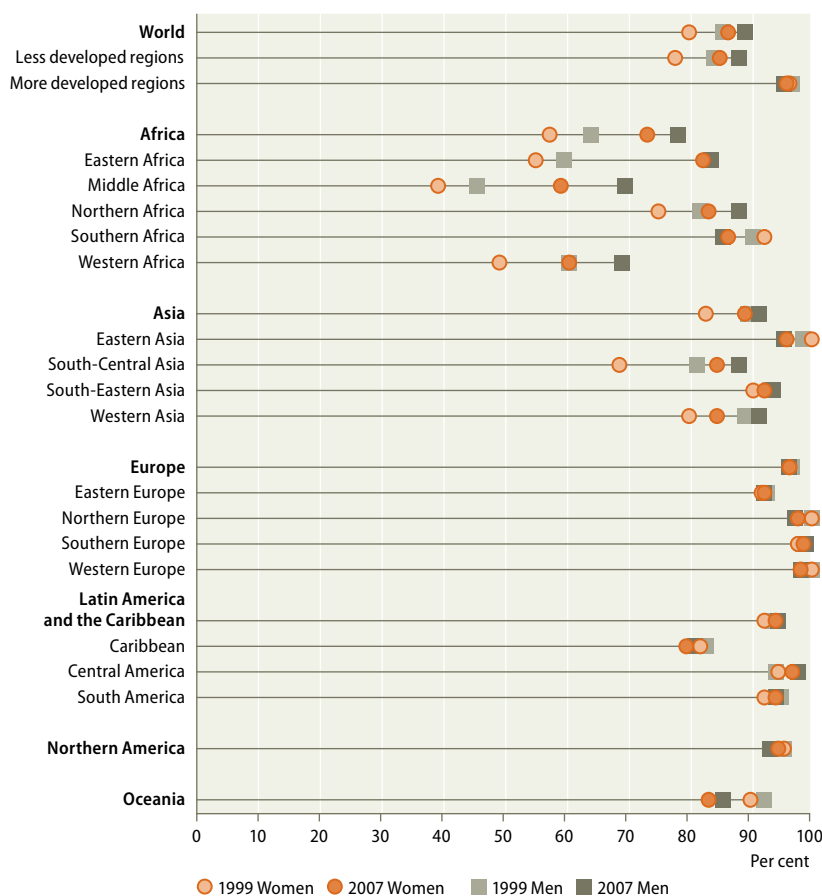
## B. Participation in education

### 1. Primary education

#### Participation in primary education

Primary enrolment of girls and boys is increasing across the world, but several countries are still far from attaining universal education

Figure 3.8  
Primary net enrolment rates by sex and region, 1999 and 2007



Source: UNESCO Institute for Statistics (2009a).

Enrolment in primary education has increased in most regions of the world, with several countries making rapid progress towards universal primary education. At the global level, the rate of primary-school-aged girls enrolled in school increased to 86 per cent from 79 per cent in the period 1999–2007 (see figure 3.8). Correspondingly, the rate increased for boys from 85 to 88 per cent. Out of 163 countries for which primary net enrolment data are available by sex in the period 1999–2007, girls’ enrolment rates exceeded 90 per cent in 92 countries, though they were less than 75 per cent in 32 countries (see Statistical Annex).<sup>14</sup> Enrolment rates have improved more for girls than for boys, particularly in those regions where girls’ enrolment was historically much lower. In 2007, 84 per cent of primary-school-aged girls were enrolled in the less developed regions as a whole, while the rate was 95 per cent for the more developed regions. In most developed countries of Eastern Asia, Europe, Northern America and Oceania, enrolment is nearly universal and girls’ primary net enrolment rates generally stayed higher than 95 per cent during the period. The average rates for both girls and boys exceeded 90 per cent in Eastern Europe, South-Eastern Asia and much of Latin America and the Caribbean. Outstanding gains in enrolment have been registered in several less developed parts of the world, particularly Africa and South-Central Asia, partly due to the abolish-

<sup>14</sup> The net enrolment rate is the enrolment of the official age group for a given level of education expressed as a percentage of the corresponding population.

ment of school fees. However, most of the countries in these regions are still far from attaining universal primary education. In Africa, despite an impressive increase of 16 percentage points in girls' primary enrolment between 1999 and 2007, only 73 per cent of primary-school-aged girls and 78 per cent of boys attended school in 2007. Two sub-regions of Africa – Middle and Western Africa – have some of the world's lowest rates with less than 60 per cent of girls of primary school age attending school. Similarly, despite a rapid rise in primary enrolment, less than 85 per cent of primary-school-aged girls in South-Central and Western Asia attended school in 2007. In contrast to the overall progress being registered in primary enrolment, a few sub-regions have seen reversals, with declines in enrolment for both girls and boys in countries in Southern Africa, Eastern Asia, the Caribbean and Oceania. In some of these cases, the declines are associated with decreasing size of the school-age population.<sup>15</sup>

**While gender gaps in primary education have narrowed in the majority of countries across the world, gender parity is still a distant goal for several countries**

With increased enrolment, gender gaps in primary enrolment have diminished in most regions of the world. They have narrowed even in Africa and South-Central and Western Asia, where enrolment has historically been among the lowest and the gender gaps the widest. The fast-closing gap is shown by the gender parity index (GPI) based on primary net enrolment rates – expressed as the ratio of the net enrolment for girls to that for boys – which increased from 0.93 to 0.97 globally between 1999 and 2007, although boys continue to enjoy a slightly higher enrolment than girls (see table 3.2). Out of 163 countries with data in the period, gender parity in primary education has more or less been attained in 117 of them.<sup>16</sup> On the other hand, 38 countries with data showed gender disparities in favour of boys, whereas disparities favouring girls were observed in only 8 countries. In the more developed regions as a whole the GPI has stayed at parity over the same period, whereas in the less developed regions as a whole the GPI has increased to that of the global average. The gap is nonexistent in Europe, Latin America and the Caribbean, Northern America and Oceania.

<sup>15</sup> UNESCO, 2008.

<sup>16</sup> Gender parity is considered to have been attained when the GPI is between 0.97 and 1.03.

### Gender Parity Index

The Gender Parity Index (GPI) is commonly used to measure progress towards gender parity in education. For a given indicator, the GPI is calculated as the ratio of the value for females to that for males. A GPI value equal to one indicates parity. In general, a value less than one indicates disparity in favour of men/boys, whereas a value greater than one indicates disparity in favour of women/girls. Gender parity is considered to have been attained when the GPI lies between 0.97 and 1.03.

Gender gaps are more varied in Africa and Asia. Eastern and South-Eastern Asia have attained gender parity, whereas South-Central and Western Asia show moderate gender disparities in favour of boys. Africa shows the largest gender gap and, with the exception of the sub-regions of Eastern and Southern Africa, its GPI is well below the global average. Gender gaps are notably large in the

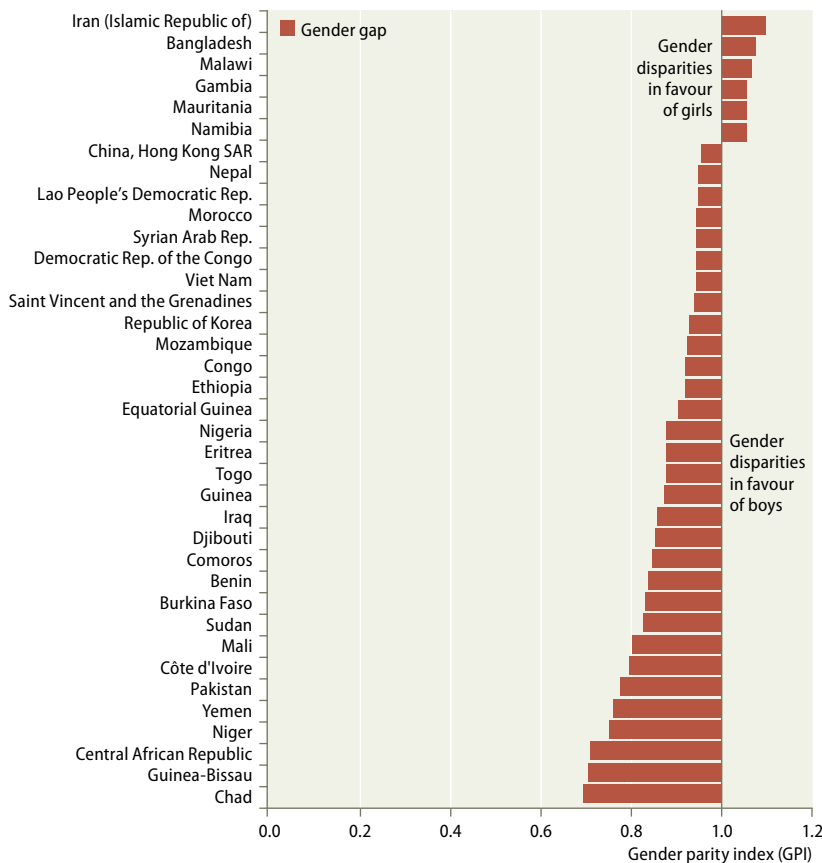
Table 3.2

**Gender parity index (GPI) based on primary net enrolment rates by region, 1999 and 2007**

	Gender parity index (GPI)	
	1999	2007
<b>World</b>	<b>0.93</b>	<b>0.97</b>
Less developed regions	0.92	0.97
More developed regions	1.00	1.00
<b>Africa</b>	<b>0.89</b>	<b>0.93</b>
Eastern Africa	0.92	0.98
Middle Africa	0.86	0.86
Northern Africa	0.92	0.94
Southern Africa	1.02	1.01
Western Africa	0.81	0.88
<b>Asia</b>	<b>0.93</b>	<b>0.97</b>
Eastern Asia	1.01	1.01
South-Central Asia	0.85	0.96
South-Eastern Asia	0.97	0.99
Western Asia	0.90	0.93
<b>Europe</b>	<b>0.99</b>	<b>1.00</b>
Eastern Europe	0.99	1.00
Northern Europe	1.00	1.01
Southern Europe	0.99	0.99
Western Europe	1.00	1.00
<b>Latin America and the Caribbean</b>	<b>0.98</b>	<b>1.00</b>
Caribbean	0.99	0.98
Central America	1.00	0.99
South America	0.97	1.00
<b>Northern America</b>	<b>1.00</b>	<b>1.01</b>
<b>Oceania</b>	<b>0.98</b>	<b>0.97</b>

Source: UNESCO Institute for Statistics (2009a).

Figure 3.9  
Gender disparities in primary net enrolment rates, 2007



Source: UNESCO Institute for Statistics (2009a).

Note: Data presented for countries where the gender gap is 5 percentage points or larger.

sub-regions of Middle and Western Africa where the GPI is below 0.90. Although the gaps are narrowing in those regions where they had been substantial, there remain several countries in which the proportion of girls in total primary enrolment remains considerably lower than that of boys (see figure 3.9). The GPI is at or below 0.75 in Central African Republic, Chad, Guinea-Bissau and Niger. It should be noted that, although much less common, there is a gender gap in favour of girls in a few countries such as Bangladesh, Gambia, Iran (Islamic Republic of), Malawi, Mauritania and Namibia. Gender disparities are more severe in countries with a disproportionate number of poor and rural households;<sup>17</sup> they tend to be wider among poorer people than among the more affluent, in rural than in urban areas and, within the latter, in slum than in non-slum areas.<sup>18</sup>

<sup>17</sup> United Nations Human Settlements Programme, 2006.

<sup>18</sup> Ibid.

### Out-of-school children<sup>19</sup>

#### The number of out-of-school children is declining but not fast enough

At the turn of the millennium an estimated 105 million girls and boys of primary school age around the world were not enrolled in school. This number had fallen to about 72 million by 2007, representing a decline by 33 million or 31 per cent (see table 3.3). In 2007, about 39 million girls of primary school age were not in school, compared to about 33 million boys. The expansion of access to primary education, including in some of the poorest countries, has helped reduce the number of out-of-school children, despite an overall increase in the population of children in this age group. Almost all girls and boys of primary school age out of school live in the less developed regions of the world, with nearly 70 per cent of them concentrated in sub-Saharan Africa and South and West Asia (see figure 3.10).<sup>20</sup> Over 32 million out-of-school children, 45 per cent of the global figure, lived in sub-Saharan Africa, and some 18 million children (about a quarter) in South and West Asia. The numbers of out-of-school children across the world are declining but not fast enough, underscoring the enormity of the challenge and the urgency of reaching poorer, more socially marginalized children who normally have less access to basic education.

While there has been progress toward gender parity in school enrolment, gender barriers remain. In 2007, girls comprised 54 per cent of the children of primary school age out of school, down from 58 per cent in 1999 (see table 3.3). The proportion of girls among these children ranges from 44 per cent in North America and Western Europe to 61 per cent in the Arab States (comprising the Middle East and North Africa). The share of out-of-school girls was the highest in the Arab States, where Egypt, Iraq and Yemen accounted for more than 70 per cent. The second-highest share of out-of-school girls is found in Central, South and West Asia, where the proportion is 58 per cent. Over the period 1999 to 2007, the regional average propor-

<sup>19</sup> These are primary-school-age children not attending either primary or secondary education, having either not started school or dropped out before completion. They may also be in some type of non-formal education that is not recognized as fully equivalent to formal primary education.

<sup>20</sup> The regional groupings in this section correspond to those used by UNESCO and differ from those used in other parts of this chapter.

## Box 3.2

**Gender parity and equality in education – what's the difference?**

Gender parity and gender equality in education mean different things. The first is a purely numerical concept. Reaching gender parity in education implies that the same proportion of boys and girls – relative to their respective age groups – would enter the education system and participate in its different cycles.

Gender equality, on the other hand, means that boys and girls would experience the same advantages or disadvantages in educational access, treatment and outcomes. In so far as it goes beyond questions of numerical balance, equality is more difficult to define and measure than parity.

The achievement of full gender equality in education would imply:

- *Equality of opportunities*, in the sense that girls and boys are offered the same chances to access school, i.e. parents, teachers and society at large have no gender-biased attitudes in this respect;
- *Equality in the learning process*, i.e. girls and boys receive the same treatment and attention, follow the same curricula, enjoy teaching methods and teaching tools free of stereotypes and gender bias, are offered academic orientation and counselling not affected by gender biases, and profit from the same quantity and quality of appropriate educational infrastructures;
- *Equality of outcomes*, i.e. learning achievements, length of school careers, academic qualifications and diplomas would not differ by gender;
- *Equality of external results*, i.e. job opportunities, the time needed to find a job after leaving full-time education, the earnings of men and women with similar qualifications and experience, etc., would all be equal.

The last condition, while not strictly part of a notion of educational equality, is nevertheless entailed by it: the persistence of gender discrimination in the labour market prevents the attainment of equality of access, treatment and outcomes in education by affecting the relative costs and perceived benefits of educating girls and boys. Accordingly, if full gender equality in education were to be achieved, it is probably the case that ending labour market discrimination, in all its gendered forms, would be required.

Source: UNESCO, *EFA Global Monitoring Report 2003/4* (2003).

Table 3.3

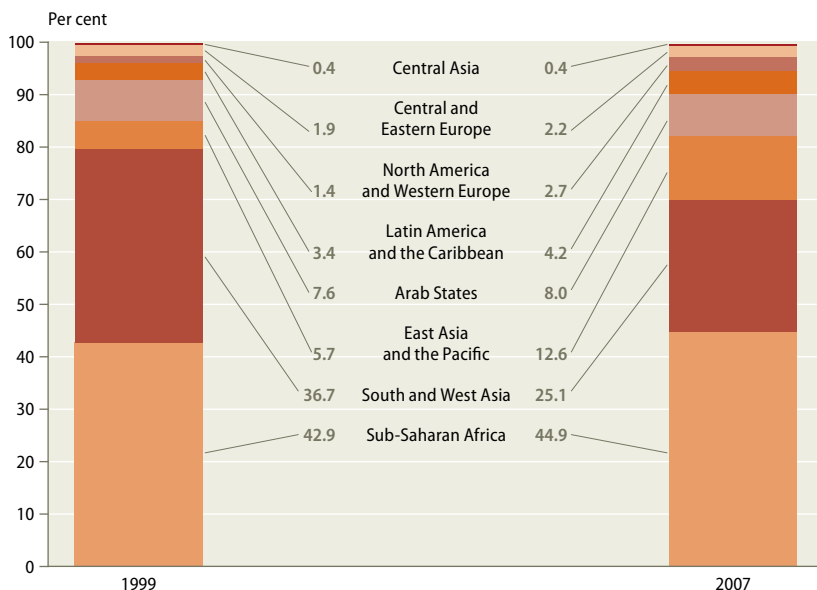
**Number of primary-school-age girls and boys out of school by sex and region, 1999 and 2007 (in thousands)**

	1999				2007			
	Both sexes	Boys	Girls	Girls (%)	Both sexes	Boys	Girls	Girls (%)
<b>World</b>	105 035	44 558	60 477	58	71 791	32 677	39 115	54
Less developed regions	101 773	42 939	58 834	58	68 638	30 965	37 673	55
More developed regions	1 791	902	889	50	2 334	1 304	1 030	44
<b>Arab States</b>	7 980	3 249	4 731	59	5 753	2 232	3 520	61
<b>Central and Eastern Europe</b>	2 036	843	1 193	59	1 552	749	803	52
<b>Central Asia</b>	464	231	233	50	271	115	156	58
<b>East Asia and the Pacific</b>	5 992	2 897	3 095	52	9 039	4 683	4 357	48
East Asia	5 674	2 750	2 923	52	8 484	4 417	4 067	48
Pacific	318	147	172	54	555	266	290	52
<b>Latin America and the Caribbean</b>	3 538	1 618	1 920	54	2 989	1 506	1 483	50
Caribbean	493	246	247	50	621	304	318	51
Latin America	3 045	1 372	1 673	55	2 367	1 202	1 165	49
<b>North America and Western Europe</b>	1 420	713	707	50	1 931	1 081	850	44
<b>South and West Asia</b>	38 594	14 168	24 426	63	18 032	7 644	10 388	58
<b>Sub-Saharan Africa</b>	45 012	20 840	24 172	54	32 226	14 667	17 559	54

Source: UNESCO, *EFA Global Monitoring Report 2010* (2010).

Note: Regional groupings correspond to those used by UNESCO and differ from those used in other parts of this chapter.

Figure 3.10  
Geographic distribution of primary school age children out of school, 1999 and 2007



Source: UNESCO, *EFA Global Monitoring Report 2010* (2010).

Note: Regional groupings correspond to those used by UNESCO and differ from those used in other parts of this chapter.

tion in Central Asia has seen a rise while South and West Asia registered a decrease. Georgia, India, Pakistan and Tajikistan are among the countries where girls comprise more than 60 per cent of out-of-school children of primary school age. In sub-Saharan Africa as a whole, girls account for 54 per cent of such children, but in Benin, Central African Republic, Guinea, Togo and United Republic of Tanzania the proportion is well over 60 per cent.

#### Poverty and other barriers keep some children out of school

Many barriers stand in the way of children's schooling, including poverty, child labour, unaffordable school fees, lack of basic facilities, discrimination and low quality education. These barriers are often compounded by negative cultural practices – such as early marriage and the preference for educating boys over girls – that put education out of reach for many girls. Analysis<sup>21</sup> done by UNESCO based on household survey data for 80 countries, collected between 1996 and 2003 as part of Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS), show that household wealth is always strongly related to school attendance, with

<sup>21</sup> UNESCO Institute for Statistics, 2005a.

children from the poorest households more likely to be out of school than their peers in the rest of the population. The analysis found that children of primary school age who live in the poorest 20 per cent of households are three times more likely to be out of school than children living in the richest 20 per cent. Child labour, commonly a symptom of poverty in a household, is a related phenomenon that interferes with schooling. The educational level of parents is also often a factor. The analysis showed that primary-school-age children with a mother with no education are twice as likely to be out of school than children with a mother with some education. Place of residence was also seen to influence the likelihood that a child will be out of school. The proportion is greater in rural areas than in urban areas, with 82 per cent of out-of-school children living in the former. Reasons for this include less access to education, including long distances to schools, and lack of trained teachers.

Natural disasters and civil conflicts are also barriers that disrupt the education of many children. According to the UN High Commissioner for Refugees, more than 1.5 million school-age refugee children live in less developed countries.<sup>22</sup> Data for 114 refugee camps in 27 countries show that full primary school enrolment has been achieved in only six out of ten camps, and that at least one in five refugee children is not part of the formal education system.<sup>23</sup> Ensuring that the most vulnerable and marginalized children are enrolled and remain in school requires targeted programmes and interventions aimed at poor households and strategies for developing educational systems that are inclusive, equitable and sustainable.

#### School progression

School progression is a critical factor in the effort to ensure that all girls and boys have access to, and complete, free and compulsory primary education of good quality. Without this, high levels of intake and enrolment do not by themselves guarantee the achievement of universal primary education. In countries with limited access to education, repeaters may keep others out of school. High levels of repetition and drop out prevent a considerable number of children from reaching secondary school at the appropriate age, which in

<sup>22</sup> United Nations, 2008.

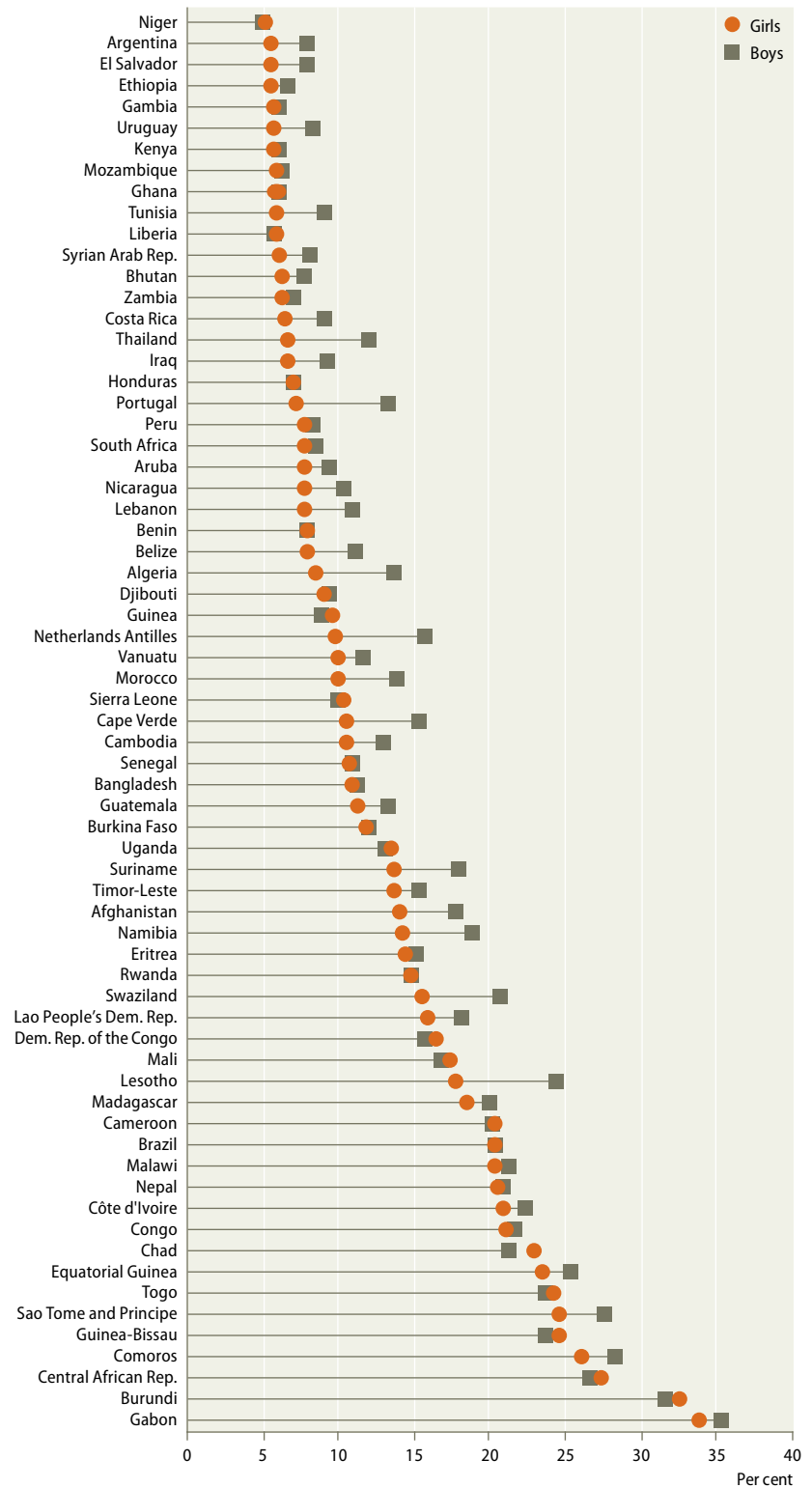
<sup>23</sup> Ibid.

turn undermines efforts to improve coverage of secondary education. They also reveal problems in the internal efficiency of the educational system and possibly reflect a poor level of instruction. Repetition and drop out disproportionately affect students from low-income and socially disadvantaged groups. Ensuring equity and quality in the education system implies overcoming repetition, drop out and low learning achievement.

### Repetition at the primary level is widespread in most less developed regions

Analysis of recent data shows that repetition is an extensive phenomenon in most less developed regions of the world. A considerable number of children experience difficulty progressing from one grade to the next at the primary level. The Statistical Annex presents data on primary repetition rates for girls and boys. The phenomenon of repetition affects all regions; however, it has been the most persistent and its incidence the highest in Africa. In this region, the overall primary repeater rates range between 3 and 34 per cent in 48 countries with data. In 27 countries or areas the repetition rate surpasses 10 per cent. Repeaters account for over a quarter of enrolment in Burundi, Comoros, Central African Republic, Gabon and Sao Tome and Principe (see figure 3.11). In Asia, repetition rates have improved over the past few decades. In the majority of the countries in the region they are well below 5 per cent, and they exceed 10 per cent in only 6 countries out of 46 with data: Afghanistan (16 per cent), Bangladesh (11 per cent), Cambodia (12 per cent), Lao People's Democratic Republic (17 per cent), Nepal (21 per cent) and Timor-Leste (15 per cent). In Latin America and the Caribbean, repetition rates are the highest in Brazil (20 per cent), Guatemala (12 per cent), the Netherlands Antilles (13 per cent) and Suriname (16 per cent). In the rest of the countries with data in this region, repetition rates are well below 10 per cent. The lowest repetition rates at the primary level are found in Europe and Northern America, in part due to the policy of automatic promotion that is practiced in several countries in these regions. In countries with available data, the only ones recording repetition rates of 3 per cent or more are Belgium (3 per cent), France (4 per cent), Luxembourg (4 per cent) and Portugal (10 per cent). It should be noted that repetition is not uniformly distributed across all primary school grades. In most cases, the highest rates of repetition tend to be concentrated

Figure 3.11  
Proportion of repeaters among pupils in primary education, by sex, 2007



Source: UNESCO Institute for Statistics (2009a).

Note: Data presented for selected countries where the repetition rate for girls is larger than 5 per cent. Data correspond to reference year 2007 or latest available in the period 2000–2007.

in the early grades and, though not exclusively, among children from poor families, those living in rural areas and disadvantaged social groups.

#### Girls repeat in fewer countries than boys

In general, gender disparities in school progression at the primary level favour girls. Once enrolled in school, girls tend to do better than boys. In 158 countries with data on repetition rates by sex in the period 2000–2007, in 124 countries boys repeated at a higher rate than girls while only in 11 countries did girls repeat at a higher rate than boys. With the exception of Oman and Turkey, all the other countries where girls repeated at a higher rate are located in sub-Saharan Africa. In 23 countries repetition rates showed gender parity, with girls and boys repeating at more or less the same rate. It should be noted that in the majority of countries, the differences between the repetition rates for girls and boys are not large. However, in some countries and areas – Algeria, Lesotho, the Netherlands Antilles, Portugal, Swaziland and Thailand – gender gaps of more than 5 percentage points are observed, all to the disadvantage of boys. One study on the Middle East and North Africa suggests that the apparent similarities of repetition rates among girls and boys in these regions should be interpreted in light of the fact that the drop-out rate among girls is notably higher than among boys.<sup>24</sup> Thus in actual fact only a few girls are given the opportunity to repeat their grade.<sup>25</sup>

#### Survival rates to the last grade of primary show considerable variation

The survival rate to the last grade of primary school – defined as the proportion of students starting first grade who are expected to reach the last grade regardless of repetition – measures the ability and efficiency of an education system to retain students. It also indicates the magnitude of drop out. Survival rates approaching 100 per cent indicate a high level of retention or a low incidence of drop out. The survival rate to the last grade of primary school is an official indicator to track progress towards MDG 2 (which, as previously noted, calls for universal primary education by the year 2015).

Survival rates vary considerably across the world. For countries with data in the period 1999–2007, the rates ranged from 25 per cent to 100 per cent

<sup>24</sup> Mehran, 1995.

<sup>25</sup> Ibid.

(see Statistical Annex). Of the 147 countries with data, in 92 countries girls had higher rates than boys. Boys' rates exceeded those of girls' in 52 countries, while in 3 countries girls and boys reached the last grade of primary school in equal proportions. The survival rate was less than 50 per cent in 10 countries, while it surpassed 90 per cent in 64 countries. The lowest survival rates globally were in sub-Saharan Africa, where they were below 50 per cent in nine countries: Chad, Central African Republic, Equatorial Guinea, Madagascar, Malawi, Mozambique, Rwanda, Togo and Uganda (see figure 3.12). In these countries, more than half of all children who start attending primary school drop out before completion. Africa is also one of the regions in which almost half of the countries have higher rates for boys than girls. Asia has seen improved survival rates, with half of the countries attaining survival rates in excess of 90 per cent. In the countries of Latin America and the Caribbean with data, the rates were all above 80 per cent, except in Dominican Republic, El Salvador, Guatemala, Guyana, Nicaragua and Suriname. For the majority of the more developed countries of Europe and Northern America, rates of survival were very close to 100 per cent.

#### Girls and boys survived or dropped out of school in equal proportions in the majority of countries

Gender parity in survival rates has been observed in the majority of countries with data. This indicates that in those countries girls and boys survived to the last grade of primary or dropped out of school in more or less equal proportions. Out of 147 countries with data, this was the case in 81 countries. In 47 countries girls survived at a higher rate than boys, while in 19 countries the situation was reversed. Sub-Saharan Africa is where several of the countries with relatively larger gender disparities in survival rates were found. In Côte d'Ivoire, Central African Republic, Chad, Guinea, Mali, Mozambique, Niger, Sao Tome and Principe, Togo and Zambia, the rates for boys were 5 percentage points or more than those for girls. On the other hand, the rates for girls were 5 percentage points or more than those for boys in Algeria, Botswana, Cape Verde, Comoros, Ghana and Lesotho. In half of the countries in Asia, gender disparity favours boys over girls. The highest survival disparity is found in Iraq, where 39 girls per 100 drop out while the comparable figure is 22 per 100 for boys. In Latin America and the Caribbean, girls survived to the



last grade of primary school at a higher rate than boys in all countries with data except in Bolivia (Plurinational State of), Guatemala and Guyana.

## 2. Secondary education

### Participation in secondary education

#### Relatively fewer girls and boys attend secondary school

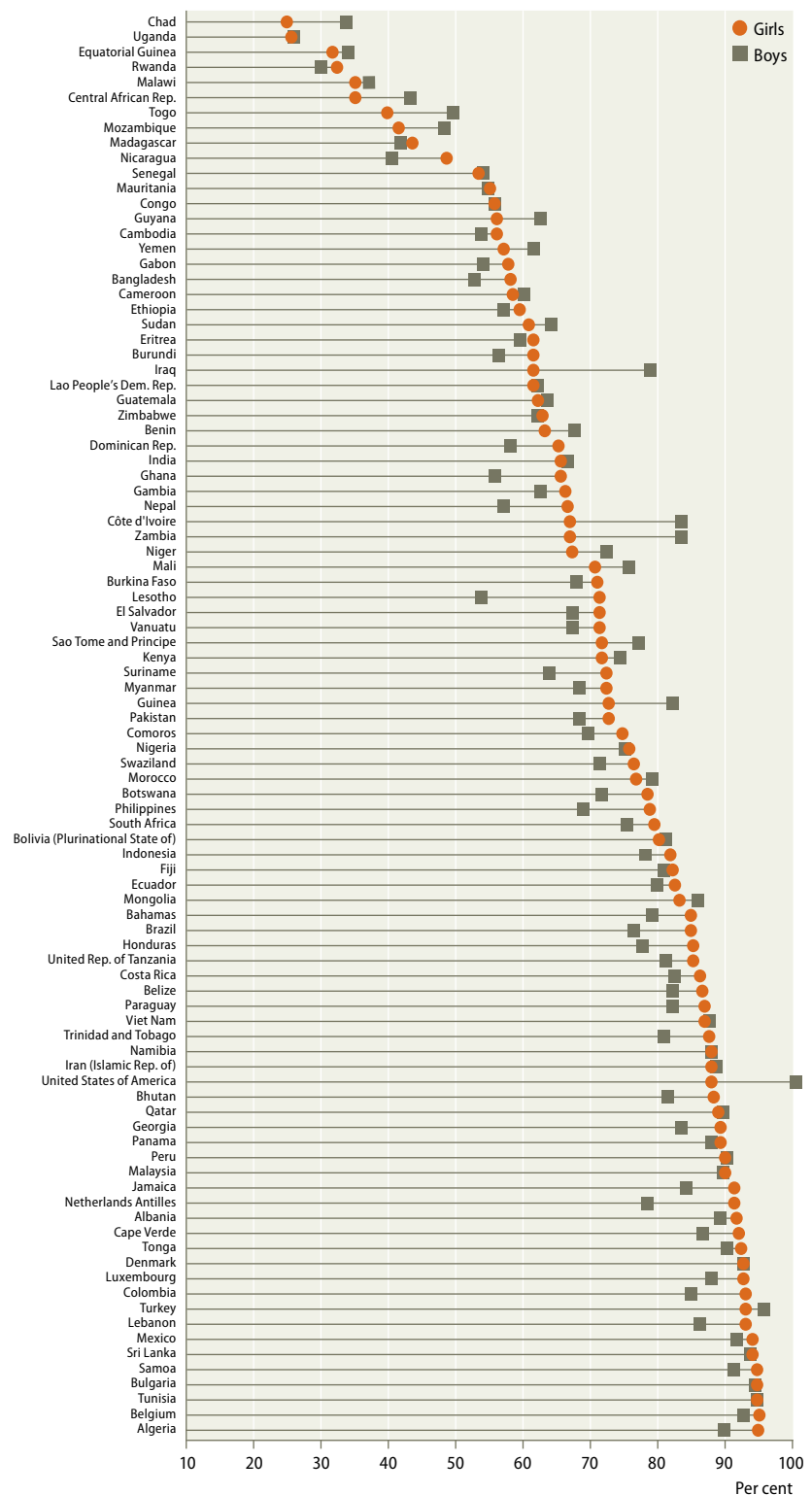
Less than 58 per cent of the world's girls and 60 per cent of boys in the official secondary-school age group attended secondary school in 2007 (see figure 3.13), a significantly lower proportion than enrol in primary school. Globally, secondary net enrolment increased by 8 percentage points for girls and 6 percentage points for boys over the period 1999–2007. Girls' secondary enrolment rates in Africa, Asia and Latin America and the Caribbean have registered gains ranging from 6 to 13 percentage points over the same period. Out of 144 countries for which secondary enrolment data were available by sex in the period 1999–2007, girl's enrolment rates were less than 50 per cent in 42 countries and exceeded 90 per cent in only 25 countries (see Statistical Annex). When compared to those at the primary level, secondary enrolment rates display greater variation between the more and less developed regions. Over 90 per cent of girls in the official secondary-school age group were enrolled in school in Europe (except Eastern Europe) and Northern America in 2007. Despite the gains being made, secondary school enrolment is too low in many of the less developed regions. Enrolment of secondary school-aged girls was less than 30 per cent in all sub-regions of Africa, except Northern and Southern Africa, while in South-Central Asia the rate was 44 per cent. In several of the less developed regions, a significant proportion of the secondary-school-age population is either out of school or attends primary school.<sup>26</sup> In Oceania, almost two thirds of boys and girls of secondary school age were out of school in 2006, while in sub-Saharan Africa 41 per cent were out of school and 34 per cent attended primary rather than secondary school;<sup>27</sup> only about a quarter attended secondary school.

Gender disparities occur in more countries and remain wider than those at the primary level

<sup>26</sup> United Nations, 2008.

<sup>27</sup> Ibid.

Figure 3.12  
Survival rates to last grade of primary by sex, 2007

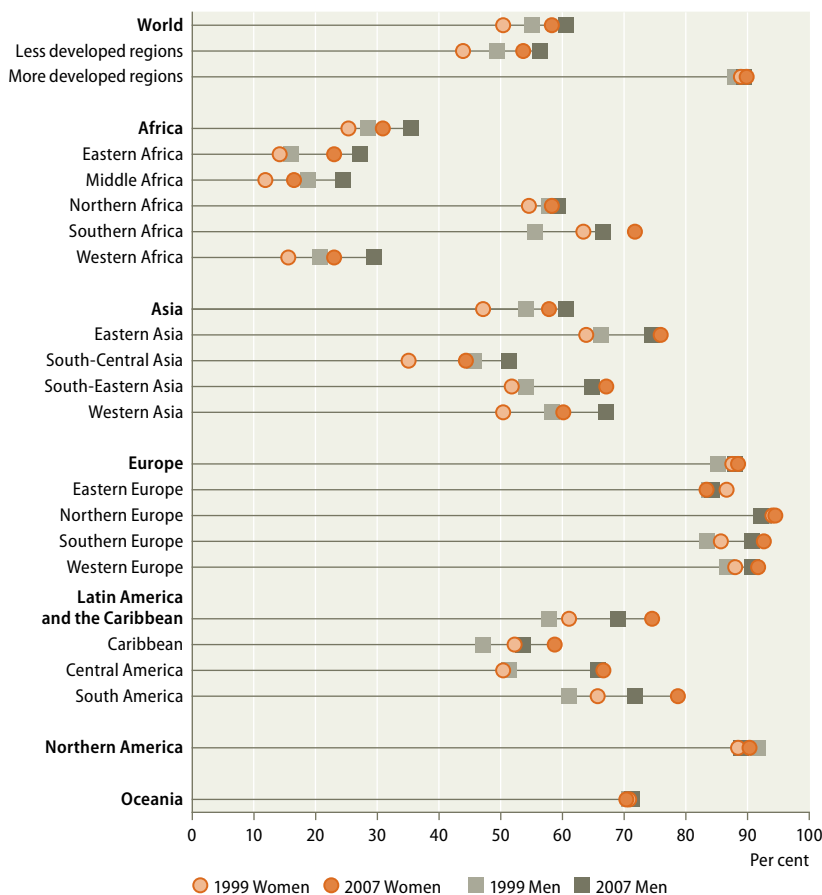


Source: UNESCO Institute for Statistics (2009a).

Note: Data presented for selected countries where the survival rate for girls is less than 95 per cent. Data correspond to reference year 2007 or latest available in the period 2000–2007.

Figure 3.13

## Secondary net enrolment rates by sex and region, 1999 and 2007



Source: UNESCO Institute for Statistics (2009a).

The global gender parity index (GPI) based on net secondary enrolment rates has risen to 0.96 in 2007 from its corresponding value of 0.92 in 1999, showing that the gender gap at the secondary level is narrowing globally (see table 3.4). Although gender disparities in access to secondary education have improved, they remain more prevalent and wider than those at the primary level. This is so in part because gender differences at the secondary level are a reflection of cumulative gender disparities at the primary level and those at transition to secondary.<sup>28</sup> A smaller number of countries are near parity in secondary education than in primary education. Out of 144 countries with data, gender parity has been attained in only 54 countries, in contrast to 117 countries at the primary level. In the more developed regions in 2007, the GPI was 1.01, indicating gender parity has more or less been achieved,

<sup>28</sup> UNESCO, 2005b.

whereas in the less developed regions as a whole it was 0.95, significantly favouring boys. Gender disparities in secondary participation favouring girls over boys have been observed in 48 countries with data. In countries in Latin America and the Caribbean such as Argentina, Brazil, Colombia, Nicaragua, Panama, Uruguay and Venezuela (Bolivarian Republic of), where GPIs are larger than 1.10, substantially more girls are enrolled in secondary education than boys (see figure 3.14). In a number of countries in Southern Africa (Botswana, Lesotho, Namibia and South Africa), South-Eastern Asia (Malaysia, Philippines and Thailand) and Oceania (Fiji, Samoa and Tonga), enrolment rates for girls also exceed those for boys.

Table 3.4

## Gender parity index based on secondary net enrolment rates by region, 1999 and 2007

	Gender parity index (GPI)	
	1999	2007
<b>World</b>	<b>0.92</b>	<b>0.96</b>
Less developed regions	0.89	0.95
More developed regions	1.01	1.01
<b>Africa</b>	<b>0.88</b>	<b>0.87</b>
Eastern Africa	0.86	0.84
Middle Africa	0.63	0.67
Northern Africa	0.94	0.98
Southern Africa	1.14	1.07
Western Africa	0.76	0.77
<b>Asia</b>	<b>0.87</b>	<b>0.95</b>
Eastern Asia	0.96	1.02
South-Central Asia	0.77	0.87
South-Eastern Asia	0.96	1.04
Western Asia	0.86	0.90
<b>Europe</b>	<b>1.03</b>	<b>1.01</b>
Eastern Europe	1.04	0.99
Northern Europe	1.01	1.03
Southern Europe	1.02	1.02
Western Europe	1.02	1.01
<b>Latin America and the Caribbean</b>	<b>1.06</b>	<b>1.07</b>
Caribbean	1.12	1.09
Central America	0.98	1.01
South America	1.08	1.09
<b>Northern America</b>	<b>0.96</b>	<b>1.02</b>
<b>Oceania</b>	<b>0.99</b>	<b>0.99</b>

Source: UNESCO Institute for Statistics (2009a).

On the other hand, gender disparities favoured boys in 42 countries with data. The proportion of girls in total secondary enrolment remains considerably lower than that of boys in many of the less developed sub-regions, most notably in Middle Africa where the GPI is 0.67, Western Africa (0.77) and Eastern Africa (0.84). Substantial gender gaps to the disadvantage of girls also remain in South-Central and Western Asia, where the GPI for secondary school in 2007 was 0.87 and 0.90, respectively. In the majority of African and Asian countries girls have substantially lower enrolment rates than boys at both the primary and secondary levels.

### Participation in technical and vocational education and training (TVET)

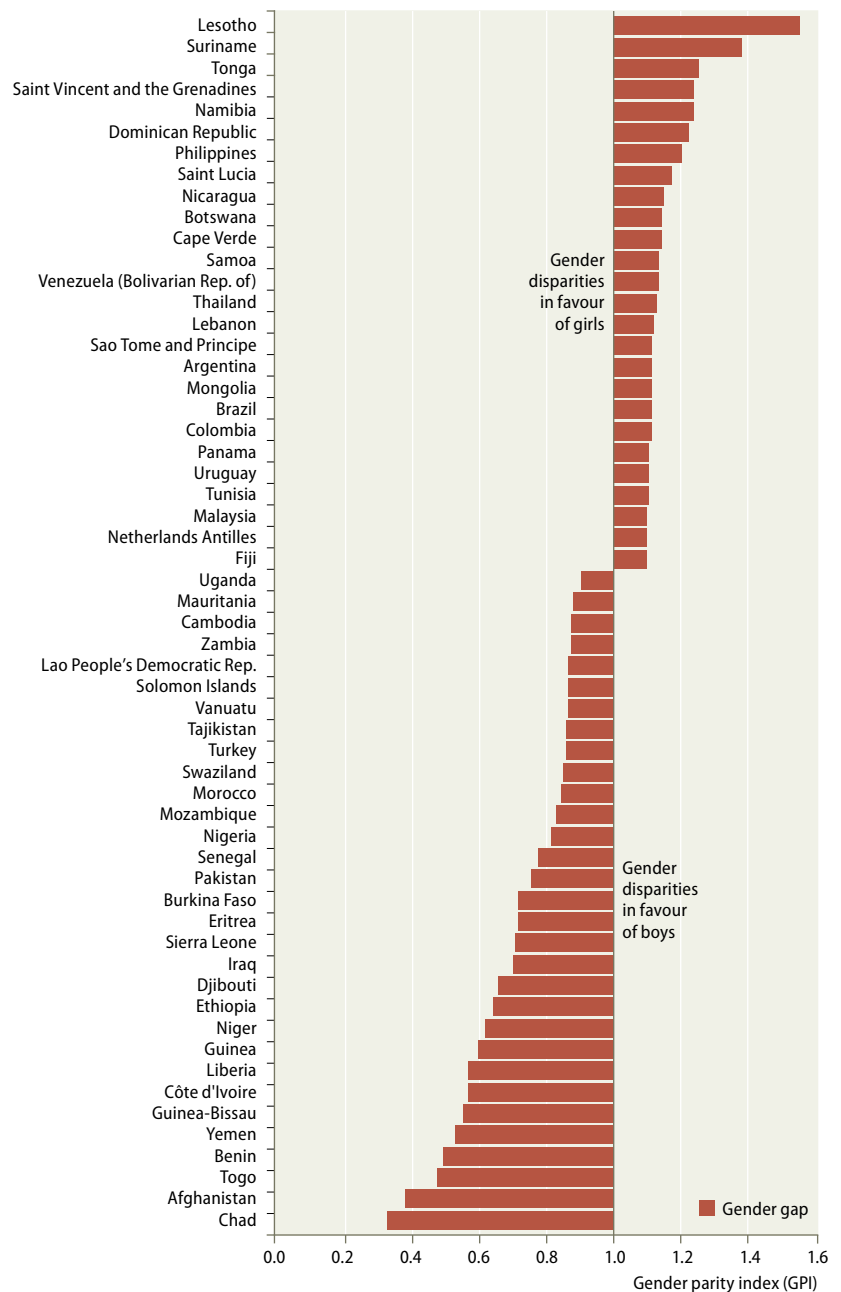
More boys participate in TVET in all regions except Latin America and the Caribbean

Technical and vocational education and training (TVET) encompasses a wide range of fields of study – from teacher training programmes to commercial studies to technical fields in industry and engineering – and prepares learners for the acquisition of knowledge and skills for the world of work, usually in a specific trade, occupation or job requiring expertise in a particular group of techniques or technology.

Regional averages of girls' participation in TVET at the secondary level are presented in figure 3.15. The data show that this varies greatly across regions. More boys participate in TVET in all regions except Latin America and the Caribbean, where slightly more girls than boys are enrolled (54 per cent). Of the 161 countries for which data were available in the period 1999–2007, girls had lower TVET enrolment than boys in 129 of them (see Statistical Annex). Significantly more girls were enrolled than boys in half of the countries with data in Latin America and the Caribbean, including over 60 per cent in Bolivia (Plurinational State of), Jamaica and Peru. Girls in South and West Asia<sup>29</sup> were considerably underrepresented in TVET programmes, accounting for less than 28 per cent of total enrolment. In sub-Saharan Africa, the majority of countries displayed larger enrolment for boys. In Equatorial Guinea, Guinea, Niger, Sao Tome and Principe and Sudan,

<sup>29</sup> The regional groupings in this section correspond to those used by UNESCO and differ from those used in other parts of the chapter.

Figure 3.14  
Gender disparities in secondary net enrolment, 2007

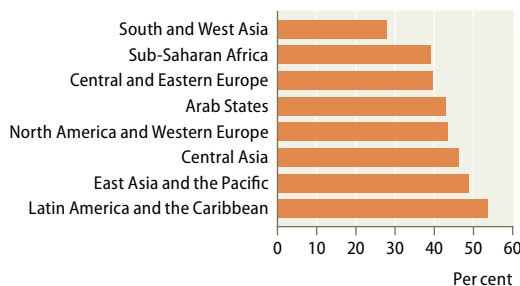


Source: UNESCO Institute for Statistics (2009a).

Note: Data presented for selected countries where the gender gap is 10 percentage points or larger.

girls' share was below 25 per cent. However, in five countries in the region (Congo, Kenya, Lesotho, Mali and Sierra Leone) girls represented over half of the TVET enrolment. The gender-based differences observed in respect of access to secondary education are, to a large extent, also reflected in the participation levels of TVET programmes.

Figure 3.15  
**Girls in secondary technical and vocational programmes (percentage in total enrolment), 2007**



Source: UNESCO Institute for Statistics (2009b).

Note: Regional groupings correspond to those used by UNESCO and differ from those used in other parts of this chapter.

However, investigating enrolment levels alone is not sufficient to obtain a comprehensive understanding of the relationship between gender and TVET programmes. To determine the extent to which the traditional differentiation between “masculine” and “feminine” subjects remains, it is necessary to assess the enrolment of girls and boys by the different fields of study.<sup>30</sup>

The study of gender parity in TVET programmes is rendered even more complex when it is taken into account that – despite its important contribution to enhancing knowledge and skills as well as the employability and income of young people – the esteem attributed to vocational education in many countries still lags behind that accorded to general education.<sup>31</sup> In some of those countries, girls may be widely represented in TVET programmes while boys occupy a larger share of the more prestigious general education streams. As a result, vocational education indicators may appear misleadingly advantageous for girls.<sup>32</sup>

### 3. Tertiary education

#### *Participation in tertiary education*

##### Tertiary enrolment of women and men has seen substantial growth globally

Enrolment in tertiary education has continued to expand worldwide. From 1990 to 2007, it more than doubled from 66.9 million to 152.4 million (see table 3.5). Over the same period, tertiary enrolment in East Asia and the Pacific<sup>33</sup> – home

<sup>30</sup> UNESCO, 2003.

<sup>31</sup> UNESCO-UNEVOC, 2006.

<sup>32</sup> Ibid.

<sup>33</sup> The regional groupings in this section correspond to those used by UNESCO and differ from those used in other parts of the chapter.

to the largest number of tertiary students in the world – has more than quadrupled for women and almost tripled for men. This situation is in part a reflection of the rapid growth of the student body in China. Likewise, in South and West Asia the expansion of tertiary enrolment has also been substantial, mirroring that achieved in East Asia and the Pacific. Sub-Saharan Africa has experienced rapid growth too, with the total size of enrolment more than tripling over the same period. Despite this achievement, however, the region still trails other regions in the provision of tertiary level education. Enrolment has more than doubled for both women and men in Latin America and the Caribbean. In contrast, Europe and North America, which had historically high participation in tertiary education, have seen the slowest growth in enrolment over the period 1990–2007.

#### Men's dominance in tertiary education has been reversed globally

The global trends show that the former preponderance of men in tertiary education has been reversed. In 1990 men comprised 54 per cent of those enrolled, but the gender balance has shifted in favour of women, who accounted for 51 per cent of tertiary enrolment in 2007 (see table 3.5). The global share of women in tertiary education increased by 5 percentage points between 1990 and 2007. Out of 166 countries with available data in the period, women's share was 50 per cent or more in 102 countries. At the regional level, women's share exceeded 55 per cent in 2007 in the more developed regions of Europe and North America, and there were more women than men enrolled in the Arab States, Central Asia and Latin America and the Caribbean. In keeping with the global trend, there was also rapid growth in women's share in tertiary education in East Asia and the Pacific, South and West Asia and sub-Saharan Africa. However, in these regions, men have continued to be enrolled in larger proportions than women. In general, women in Africa were poorly represented at the tertiary level except in some Northern and Southern African countries where they were in the majority. Women's shares were among the lowest in the world in several countries in Eastern, Middle and Western Africa. In Benin, Chad, Congo, Eritrea, Gambia and Guinea-Bissau, these were below 20 per cent. Women's shares have also been relatively lower in South and West Asia. In Afghanistan, Bangladesh, Bhutan, Iraq, Nepal and Yemen, women's share was well below

Table 3.5

## Number of women and men in tertiary education and women's share by region, 1990 and 2007

	1990				2007			
	Both sexes	Men	Women	Women (%)	Both sexes	Men	Women	Women (%)
<b>World</b>	<b>66 912</b>	<b>36 380</b>	<b>30 532</b>	<b>46</b>	<b>152 483</b>	<b>75 127</b>	<b>77 356</b>	<b>51</b>
Arab States	2 375	1 498	876	37	7 302	3 641	3 661	50
Central and Eastern Europe	13 521 <sup>a</sup>	6 292 <sup>a</sup>	7 229 <sup>a</sup>	53 <sup>a</sup>	20 750	9 372	11 378	55
Central Asia	1 545 <sup>a</sup>	783 <sup>a</sup>	763 <sup>a</sup>	49 <sup>a</sup>	2 534	1 217	1 317	52
East Asia and the Pacific	13 911	8 608	5 302	38	46 714	24 177	22 537	48
Latin America and the Caribbean	7 087	3 674	3 413	48	17 757	8 116	9 641	54
North America and Western Europe	24 935	12 034	12 902	52	34 783	15 277	19 506	56
South and West Asia	6 213	4 280	1 933	31	18 504	10 835	7 670	41
Sub-Saharan Africa	1 273	859	413	32	4 141	2 492	1 648	40

Source: UNESCO Institute for Statistics (2009a).

Note: Regional groupings correspond to those used by UNESCO and differ from those used in other parts of this chapter. Footnote "a" denotes reference year 2000. Numbers are in thousands.

40 per cent. In contrast, in the South-Eastern Asian countries of Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines and Thailand, women's share was 50 per cent or more.

When making regional comparisons concerning tertiary participation levels, it is useful to take into account population size. The tertiary gross enrolment ratio (GER) measures changes in par-

ticipation levels relative to a target population group consisting of the five-year age group following secondary school leaving and can be used to compare the volume of participation. Due to a steady expansion of education systems across the world, tertiary GERs have increased in all regions. The global GER for women more than doubled between 1990 and 2007 from 13 per cent to 27 per cent (see figure 3.16). The average global participation of women in tertiary education has exceeded that of men's, which rose from 14 per cent to 25 per cent over the same period.

Tertiary GERs show large regional disparities. In North America and Western Europe, the GERs for women and men in 2007 were 82 per cent and 61 per cent, respectively. Similarly, countries in Central and Eastern Europe enjoy a high GER of 69 for women, 14 percentage points above the ratio for men. These regions are the global leaders in terms of women's participation in higher education. In Latin America and the Caribbean, the average GER for women increased by 21 percentage points in the period between 1990 and 2007. In 2007 women's GER stood at 37 per cent, slightly higher than the ratio for men at 31 per cent. Some of this gain was due not only to increased access but also to slower population growth.<sup>34</sup> In East Asia and the Pacific, GERs for women rose from 6 per cent in 1990 to 26 in 2007, a growth of 20 percentage points. Such a large increase was achieved partly due to the remarkable growth registered in China mentioned above. The region of South and West Asia, which had

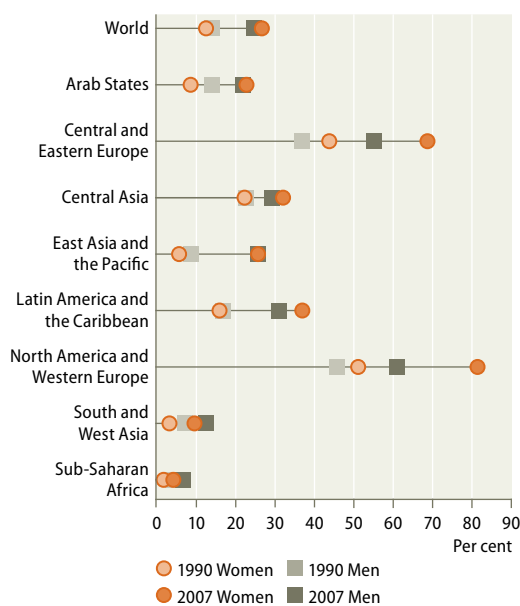
### Measuring participation in tertiary education

Unlike in primary and secondary education, where the target age groups consist of the official school-age populations, the notion of a target population does not readily apply to tertiary education as there are usually no official ages for attendance. Most tertiary education systems offer a wide range of programmes and pathways, allowing students to achieve a degree in just two years or to complete an advanced research degree in seven or eight years. In light of this variation, the gross enrolment ratio (GER) for tertiary education is calculated on the basis of a standard age range of five years that begins at the end of secondary education. The tertiary GER is computed as the total enrolment in tertiary education, regardless of age, expressed as a percentage of the target population made of the five-year age group following secondary school leaving. The tertiary GER is useful to compare the volume of participation in tertiary programmes. However, it is important to note that there are limitations when comparing the actual population coverage across countries due to the diversity in the duration of tertiary programmes, the enrolment of large numbers of women and men outside the target age group and the high levels of drop-outs and frequent re-enrolments.

Source: UNESCO Institute for Statistics, *Global Education Digest 2009* (2009).

<sup>34</sup> UNESCO Institute for Statistics, 2009c.

Figure 3.16  
Tertiary gross enrolment ratio (GER) by sex and region, 1990 and 2007



Source: UNESCO Institute for Statistics (2009a).

Note: Regional groupings correspond to those used by UNESCO and differ from those used in other parts of this chapter. For the regions of Central and Eastern Europe and Central Asia, data refer to year 2000 and 2007, respectively.

similar levels of participation to East Asia and the Pacific in the 1990s, managed to grow its GERs by only a modest 6 percentage points for both women and men over the same period. In 2007 GERs for women stood at 10 per cent while the ratio for men was slightly higher at 13 per cent. Except for Iran (Islamic Republic of), where women's GER was 34 per cent, all the other countries in the region including India had GERs of 10 per cent or less, and women's enrolment lagged behind that of men's. The average GERs for women and men in sub-Saharan Africa remain among the lowest in the world, and women in this region face significant barriers to participation in higher education.

#### Tertiary gender disparities favour women

In 2007 the GPI of the worldwide tertiary GER stood at 1.08, reflecting a gender distribution highly favourable to women (see figure 3.17). Two decades previously, men's participation had been higher than women's as reflected in the GPI of 0.88. Global tertiary enrolment ratios for women and men reached parity in the year 2003 but since then the global participation of women has been exceeding that of men.<sup>35</sup> Out of 154 countries with data, only 8 countries showed gender parity. In 54 other countries more men than women participated in tertiary education while in the

<sup>35</sup> Ibid.

remaining 92 countries women were in the majority. The GPI in 2007 far exceeded the parity value of one in all the more developed regions. In North America and Western Europe it was 1.33, while Central and Eastern Europe and Latin America and the Caribbean displayed GPIs of 1.25 and 1.19 respectively. A significant gender gap in favour of men remains in those regions where a large gap already existed and where overall enrolment is much lower. Sub-Saharan Africa (0.66) and South and West Asia (0.76) were the only regions where the tertiary enrolment GPI was below one. Women in several countries in Africa and South and West Asia face severe disadvantages in tertiary education. In a few countries the GPI was less than 0.40: Afghanistan, Congo, the Democratic Republic of the Congo, Ethiopia, Guinea, Mauritania, Niger, Tajikistan and Yemen.

#### Tertiary enrolment by field of study

Women's choices of specific fields of study have a significant impact on their future lives, careers and roles in society. Analysis of tertiary enrolment by different fields can determine whether there is a gender pattern in their selection – that is, "masculine" and "feminine" fields of study. It can shed light on whether differences in the selection of study areas reflect individual preferences or cultural and social stereotypes. Such an analysis can also elicit information on the capacity of tertiary education systems to provide programmes in different academic disciplines and to meet the needs of labour markets and society at large.

Figure 3.18 presents data on women's enrolment among eight broad fields of study: education; health and welfare; humanities and arts; social science, business and law; science; engineering, manufacturing and construction; agriculture; and services. The chart illustrates gender differences in participation among these eight fields in relation to the proportion of women in total tertiary enrolment. It is apparent from the panels in the chart that gender patterns vary distinctly by field of study.

#### Women still dominate traditionally "feminine" fields of study and are underrepresented in science and engineering fields

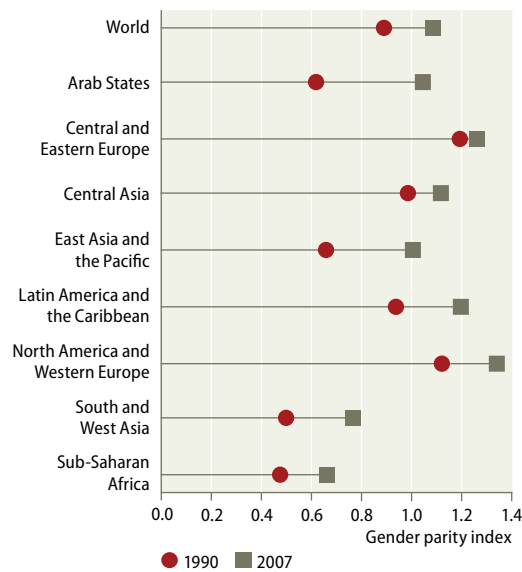
The fields in which women have traditionally been dominant – education, health and welfare, humanities and arts, and social science, business and law – are still dominated by them. In more than two out of three countries for which

data were available in the period 1999–2007, women outnumbered men in enrolment in these four fields. In the panels, the countries in which women outnumber men in the respective fields of study are located above the horizontal line, which represents 50 per cent share of female enrolment. Women’s participation is particularly prominent in education. Out of 120 countries with data, the share of women enrolled in this field exceeded 50 per cent in 92 countries. In 36 countries, it exceeded 75 per cent. In Armenia, Croatia, Estonia, Georgia, Lebanon and the Netherlands Antilles, women’s share was greater than 90 per cent. The situation completely reverses in certain other countries where women’s share in education is lower than that of men. These countries are mostly located in sub-Saharan Africa, and to some extent in Asia, where women’s share in tertiary education is relatively low.

A different picture emerges when looking at women’s participation in the fields of science, engineering, manufacturing, and construction, agriculture and services. Men’s participation in these fields is greater than that of women in the majority of countries reporting data in the period 1999–2007. In the panels in figure 3.18, those countries in which women are outnumbered by men are located below the horizontal line. Out of 117 countries with data, men enrolled in science outnumbered women in 89 countries. In these countries, men’s participation was more than women’s even in some of those cases where women outnumbered men overall in tertiary enrolment. These countries represent diverse regions and tertiary education systems. In contrast, women’s participation in science was more than men’s in 26 countries. In most of these countries, women made up more than half of the entire tertiary enrolment. Several Arab States are represented in this group of countries, including Bahrain, where women comprised 75 per cent of those enrolled in science, Jordan and Lebanon (each 51 per cent), Oman (56 per cent), Qatar (69 per cent) and Saudi Arabia (59 per cent). Women’s participation is higher in these countries in part because a large number of men pursue higher education overseas. Despite enjoying better access to tertiary education than ever before, women continue to face challenges in accessing the fields of study traditionally dominated by men. The gender patterns in participation among the eight fields of study indicate that gender-based stereotypes survive and that role models that could lead young women to challenging, better-paid careers are scarce.

Figure 3.17

**Gender parity index (GPI) of tertiary gross enrolment ratios by region, 1990 and 2007**



Source: UNESCO Institute for Statistics (2009a).

Note: Regional groupings correspond to those used by UNESCO and differ from those used in other parts of this chapter. For the regions of Central and Eastern Europe and Central Asia, data refer to year 2000 and 2007, respectively.

### C. Teaching staff

Several factors impinge on the quality of education and the learning environment, including lack of trained teachers, limited availability of textbooks, over-crowding of classrooms, insufficient instructional time and inadequate school facilities. Quality in education depends in large part on the quality of the teaching staff. Gender balance among the staff is critical for promoting gender parity and equality in access to, and achievement in, education and for creating a supportive and non-discriminating learning environment for both women and men. There is evidence that gender balance among teaching staff is closely related to the improvement of gender parity in enrolments.<sup>36</sup> As the proportion of female teachers increases from low levels, girls’ enrolments rise relative to boys. The “feminization” of the teaching profession, particularly in countries where women have lower socio-economic status, can serve as an empowering tool for young women to pursue their studies and for parents to choose to educate girls.<sup>37</sup>

Table 3.6 displays regional averages of women’s share in the teaching staff by level of education for the years 1999 and 2007. Similar data is presented in figure 3.19 for countries that reported statistics

<sup>36</sup> Colclough and others, 2003.

<sup>37</sup> UNESCO, 2003.

for 2007 on women's share of the teaching staff at all levels of education. The trends show that the participation of women in the teaching profession has increased at all levels of education in most countries.

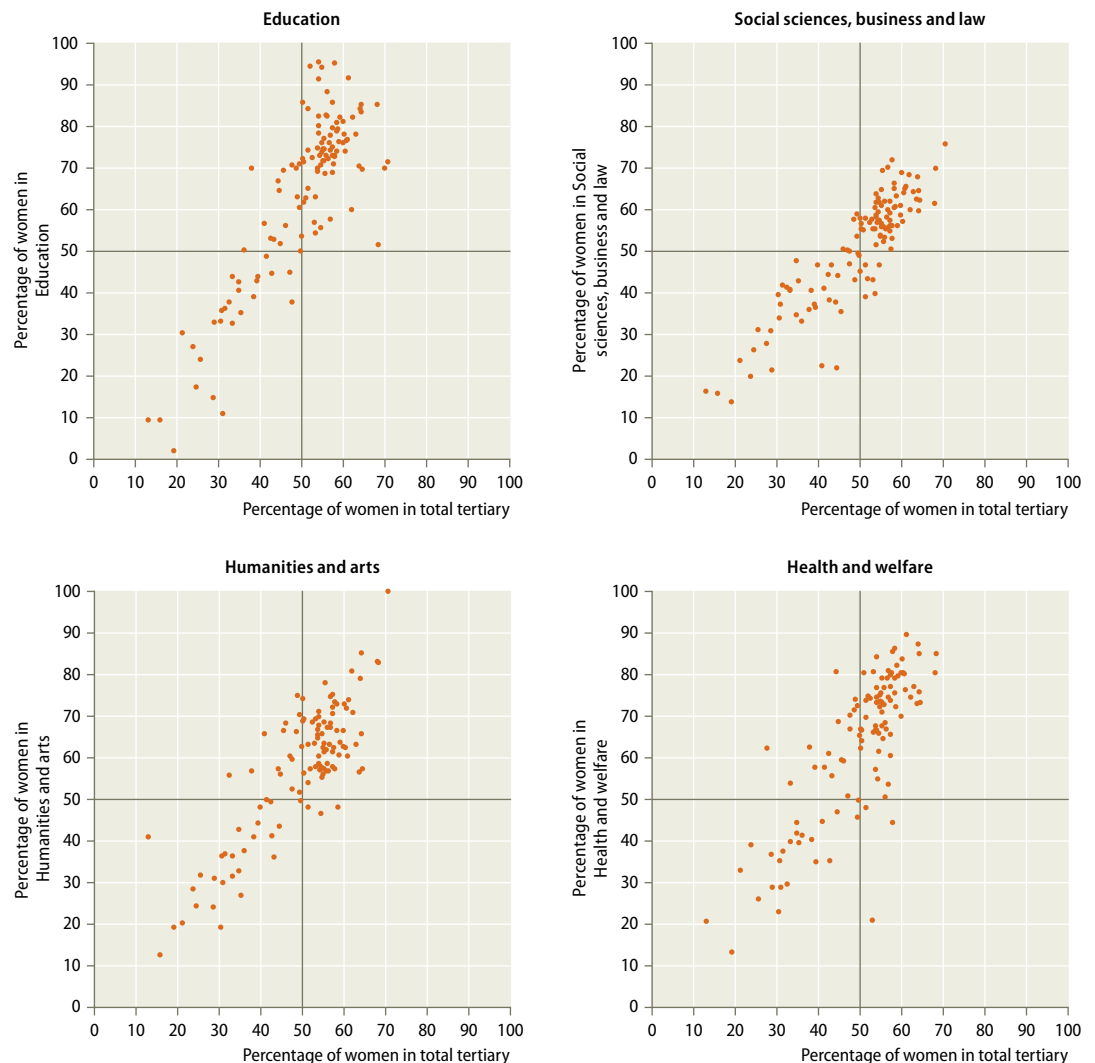
### Women predominate in teaching at the primary level

Female teachers constitute the majority of primary school teachers in most regions, and their global share increased from 58 to 62 per cent between 1999 and 2007. Across the world, however, the proportions of women in the teaching staff at the primary level show a wide range. For the more developed regions as a whole, this was 84 per cent in 2007 whereas in the less developed regions it

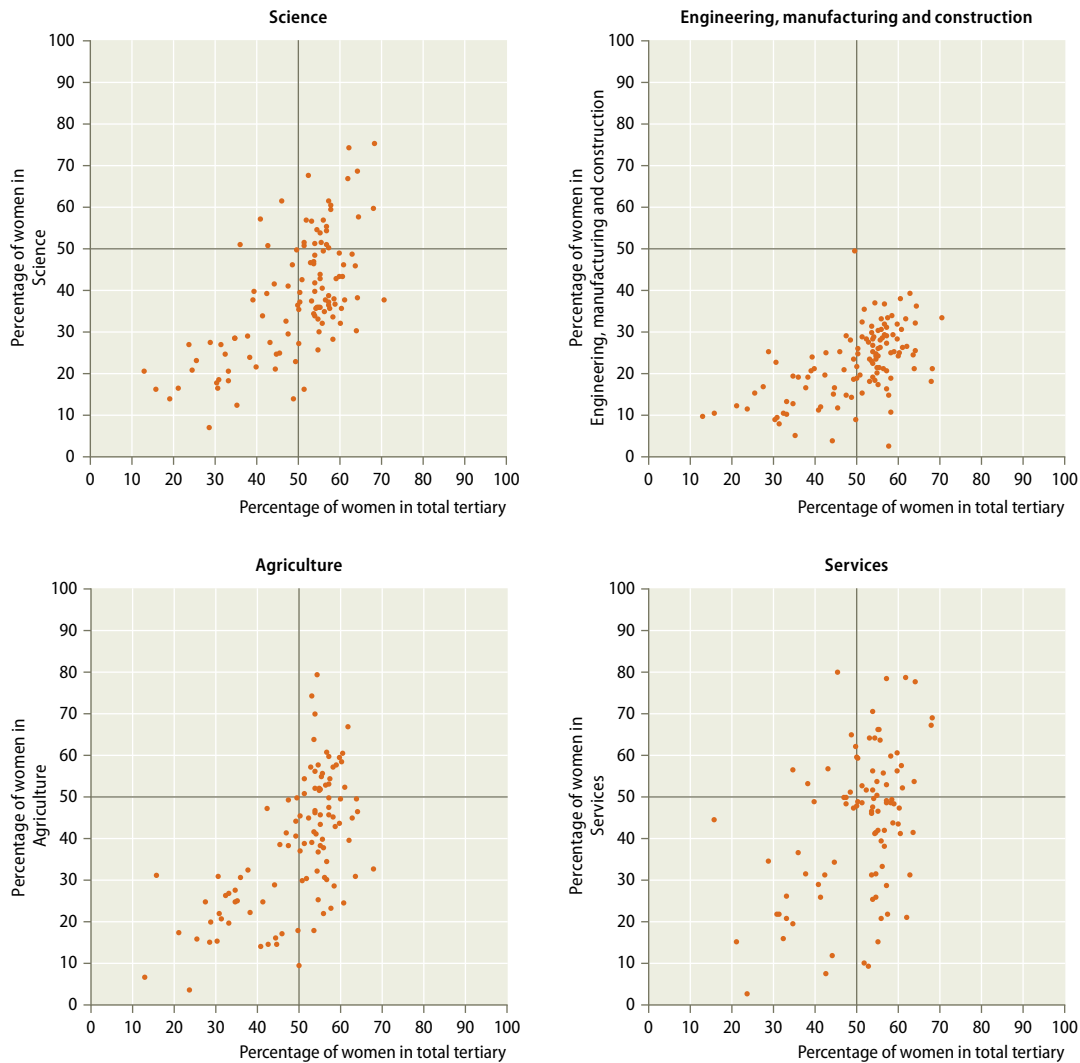
stood at 57 per cent. It was highest in Eastern Europe at 93 per cent and lowest in Middle Africa at 32 per cent. In 98 countries out of 193 reporting data in the period 1999–2007, the proportion of female primary school teachers exceeded 75 per cent (see Statistical Annex). In some countries women represent almost the totality of primary school teachers – the proportion was larger than 90 per cent in 21 countries. In contrast, in 16 countries the participation of women in the teaching profession at the primary level was less than 30 per cent. All but two of these countries – Afghanistan and Yemen – are in sub-Saharan Africa. Low levels of female participation (below 50 per cent) are also found in some countries in South-Central Asia (Bangladesh, Bhutan, India, Nepal and Pakistan), South-Eastern Asia (Cambodia, Lao People's

Figure 3.18

### Women as a percentage of enrolment in selected broad fields of study, 2007







Source: UNESCO Institute for Statistics (2009a).

Note: Each point represents one country. The horizontal line is a gender parity line for the respective field of study. Below the gender parity line, women's participation in the respective field of study is lower than that for men's. Above the line, women's participation exceeds men's. Data correspond to reference year 2007 or latest available in the period 1999–2007.

Democratic Republic and Timor-Leste) and Oceania (Papua New Guinea and Solomon Island) (see figure 3.19). The data show that the proportion of female primary teaching staff is lower in countries with low levels of overall enrolment.

### Women's share in teaching drops significantly at higher levels

Compared to the primary level, women teachers at the secondary level constitute a lower proportion at about 52 per cent in the period from 1999 to 2007. Their share ranged from 77 per cent in Eastern Europe to 15 per cent in Middle Africa in 2007. The proportion in the less developed regions as a whole was 48 per cent, and it was 38 per cent in Africa and 46 per cent in Asia. With the exception of Northern and Southern Africa, women teachers throughout Africa were vastly outnumbered by men.

In five African countries – Chad, Equatorial Guinea, Guinea, Guinea-Bissau and Togo – the proportion of female teachers at the secondary level was below 10 per cent.

Women constitute the lowest proportion of teachers at the tertiary level, making up only 42 per cent in both the more and less developed regions in 2007. Tertiary level data for 146 countries reported in the period 1999–2007 showed that in 125 countries (or 86 per cent) the proportion of women teachers was below 50 per cent. Outside of sub-Saharan Africa, proportions well below 30 per cent were found in several Arab countries or areas – Jordan, Kuwait, Occupied Palestinian Territory, Oman, United Arab Emirates and Yemen. Even in Northern America and Europe (except Eastern Europe), women's proportion of the teachers in tertiary education was significantly lower than 50 per cent. On the other hand, in a

Table 3.6

Women in teaching staff by level of education and region, 1999 and 2007 (per cent)

	Primary		Secondary		Tertiary	
	1999	2007	1999	2007	1999	2007
<b>World</b>	58	62	52	52	39	42
Less developed regions	52	57	48	48	39	42
More developed regions	83	84	61	63	38	42
<b>Africa</b>	45	48	37	38	33	31
Eastern Africa	40	44	30 <sup>a</sup>	32	26	25
Middle Africa	25	32	16	15	10	..
Northern Africa	49	59	44	49	36	37
Southern Africa	78	76	50	53	47 <sup>a</sup>	50 <sup>b</sup>
Western Africa	39	41	27	26	29	17 <sup>b</sup>
<b>Asia</b>	50	55	45	46	33 <sup>a</sup>	38
Eastern Asia	54 <sup>a</sup>	57	40 <sup>a</sup>	44	32 <sup>a</sup>	36
South-Central Asia	38	47	40	40 <sup>b</sup>	33 <sup>a</sup>	37
South-Eastern Asia	64	66	53	56	39	46
Western Asia	57	58 <sup>b</sup>	55	54 <sup>b</sup>	35	37
<b>Europe</b>	83	85	65	67	42	46
Eastern Europe	92	93	75	77	52 <sup>a</sup>	54
Northern Europe	76	80 <sup>b</sup>	57	62 <sup>b</sup>	37	41 <sup>b</sup>
Southern Europe	80	83	60	64	34	38
Western Europe	77	83	53	56	33	36
<b>Latin America and the Caribbean</b>	76	78	64	60	45	46
Caribbean	64	67	53	51	44	55
Central America	63	68	46	48	..	..
South America	82	83	70	65	44	42
<b>Northern America</b>	85	87	57	63	41	44
<b>Oceania</b>	72 <sup>a</sup>	75 <sup>b</sup>	..	..	44	..

Source: UNESCO Institute for Statistics (2009a).

## Notes:

<sup>a</sup> Data refer to a year in the period 2000–2002.<sup>b</sup> Data refer to a year in the period 2004–2006.

few countries in Eastern Europe (Belarus, Latvia, Lithuania, Republic of Moldova and Russian Federation), Latin America and the Caribbean (Argentina, Cuba and Jamaica), South-Central Asia (Georgia, Kazakhstan and Kyrgyzstan) and South-Eastern Asia (Myanmar, Philippines and Thailand), women teachers at the tertiary level have attained participation levels greater than those observed in the more developed regions.

#### D. Scientific and technological knowledge

Much of the improvement in human welfare over the past century can be attributed to scientific and technological innovations.<sup>38</sup> The diffusion of new

<sup>38</sup> Juma and Yee-Cheong, 2005.

information and communication technologies (ICTs) has revolutionized the role of knowledge in societies. However, there is a “knowledge divide” – the cumulative effect of the various rifts observed in the main areas that make up knowledge (access to information, education, scientific research, and cultural and linguistic diversity) – which threatens to become a factor of exclusion.<sup>39</sup> This divide is particularly glaring between developed and developing countries and is also found within a given society, including between women and men. Women’s participation in creating, transmitting and processing knowledge – and the elimination of gender disparities in access to information and scientific and technological knowledge – is a key concern in addressing inequalities and promoting human development.

#### 1. Research and development

##### Women are starkly underrepresented among researchers worldwide

Investment in research and development is vital for generating knowledge and for laying the foundation for scientific and technological innovations. Sustainable science and technology capacity development is critical for building the foundation for a knowledge-based society, and countries need to establish and maintain an indigenous science and technology workforce that not only consumes other countries’ technological exports but also creates, acquires, assimilates, utilizes and diffuses science and technology knowledge.<sup>40</sup> Qualified researchers, professionals and technicians are required to manage the expansion of a country’s science, technology and innovation capacity. However, in an age where science and technology based-knowledge is becoming a determinant of economic competitiveness, women are starkly underrepresented among researchers, professionals and technicians.<sup>41</sup>

Figure 3.20 presents data on women’s and men’s share of the total number of researchers by region. The data show that women constitute only slightly more than a quarter of all researchers worldwide. They also account for less than half of researchers in all regions and in 101 out of 115 countries with available data (see Statistical Annex). In 49 countries women’s share is less than a third. In the

<sup>39</sup> UNESCO, 2005.<sup>40</sup> UNESCO, 2007.<sup>41</sup> Ibid.

Research and development

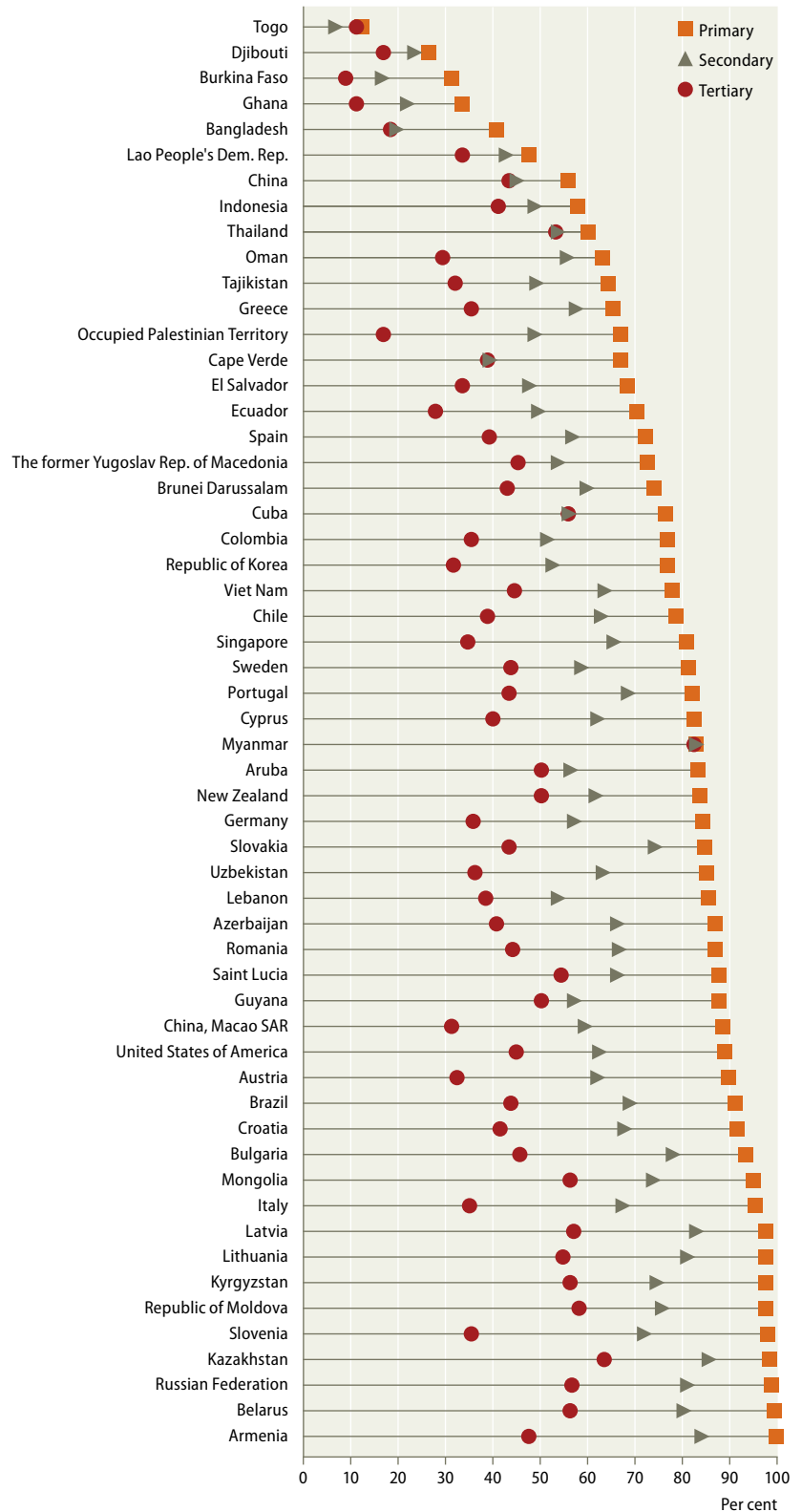
Research and development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of humanity, culture and society, and the use of this stock of knowledge to devise new applications. The term covers three activities: basic research, applied research and experimental development. Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned.

African countries of Ethiopia, Gambia, Guinea and Senegal, women account for less than 10 per cent of all researchers. In contrast, in a handful of countries in Africa (Cape Verde and Lesotho), Asia (Azerbaijan, Georgia, Kazakhstan, Philippines and Thailand), Europe (Latvia, Lithuania and the former Yugoslav Republic of Macedonia) and Latin America (Argentina, Brazil and Venezuela (Bolivarian Republic of)) women make up half or slightly more than half of researchers. Gender parity – defined here as a share of between 45 and 55 per cent for each sex – has been achieved in only 23 countries.

In Africa, the average share of women in research is 33 per cent. The proportion is higher than the world average in Northern Africa (36 per cent) whereas in sub-Saharan Africa the average is 28 per cent. In about half of the countries with available data in sub-Saharan Africa, women account for less than 30 per cent of researchers. Cape Verde, Lesotho and Tunisia are the only countries that have achieved gender parity in Africa.

In Asia as a whole, women represent 19 per cent of researchers. The countries of Central Asia have recorded the highest share worldwide (49 per cent). However, in the sub-regions of Eastern Asia and Southern Asia, the numbers are far below the global average of 29 per cent. Along with Bangladesh, India<sup>42</sup> and Nepal, Japan and the Republic of Korea report some of the lowest proportions of women researchers in the region (15 per cent or below). Women's participation is relatively higher in South-Eastern Asia, where the sub-regional average stands at 40 per cent and national level estimates range from 21 per cent in Cambodia to 85 per cent in Myanmar. Seven countries (Armenia, Azerbaijan, Georgia, Kazakhstan, Mongolia,

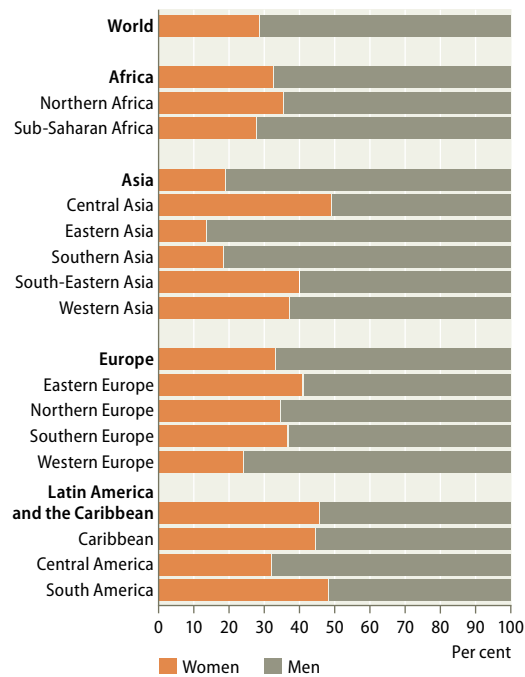
Figure 3.19  
Women in teaching staff by level of education and country, 2007



<sup>42</sup> Data measured not on the basis of headcount but on full-time equivalency (FTE), a method that adjusts for part-time or part-year participation.

Source: UNESCO Institute for Statistics (2009a).

Figure 3.20  
**Women's and men's share of the total number of researchers by region, 2007 or latest available year**



Source: UNESCO Institute for Statistics (2009a).

Note: Regional averages computed based on available data (no imputations were made for countries with missing data). Data refer to headcount of the total number of persons who are mainly or partially employed in research and development.

Philippines and Thailand), representing less than a quarter of those with available data in Asia, have achieved gender parity.

At 46 per cent, women's share of researchers in Latin America and the Caribbean exceeds the global average. At the level of country or area, it ranges from 18 per cent in the United States Virgin Islands to 52 per cent in Venezuela (Bolivarian Republic of). Gender parity has been attained in Argentina, Brazil, Cuba, Ecuador, Paraguay and Venezuela (Bolivarian Republic of). However, in countries or areas with small research communities such as Guatemala, Honduras and the United States Virgin Islands, women's share accounts for less than a third.

Women researchers in Europe account for 33 per cent of the total. While the regional proportion is above the global average, women account for 30 per cent or less in Austria, Belgium, Denmark, France, Germany, Luxembourg, Netherlands and Switzerland. The gender balance is much better in Eastern and Southern Europe where over 41 per cent and 37 per cent, respectively, of researchers are women. Gender parity has been achieved in Bulgaria, Croatia, Latvia, Lithuania, Republic of Moldova, Romania, Serbia and the former Yugoslav Republic of Macedonia.

There is a wide range of reasons for women's underrepresentation in research and development, one major factor being that they are less likely than men to obtain tertiary level qualifications in science, engineering and technology fields required for a career in scientific research. Other factors related to working conditions and career development are also important and include work-life balance, gendered patterns and approaches to productivity, performance measurement, retention and promotion criteria and research grant awards.<sup>43</sup> Lack of good work-life balance policies may limit women's participation as they frequently perform paid work along with heavy family responsibilities. Once in employment, rigid employment practices and lack of opportunities for retraining can lead to skilled women leaving science and technology careers permanently.<sup>44</sup> Although these issues affect both men and women, women are more affected as they are more likely to have gaps in employment due to maternity leave and family care-giving demands.

## 2. Decision-making in research and development

### Fewer women are represented on scientific boards

Women have had less opportunity than men to participate in research and development, and scientific research has in return often neglected their situations, interests and concerns. This has been the case in part because women are under-deployed in research and generally have less access than men to research and development resources.<sup>45</sup> Another reason is that fewer women are represented at the higher levels of personnel in scientific institutions – including advisory, funding and other decision-making bodies. Women have less chance of reaching senior levels in these institutions, including holding positions of influence through membership in scientific boards.<sup>46</sup>

The proportion of female members of scientific boards can serve as a useful indication for the degree to which women participate in the process of setting the science and technology agenda. Figure 3.21 displays data on the share of women on these boards in 27 countries, almost all of which

<sup>43</sup> UNESCO, 2007.

<sup>44</sup> Ibid.

<sup>45</sup> European Commission, 2006.

<sup>46</sup> Ibid.

are in Europe.<sup>47</sup> Although the data presented lack geographical coverage and representation of regions from different development groups, they nonetheless provide evidence of the severe under-representation of women in such bodies. The scarcity of sex-disaggregated data among professorial ranks and at higher levels of personnel in scientific institutions poses a significant obstacle to the analysis of policies in science and technology from a gender perspective.

The share of women on or presiding over scientific boards is below 50 per cent in all of the 27 countries, ranging from 49 per cent in Sweden to 4 per cent in Luxembourg. With the exception of seven countries, women's share is less than 30 per cent. The situation is more balanced in Finland, Norway and Sweden, where the share of female board membership exceeds 40 per cent. The proportion of women is above 30 per cent in Croatia, Bulgaria, Denmark and Iceland.

Correcting the gender imbalance in participation in science and technology requires strategic approaches. Effective measures include popularizing science and promoting scientific literacy and the use of the tools of technology. Efforts should also be made to increase the number of women students in the scientific and technical professions. Another important step to take is enhancing women's representation at the top levels of decision-making processes in higher education institutions, scientific associations, research and development centres and major scientific and technological companies. The objective of increasing women's participation in the generation of scientific and technological knowledge cannot be achieved if women are not sufficiently involved in setting the science and technology agenda.

### 3. Gender digital divide

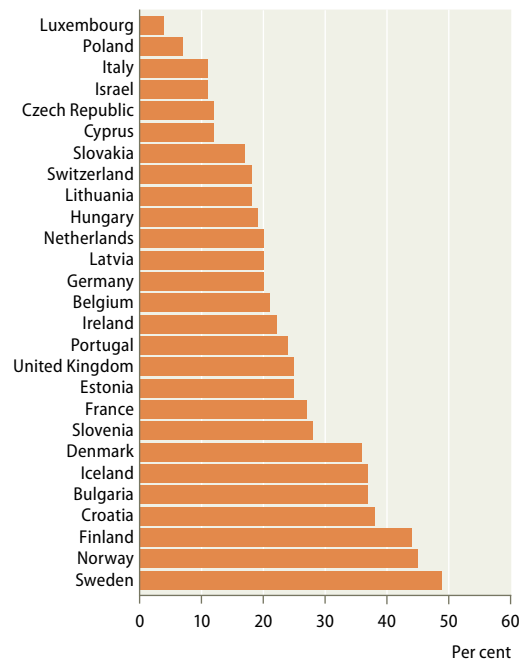
#### Inequalities of access to the Internet is further marginalizing women

Information and communication technologies (ICTs) are pivotal for the development of knowledge societies. Advances in this area have been

<sup>47</sup> Data on women in science in Europe have recently been made more available primarily due to the work of the Helsinki Group on women and science. Established by the European Commission in November 1999, the Group aims to promote the participation and equality of women in the sciences on a Europe-wide basis, the compilation of sex-disaggregated statistics and the building of gender-sensitive indicators.

Figure 3.21

Proportion of women on scientific boards, 2007 or latest available year



Source: European Commission, *She Figures 2006* (2006).

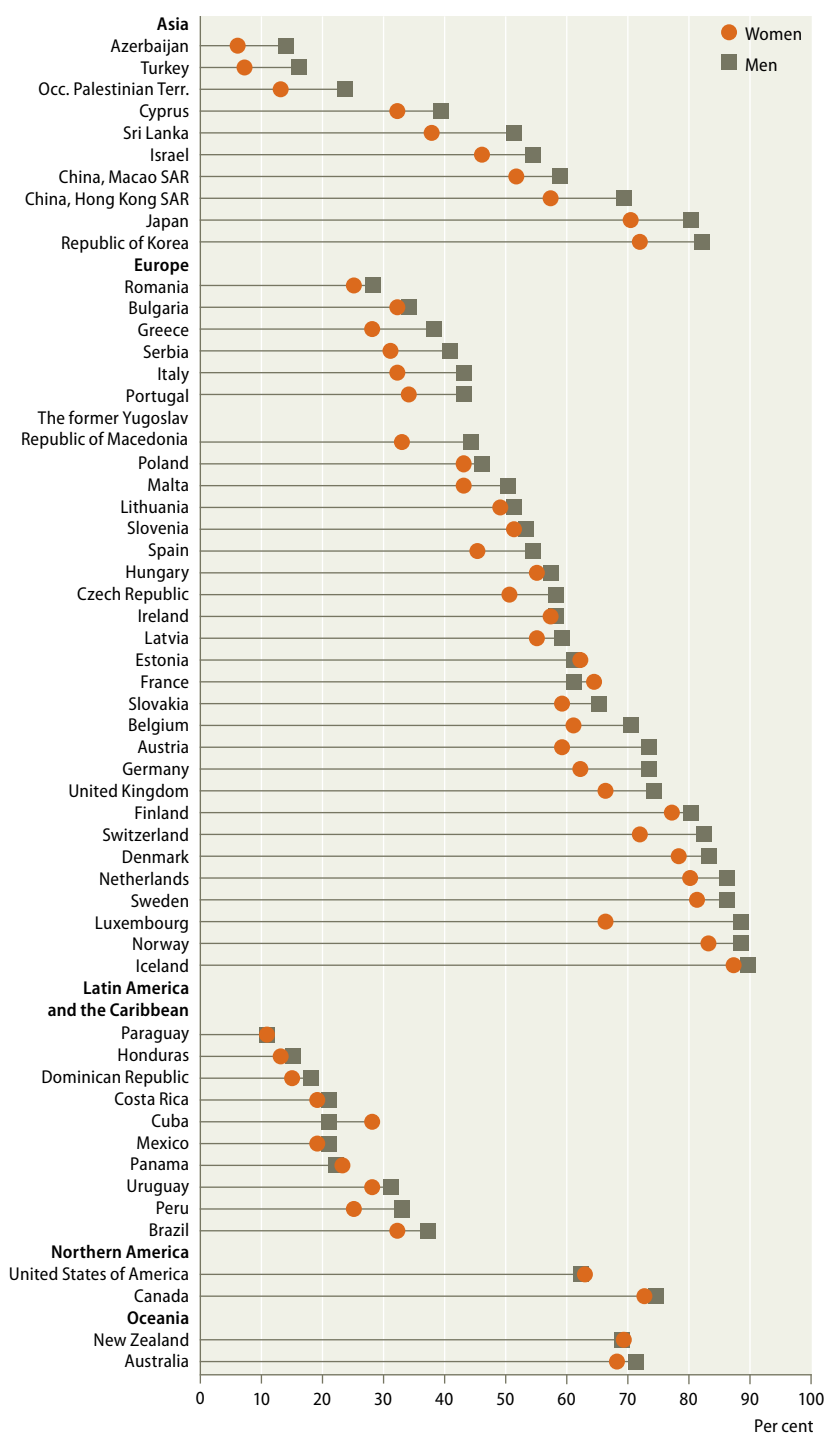
affecting the means of creating, transmitting and processing knowledge. The uneven distribution of access to and use of ICTs – known as the “digital divide” – has become a major barrier to development because of the risks it poses to economic and social marginalization and to the widening of the knowledge divide. The digital divide occurs along multiple and often overlapping lines: education, poverty, gender, age, disability, ethnicity and region. The gender digital divide represents a dimension in which a knowledge gap has emerged between women and men.<sup>48</sup> Inequalities of access to information sources, contents and infrastructures can hamper the growth of knowledge societies. If left unaddressed, this could also further marginalize women and increase societal disparities.

Use of the Internet is one indicator of access to information and sharing of knowledge. Figure 3.22 shows data on the proportion of female and male Internet users relative to their respective populations across 55 countries. The figure illustrates the limited availability of sex-disaggregated ICT statistics, particularly in the less developed regions. The figure also demonstrates that the proportion of women who use the Internet varies substantially across regions and countries. In about half of the countries or areas shown, less than 50 per cent of

<sup>48</sup> Lopez-Carlos and Zahidi, 2005.

Figure 3.22

Proportion of population using the Internet, by sex and country or area, 2008 or latest available year



Source: Compiled by the United Nations Statistics Division from EUROSTAT, Information Society statistics database (2009); UNECE statistical database (2009); ITU, Information Society statistical profiles 2009: Americas (2009); and national sources (as of October 2009).

Note: Data refer to use of the Internet in the last three months preceding the survey in the majority of countries presented. Use of the Internet is defined as any kind of use, whether at home, at work or from anywhere else, for private or professional purposes, using a computer or any other means. Data refer to population aged 16–74 in the majority of countries presented. The comparability of data is limited due to varying definition of Internet use and differing population age groups and lengths of period of Internet use surveyed.

women use the Internet. Among these, in nine low Internet penetration countries or areas – Azerbaijan, Costa Rica, Dominican Republic, Honduras, Mexico, Occupied Palestinian Territory, Panama, Paraguay and Turkey – less than 25 per cent of women use the Internet. In contrast, the proportion of women who use the Internet is larger than 75 per cent in Denmark, Finland, Iceland, Netherlands, Norway and Sweden, all high Internet penetration countries.

The figure also provides evidence that, with some exceptions, the gender digital divide is widespread. In general, it is more pronounced among less developed countries with low Internet penetration, although it is also evident in several more developed countries with high Internet penetration. Gender gaps to the disadvantage of women – some more and others less pronounced – are present in all the regions shown. Out of the 55 countries presented, the gender gap in 28 is more than 5 percentage points. In all these countries a higher proportion of men than women use the Internet, except in Cuba where the gender disparity is in favour of women.

Gender gaps are substantial in several countries or areas. In the former Yugoslav Republic of Macedonia, Greece, Italy, the Occupied Palestinian Territory, Serbia and Sri Lanka – all with low Internet penetration – the gender gaps in favour of men range from 10 to 13 percentage points. Substantial gender gaps ranging from 10 to 22 percentage points are also present in the following relatively high Internet penetration countries/areas: Austria; China, Hong Kong SAR; Germany; Japan; Luxembourg; the Republic of Korea and Switzerland. The greatest disparity is registered in the relatively high Internet penetration country of Luxembourg, where the gender gap is 22 percentage points in favour of men. This shows that the gender digital divide is as pertinent in the more developed countries as in the less developed ones.

On the other hand, the gender gap is less pronounced or non-existent in a number of countries from both more and less developed economies. It is less than 5 percentage points in the low Internet penetration countries of Bulgaria, Costa Rica, the Dominican Republic, Honduras, Mexico, Panama, Paraguay, Poland, Romania and Uruguay as well as in the relatively high Internet penetration countries of Australia, Canada, Estonia, Finland, France, Hungary, Iceland, Ireland, Latvia, Lithuania, New Zealand, Slovenia and the United States of America.

Many women face barriers in accessing ICTs. One is that they are more likely than men to lack basic literacy and computer skills. Another, in the less developed regions, may be gender-based cultural attitudes. The location of information centres or cybercafés in places that women may not be comfortable frequenting or that are culturally inappropriate for them to visit causes them to have less access to those ICT facilities that do exist.<sup>49</sup> Even when access is not an issue, the paucity of Internet content that meets the information needs

of women can lead to inequality in use. As a result of issues such as these, women's ability to benefit equally from the opportunities offered by ICTs and to contribute fully to the knowledge-based economy is limited.<sup>50</sup> To overcome the further marginalization of women, it is imperative to expand their access to and use of ICTs. However, while expanding access is necessary, it is not sufficient to close the gender digital gap.<sup>51</sup> To do this requires policies containing specific measures for targeting and addressing the gender dimensions of ICTs.

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<sup>49</sup> Hafkin, 2003.

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<sup>50</sup> Ibid.

<sup>51</sup> Huyer, 2005.