A TEACHER FOR EVERY CHILD: Projecting Global Teacher Needs from 2015 to 2030

According to new global projections from the UNESCO Institute for Statistics, chronic shortages of teachers will persist beyond 2015 for decades to come if current trends continue. In total, the world will need an extra 3.3 million primary teachers and 5.1 million lower secondary teachers in classrooms by 2030 to provide all children with basic education.

MILLIONS OF TEACHERS MISSING AT THE PRIMARY LEVEL

Countries will need an extra 1.6 million teachers in classrooms to achieve universal primary education (UPE) by 2015 and this number will rise to 3.3 million by 2030, according to new projections developed by the UNESCO Institute for Statistics (UIS) to better inform planning and policymaking options at the global level *(see **Table 1** for data and **Annex 1** for methodological information).* These figures will be analysed in greater depth in the 2013/2014 edition of the Education for All *Global Monitoring Report*, which will examine the policy options and financial resources required to address the global teacher gap.

Teachers play a critical role in enabling students to achieve good learning outcomes within effective education systems. While their ability to positively shape a child's learning experience depends on a myriad of factors, the first step towards good learning outcomes is to ensure that there are enough teachers in classrooms. This is the purpose of UIS projections, which do not indicate what *will* happen but rather what governments *should* make happen in order to provide every child with a primary education.

TABLE 1. NUMBER OF NEW TEACHING POSITIONS NEEDED TO ACHIEVE UPE

Regions	Number of primary teachers in 2011 (in thousands)	New teaching posts needed to achieve UPE (in thousands)			
		By 2015	By 2020	By 2025	By 2030
Arab States	1,931	213	345	399	454
Central and Eastern Europe	1,127	84	170	166	111
Central Asia	340	26	68	64	45
East Asia and the Pacific	10,378	57	52	65	90
Latin America and the Caribbean	3,102	36	26	34	38
North America and Western Europe	3,801	128	237	256	302
South and West Asia	5,000	130	187	187	196
Sub-Saharan Africa	3,190	902	1,295	1,716	2,100
World	**28,870**	**1,577**	**2,381**	**2,886**	**3,335**

**Note:** These figures do not include teachers needed to fill vacancies due to attrition.
Source: Calculations based on the UNESCO Institute for Statistics database.

According to UIS data, about 58% of countries and territories around the world currently do not have enough teachers in classrooms to achieve UPE. To better gauge the extent of the problem, **Figure 1** presents projections for the 93 countries expected to face chronic shortages, which persist for at least two years.[1] Only 40% (or 37) of these countries will have enough primary teachers in classrooms to meet the 2015 target. If current trends continue, this proportion would rise to 54% by 2020. However, 29 countries – or 31% – will still not have enough primary teachers as late as 2030.

These figures reflect the number of new teaching positions required to achieve UPE. In addition, countries must also replace teachers who leave the workforce (e.g. due to retirement, illness, etc.) in relation to changes in the size of the primary school-age population**.** Several countries facing chronic teacher shortages also face high rates of teacher attrition, which can reach as high as17% as in the case of Angola, where almost one in five teachers leaves the profession in a given year, according to the latest UIS data.

Faced with the pressure to achieve UPE and offset attrition rates, many countries resort to hiring less-qualified teachers or even lowering national standards. This decision can jeopardise education quality and the learning outcomes of students, especially those in over-crowded classrooms with few resources. It is important to note that UIS projections are based on the number of teachers needed not their qualifications.

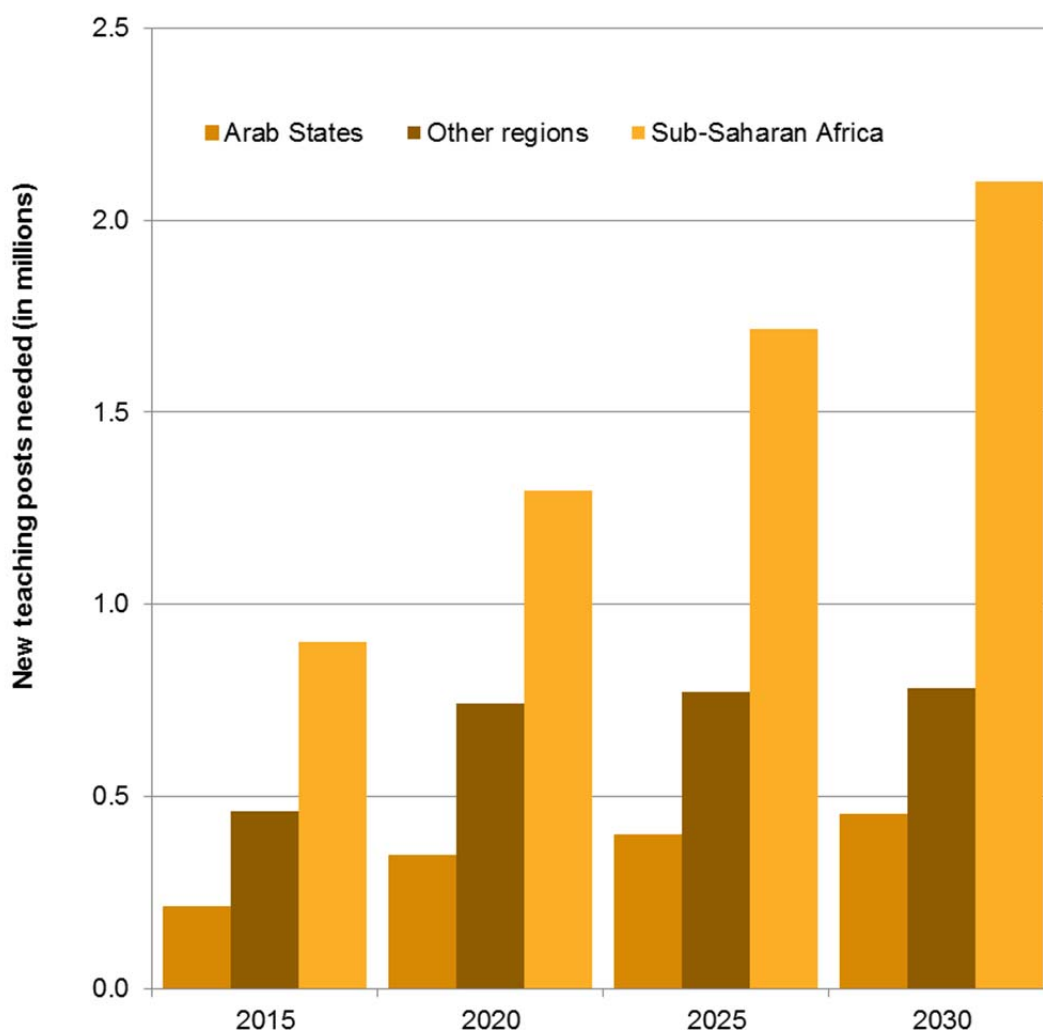**FIGURE 1. TWO-THIRDS OF COUNTRIES WITH SHORTAGES IN 2011 CAN CLOSE THE GAP BY 2030**
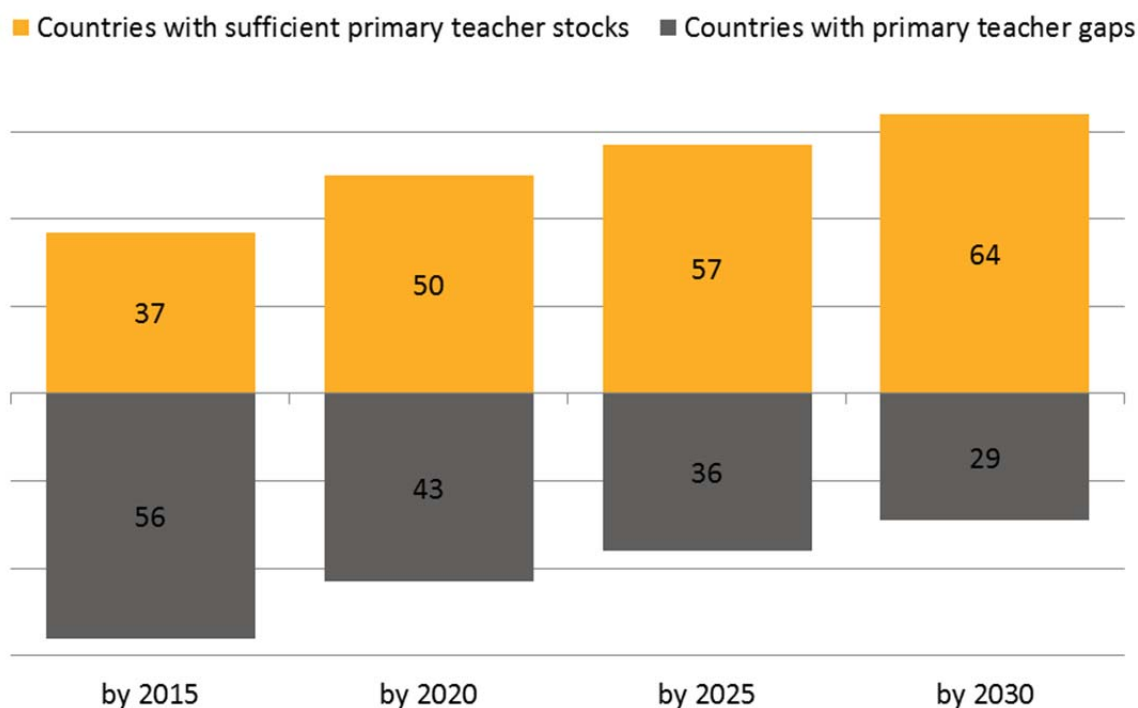
Source: Calculations based on the UNESCO Institute for Statistics database.

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[1]   The analysis is based on countries with available data. The projections are based on UN Population Division estimates of school-age populations, teaching staff data and repetition indicators. Some countries, such as Bangladesh, Brazil, Haiti, India and Zimbabwe, lack recent data for at least one of these indicators and, therefore, are not included in country-specific discussions in this report. However, the UIS imputes values for missing data in order to produce regional and global estimates.

About one-third of countries with shortages are found in sub-Saharan Africa, where the pressure to hire more teachers will intensify due to the rising demand for education from a growing school-age population. For example, in 2030, there will be 143 primary school-age children for every 100 in 2011. As shown in **Figure 2**, the region will need to create 2.1 million new teaching positions by 2030, while filling about 2.6 million vacant positions due to attrition.

The Arab States has the second-largest share of the global teaching gap *(see Figure 2)*. From 2011 to 2030, the region will have to accommodate for a growing school-age population with an extra 9.5 million students expected to enrol. Fortunately, countries across the region have been steadily increasing teacher recruitment over the past decade. If this momentum continues, the size of the teacher gap should stabilise by 2020, even though the number of children starting school will continue to grow. To achieve UPE in 2030, the region will have to create 500,000 new teaching positions while filling about 1.4 million vacant positions.

FIGURE 2. TEACHER GAP BY REGION, 2015 TO 2030

Source: Calculations based on the UNESCO Institute for Statistics database.

WHICH COUNTRIES WILL CLOSE THE GAP AND WHEN?

To better evaluate the challenges, **Figure 3** presents three groups of countries facing shortages: those that will have enough teachers to reach UPE by 2015 given current trends; those that will close the gap between 2015 and 2030; and those that will not make it even by 2030.

Figure 3 compares recent growth rates in the number of primary teachers recruited with the number of teachers needed to accommodate all primary school-age children based on UIS projections. The projections are based on several indicators *(see **Annex 1)** including current pupil-teacher ratios (PTRs – *see table in **Annex 4)**. So these projections should be considered as the bare minimum to achieve UPE.

For example in sub-Saharan Africa, Ethiopia has been expanding its teacher workforce by an average of 11% since 1999. If this growth continues, the country should be able to accommodate all primary school-age children by 2015, while reducing the PTR, which is currently at 55. This is also the case for countries such as Cameroon, Namibia and Lesotho.

The first panel of Figure 3 presents countries that could have enough teachers in classrooms by 2015. However, this does not necessarily mean that they will achieve UPE. UIS projections are based on the size of the primary school-age population. Yet many children start school late, especially in sub-Saharan Africa. So even though it appears as if Lesotho, for example, will have enough teachers by 2015, the country must still accommodate for a significant number of lower secondary school-age children enrolled in primary school as well as a high rate of repetition (20%). Together these two factors will continue to swell the size of overcrowded classrooms and raise the need for more teachers.

A second group of countries shown in Figure 3, mainly in sub-Saharan Africa, will miss the 2015 deadline for UPE but could be able to close their teacher gaps over the next two decades. The estimated year is indicated next to the country name. In the Central African Republic, for example, the supply of teachers has been growing by an average of 10% per year, which is considerable. Yet to achieve UPE, the workforce would need to grow by 25%, according to UIS data. So if current trends continue, the country would not have enough teachers in classrooms until 2022.

The teacher shortage is actually getting worse in some countries in the third group in Figure 3. If current trends continue, there will be more children needing primary teachers in 2030 than today in Côte d'Ivoire, Eritrea, Malawi and Nigeria. The teacher gaps are widening because of staggering attrition rates and the rising demand for primary education. In Eritrea, for every seven new teachers that join the workforce, ten leave, according to UIS data. However, the data also show that all of these new recruits meet national qualification standards, which represents an important policy decision concerning teacher training and recruitment in that country.

Turning to the Arab States, Mauritania and Yemen could close their teacher gaps by 2015, as shown in Figure 3. However, Palestine will continue to face a teacher shortage until 2023, primarily due to the growing school-age population. Djibouti faces the greatest challenges in the region. Only 54% of primary school-age children are currently enrolled in primary school. To achieve UPE by 2015, the country would have to recruit 17% more teachers each year. This is highly unlikely at current growth rates of just 3% per year. As a result, Djibouti is expected to face an acute teacher shortage beyond 2030.

FIGURE 3. AVERAGE ANNUAL GROWTH RATE OF PRIMARY TEACHER WORKFORCE AND PROJECTED GROWTH RATE NEEDED TO ACHIEVE UPE
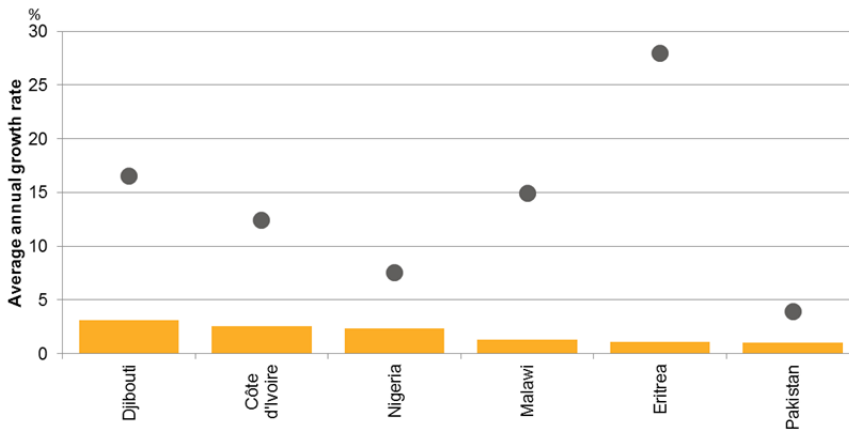
Countries expected to close the gap by 2015
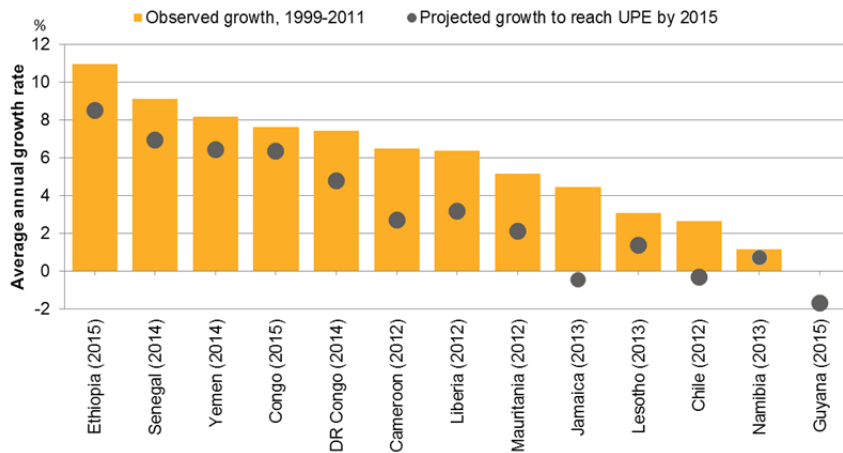
Countries expected to close the gap between 2016 and 2030
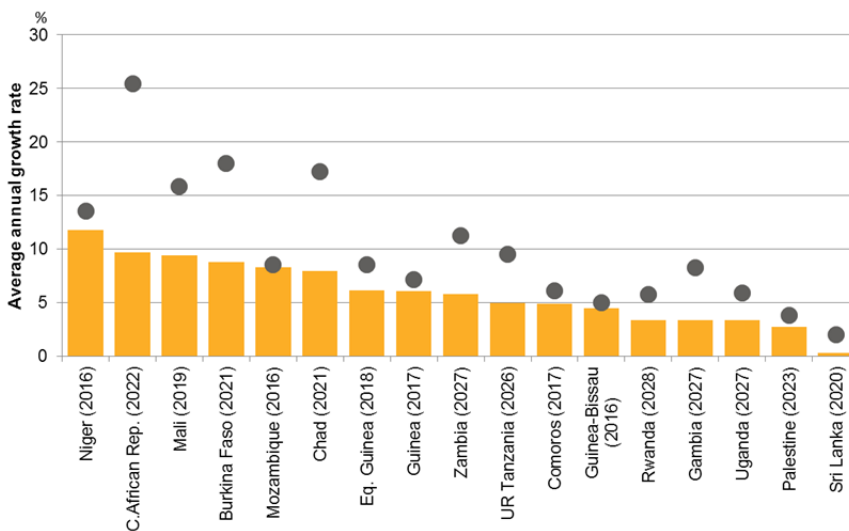
Countries expected to close gap after 2030

Note: Number between parentheses is year in which the country is expected to close the primary teacher gap.
Source: Calculations based on the UNESCO Institute for Statistics database.

RISING DEMAND FOR LOWER SECONDARY EDUCATION

With more countries achieving or approaching UPE, the demand for lower secondary education continues to rise. As shown in **Figure 4**, the global gross enrolment ratio for lower secondary education grew by 10 percentage points – from 72% to 82% – between 1999 and 2011.

According to UIS data, lower secondary education is compulsory in about 80% of countries. Yet despite these legal guarantees, many countries are unable to provide every child with this level of education. The UIS has developed new projections to quantify the future demand for teachers in order to achieve universal lower secondary education (ULSE).

To teach the same number of students, more teachers are needed at the lower secondary level than the primary level. This is because lower secondary education generally requires more subject-specific teachers and longer instruction time, even though there are fewer grades than at the primary level. According to UIS data, the global average duration of lower secondary education is three years compared to six years for the primary level. The official entry age typically ranges from 10 to 13 years old, according to the International Standard Classification of Education (ISCED).

In total, about 3.5 million new teaching positions must be created to provide every child of age with a lower secondary education by 2015, according to UIS projections. This figure rises to 5.1 million new posts to meet the projected demand for 2030 *(see **Table 2**)*.

Sub-Saharan African accounts for close to one-half (46%) of the global shortage of lower secondary teachers. An extra 1.6 million teachers will be needed in classrooms by 2015 and this figure rises to 2.5 million for 2030. In short, the region will have to double its stock of lower secondary teachers by 2030 in order to provide universal lower secondary education to its growing school-age population.

FIGURE 4. GROSS ENROLMENT RATIO IN LOWER SECONDARY EDUCATION FOR THE WORLD AND SELECTED REGIONS, 1999-2011
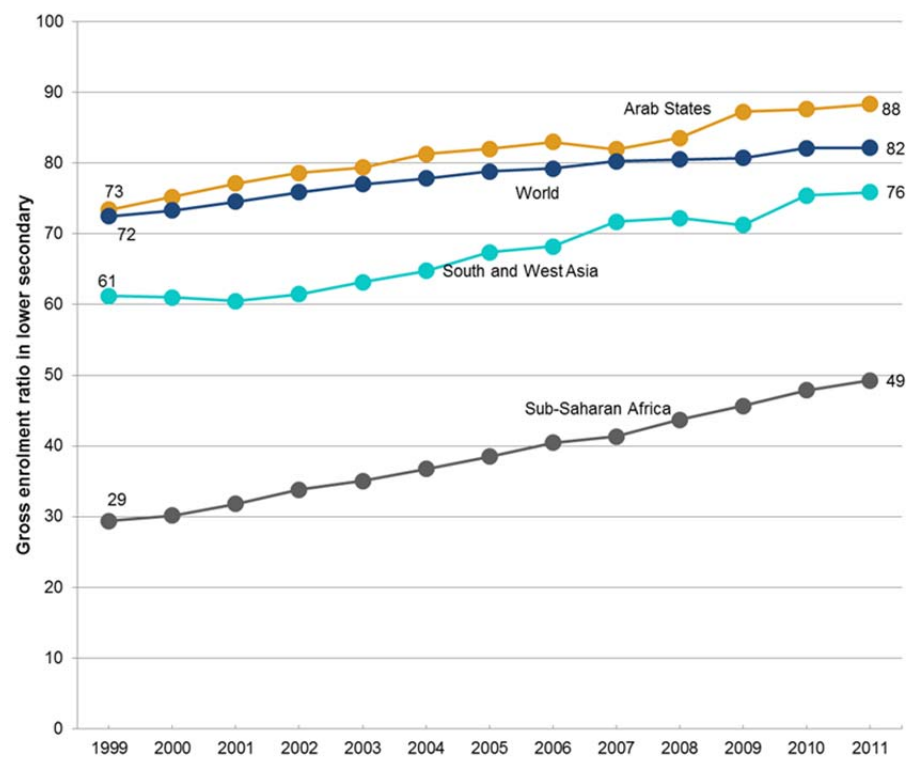
Source: UNESCO Institute for Statistics database.

**TABLE 2. NUMBER OF NEW TEACHING POSITIONS NEEDED TO ACHIEVE UNIVERSAL LOWER SECONDARY EDUCATION, 2015-2030**

Regions	Number of lower secondary teachers in 2011 (in thousands)	New teaching posts needed to achieve ULSE (in thousands)			
		by 2015	by 2020	by 2025	by 2030
Arab States	1,198	341	449	529	583
Central and Eastern Europe	1,570	109	272	374	331
Central Asia	406	8	39	71	67
East Asia and the Pacific	5,833	282	308	274	230
Latin America and the Caribbean	2,160	167	109	118	122
North America and Western Europe	2,555	38	127	162	170
South and West Asia	2,460	991	1,065	1,081	1,040
Sub-Saharan Africa	1,096	1,575	1,893	2,214	2,541
World	17,280	3,512	4,263	4,823	5,086

Note: These figures do not include the number of teachers needed to offset attrition.
Source: Calculations based on the UNESCO Institute for Statistics database.

WHEN WILL COUNTRIES MEET THE DEMAND FOR LOWER SECONDARY TEACHERS?

Countries have been steadily increasing recruitment of lower secondary teachers over the past decade. If present trends continue, 42% of the 148 countries currently facing shortages should have enough teachers in classrooms by 2015 *(see **Figure 5**).* By 2030, this will be the case for 80% of countries, if trends continue. However, 29 countries will continue to face persistent shortages and one-half of them are in sub-Saharan Africa.

FIGURE 5. EXPECTED TIME FRAME TO FILL CHRONIC SHORTAGES OF LOWER SECONDARY TEACHERS
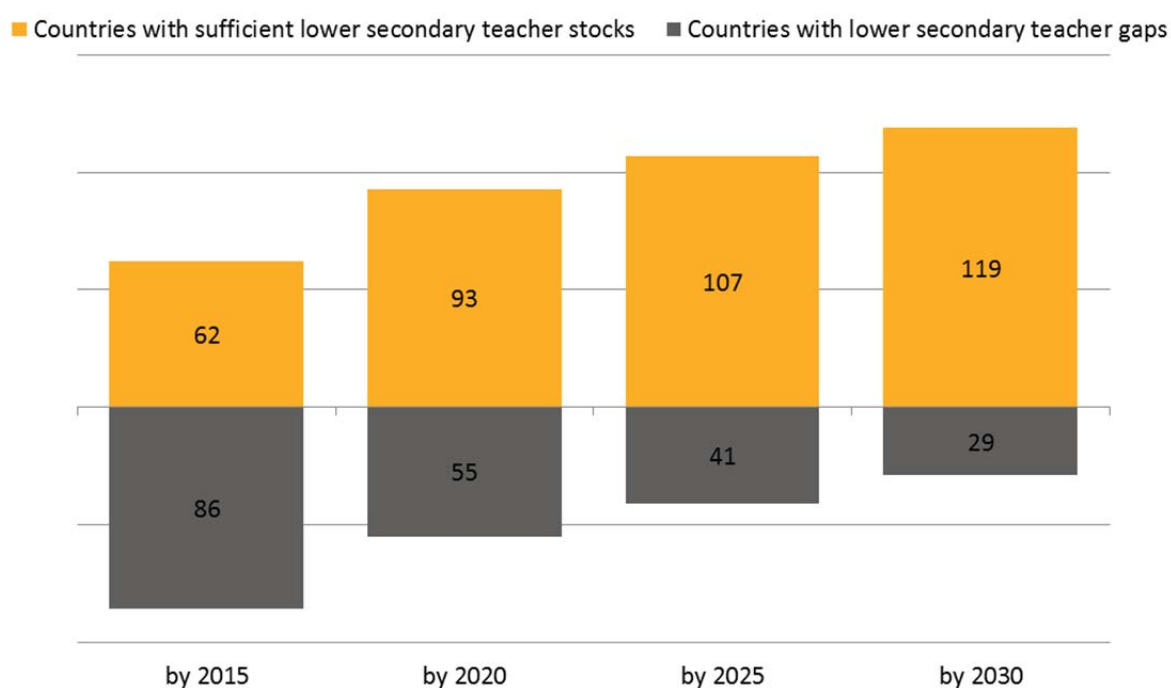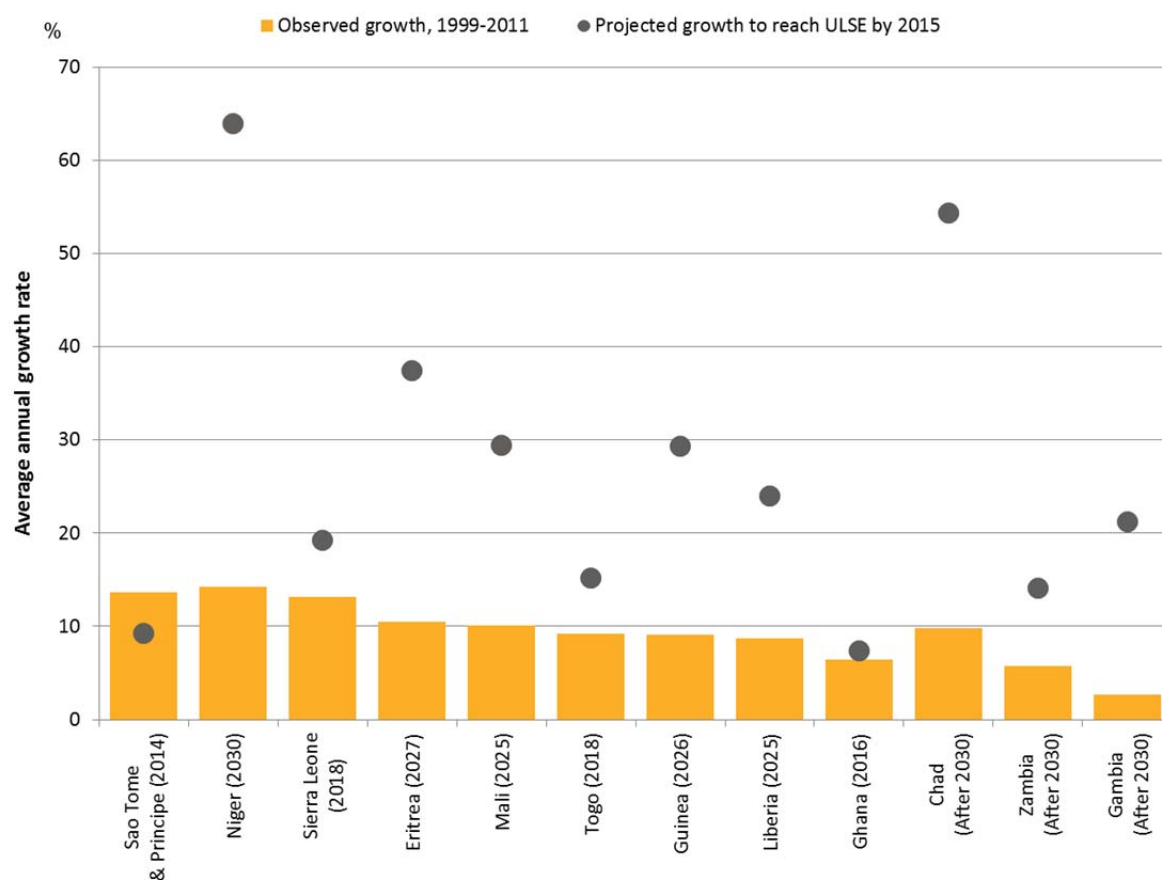

Source: UNESCO Institute for Statistics database.

Sub-Saharan Africa continues to face the greatest challenges with a growing school-age population and a legacy of low net enrolment rates. In 2011, only 27% of children of lower secondary age were enrolled in this level of education.

As shown in **Figure 6,** Sao Tome and Principe will probably be the only country in the region with sufficient numbers of lower secondary teachers by 2015, although several countries are not far behind: Ghana (2016), Togo (2018) and Sierra Leone (2018). However, chronic shortages will persist beyond 2030 in countries such as Chad, Zambia and Ghana.

Significant proportions of children start lower secondary school late, which leads to overcrowded classrooms and the rising demand for more teachers. For example in Ghana and Zambia, only about one-third of students currently enrolled in lower secondary education are part of the official age group. The rest are older. So to achieve universal lower secondary education, these countries must hire enough teachers to teach both groups of children.

FIGURE 6. SUB-SAHARAN AFRICAN COUNTRIES WITH AVAILABLE DATA ON PROJECTED DEMAND FOR LOWER SECONDARY TEACHERS

Source: UNESCO Institute for Statistics database.

For more information about UIS projections on teachers, consult the following resources:

1. **UNESCO eAtlas of Teachers**
2. **Infographic** presenting key data and messages

Please consult the UIS website http://www.uis.unesco.org to access the UIS Data Centre
and subscribe to eAlerts on the Institute's latest publications and data releases.

ANNEX 1. METHODOLOGY

Calculating the global demand for teachers

This annex briefly describes key elements of the methodology used to calculate UIS projections concerning the demand for teachers. More detailed information is presented in the following publication, which is available on the UIS [website](): *Projecting the Global Demand for Teachers: Meeting the Goal of Universal Primary Education by 2015* (UIS Technical Paper No. 3, 2009).

To better inform policy discussions, the UIS has developed two approaches to estimate the future demand for and supply of teachers. First, there is the "deadline" approach, which reflects the total number of teachers needed to achieve universal primary and/or lower secondary education by a target year. In the past, UIS projections were limited to the Education for All deadline of 2015, but new calculations presented in this fact sheet cover five-year intervals from 2015 to 2030.

In addition, the UIS has developed a second approach that compares current trends in teacher supply with the future demand for teachers. The aim is to answer the following question: "If current trends continue, when will countries be able to close their teacher gaps?" The data resulting from both approaches are presented and analyzed for the first time in this fact sheet.

Teacher projections by targeted year

1. **Projected enrolment**

   For each level of education, the model assumes that all countries will achieve universal enrolment (i.e. 100% enrolment for the projected primary and lower secondary school-age populations). School-age populations are based on estimates from the UN Population Division (2010 revision), as well as the theoretical starting age and duration of these education levels in each country.

   The UIS model also takes into account repetition, which can increase class size and hence raise the need for more teachers. It is assumed that the percentage of repeaters will decrease by 50% by each target year (e.g. 2015, 2020, etc.), with the maximum threshold for this indicator set at 10%. This explains why the projected enrolment can exceed 100% of the projected school-age population in some cases.

2. **Projected teacher stock**

   The number of teachers needed in the future is calculated by dividing expected enrolment (between 100% and 110% of future school-age population) by the current pupil-teacher ratio (PTR) except in cases that exceed the maximum thresholds set at 40:1 and 32:1 for primary and lower secondary education respectively.

3. **Projected teacher gap**

   Teacher gaps or shortages are calculated by subtracting the number of teachers currently employed from the total number of teachers needed in the future (difference between current and projected teacher stocks). In some cases, the number of teachers currently employed can exceed UIS projections for the future. However, this does not suggest that countries should reduce their teacher workforce. To the contrary, it reflects an opportunity to improve learning conditions of students by reducing the pupil-teacher ratio, for example, or by deploying more teachers to better serve marginalised students.

Teacher projections based on current trends

The methodology behind this approach is also very simple and applies to the primary and lower secondary levels.

1. **Future gaps between the supply of and demand for teachers**

    First, the number of teachers needed to provide universal primary and lower secondary education is calculated for future years based on the methodology described above.

2. **Potential growth in the teacher workforce**

    The UIS calculates the average annual growth rate of the teacher workforce in every country since 1999. Based on these rates, the UIS estimates the potential size of the teacher workforce in the future in order to identify the year at which the projected supply of teachers will meet the demand.

ANNEX 2. TEACHER PROJECTIONS FOR PRIMARY EDUCATION

REGIONAL TOTALS FOR PRIMARY EDUCATION BY 2015 (IN THOUSANDS)

| Regions | Stock in 2011 | Primary teachers needed in 2015 | Total recruitment needed | Of which: | |
				New teaching posts to achieve UPE	Replacement for attrition
Arab States	1,931	2,111	579	213	366
Central and Eastern Europe	1,127	1,201	304	84	220
Central Asia	340	365	95	26	69
East Asia and the Pacific	10,378	9,004	603	57	546
Latin America and the Caribbean	3,102	2,978	487	36	451
North America and Western Europe	3,801	3,890	855	128	727
South and West Asia	5,000	4,758	749	130	619
Sub-Saharan Africa	3,190	4,058	1,568	902	666
World	**28,870**	**28,365**	**5,240**	**1,577**	**3,663**

REGIONAL TOTALS FOR PRIMARY EDUCATION BY 2020 (IN THOUSANDS)

| Regions | Stock in 2011 | Primary teachers needed in 2020 | Total recruitment needed | Of which: | |
				New teaching posts to achieve UPE	Replacement for attrition
Arab States	1,931	2,239	1,234	345	889
Central and Eastern Europe	1,127	1,289	700	170	530
Central Asia	340	409	234	68	166
East Asia and the Pacific	10,378	8,845	2,818	52	2,767
Latin America and the Caribbean	3,102	2,917	1,172	26	1,147
North America and Western Europe	3,801	3,995	1,942	237	1,705
South and West Asia	5,000	4,824	2,035	187	1,848
Sub-Saharan Africa	3,190	4,466	2,943	1,295	1,648
World	**28,870**	**28,983**	**13,080**	**2,381**	**10,699**

REGIONAL TOTALS FOR PRIMARY EDUCATION BY 2025 (IN THOUSANDS)

| Regions | Stock in 2011 | Primary teachers needed in 2025 | Total recruitment needed | Of which: | |
				New teaching posts to achieve UPE	Replacement for attrition
Arab States	1,931	2,286	1,813	399	1,414
Central and Eastern Europe	1,127	1,272	980	166	814
Central Asia	340	401	318	64	254
East Asia and the Pacific	10,378	8,536	4,796	65	4,731
Latin America and the Caribbean	3,102	2,858	1,846	34	1,811
North America and Western Europe	3,801	4,008	2,934	256	2,677
South and West Asia	5,000	4,769	3,186	187	3,000
Sub-Saharan Africa	3,190	4,891	4,428	1,716	2,713
World	**28,870**	**29,021**	**20,300**	**2,886**	**17,413**

REGIONAL TOTALS FOR PRIMARY EDUCATION BY 2030 (IN THOUSANDS)

| Regions | Stock in 2011 | Primary teachers needed in 2030 | Total recruitment needed | Of which: | |
				New teaching posts to achieve UPE	Replacement for attrition
Arab States	1,931	2,321	1,838	454	1,384
Central and Eastern Europe	1,127	1,204	892	111	781
Central Asia	340	377	286	45	241
East Asia and the Pacific	10,378	8,034	4,875	90	4,785
Latin America and the Caribbean	3,102	2,781	1,857	38	1,820
North America and Western Europe	3,801	4,048	2,977	302	2,675
South and West Asia	5,000	4,652	3,193	196	2,997
Sub-Saharan Africa	3,190	5,270	4,729	2,100	2,629
World	**28,870**	**28,686**	**20,646**	**3,335**	**17,311**

ANNEX 3. TEACHER PROJECTIONS FOR LOWER SECONDARY EDUCATION

REGIONAL TOTALS FOR LOWER SECONDARY EDUCATION BY 2015 (IN THOUSANDS)

Regions	Number of lower secondary teachers in 2011	Number of teachers needed in 2015	New teaching posts needed to achieve ULSE
Arab States	1,198	1,495	341
Central and Eastern Europe	1,570	1,634	109
Central Asia	406	392	8
East Asia and the Pacific	5,833	6,047	282
Latin America and the Caribbean	2,160	2,248	167
North America and Western Europe	2,555	2,476	38
South and West Asia	2,460	3,447	991
Sub-Saharan Africa	1,096	2,671	1,575
World	**17,280**	**20,411**	**3,512**

REGIONAL TOTALS FOR LOWER SECONDARY EDUCATION BY 2020 (IN THOUSANDS)

Regions	Number of lower secondary teachers in 2011	Number of teachers needed in 2020	New teaching posts needed to achieve ULSE
Arab States	1,198	1,629	449
Central and Eastern Europe	1,570	1,809	272
Central Asia	406	435	39
East Asia and the Pacific	5,833	5,798	308
Latin America and the Caribbean	2,160	2,150	109
North America and Western Europe	2,555	2,580	127
South and West Asia	2,460	3,525	1,065
Sub-Saharan Africa	1,096	2,989	1,893
World	**17,280**	**20,915**	**4,263**

REGIONAL TOTALS FOR LOWER SECONDARY EDUCATION BY 2025 (IN THOUSANDS)

Regions	Number of lower secondary teachers in 2011	Number of teachers needed in 2025	New teaching posts needed to achieve ULSE
Arab States	1,198	1,714	529
Central and Eastern Europe	1,570	1,921	374
Central Asia	406	475	71
East Asia and the Pacific	5,833	5,697	274
Latin America and the Caribbean	2,160	2,111	118
North America and Western Europe	2,555	2,619	162
South and West Asia	2,460	3,540	1,081
Sub-Saharan Africa	1,096	3,310	2,214
World	**17,280**	**21,385**	**4,823**

REGIONAL TOTALS FOR LOWER SECONDARY EDUCATION BY 2030 (IN THOUSANDS)

Regions	Number of lower secondary teachers in 2011	Number of teachers needed in 2030	New teaching posts needed to achieve ULSE
Arab States	1,198	1,761	583
Central and Eastern Europe	1,570	1,872	331
Central Asia	406	469	67
East Asia and the Pacific	5,833	5,439	230
Latin America and the Caribbean	2,160	2,060	122
North America and Western Europe	2,555	2,634	170
South and West Asia	2,460	3,498	1,040
Sub-Saharan Africa	1,096	3,636	2,541
World	**17,280**	**21,369**	**5,086**

ANNEX 4. PRIMARY PUPIL-TEACHER RATIOS FOR COUNTRIES PRESENTED IN FIGURE 3

Countries with more than 40 pupils per teacher			Countries with 31 to 40 pupils per teacher			Countries with 30 pupils per teacher or less		
Country	PTR	GER	Country	PTR	GER	Country	PTR	GER
C. African Rep.	81	94	Eritrea	40	47	Yemen	30	91
Malawi	76	141	Pakistan	40	92	Namibia	30	107
Zambia	63	117	Mauritania	39	101	Eq. Guinea	28	87
Chad	63	101	Niger	39	71	Comoros	28	98
Rwanda	58	142	Gambia	38	81	Liberia	27	103
Ethiopia	55	106	DR Congo	37	96	Palestine	26	92
Mozambique	55	111	Nigeria	36	83	Guyana	25	87
Guinea-Bissau	52	123	Djibouti	35	59	Sri Lanka	24	97
Congo	49	116	Lesotho	34	103	Chile	22	102
Côte d'Ivoire	49	88	Senegal	33	86	Jamaica	21	89
Mali	48	82						
Burkina Faso	48	79						
Uganda	48	113						
UR Tanzania	46	102						
Cameroon	45	119						
Guinea	44	98						