



Martin Kharumwa / Save the Children

Closing the gap
*Ensuring there are enough qualified
and supported teachers
in sub-Saharan Africa*



Key messages

- To reach the Education 2030 goals, countries in sub-Saharan Africa will need to recruit 15 million teachers by 2030.
- The proportion of qualified teachers in the region has steadily declined since 2000 at both primary and secondary levels.
- The ratio of pupils to trained teachers remains high: according to the most recent data, there are 58 pupils per trained teacher at primary level and 43 pupils per trained teacher at secondary level.
- Female teachers play a pivotal role in encouraging girls' enrolment, but fewer than 50% of teachers are female at primary level, falling to less than 30% at secondary level.
- Countries need external financial support to fund essential non-salary costs, including initial teacher education and continuous professional development, preparation for blended learning, and improved ICT access and working conditions.

Introduction

The fourth Sustainable Development Goal (SDG 4) aims to ensure better learning opportunities and outcomes and more equitable and inclusive education for all. SDG target 4.c calls for an increase in the supply of qualified teachers, particularly in low-income countries. To achieve this ambitious target, the international community needs to pay renewed attention to teacher support and preparation. An abundant amount of evidence shows that the quality of teachers and teacher policies play an essential role in improving students' learning and fostering educational equity and inclusion. An undersupply of qualified teachers particularly affects the most disadvantaged (UNESCO, 2014; OECD, 2018). Therefore, ensuring an appropriate supply of qualified teachers is not only an important goal in itself, but is essential to achieving all the other education-related targets.

This advocacy brief considers what it will take to increase the supply of qualified teachers in sub-Saharan Africa, the region where the shortage is most acute. It analyses the causes for teacher shortages, looks at trends affecting the region and describes the scale of the shortages. It examines the fiscal pressures on low-income countries to cover salary costs and the costs of initial teacher education and continuing professional development, and it proposes some recommendations for governments and the international community to achieve the essential target of substantially increasing the supply of well qualified teachers.

Many factors drive teacher shortages

Different institutional and individual factors continue to drive chronic teacher shortages in sub-Saharan African countries, ranging from education planning and financing to demographics. The problem is exacerbated by high rates of teacher attrition (teachers choosing to leave the profession).

Education expansion and financial pressure

In recent decades, successful policy and institutional changes have facilitated the growth and expansion of primary and secondary enrolment, and as a result have driven the expansion of education systems (Dejaeghere et al., 2006; Moon and Villet, 2017). This massive education expansion has created a need for more teachers, increasing the already existing teacher shortage (Aden and Kharbiryumbai, 2019; Mulkeen, 2007). In sub-Saharan Africa, resources have not increased at the same pace as educational expansion, and low-income countries struggle to pay teachers adequate wages and to meet the growing financial needs of the larger workforce (Pitsoe and Machaisa, 2012). With the lion's share of countries' education budgets going to teacher salaries, very little is left to cover essential costs related to teacher training, improving working conditions, well-being and so on.

Teachers' preparation and qualifications

In many countries, teacher training institutions have insufficient capacity to prepare adequate numbers of qualified teachers. Not only are there too few teacher training institutions and available places, but those that exist are too often of poor quality and do not produce qualified teachers. Likewise, teacher recruitment is frequently not based on quality of teaching or merit, and not enough support is given to teachers' induction and mentoring processes. Moreover, most teachers in sub-Saharan Africa receive limited support to develop their professional competencies once in service (Mafora, 2013; Mogashoa, 2015; Moon and Villet, 2017).

Paradoxically, teachers' relatively high qualifications can exacerbate teacher shortages in some settings. Highly educated teachers may be more likely to leave the profession because they can quickly obtain another job in a broad range of economic, public and social sectors (Bahtilla, 2019, International Task Force on Teachers for Education 2030, 2020; Kasau, 2012; Macdonald, 1999). In Ghana, teachers with higher qualifications are more likely to drop out because of professional opportunities

in other sectors (Agezo, 2010). By contrast, in Zimbabwe, lower qualified teachers drop out more often than qualified teachers because they often receive only short-term contracts and their support system is inadequate (Mulei et al., 2016).

The evidence suggests that teacher qualification as a driver of teacher attrition is a context-sensitive variable, so more research is needed to understand the relationship between teacher qualifications and shortages in different contexts, taking into account both internal elements (working conditions, social standing, professional development and support) and external factors (labour market structure, external incentives, etc.).

Working conditions and insufficient support

Working conditions play a crucial role in teacher shortages, particularly in sub-Saharan African countries, with teachers leaving the profession when conditions deteriorate. In Burkina Faso, Mali and Senegal, for example, there is evidence that teachers left their jobs when working conditions worsened due to insufficient supply of student textbooks and teaching supplies, inadequate equipment and lack of curriculum reform (Mabeya, 2021; Mulkeen, 2007; Palm, 2020; Pitsoe and Machaisa, 2012). In South Africa, poor salaries and working conditions push many to emigrate seeking better conditions abroad (Mlambo & Adetiba, 2020).

High teacher workloads also cause teacher attrition (Palm, 2020). In numerous sub-Saharan African countries, teachers find their work stressful and view their occupational status as declining; many feel unable to deal with current workloads and drop out as a result of fatigue and physical illness (Mampane, 2012; Pitsoe, 2013; Pitsoe and Machaisa, 2012).

Teachers also leave positions when their own and their students' physical safety and integrity is at risk. Attacks as a result of terrorism and tribal clashes in conflict areas, victimization and harassment against teachers, poor social support for teachers and lack of respect have all been documented as issues causing teachers to leave the profession. (Mabeya, 2021; Ndala, 2015; Palm, 2020). This is likely to increase due to the effect of COVID-19 on education.

Teacher shortages are more prevalent in rural settings, and in the absence of proper incentive systems, many countries find it difficult to recruit and retain qualified teachers in remote and rural areas (Buckler, 2011; Macdonald, 1999; Mafora, 2013; Mulkeen, 2005, Mulkeen et al., 2007). This points to a need to rethink deployment strategies so that qualified teachers are equitably deployed to underserved areas and given appropriate incentives and compensation.

Age, health and well-being

The COVID-19 crisis focused attention on teacher health and well-being, even as it highlighted the role teachers play in providing socio-emotional support for students. Teacher shortages are exacerbated by high levels of stress and anxiety among teachers, due to poor working conditions, lack of initial and ongoing professional development and insufficient overall institutional support. In many sub-Saharan African countries, young teachers with little experience in the teaching profession are more likely to leave than older and more experienced teachers (Mabeya, 2021; Mulkeen, 2007). The more seniority teachers achieve, the more likely they are to stay longer.

Before the current sanitary crisis, teachers in sub-Saharan Africa were particularly affected by the HIV and AIDS pandemic, with relatively high mortality rates documented in the region (Ndala, 2015; Pitsoe, 2013). As the COVID-19 pandemic has demonstrated, other health crises and pandemics have tested the resiliency of education systems, affecting teacher preparation, recruitment, retention and working conditions.

COVID-19 has affected teacher working conditions and shortages

Around the world, teaching has been one of the professions most severely affected by the COVID-19 pandemic. In high- and low-income countries alike, teachers' well-being and working conditions have been negatively affected by school closures and the rapid move to online teaching and other remote education programmes and strategies (Allen et al., 2020; MacIntyre, 2020; Mari et al., 2021). Evidence points to heavy workloads and high levels of burn-out, as teachers have been asked to support communities and ensure learning continuity with little or no preparation or support.

A joint survey produced by UNESCO, the UNESCO Institute for Statistics (UIS), UNICEF and the World Bank on country responses to COVID-19 found that less than one-third of countries offered psychosocial support to help teachers handle the crisis and only 50% of countries surveyed offered additional training in online education to their teachers (UNESCO et al., 2020). Moreover, only 50% of countries in sub-Saharan Africa reported that schools had sufficient resources to ensure safety, including personal protective equipment and soap as well as infrastructure such as clean water and WASH facilities.

In sub-Saharan Africa, some contract teachers and teachers working in the private sector partially or fully lost income and wages during the school closures. According to estimations made by Teachout and Zipfel (2020), in sub-Saharan Africa 50% of private school teachers may have seen a decrease of 50% in salary on average.

As yet, insufficient data exist to judge the effects of the COVID-19 crisis on the long-term effects of teacher attrition and teacher shortages. Some evidence even suggests that as a result of the economic crisis generated by the pandemic, some teachers may remain in education systems due to lack of job alternatives in other sectors. However, the crisis has highlighted and exacerbated teachers' already difficult working conditions.

Teachers need help to engage with distance education

The COVID-19 school closures tested and stretched teachers' capacity to provide distance and hybrid teaching. Financing education also means providing teachers with the access they need to computers and the internet, as well as adequate training and support to use technology effectively.

However, in sub-Saharan Africa, lack of infrastructure and internet connectivity posed an immense barrier to moving to online teaching and learning. Data show that in 20 of 28 countries, under one-quarter of households have internet connections in the home. The lowest rate of connectivity can be found in Burundi, the Democratic Republic of the Congo and Mozambique, where less than 5% of households are connected.

ICT at the school level is usually even rarer than in the household. For example, while 10% and 14% of households in Niger and Sierra Leone have an internet connection, just 1% of primary schools are connected. Less than 5% of primary schools are connected in Angola, Burkina Faso, Madagascar and Togo. One exception is Rwanda, where the SMART Classroom initiative under the ICT in Education Master Plan aims to reach all schools by 2020 (Wallet and Kimenyi, 2019, Republic of Rwanda Ministry of Education, 2016). While this ambitious objective has not yet been reached, 35% of primary schools are now connected, compared to 9% of households. At the higher end of the range, 40% of primary schools are connected in Mauritius.

The transition to distance teaching was sudden and many teachers lack the skills required to teach online. Initial training on ICT is inadequate in a number of countries and is often not prioritized due to lack of access. The UNESCO/UNICEF/World Bank/OECD survey on national responses to the COVID-19 pandemic showed that 44% of countries provided guidance on distance instruction, 27% provided professional development activities and just 10% provided ICT tools and connectivity (UNESCO et al., 2021). No professional support for

teachers was provided in 1 out of 5 countries in sub-Saharan Africa, including Angola, Eritrea, Mozambique, Nigeria and Sao Tome and Principe (International Task Force on Teachers for Education 2030, 2021).

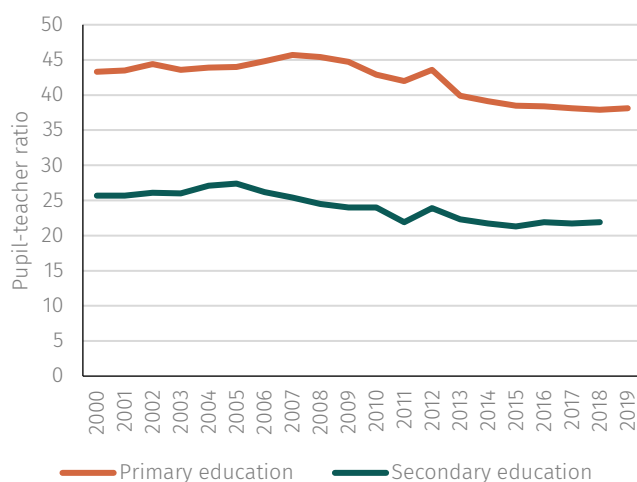
National and regional trends in indicators of teacher shortage give reason for concern

Pupil-teacher ratios have improved but remain high

One of the strongest indicators of teacher shortages is the pupil-teacher ratio. High ratios indicate overcrowded classrooms and poorer learning conditions. To ensure acceptable working conditions and an equitable teaching and learning environment, the UNESCO Institute for Statistics model on teacher projections to achieve SDG 4 sets a benchmark of 40 students per teacher (40:1) in primary and 25 per teacher (25:1) in secondary levels.

Figure 1 shows the evolution of pupil-teacher ratios in primary and secondary education between 2000 and 2019 in sub-Saharan Africa. Slight improvements can be seen at both levels: in 2000, the average number of pupils to teachers was 43:1 in primary education, which dropped to 38:1 in 2019. At secondary level, the ratio dropped from 26:1 in 2000 to 22:1 in 2018.

Figure 1. Average pupil-teacher ratios in sub-Saharan Africa by education level, 2000–2019



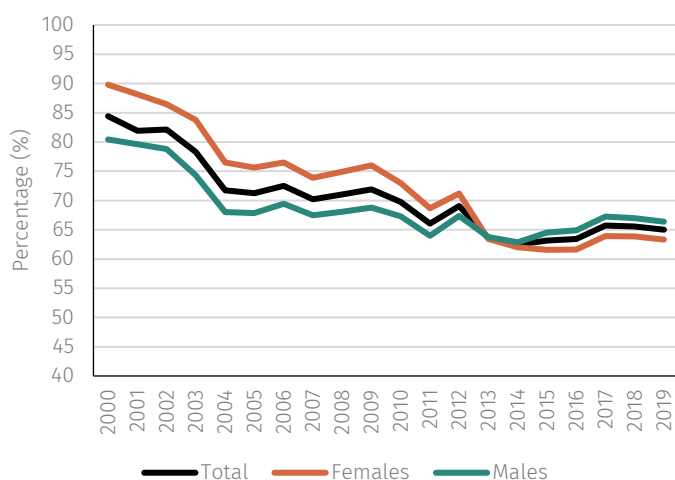
Source: UNESCO Institute for Statistics (March 2021)
Note: Calculated by dividing the total enrolment by the total number of teachers.

However, pupil-teacher ratios are far from homogeneous in the region (Table 1 in Statistical tables). In Angola, Central African Republic, Chad, Malawi, Mozambique, Rwanda and the United Republic of Tanzania, for example, the pupil-teacher ratio in primary education is higher than 50:1. The ratio improves in secondary education, where most countries with data have a ratio of less than 30:1, with the exception of Central African Republic, Eritrea, Malawi and Mozambique.

The percentage of qualified teachers has declined

The trend with regard to qualified teachers in the region is less positive. Figures 2 and 3 track the evolution of the percentage of teachers meeting national standards for minimum required qualifications. In both primary and secondary education, the percentage of teachers with the minimum required qualifications has decreased dramatically in the last two decades in sub-Saharan Africa, even though regional averages mark stark differences between countries. This trend affects both male and female teachers, though the decline is even more severe for female teachers at primary level. In 2000, an average of 84% of primary teachers had the minimum required qualifications, but by 2019, only 65% did. Factors behind the trend include the growth of private provision in low-fee private and community schools, which tend to employ less qualified teachers, and the increased use of contract and voluntary teachers in the region. More generally, the trend can also be attributed to constrained education budgets, under which governments have prioritized actions that increase enrolment and improve access at the expense of teacher quality and reinforcing teacher training institutions and adding additional spaces to keep pace with demand. The high rate of teacher attrition in some countries significantly exacerbates the situation.

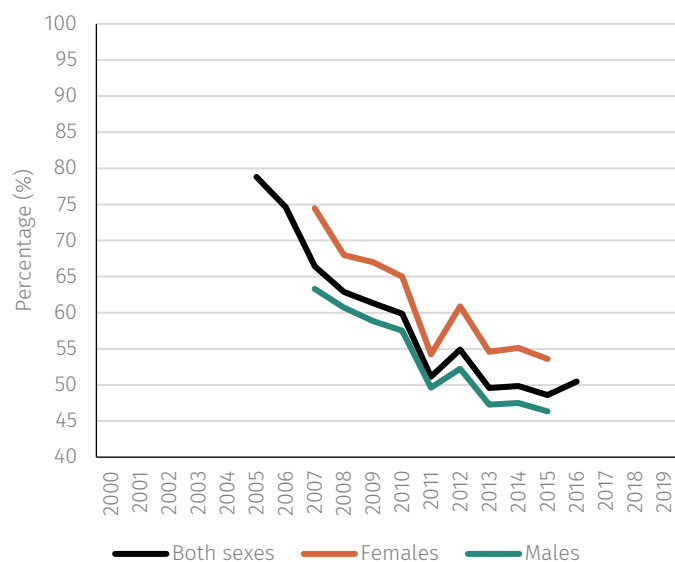
Figure 2. Average percentage of teachers in sub-Saharan Africa with the minimum required qualifications in primary education, by sex, 2000–2019



Source: UNESCO Institute for Statistics, Indicator 4.c.1 (March 2021).

Secondary education shows a similar trend. According to available data, as **Figure 3** shows, an average of 79% of secondary teachers in sub-Saharan Africa had the minimum required qualifications in 2005, falling to 50% in 2016.

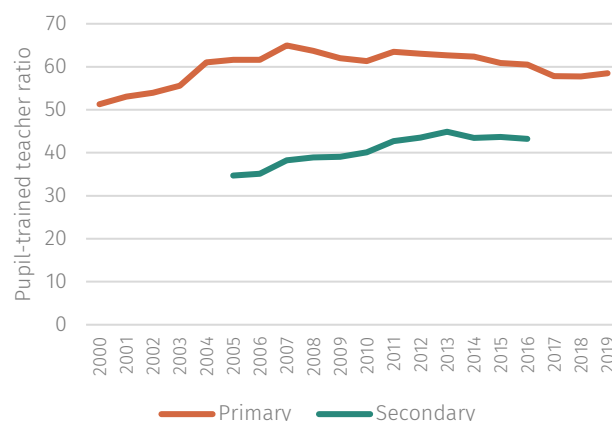
Figure 3. Average percentage of teachers in sub-Saharan Africa with the minimum required qualifications in secondary education, by sex, 2000–2019



Source: UNESCO Institute of Statistics, Indicator 4.c.1 (March 2021).

The pupil-trained teacher ratio has recently improved in primary education in sub-Saharan Africa, but remains high at 58:1 after peaking at 65:1 in 2007. In secondary education, the pupil-trained teacher ratio has increased from 35:1 in 2005 to 43:1 in 2016 (**Figure 4**). Higher pupil-trained teacher ratios generally imply lower levels of quality education. Data per country are found in Statistical table 1.

Figure 4. Average pupil-trained teacher ratio by education level, sub-Saharan Africa, 2000–2019



Source: UNESCO Institute for Statistics, Indicator 4.c.2 (March 2021).

More female teachers are needed

One of the most important arguments for increasing the number of female teachers is that female teachers have an overall positive impact on girls' enrolment and learning, in particular in sub-Saharan Africa (UNESCO, 2003). The percentage of female teachers in primary education is higher than in secondary education in all regions (**Figure 5a and 5b**). However, sub-Saharan Africa remains the region with the lowest percentage of female teachers in primary education, at just below 50%. In secondary education, the Arab States and sub-Saharan Africa are the only two regions in which female teachers represent less than half of the total stock of teachers. In 2018, only 30% of secondary teachers in sub-Saharan Africa were female. Within countries, shortages of female teachers are particularly acute in rural areas which in turn can drive gender disparities among students and lower enrolment and completion rates for girls (UNICEF, 2019).

Country-level data (**Statistical table 3**) reveal that female teachers represent less than half of the teacher workforce in both primary and secondary education in the majority of countries with data. The reasons for this are complex, but one major cause in a number of countries is the relatively low number of females who make the transition to secondary education, which is a prerequisite for entry to subsequent teacher training. To try to level the field, some scholarship programmes targeting girls have been introduced to help girls and women get through secondary education and then be trained in teacher training colleges. However, since

national education budgets are tightly constrained, many of these initiatives have come from the international donor community (CODE, 2021). In only a few countries in the Southern African

Development Community, such as Mauritius, Namibia, Seychelles and South Africa, the percentage of female teachers is above 50% at secondary level.

Figure 5a. Percentage of female teachers by region, primary education, 2000–2019

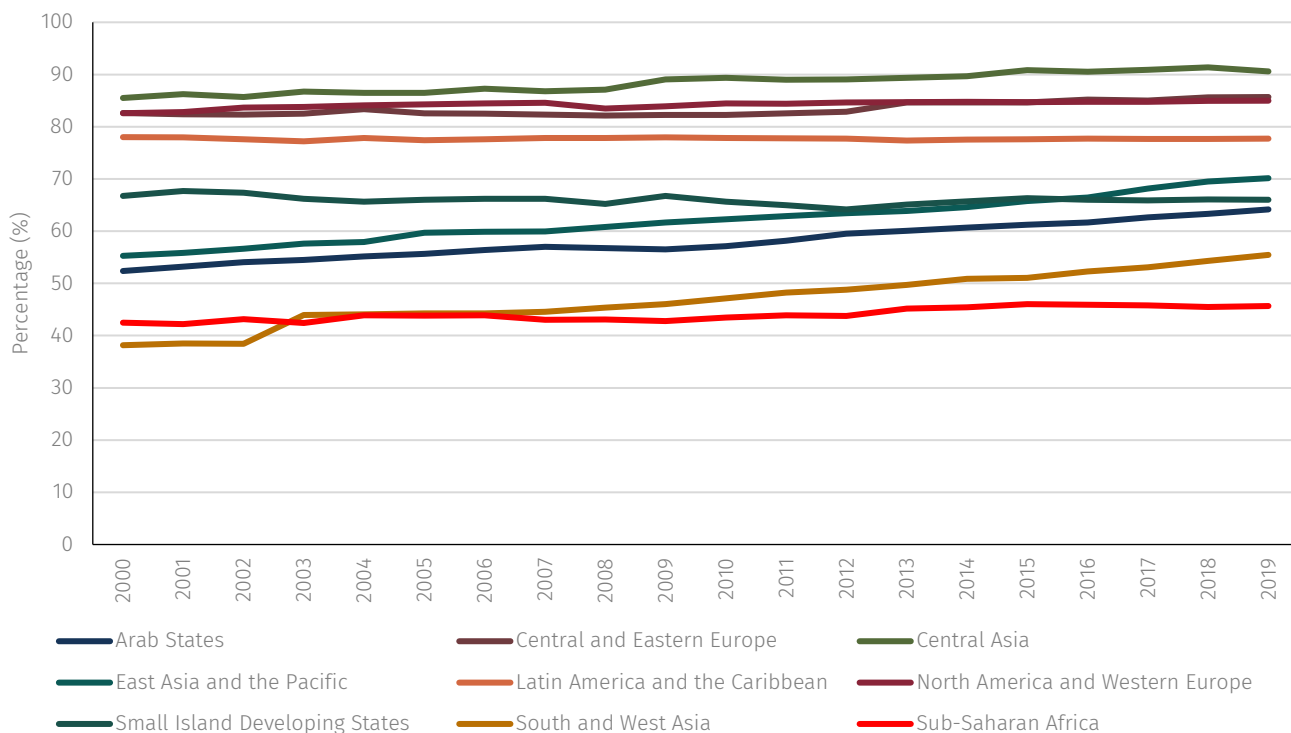
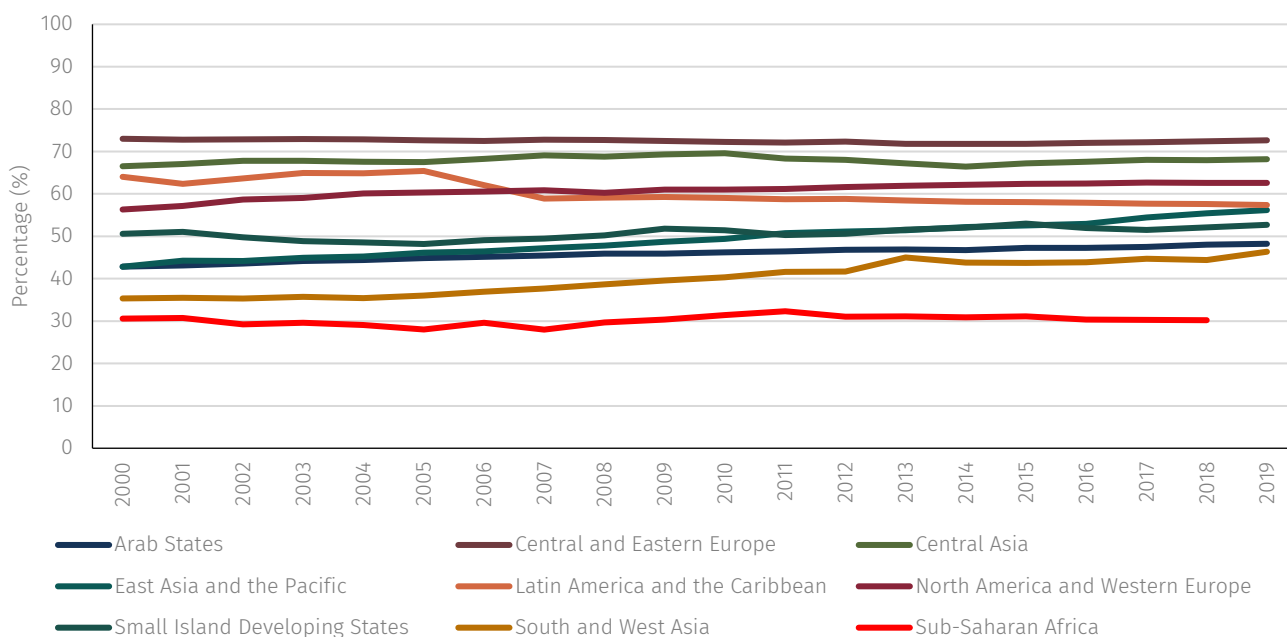


Figure 5b. Percentage of female teachers by region, secondary education, 2000–2019



Source: UNESCO Institute for Statistics (March 2021).

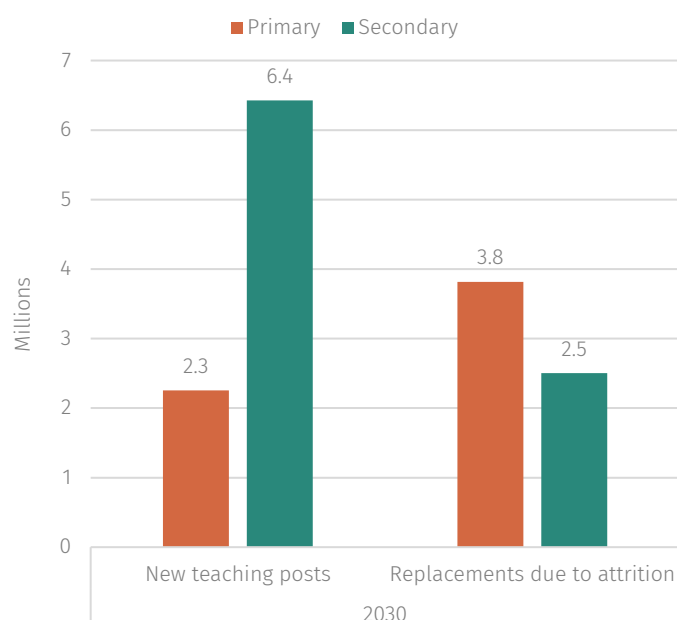
More teachers will be needed in sub-Saharan Africa to reach 2030 targets

New calculations based on UIS data point to continuing teacher gaps in primary and secondary education. Currently, sub-Saharan Africa has a teacher shortage of 4.1 million teachers: almost 1 million in primary education and 3.3 million in secondary.

New teacher projections based on UIS data point to continuing teacher gaps in primary and secondary education (**Box 1**). By 2030, the countries in the region will need to recruit a total of 15 million teachers: 6.1 million at primary level and 8.9 million at secondary level. It is estimated that, in order to reach SDG 4 by 2030, countries will need to recruit for 8.7 million new teaching posts and replace another 6.3 million teachers who have left the profession. (**Figure 6**).

These are conservative estimates which reflect the situation prior to the COVID-19 crisis. The effects of the pandemic on student repetition rates and teacher attrition could affect future need in many different ways.

Figure 6. Projected teacher needs in sub-Saharan Africa, 2030



Source: Projections based on UNESCO Institute for Statistics data.

Different factors explain countries' needs to increase teacher numbers. First, most sub-Saharan African countries are expected to see a significant increase in the school-aged population. This demographic increase will particularly affect secondary education (UNPD, 2021). Secondly, while most sub-Saharan African countries have achieved higher levels of enrolment in primary education, the percentage of out-of-school children and the rate of school drop-out in secondary education are still high. This explains why the projected percentage of increase in the number of teachers needed is much higher in secondary education than in primary education. Thirdly, many sub-Saharan African countries already need to increase teacher numbers to achieve minimum standards in terms of pupil-teacher ratios. This is particularly important in primary education because of increases in enrolment in recent decades, which have contributed to high pupil-teacher ratios in most sub-Saharan African countries.

Figures 7 and 8 show the annual percentage of increase in teacher numbers in primary and secondary education needed to reach the 2030 targets in a selection of countries in the region.

Box 1 – Measuring current and future teacher numbers

The estimated increase needed in the current teacher workforce for each country is based on the methodology developed by the UNESCO Institute for Statistics, following assumptions that education systems:

- Reach universal primary and secondary enrolment and completion
- Increase efficiency by reducing repetition: that is, repetition rates should fall by half and not exceed 10%, and consequently, gross enrolment ratios should be between 100% and 110%
- Maintain or improve pupil-teacher ratios to ensure minimum quality standards, meaning that additional recruits will be needed to cap primary and secondary pupil-teacher ratios at 40:1 and 25:1, respectively
- Experience population growth as projected by the United Nations Population Division
- Maintain current levels for other indicators unchanged.

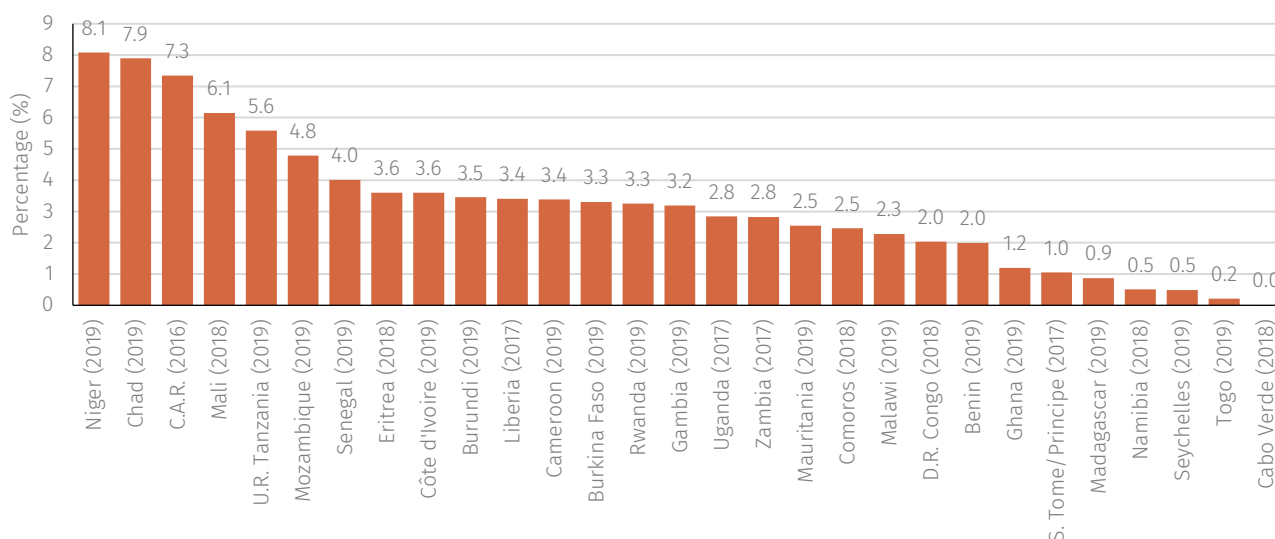
Estimations based on these assumptions allow the determination of the number of extra teachers needed to achieve universal enrolment in primary and secondary education and establish a minimum standard of pupil-teacher ratios.

Source: UIS (2009) and (2016).

Central African Republic, Chad, Mali and Niger will need the highest increase in the number of teachers (6% or more growth annually) in the coming years.

Togo, Madagascar, Namibia, Sao Tome and Principe and Seychelles will need only a slight increase in teacher numbers.

Figure 7. Projected annual percentage increase needed in the numbers of teachers in primary education, per country, projections to 2030



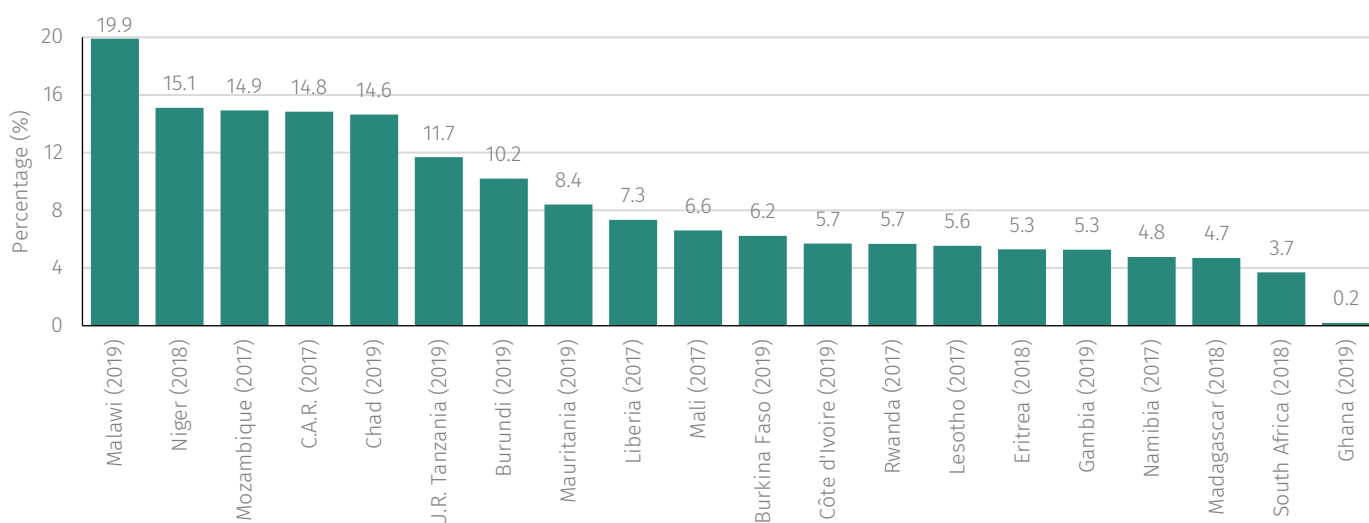
Note: Base year in parentheses.

Source: Projections based on UNESCO Institute for Statistics data (March 2021).

In secondary education (Figure 8), the projected annual growth needed to increase teacher numbers is higher, with a handful of countries requiring over 10% annual growth, including Burundi, Central African Republic, Chad, Mozambique, Niger and the United Republic of Tanzania. Malawi will be very

challenged to recruit adequate numbers of qualified teachers to increase teacher numbers by 20% annually to reach education targets by 2030. Other countries need only modest increases: Ghana, for example, will need just 0.2% annual growth.

Figure 8. Projected annual percentage increase needed in the numbers of teachers in secondary education, per country, projections to 2030



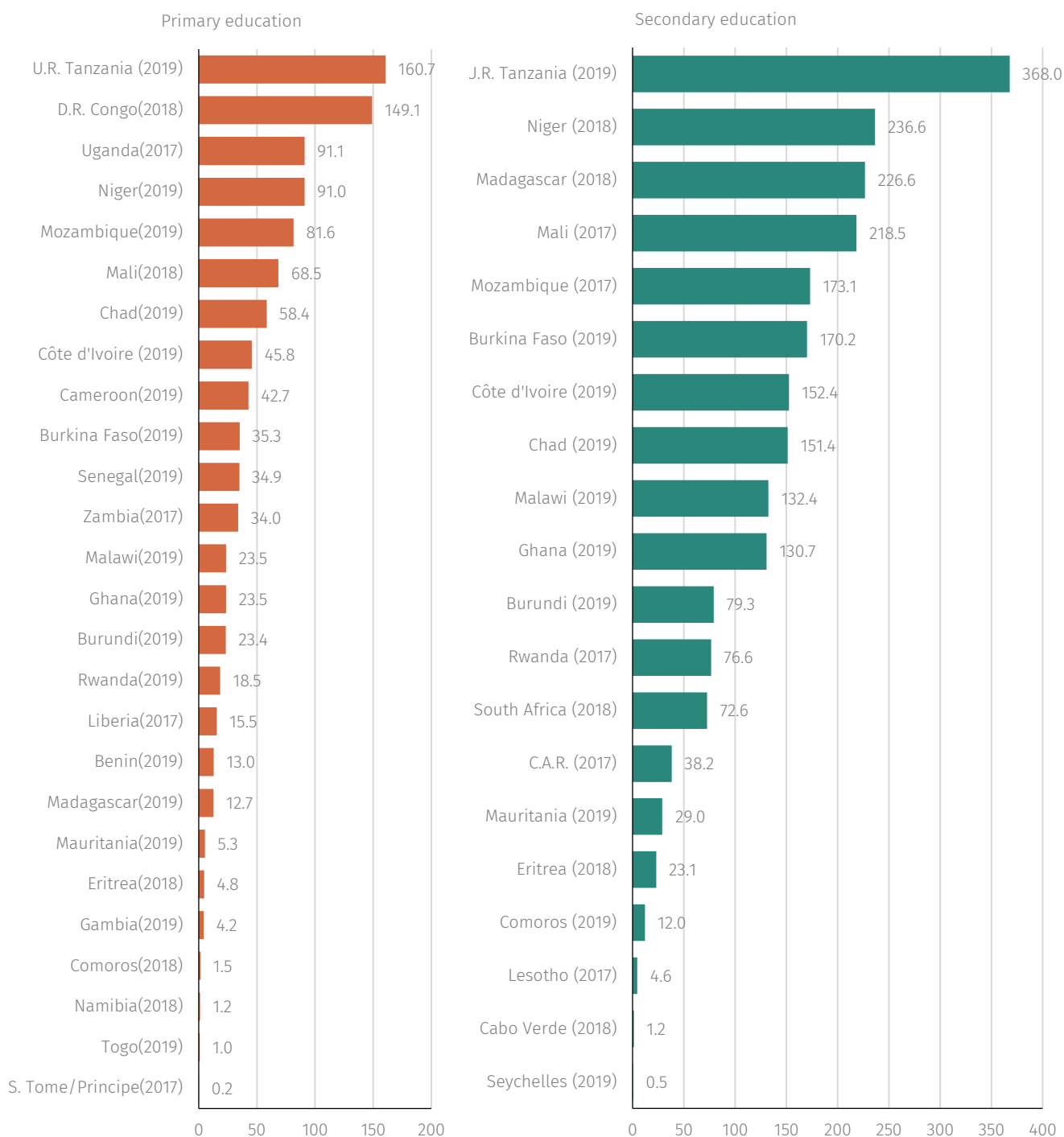
Note: Base year in parentheses.

Source: Calculations based on UNESCO Institute for Statistics data (March 2021).

Finally, **Figure 9** shows the number of new teacher positions required based on the projections estimated in a selection of countries with data. The scale of the challenge facing different countries

varies, but each country has work to do if it is to achieve adequate supply of teachers to meet the 2030 targets.

Figure 9. Number of new teachers (in thousands) required by 2030, by education level



Source: Projections based on UNESCO Institute for Statistics data (March 2021).

Financial resources for teacher recruitment and retention must be increased

The financial commitment required to resolve teacher shortages not only includes the costs of training and other expenditures, but also includes the cost of covering teachers' salaries. Teachers' salaries represent the main component of education expenditure in national education systems, so they are a key variable in the calculation of future education investment.

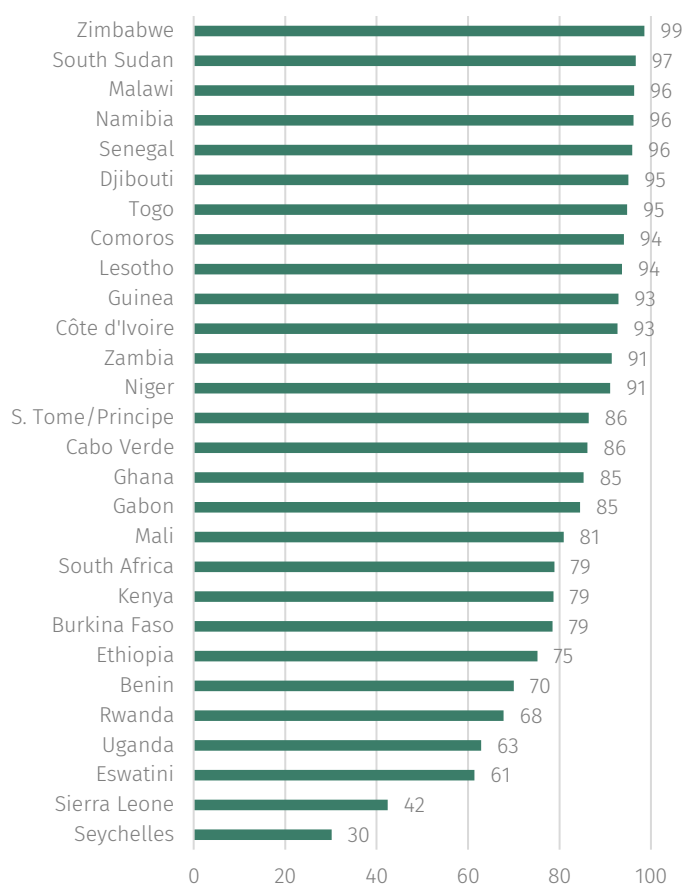
Sub-Saharan Africa is the only region to have allocated over 15% of total public expenditure to education every year since 2000 (UNESCO, 2020), with strong growth recorded over the past decade. However, analysis carried out at the beginning of 2021 found that two-thirds of low- and lower-middle-income countries have reduced their education budgets since the beginning of the COVID-19 crisis (UNESCO and World Bank, 2021), which could jeopardize this growth. The cost of recovering from the crisis will be high, as remediation, re-enrolment, second chance education and infrastructure costs all create an extra burden for education budgets (UNESCO, 2020).

Teacher salaries take the greatest share in national education budgets

A substantial share of education expenditures in primary education are allocated to staff salaries, with teachers making up the greatest share. **Figure 10** shows that of 28 countries, 13 allocate more than 90% of education expenditures in public institutions to staff compensation in primary education. In Djibouti, Malawi, Namibia, Senegal, South Sudan, Togo and Zimbabwe, 95% or more of expenditures go on staff salaries.

Beyond the large combined wage bill, remaining expenditures on education are low, underlining the need for partners and the international community to support teachers. Financial assistance is needed to address unmet needs in professional development, to provide teaching and learning resources and to offer other incentives including housing, transportation and support in accessing ICT and internet connectivity. Alongside these ongoing issues, additional needs have been generated by the COVID-19 crisis, including in health and safety measures, psychosocial support and vaccination roll-out.

Figure 10. All staff salary costs as a percentage of total expenditure in public institutions in primary education, 2019 or latest year available



Source: UNESCO Institute for Statistics (March 2021).

Cross-national data on teacher training are difficult to obtain, since there is no standard measure of training and each country has unique initial teacher education and continuing professional development programmes. However, as the example of Burkina Faso shows, in low-income countries, national governments face challenges in fully covering basic costs and significant reforms in initial teacher training and continuing professional development initiatives. In Burkina Faso, the government estimates that it will cover 98% of the total education budget between 2021 and 2025. However, the remaining 2% – an additional US\$97 million – will need to be covered by foreign aid and cooperation (see **Box 2**). This covers pre-service and in-service professional development, as well as governance and accountability measures.

The COVID-19 crisis has increased attention on distance and hybrid learning. With these models likely to continue to feature in education going forward, it is important to understand how much it would cost to prepare teachers to move to distance or mixed teaching models. However, costs vary greatly between countries and it is difficult to make cross-country comparisons. UNESCO has simulated the costs of national roll-out of digital/hybrid

learning in Honduras and Sierra Leone, including teacher training. The cost simulation is based on an assumption of 100% gross enrolment ratios for primary and lower secondary by 2030, and improvement in enrolment for upper secondary. It also assumes that only 10% of primary students in all schools (public and private) will be covered by digital/hybrid learning, 20% in middle school and 30% in high school. The unit cost of teacher training is assumed to be 5% of teacher salary.

The model includes costs of devices, classroom equipment, school technicians, development of digital content and central operation costs, but excludes infrastructure (connectivity) costs. In total, in Sierra Leone, it is estimated that teacher training in digital/hybrid learning would cost US\$1.2 million annually or 12% of the total cost of implementing digital/hybrid learning between 2022 and 2030 (excluding the cost of connectivity). In Honduras, the estimated cost of teacher training in ICT is US\$6 million annually, or 20% of costs for the same period.

Box 2. Calculating the cost of teacher training in Burkina Faso

The example of Burkina Faso illustrates the budgetary pressures on countries and how essential international aid is in helping countries to train teachers to support learning.

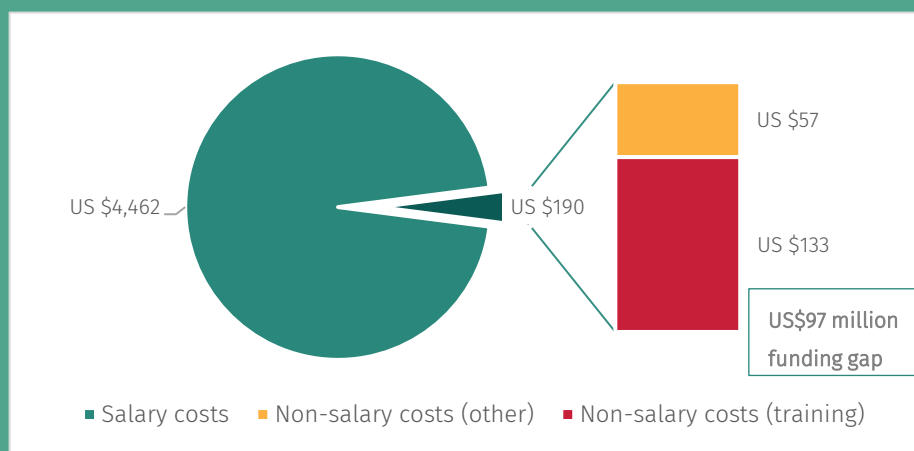
Burkina Faso developed national strategy in 2020 for the 2021–2025 period, to improve the management of their teacher workforce. The strategy was developed following the analysis of results of a study on teachers carried out by the country’s education ministry with technical and financial support from UNESCO and the Norwegian Teacher Initiative (NTI).

The overall cost of the national strategy is estimated at 2,584 billion West African CFA francs (US\$ 4,652 million) over 2021–2025. This estimated expenditure calculation is based on a ‘conservative’ scenario in which the total number of teachers increases from 97,357 in 2021 to 105,579 in 2025. The figure covers the wage bill (which comes to CFA 2,479 billion – US\$4,462 million – or 97% of the total cost) and non-salary expenditure (at around CFA 106 billion or US\$190 million, 3% of the total cost). Non-salary expenses include initial and continuing teacher education (around 71% of non-salary expenditure), governance, deployment, improvement of working conditions and teacher accountability. About 5% of in-service teachers would receive training in ICT and distance education, at an estimated cost of US\$36 per teacher.

The government expects to fully ensure the financing of salary expenditure and to fund just under half of non-salary expenditure, approximately CFA 52 billion or US\$93 million, out of forecast non-salary expenditure of CFA 106 billion or US\$190 million. This means that financing from the country’s own resources would reach some CFA 2,530 billion, or 98% of the total cost of the strategy.

Development partners will be called upon to cover the gap in non-salary expenditure, amounting to CFA 54 billion (US\$97 million) over the strategy’s 5-year period. It is essential that partners participate in covering this gap, since most non-salary expenses are devoted to governance and initial and continuing professional development, which are crucial to education quality (Figure 11).

Figure 11. Cost simulation and funding gap for Burkina Faso’s 2021–2025 teacher strategy, in US\$ millions, 2020



Source: Stratégie nationale sur la question enseignante au Burkina Faso (SNAQUE) 2021–2025, MOE Burkina Faso 2020.

Teacher salary levels in sub-Saharan Africa are low

SDG indicator 4.c.5 aims to examine teachers' salaries relative to other professions that require a comparable qualification. Ensuring satisfactory salaries is a key mechanism for retaining effective teachers and reducing attrition rates and teacher shortages.

In sub-Saharan Africa, even though a large share of education expenditure goes to salaries, teachers too often work in difficult conditions typified by lack of job security, low wages and loss of motivation (Lauwerier et al., 2015). According to Lauwerier et al. (2015 p. 2), 'teacher wages in sub-Saharan Africa were poor and generally below the poverty line or the cost of living'.

A recent study based on surveys in Africa identified the median earnings of teachers in sub-Saharan Africa at about US\$680 per month, lower compared to teachers in other countries¹ included in the study, who earned an average of some US\$860 per month (measured at the 2011 purchasing power parity exchange rateⁱⁱ). Even within the region, the average masks large differences between countries. Teacher salaries are US\$100 per month in the Democratic Republic of the Congo, US\$220 in Liberia, US\$400 in Niger, US\$640 in Ghana, US\$800 in the United Republic of Tanzania, US\$1,600 in Zambia and US\$2,300 in Namibia (Evans et al., 2020).

The same study compared teachers' monthly income with that of workers at a comparable level of education in 15 countries in sub-Saharan Africa (Evans et al., 2020). It found that, although teachers' monthly earnings relative to other workers vary across countries, teachers often receive less money per month, even when their per hour rate is higher. While in Burkina Faso, Côte d'Ivoire and Zambia, teachers are paid much more than other workers, in Liberia, Niger and Sierra Leone, they are paid less. Based on hourly earnings relative to other professions, Nigeria paid its teachers the lowest among the countries examined, however this may change after the full implementation of a new salary scale announced in 2020 (Nigerian Tribune, 2021). The study also found that on average across the countries surveyed, teachers are over 50% more likely than other workers to have a second job to help make ends meet. In general, in the countries studied, teacher salaries did not rise as fast as national income (Evans et al., 2020).

Teacher salaries are not the only factor in teacher retention, and they must be considered over the long term as a part of other policy interventions. However, ensuring that teachers are paid a decent wage can play a key role in helping countries recruit and retain a sufficient number of teachers to fill current and future gaps.

Recommendations

Reaching SDG 4 will require a substantial increase in the supply of qualified teachers, especially in low-income countries. Given the central role that teachers play in achieving all education-related goals and targets, better data are needed to understand how many qualified teachers are and will be necessary in the countries with the greatest needs.

The evidence in this policy brief shows that important advances in school enrolment in sub-Saharan Africa have not been matched with a sufficient increase of qualified teachers. High pupil-teacher ratios, together with declining levels of qualification among in-service teachers, could undermine educational results.

Teacher shortages are a multi-dimensional problem with deep-rooted causes. Training and hiring new teachers will be insufficient to solve the problem: structural issues in education systems of the region must also be addressed. These issues include low-quality and overly scant teacher training and continuous professional development, lack of professional autonomy, uncompetitive salaries and poor working conditions.

While evidence is scarce, the COVID-19 pandemic will likely increase the demands for teachers. Recent data show that 63% of Ministries in low-income countries recruited additional teachers to support reopening in 2021 compared to a global average of 40%. Central authorities in low-income countries need to foster data and monitoring systems that address human resource gaps. Teachers will also increasingly require additional capacity-building, particularly related to distance education and teaching.

To tackle teacher shortages and ensure a sufficient number of qualified teachers to reach all learners, in particular those among marginalized and disadvantaged populations, governments and partners must:

- **Develop holistic teacher policies and cost them properly**, especially in the countries with the most severe shortages. Comprehensive national teacher policies, covering all dimensions from recruitment to training and qualifications, career progression, remuneration, standards etc., are key to creating a well-trained and supported teaching workforce to sustain learning. They also allow countries to better understand where teachers are needed the most, in particular for disadvantaged areas, as well as to identify the most cost-effective interventions and the policy trade-offs required. Holistic teacher policies need to be properly costed and accompanied by solid

implementation plans, with an equity and gender perspective.

- **Increase domestic resources available for education.** Enhanced strategic and targeted domestic resources are needed to ensure that both salary and non-salary needs are met. This includes ensuring that teachers are paid a living wage and that contract teachers and those working in the private sector are protected from possible labour rights breaches. Domestic education budgets need to be increased or maintained to ensure they reach the internationally agreed benchmark of national education expenditure of at least 15%–20% of GDP. Tax justice and other domestic resource mobilization initiatives are needed to increase the overall envelope available for national education systems. Decentralization of education budgets to district authorities can target local teacher gaps, fill posts and provide needed professional development and support which are critical to effectively address existing and emerging inequities.
- **Increase international funding to education** with a stronger focus on teachers and teaching, in particular initial teacher education and continuing professional development. This means helping countries meet funding gaps to cover professional development; training in blended learning; improved working conditions; and greater socio-emotional support, among others. The COVID-19 crisis has shown the need to invest in innovations in distance learning, ICT, and adaptive pedagogies, so that teachers are better prepared to adapt their practice to changing environments and needs.
- **Improve teacher support and working conditions** to reduce attrition, attract new and talented prospective teachers and ensure, in particular, that young teachers remain in the profession. This includes creating continuing professional development opportunities and mentoring programmes, making space for peer support networks, and investing in well-being and occupational health and safety. Actions must urgently be taken to protect teachers, whether from attacks on schools or from COVID-19. Teachers and education support personnel need to be treated as a priority group in national vaccine roll-outs to allow for safe school reopening.

- **Collect more national and internationally comparable data**, if better and sounder educational financing and planning is to be carried out. Data needs are especially evident in relation to variables such as teacher attrition, qualifications and teacher salaries. There is a need for better teacher information management systems and payroll schemes, along with geospatial analysis and other systems which identify where teachers are needed most and need the greatest support. Information systems should in particular pay attention to understanding the needs of female teachers, who play an important role in supporting girls' education and have been particularly hard-hit by the COVID-19 crisis. The International Classification of Teacher Training Programmes (ISCED-T) currently being developed by UIS will assist in the collection of internationally comparable data on teacher training and qualifications.

Two new indicators have been developed as part of SDG 4.c measurement: the 'average teacher salary relative to other professions requiring a comparable level of qualification' (Indicator 4.c.5) and 'percentage of teachers who received in-service training in the last 12 months by type of training' (Indicator 4.c.7). However, only a handful of countries are currently reporting these data, and much more will need to be done in order for these indicators to enable meaningful analysis and comparisons across countries and regions.

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ⁱ The study also collected data from Bolivia, Cambodia, Indonesia, Mexico and Pakistan.

ⁱⁱ PPPs are the rates of currency conversion that equalize the purchasing power of different currencies by eliminating the differences in price levels between countries. In their simplest form, PPPs are simply price relatives that show the ratio of the

prices in national currencies of the same good or service in different countries. PPPs are also calculated for product groups and for each of the various levels of aggregation up to and including GDP (OECD, 2021: Retrieved from: <https://www.oecd.org/sdd/prices-ppp/purchasingpowerparities-frequentlyaskedquestionsfaqs.htm>).

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Statistical tables

Table 1 – Pupil-teacher ratio by country and education level, 2019 or latest year available

	Primary education		Secondary education	
	Year	Pupil-teacher ratio	Year	Pupil-teacher ratio
Angola	2016	59	2016	27
Benin	2019	41	2016	11
Botswana	2015	24		
Burkina Faso	2019	39	2019	22
Burundi	2019	43	2019	25
Cabo Verde	2018	21	2018	15
Cameroon	2019	46	2016	19
Central African Republic	2016	83	2017	32
Chad	2019	55	2019	23
Comoros	2018	28	2019	8
Côte d'Ivoire	2019	42	2019	29
D. R. Congo	2018	31	2015	14
Equat. Guinea	2015	23		
Eritrea	2018	39	2018	35
Eswatini	2018	26	2016	16
Gambia	2019	37		
Ghana	2019	27	2019	15
Guinea	2016	47		
Kenya	2015	31		
Lesotho	2017	33	2017	25
Liberia	2017	22		
Madagascar	2019	37	2018	19
Malawi	2019	55	2019	68
Mali	2018	38	2017	17
Mauritania	2019	41	2019	29
Mauritius	2019	15	2019	12
Mozambique	2019	57	2017	37
Namibia	2018	25		
Niger	2019	40	2018	27
Rwanda	2019	57	2017	20
Sao Tome and Principe	2017	31	2016	25
Senegal	2019	34	2015	20
Seychelles	2019	15	2019	10
Sierra Leone	2019	37	2016	22
South Africa	2015	30	2018	27
South Sudan	2015	47	2015	27
Togo	2019	39		
Uganda	2017	43		
U. R. Tanzania	2019	54	2019	22
Zambia	2017	42		

Source: UNESCO Institute of Statistics (March 2021)

Note: 1) No data are available for Congo, Ethiopia, Gabon, Guinea-Bissau, Nigeria, Somalia, Sudan or Zimbabwe. 2) The basic pupil-teacher ratio is no longer published by the UIS. The authors calculated this indicator based on available enrolment and teacher data from the UIS.

Table 2. Percentage of teachers with the minimum required qualifications and pupil-trained teacher ratio, by education level, by country, 2019 or latest year available

	Primary education (% qualified teachers)					Secondary education (% qualified teachers)					Pupil-trained teacher ratio			
	Year	Both sexes	Females	Males	Parity index	Year	Both sexes	Females	Males	Parity index	Year	Primary education	Year	Secondary education
Angola						2015	51	56	50	1.1				
Benin	2019	71	71	71	1.0	2016	18	22	18	1.2	2019	57	2016	61
Burkina Faso	2019	89	94	84	1.1	2019	61	61	61	1.0	2019	44	2019	37
Burundi	2019	100	100	100	1.0	2018	100	100	100	1.0	2019	43	2018	27
Cabo Verde	2018	99	99	97	1.0	2018	96	97	95	1.0	2018	21	2018	16
Cameroon	2017	81	83	79	1.0	2015	53	63	48	1.3	2017	55	2015	37
Central African Republic						2016	45	49	45	1.1			2016	76
Chad						2016	44	44	44	1.0			2016	62
Côte d'Ivoire	2019	100	100	100	1.0	2019	100	100	100	1.0	2019	42	2019	29
D. R. Congo	2018	92	92	92	1.0						2018	34		
Equat. Guinea	2015	37	41	35	1.2						2015	62		
Eritrea	2018	84	87	83	1.0						2018	46		
Eswatini	2017	88	88	87	1.0	2015	73	72	75	1.0	2019	30	2015	22
Gambia	2019	88	90	87	1.0	2019	96	96	96	1.0	2019	42		
Ghana	2019	62	66	58	1.1	2018	77	84	75	1.1	2019	44	2018	21
Guinea	2016	75	86	71	1.2						2016	63		
Lesotho	2016	87	87	84	1.0	2016	89	91	86	1.1	2016	39	2016	26
Liberia	2017	70	74	69	1.1	2015	62	61	62	1.0	2017	32	2015	30
Madagascar	2019	15	19	11	1.7	2018	20	24	18	1.3	2019	240	2018	96
Mauritania	2019	97	97	97	1.0	2019	93	76	95	0.8	2019	42	2019	31
Mauritius	2019	100	100	100	1.0	2019	48	46	51	0.9	2019	15	2019	26
Mozambique	2019	98	99	97	1.0	2015	85	86	85	1.0	2019	58	2019	47
Niger	2019	98	98	97	1.0						2019	41		

Rwanda	2019	95	96	94	1.0	2017	58	53	60	0.9	2019	60	2019	35
Sao Tome and Principe	2017	27	32	22	1.4	2015	36	57	26	2.2	2017	114	2019	46
Senegal	2019	75	72	77	0.9	2015	72	84	68	1.2	2019	45	2015	28
Seychelles	2019	84	84	87	1.0	2019	89	90	88	1.0	2019	18	2019	12
Sierra Leone	2019	64	73	59	1.2	2015	70	79	69	1.1	2019	58	2015	29
South Africa						2016	100						2016	27
Togo	2019	77	68	78	0.9						2019	51		
Uganda	2017	80	79	80	1.0						2019	54		
U. R. Tanzania	2016	99	99	99	1.0						2016	42		
Zambia	2017	99	98	100	1.0						2017			

Source: UNESCO Institute for Statistics (March 2021)

Notes: (1) Proportion of teachers with the minimum required qualifications: SDG indicator 4.c.1. (2) Pupil/trained teacher ratio: SDG indicator 4.c.2. (3) Certain countries have been excluded if recent data are not available.

Table 3. Percentage of female teachers by education level, by country, 2019 or latest year available

	Primary education		Secondary education	
	Year	(% female)	Year	(% female)
Angola	2016	47	2016	29
Benin	2019	27	2016	10
Botswana	2015	74		
Burkina Faso	2019	48	2019	17
Burundi	2019	50	2019	26
Cabo Verde	2018	71	2018	47
Cameroon	2019	56	2016	35
Central African Republic	2016	19	2017	47
Chad	2019	19	2019	8
Comoros	2018	29	2018	17
Côte d'Ivoire	2019	32	2019	16
D. R. Congo	2018	29	2015	12
Equat. Guinea	2015	44		
Eritrea	2018	39	2018	24
Eswatini	2018	70	2016	49
Gambia	2019	36	2019	21
Ghana	2019	43	2019	25
Guinea	2016	31		
Kenya	2015	50	2015	42
Lesotho	2017	75	2017	55
Liberia	2017	18	2017	6
Madagascar	2019	53	2018	42
Malawi	2019	45	2019	24
Mali	2018	32	2017	14
Mauritania	2019	35	2019	11
Mauritius	2019	80	2019	63
Mozambique	2019	46	2017	31
Namibia	2018	68	2017	54
Niger	2019	54	2018	22
Rwanda	2019	55	2017	31
Sao Tome and Principe	2017	55	2016	33
Senegal	2019	32	2015	27
Seychelles	2019	85	2019	56
Sierra Leone	2019	30	2016	14
South Africa	2015	79	2018	58
South Sudan	2015	15	2015	13
Togo	2019	17		
Uganda	2017	43		
U. R. Tanzania	2019	50	2019	33
Zambia	2017	50		

Source: UNESCO Institute for Statistics (March 2021)

Note: No recent data are available for Congo, Ethiopia, Gabon, Guinea-Bissau, Nigeria, Somalia, Sudan or Zimbabwe.

Method and assumptions – Teacher shortages projections to 2025 and 2030

The model applied to estimate teacher number needs projections for the years 2025, 2030 and 2035 is based on the method proposed by UIS in 2009. The main characteristics of the model applied, and the assumptions made to estimate teacher number needs, are:

- **Base year:** The estimations only include sub-Saharan African countries with available information on the number of teachers and enrolment for the years 2019, 2018 or 2017.
- **Enrolment:** The model assumes 100% enrolment in primary and secondary education. The number of students for each education level is estimated based on UN population projections (medium variant)ⁱⁱⁱ and accounting for the rate of repetition in each country.
- **Repetition rate:** For each country, the repetition rate was retrieved from the most recent year with data available between 2010 and 2019. It is assumed that if the repetition rate is higher than 10%, it will be reduced by 15% in each of the estimated years (2025, 2030 and 2035).
- **Pupil/teacher ratio:** The estimations consider 40:1 as the maximum pupil/teacher ratio for primary education and 25:1 as the maximum for secondary education. Because of the lack of data for many of the countries of the region, the projections do not distinguish between qualified and non-qualified teachers.
- **Teacher attrition rate:** For each country, teacher attrition rate was retrieved from the most recent year with data available between 2015 and 2019. If data are not available, an attrition rate of 5% was assumed.

The calculation of the annual growth in the number of teachers required by 2030, assuming 100% of enrolment and a maximum ratio of 40:1 in primary education and 25:1 in secondary education is made according to the formula:

$$CAGR = \left(\frac{EV}{BV} \right)^{\frac{1}{n}} - 1$$

where:

EV = Ending value

BV = Beginning value

n = Number of years

ⁱⁱⁱ For more details on the methodology of the projections, see United Nations. 2021. 2019 Revision of World Population Prospects. <https://population.un.org/wpp/>.

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