



Global Report on Teachers

Addressing teacher shortages
and transforming the profession

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Caption: The photos from the front cover feature teachers from the 2023 UNESCO World Teachers' Day photo exhibition "The teachers we need for the education we want". From left to right: Rima Neo Maria Sifudi (South Africa), Priscilia Farinango (Ecuador), Punleu Be (Cambodia), Yuli Collazos Peñag (Colombia), Mo'men Youssef (Egypt), Pogorelov Oleksandr Mykaloiovych (Ukraine).

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Addressing teacher shortages and transforming the profession

Teachers are central to unlocking every learner's potential and achieving Sustainable Development Goal 4 of inclusive, equitable and quality education for all. Regrettably, worldwide teacher shortages have been endangering the future of education. New data collected for the *Global Report on Teachers* indicates that 44 million additional teachers are needed to achieve universal primary and secondary education by 2030. Shortages are widespread, with sub-Saharan Africa needing 15 million more teachers, while higher-income countries face retention challenges, resulting in teachers massively leaving the profession.

Echoing calls from the International Commission on the Futures of Education and the 2022 Transforming Education Summit, this report advocates for dignifying, diversifying, and valorizing the teaching profession. It emphasizes the importance of improved working conditions, enhanced professional development, and increased teacher involvement in decision-making to bridge the gap.

This report is a tool to mobilize international and country efforts to empower, recruit, train, and support teachers within resilient education systems for a collaborative, innovative, and cohesive teaching profession. It is a roadmap, aiming to elevate the status of the teaching profession and ensure quality education for all learners, urging immediate action.

44

million additional teachers
are needed to achieve universal
primary and secondary
education by 2030



"Since wars begin in the minds of men and women it is in the minds of men and women that the defences of peace must be constructed"



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and transforming the profession

Foreword

As the deadline for the 2030 Agenda approaches, the critical role of teachers in achieving sustainable development and SDG 4—equitable, inclusive, and quality education with lifelong learning opportunities for all—has become increasingly evident.

Yet, a global teacher shortage is affecting access to and the relevance of education, leading to overcrowded classrooms, diminished teaching quality, and limited learning opportunities, especially in underserved communities.

This inaugural *Global Report on Teachers*, a collaborative effort between UNESCO and the International Task Force on Teachers for Education 2030, sheds light on this urgent global challenge. Leveraging new data and research, it provides actionable insights and good practices for enhancing teacher recruitment, retention, and professional development. The report is founded on the conviction that an empowered and well-supported teaching force is crucial for fostering quality education and lifelong learning.

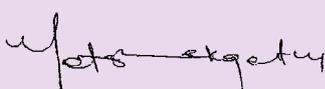
The analysis delves into the teacher shortage crisis, examining its causes, including a major gap in education financing, the persisting impact of the COVID-19 pandemic, and the constant evolution of digital technological advances, including artificial intelligence. It underscores the need for 44 million additional teachers to achieve universal primary and secondary education, and highlights strategies to counter rising teacher attrition rates through greater valorization of the teaching profession, making it more attractive. This includes implementing inclusive policies, improving working conditions, and increasing teacher agency.

The Report comes out of growing solidarity with teachers at the global level—from the recommendations of the UN Secretary-General’s High-level Panel on the Teaching Profession and the Transforming Education Summit, where countries committed to transforming teaching, focusing on elevating their status, working conditions and professional development.

We hope that this report will serve as a guide for transforming these commitments into action. As we look toward the Summit of the Future let us ensure that support for teachers is recognized as a crucial investment in our collective future, empower educators and affirm education’s role as a fundamental human right and global public good.



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The report was coordinated by Mr Carlos Vargas, Chief of UNESCO's Section for Teacher Development and Head of the Secretariat of the International Task Force on Teachers for Education 2030 (Teacher Task Force), and two editors-in-chief: Ms Ximena Rubio and Mr Peter Wallet, UNESCO and TTF Project Officers. The development of the report was conducted by the following team: Claude Akpabie, Maram Algothani, Helena Barreiras Inacio, Zenab Choug, George Håkon Benson, Erin Chemery, David Childress, Angela Crovace, Aditi Desai, Valérie Djioze-Gallet, Mirna Eskif, Meritxell Fernández Barrera, Helen McLaren, Jack McNeill, Fatou Niang, Ieva Raudonyte, Sarah-Marie Richter, Helen Rojas, Lydie Ruas, Anna Ruszkiewicz, Roy Saurabh, Emilia Soto Echeverri, Mara Vos Carrero, Ann Wanjiku Kiragu, Yue Yong and Qiongxing Zhang.

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Acronyms and abbreviations

AI	Artificial intelligence
ASN PPPK	Aparatur Sipil Negara (State Civil Apparatus) Pegawai Pemerintah dengan Perjanjian Kerja (Government Employees with Employment Agreements)
CEART	Committee of Experts on the Application of the Recommendations concerning Teaching Personnel
CONFEMEN	Conference of Ministers of Education of Francophone States and Governments
CoP	Community of Practice
CPD	Continuous professional development
CRS	Creditor Reporting System, OECD statistics
DAC	Development Assistance Committee, OECD
ECW	Education Cannot Wait
EI	Education International
EMIS	Education management information system
ERCE	Regional Comparative and Explanatory Study
EU	European Union
FAWE	Forum for African Women Educationalists
GDP	Gross domestic product
GEM	Global Education Monitoring Report, UNESCO
GIS	Geographic information management system
GIZ	German Agency for International Cooperation
GPE	Global Partnership for Education
HLP	High-level Panel on the Teaching Profession
HLSC	High-Level Steering Committee, SDG 4 Education 2030
ICT	Information and communication technology
IICBA	UNESCO International Institute for Capacity Building in Africa
ILO	International Labour Organization
ISCED-T	International Standard Classification of Teacher Training Programmes
ITE	Initial teacher education
LLECE	Latin American Laboratory for Assessment of the Quality of Education
NGO	Non-governmental organisation
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
PASEC	CONFEMEN's Programme for the Analysis of Education Systems

PFP	Performance-based pay
PISA	Programme for International Student Assessment, OECD
PPP	Purchasing power parity per annum
PTR	Pupil-teacher ratio
PTTR	Pupil-trained teacher ratio
SDG	Sustainable Development Goal, UN
SIDS	Small Island Developing States
STEM	Science technology, engineering and mathematics
TALIS	Teaching and Learning International Survey, OECD
TES	United Nations' Transforming Education Summit
TIMSS	Trends in International Mathematics and Science Study
TMIS	Teacher management information system
TTF	International Task Force on Teachers for Education 2030, also known as Teacher Task Force
UIS	UNESCO Institute for Statistics
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
UNOSSC	United Nations Office for South-South Cooperation
UNRWA	United Nations Relief and Works Agency
UN	United Nations
UPE	Universal primary education
USE	Universal secondary education
WASH	Water, sanitation and hygiene

Executive summary

Why a Global Report on Teachers?

Teachers are essential to achieving Sustainable Development Goal (SDG 4) which commits to ensuring inclusive and equitable quality education for all by 2030. As a critical means of implementation, Target 4.c calls for a substantial increase in the supply of qualified teachers. Yet huge global shortages persist. In 2022 UNESCO sounded the alarm about the status of the profession, highlighting both the global shortage of teachers and that progress towards SDG 4 was already at risk. This Global Report on Teachers (henceforth the Report) has commissioned new projections which show that 44 million additional primary and secondary teachers are needed globally to meet those 2030 targets. The impacts of such shortages are vast: they are costly for systems, increase teacher workloads and can damage the quality of education. New projections estimate financing all the additional teaching posts needed to reach universal enrolment targets will cost around US\$120 billion annually.

Teacher shortages are a pressing concern worldwide regardless of the income level of a country. Projections show that sub-Saharan Africa needs 15 million additional teachers by 2030 to achieve SDG 4 targets, mostly due to a rapidly expanding school-aged population coupled with financial constraints. Worrying trends are equally observed in higher income countries where governments cannot attract enough new teachers to replace the increasing numbers quitting the profession. The impacts of shortages are reported across European countries such as France, the Netherlands (Kingdom of) and England, as well as in Japan and the United States of America.

Despite the growing body of research on teachers and teacher-related issues, until now there has been no flagship report dedicated to examining promising practices and regularly monitoring global progress towards Target 4.c. This Report, to be published every two years and using a thematic approach, aims to support the international community in monitoring and making progress towards its overall commitment established in the Incheon Declaration and Framework for Action, to ensure that ‘teachers and educators are empowered, adequately recruited, well-trained, professionally qualified, motivated, and supported within well-resourced, efficient, and effectively governed systems’.

As a way forward, the International Commission on the Futures of Education has highlighted the importance of reimagining the teaching profession as a collaborative profession, recognizing professional development as a lifelong learning journey, improving teachers’ working conditions and status, and promoting their engagement in decision-making. Likewise, the Transforming Education Summit (TES) called for the repositioning of the profession to ensure that teachers increasingly serve as creative guides and facilitators in the learning process. Echoing these calls, the Report makes the case for reclaiming the role of teachers as collaborative, autonomous and competent professionals who can draw on technology to enrich teaching and learning and promote effective communication. The report also calls for training and accreditation systems that build professionalism and effectively support and develop teachers throughout their careers. To accomplish this, education systems will need to develop strategies and policies that work hand in hand as part of a cohesive whole to provide teachers with better working conditions that enable quality teaching and learning.

The state of the art of global teacher shortages

To monitor global progress towards SDG target 4.c, internationally comparable indicators were identified to measure the quantity of teachers and the quality of teaching. Measuring teacher shortages is neither a straightforward nor a uniform process across different contexts. Despite these difficulties, two factors stand out when projecting future teacher needs: the school-age population and teacher attrition. Taking into account the fact that school-age populations can both expand and contract is key in projecting future demand for teachers. Attrition also impacts future demand and requires countries to consider the replacement rate for teachers depending on factors such as age, anticipated retirement or anything else which drives personnel from the workforce. This is a specially pressing concern, as global attrition rates among primary teachers almost doubled from 4.6 per cent in 2015 to 9 per cent in 2022.

Based on a model developed by the UNESCO Institute for Statistics (UIS), new projections show that 44 million primary and secondary teachers will be needed by 2030 to reach SDG targets. While much progress has been made since the 2016 projection of 69 million teachers, the existing gap remains roughly half the size of the current teacher workforce. With the inclusion of universal secondary education (USE) in the SDG targets, most newly recruited teachers across the world are now needed at this level by 2030. Projections show there is still a need for 31 million secondary teachers globally compared to 13 million primary teachers. Furthermore, the number of teachers needed to replace those leaving the workforce accounts for a substantial 58 per cent of that figure, while the remaining 42 per cent is attributed to newly created teaching positions.

Ongoing global challenges in achieving the SDG targets led countries to set national benchmarks in 2021 to define their own targets based on their specific context, starting point and pace of progress. Taking these benchmarks into account led to a set of alternative projections of the number of teachers needed by 2030. In contrast to the model of full enrolment, these benchmarks allow for projections based on the estimated 84 million, or roughly 5 per cent, of primary and secondary aged children (combined) that would remain excluded from formal education in the year 2030. This recalculation shows that approximately 12.3 million primary teachers will be required globally – a figure approximately 591,000 lower (about 5 per cent) than the 13 million needed to ensure full primary enrolment and achieve the SDGs.

The difference between meeting teacher needs as per national benchmarks for out-of-school children and achieving universal secondary education widens given the higher proportion of youth out of school at those levels. Globally, 27.5 million secondary level teachers are needed – a decrease of about 12 per cent from the 31 needed for universal enrolment. These targets are perhaps more achievable in several countries, particularly where resources are most constrained.

Teachers are vital in ensuring a high-quality education is provided, and thus should receive adequate and relevant pedagogical training to qualify for the level and subject in which they teach. The worldwide average for qualified teachers remains steady across various educational levels, standing at approximately 85 per cent. However, regional trends can hide wide disparities among countries. There is also considerable variation in how different education systems define the concept of a qualified teacher, making international comparisons and benchmarking challenging. Overall, more data is needed on qualified teachers, especially for certain educational levels and regions.

The number and distribution of teachers are also important policy parameters helping to determine the quality of education. The pupil-teacher ratio (PTR) has generally declined globally since 2000. However, there are large disparities between regions and countries of different income groups. High PTRs resulting in overcrowded classrooms are a particularly acute problem in low-income countries compared to their high-income counterparts. In contrast to the PTR, the pupil-trained teacher ratio (PTTR) indicator measures the ratio of students to those teachers holding the minimum required qualifications. In primary education, high-income countries had an average PTTR of 15:1, while low-income countries faced a considerably higher ratio, more than tripling that number at 52:1 in 2022.

Analysis of teacher salaries can help illustrate the competitiveness of the profession to attract and retain teachers over time. Faced with better salaries in other professions, the relatively low salaries in teaching can dissuade high-quality candidates. Data show that teacher salaries vary greatly with respect to other professions requiring similar levels of qualifications across all educational levels. In some countries, teachers earn double the average of other professionals while, in others, they earn much lower salaries. In primary education,

analysis shows that half of all countries pay teachers less than other professions requiring similar qualifications, while this decreases to just 3 in 10 countries in Europe and

Northern America. Meanwhile, research from sub-Saharan Africa highlights the fact that teachers in many countries earn so little they cannot meet basic family needs.

Teacher shortages as a multidimensional challenge

Teacher shortages are a complex policy issue, as many factors are linked to the status of the profession. With a few exceptions, the appeal of the teaching profession has declined globally, and education systems struggle to attract and retain teachers. In countries across all income levels, unattractive salaries, hard working conditions, and heavy workloads are discouraging many candidates from joining or staying in the profession. The expansion of education systems to meet universal education targets has also resulted in the widespread hiring of contract or community teachers in many countries. This practice can give rise to two-tier systems where contract staff work on less desirable terms than those in government employment.

Shortfalls in recruitment are one of the key causes contributing to teacher shortages, but there is great variation across countries as shown when 15-year-olds are asked about their aspirations to become a teacher. Data available for 41 countries participating in the Organisation for Economic Co-operation and Development's (OECD) Programme for International Student Assessment (PISA) reveal that, between the years 2000 and 2018, teaching continued to be ranked among the top ten career aspirations of 15-year-olds. However, analysis of results from the 2006 PISA cycle shows that in some countries such as Austria, Estonia, Chile, the Czech Republic, Denmark, Germany, Hungary, Italy, Portugal, the Russian Federation, the Slovak Republic and Switzerland, less than 2 per cent of students would opt for a career as a teacher. In countries where the number of those interested in pursuing teaching falls short, it is important to explore reasons. Common factors can include a lack of personal fit, perceptions of teaching (e.g. workload) and better options elsewhere.

Many issues lower the status of the profession and affect recruitment, and no singular cause drives teachers to leave the profession. Broadly, the factors that lead to attrition can be grouped into three major categories that include push factors (working conditions and teacher well-being), pull factors (teacher remuneration and

opportunities for career growth) and personal reasons (retirement, health concerns or family obligations). Some systems also face the growing trend of losing teachers to skilled global migration, with countries such as Canada, Germany, the United Kingdom (UK) and the USA hosting large numbers of immigrant teachers. Teachers working in emergency or crisis situations may also leave the profession at higher rates than their peers. Issues can stem from safety and security concerns, a lack of teacher management and dependable compensation or exclusionary government policies.

While attrition can affect all types of teachers regardless of context, male and younger teachers tend to leave the profession at higher rates. Global attrition rates in 2021 were 9.2 and 5.9 per cent for male primary and lower secondary teachers, compared to 4.2 and 5.6 per cent for female teachers. On the other hand, women are under-represented in leadership positions or in certain locations due to a lack of suitable housing, unsafe or unsanitary working conditions, or discrimination due to views on women's role in the workforce. For younger teachers, the early years in a career are particularly sensitive. Attrition rates present a U-shaped pattern throughout the career path of teachers, as the highest rates are in the early years and when teachers are near retirement. Some studies have calculated that as many as 40 per cent of teachers leave the profession in the first five years in Canada, Hong Kong (SAR China), the UK and the USA.

Numerous structural and broader contextual challenges contribute to the issue of teacher shortages as well. The misallocation of quality teachers can cause shortages to persist when there is a misalignment between qualifications and the subjects or areas where they are needed. Very often, weak planning and management procedures as well as non-existent or inappropriate monitoring tools result in a lack of adequate information required for decision-making. Many systems simply do not have integrated human resource management systems, both for personnel management and data collection.

Levers to address teacher shortages

Countries have acted to address the pull, push and personal factors related to teacher shortages in varied ways and make teaching a more attractive career. Systems and education leaders may utilize a variety of levers at their disposal to improve the attractiveness of teaching, ranging from comprehensive management strategies and policy initiatives to decisions made by principals at the school level. Initiatives may involve meeting basic requirements such as decent pay and working conditions. Strategies could involve raising teacher salaries or providing other incentives, improving school culture or working hours, or developing mental health support for teachers. For example, competitive salaries can contribute to teacher's job satisfaction and increase the attractiveness of the profession: Kazakhstan effectively doubled teacher salaries between 2020 and 2023 after a national survey revealed that teachers felt overburdened and underpaid, leading to them feeling more supported by the state.

Effective school leadership can enable motivating school environments, enhance working conditions and empower teachers with greater autonomy. Results from UNESCO's Regional Comparative and Explanatory Study (ERCE) suggest that Latin American schools whose principals more frequently engage in classroom observation or who foster collaboration among teachers

may achieve better results in math, language and science. Novice teachers also need ongoing support to both build their motivation and professionalism as well as to prevent early career attrition. Schools can offer induction programmes that offer some combination of mentoring from a more experienced colleague (usually in the same subject area), informal support and more structured formal training. In the Republic of Korea, study groups pair new teachers with more experienced colleagues to align professional learning and exchange ideas with good results.

Systems also need to track and analyse their teaching forces to better understand the potential for high rates of attrition or inequitable deployment. To do so, utilizing a Teacher Management and Information System (TMIS) could help planners better project personnel needs. The MIRADOR system in Senegal has integrated data modules that can track elements including teacher career management, recruiting, training, and staff numbers to project future teacher replacement needs. With a better understanding of what they need, countries can improve equitable deployment by offering incentives for teachers to work in remote or disadvantaged schools. These could range from direct financial incentives such as increased pay or housing allowances to offering additional professional development opportunities.

Transforming teaching: a new social contract

Looking to the future, developing a new social contract for education may serve as the lynchpin to raise the prestige of the profession. As the basis of this contract, the International Commission for the Futures of Education reimagines education as a shared societal goal striving towards a common good and teaching as a highly collaborative profession, with an emphasis on reflection, research, knowledge-creation and innovation. To begin this process, systems need to find and recruit the right candidates that are drawn to teaching as a vocation. Systems must determine and understand the motivation of prospective teaching candidates so that they can better implement tailored recruitment strategies for initial teacher training. In China, altruistic and intrinsic factors such as personality

fit, interest in a subject, opportunity for continuous professional development (CPD) and a desire to help others, motivate secondary students to pursue a career in teaching.

Building a profession attractive to all must include embracing diversity. Systems initially need to develop a gender-balanced workforce that reflects the broader community. This may include developing laws that protect women from violence and ensure their rights or developing strategies to increase the presence of male teachers in the lower levels of education. Students from under-represented groups benefit from teachers who share their ethnic, racial, linguistic, or cultural background, so systems can develop programmes that specifically target and recruit those teachers. Systems and governments can also take positive steps to encourage

those with disabilities to enter the teaching profession. In Nepal, nearly 40 per cent of visually impaired people that hold university degrees work as teachers in mainstream schools.

As part of the shift towards a more professionalized career, initial teacher education (ITE) and professional development programmes must be recognized as ecosystems that support lifelong learning. To better prepare prospective teachers, the Netherlands has partnered ITE institutes with schools in the design, delivery and evaluation of ITE programming, leading to a sense of cooperation and a connecting of preparation to practice. The rapid emergence of innovations such as digital technologies and artificial intelligence (AI) systems highlight the importance of teachers becoming lifelong learners. Technology can facilitate teacher training as well as enhance teaching and learning opportunities in the classroom. However, teachers need to be well trained and prepared to realize any potential gains from technology use. Opportunities for professional development need to be available in a variety of formats and delivery methods to ensure lifelong learning. Systems must then ensure the relevance of training as well as flexibility in scheduling to accommodate teacher workloads. Research has also shown that ongoing professional learning opportunities can improve a teacher's motivation and well-being.

The process of professionalization may start by developing minimum standards to monitor teacher qualification and certification, as well as by providing opportunities for contract teachers to earn their way into permanent positions. For instance, Mexico has regularized approximately 800,000 contract teachers who became eligible for permanent positions after six months on the job. Accountability systems are also important as they provide professional and participatory feedback mechanisms. A clear career structure is another cornerstone of professionalization as

it links to teacher motivation, progress, work stability and development. Many systems have begun to move beyond models of teacher career progression based solely on seniority towards career ladders where teachers take on new roles after meeting required standards.

Fully developing a new social contract for education may then specifically involve strategies that target collaboration, social dialogue and innovation. Active participation in communities of practice can contribute to enhancing the appeal of the profession, as they provide a place for teachers to develop, share ideas, and innovate. Effective social dialogue can also raise the status of teaching by empowering teachers and giving them a voice. In Tamil Nadu in India, the Activity Based Learning programme engaged teachers through the design and implementation stages of the project, leading to a sense of ownership and buy-in and the spread of programme to other Indian states. Teachers can further contribute to shaping decisions and practices in the education world through innovation and research.

Appropriate data are essential to calculate the numerous costs associated with teacher supply and quality. Limited data on teacher attrition make it difficult to identify long-term trends, particularly with regards to pre-primary and secondary teachers. Also, there are little data on the hidden costs of teacher recruitment, retention, and attrition, all of which would be important to better advise policy-makers and stakeholders on ways of achieving cost-effective supply. The need for qualitative data should be considered throughout the entire 'supply pipeline', starting with the recruitment of trainees and going through schemes which support retired teachers. Acquiring updated and comprehensive quantitative data on pay scales and factors influencing career growth is crucial for creating an appealing salary structure for teachers.

Financing the teaching profession

In the Education 2030 Framework for Action, the established financing targets for governments were set at 4 to 6 per cent of GDP and 15 to 20 per cent of public expenditure allocated to education. Global averages in expenditure were 4.2 per cent of GDP in 2021, but significant gaps in educational funding remain between country income groups, ranging from 5.0 in high-income countries in 2021 to 3.1 per cent in low-

income countries in 2022. The average proportion of public expenditure allocated to education was within half a percentage point of 14 per cent from 2005-2019 but dropped below 13 per cent in 2020-2021. Both low-income countries (4.5 percentage points more) and middle-income countries (3.7 percentage points) allocated more to education than high-income countries as a percentage of government expenditure in 2021.

Worldwide spending from the three main sources of education financing – government, donor, and household funds – saw a slight increase from US\$5.3 trillion in 2019 and 2020 to US\$5.4 trillion in 2021. In 2021, government allocations constituted 78 per cent of the total global spending on education, remaining the primary source of education financing across all country income groups. Donor funds also remain a crucial component of education budgets in low-income countries, comprising 13 per cent of their total education expenditure in 2021. However, despite experiencing a 15 per cent increase from 2019 and 2020, official development assistance (ODA) allocated to education decreased by 7 per cent in 2021. The escalating debt crisis in low-income countries also poses a threat to public education expenditure. According to the International Monetary Fund, the proportion of countries facing either debt distress or a high risk of it surged from 21 per cent in 2013 to 58 per cent in 2022.

While education expenditures can encompass a wide variety of budget items, teachers tend to make up most of the spending between salaries and other related programming or initiatives. If systems face high rates of attrition and are constantly forced to recruit and train new teachers, this expense can quickly add up. In the UK, estimates held that £208 million per annum were spent training teachers that quit within the first 2 years after qualifying in 2016. The cost of attrition can become especially large at the systemic level, as low- and lower-middle income countries use approximately 75 per cent of their education budget on teachers' costs. Even so, researchers suggest the combined costs of turnover and attrition are rarely considered and research in this area is very limited. With the high costs associated with

teacher attrition and subsequent repeated cycles of training, money spent on teachers can be seen more as an investment than an outright expense. While an obvious starting point, establishing the 'right' level of teacher salaries is complex, and little guidance exists for how pay levels should be set. To entice qualified teachers, it is crucial to offer them competitive starting salaries and pathways for career advancement. The financing of long-term capital costs is also relevant for their impact on both teacher recruitment and retention, as poor working conditions can be a major cause of teacher attrition. Another straightforward cost-reduction strategy for many systems is to better retain early career teachers by supplying quality induction and mentoring programmes.

While determining how much to pay current teachers, investing in infrastructure, and professionalization initiatives are key financial decisions for any education system, many countries must also factor in projected costs of new teaching positions. New projections estimate the cost of financing all the new teachers needed to reach SDG 4 universal education targets reaches 120 billion US\$ annually. This amount is not spread equally, either, as Africa and Asia shoulder the brunt. Sub-Saharan Africa alone is estimated to need nearly US\$39 billion annually, or an additional budget of approximately 79 per cent. Cost projections considering the number of new teachers needed to meet national benchmarks do considerably reduce the projected costs at both the primary and secondary levels. For the primary level, costs are nearly 11.5 per cent lower than the projection for meeting universal primary by 2030 while at the secondary level costs are nearly 20 per cent lower than projections for universal secondary.

The role of international cooperation

While some countries may be able to largely tackle teacher shortages through their own initiatives and funding, many others require international cooperation and support to guide strategies and actions or provide human, technical or financial resources. Collaboration at a global level is key when addressing structural and global challenges such as teacher shortages. The 2022 United Nations TES marked a milestone in global cooperation in the field of education and brought critical issues back to the forefront of national and international political agendas. Other examples of international collaboration come in the form of South-South or triangular

cooperation where Global South countries can pool and share resources, develop self-reliance through capacity-building and idea exchange, and expand participation and cooperation in international economic activity.

Government investment in a sustained, well-qualified, and adequately supported teacher workforce for the long-term enhances the quality and resilience of educational systems. However, in many low-income countries, the limited size of the education budget leaves minimal room for investments in ITE and CPD, and improvements in working conditions and infrastructure. International

aid partners can offer coordinated approaches for supporting teachers by external funders in collaboration with governments through financing, support, training, or advocacy. To ensure the supply of qualified teachers

supported to reach their maximum potential, donors are encouraged to engage with and strengthen the capacity of social partners – including teachers – as partners in policy development.

Recommendations

- 1. Develop holistic teacher policies aligned to national priorities and the policy landscape that include all dimensions affecting teachers in an integrated manner, using a collaborative framework and social dialogue.**
- 2. Collect more and better data to systematically report on the indicators agreed in the Education 2030 Framework for Action.**
- 3. Transform teacher education and professional development from course-based, individual endeavours to lifelong, collaborative, and teacher-led processes.**
- 4. Improve the working conditions of teachers, beginning with salaries and incentives to ensure teachers receive competitive compensation and benefits and ensure gender equality in pay and treatment.**
- 5. Ensure adequate public, domestic funding that is consistent with the existing benchmarks of 6 per cent of GDP and 20 per cent of total government expenditure.**
- 6. Enhance international cooperation to engage different constituencies in collaborative efforts to address teacher shortages and amplify the outreach of teacher policies.**



Chapter 1

Introduction

The global education context: Where teachers stand

Six years away from the deadline of the 2030 Agenda for Sustainable Development, and the targets of SDG 4, it is clear that, despite considerable progress made in securing access to education, huge and varied global challenges persist. These include environmental and climate crises, humanitarian emergencies, socio-economic instabilities, and political conflicts. These overlapping crises have further disrupted and hindered the achievement of inclusive, equitable and quality education for all. This complex landscape underscores the urgent need to reassess and reinforce our strategies to ensure that educational advancements are not just widespread but also resilient to these multifaceted global challenges (International Commission on the Futures of Education 2021). Given these circumstances, global education policy-makers and stakeholders are increasingly focused on addressing the interlinked challenges of equity and relevance. These dual crises demand careful consideration as we navigate the path towards fulfilling the commitment outlined in SDG 4 (United Nations 2023a).

The crisis of equity in education is multi-faceted. Firstly, it includes the persistent issue of exclusion from learning opportunities, as it is estimated that 244 million children from 6 to 17 years old were out of school in 2021, only 9 million less than in 2015 (Global Education Monitoring Report Team and UNESCO Institute for Statistics 2022). Moreover, this figure was estimated to increase in 2022 to 250 million, mainly due to the exclusion of girls and the ongoing education crisis in Afghanistan (Global Education Monitoring Report Team 2023b). Additionally, many of those who do have access to education fail to achieve learning outcomes appropriate to their level. Among the 31 low- and lower-middle-income countries with available data since 2019, 18 of these countries have fewer than 10 per cent of children reaching minimum proficiency levels in either reading or mathematics (Global Education Monitoring Report Team 2023a). Global comparable evidence post-COVID-19 is not currently available, but some studies suggest that the pandemic had a significant impact on education systems. Particularly affected were lower-income countries where prolonged school closures and limited, less effective distance learning solutions were more prevalent compared to wealthier countries (Global Education Monitoring Report Team 2023a). Secondly, the equity crisis is exacerbated by under and unequal investment in education between affluent and poorer nations, as well as within countries themselves. This issue is particularly acute in heavily indebted poor countries, where a significant portion of public revenue is allocated to servicing external public debt (UNDP 2023a; United Nations 2023a). Lastly, there is inadequate support

at scale from the international community. Thus, despite global calls for increased education funding, the share of international aid directed towards education has stagnated in recent years (UNESCO et al. 2023b).

The crisis of relevance in education encompasses several key issues. First, there is the inadequacy of current educational systems in preparing students for a rapidly changing workforce, particularly in the face of advancements in automation and AI (United Nations 2023a). There is a need to enhance institutional capacity to address the demands of an increasingly digital world and advancements in AI, ensuring that both learners and teachers are well-equipped to handle challenges, potential risks, and seize available opportunities. As a recent UNESCO survey of over 450 schools and universities shows, fewer than 10 per cent have developed institutional policies and/or formal guidance concerning the use of generative AI applications (UNESCO 2023c). Moreover, education systems are called upon to develop a more comprehensive understanding of climate change, preparing students to adapt to and mitigate its effects while addressing climate justice issues. According to a UNESCO study which analysed national curriculum frameworks from 100 countries, just over half of them included at least one explicit mention of climate change but the depth of the inclusion was usually minimal (UNESCO 2021b). Finally, in a world marked by growing polarization and societal divisions, along with a decline in confidence in governments and other institutions, there is a pressing need for education systems to foster a more humane, just, and socially cohesive society that values diversity, equity and sustainable development pathways (United Nations 2023a).

Transforming teaching-learning practices and the teaching profession to address these interconnected and multidimensional dual crises has become a central focus in key global policy debates. This shift is crucial as global and national commitments are assessed in the second half of the timeline set for achieving the SDG 4.

Globally, education faces a dual crisis of equity, with persistent exclusion and uneven investment, and relevance, as educational systems struggle to adapt to workforce changes, technological advancements like AI, and incorporate critical topics such as climate change and social cohesion into curricula.

Why a Global Report on Teachers?

Research has repeatedly found that teachers are the most important school-related factor affecting student learning (Rivkin et al. 2005; Chetty et al. 2014). To achieve quality education for all, every child must therefore have access to a qualified teacher.

However, among the growing body of research on teachers and teacher-related issues, there is still no report dedicated to regularly monitoring global progress towards SDG 4 and, in particular, Target 4.c with its call to ‘substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States’ by 2030.

Set against this backdrop, the Report aims to support the international community in monitoring and making progress towards its commitment to ensure that ‘teachers and educators are empowered, adequately recruited, well-trained, professionally qualified, motivated, and supported within well-resourced, efficient, and effectively governed systems’ (UNESCO 2016a).

The Report aims to support the international community in monitoring and making progress towards its commitment to SDG 4 and target 4.c with its call to ‘substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States.’

Established as a joint initiative of UNESCO and the International Task Force on Teachers for Education 2030 (also known as Teacher Task Force or TTF), the Report builds upon the wealth of expertise, knowledge, and information available within the UNESCO and TTF networks.

The Report aims to complement the Global Education Monitoring (GEM) Report’s efforts towards an in-depth analysis of Target 4.c. Furthermore, this Report is timely. At the halfway mark for 2030, it will allow for in-depth

monitoring of progress towards SDG4 Target 4.c and advocate to accelerate the pace for its achievement while transforming the teaching profession.

Starting with the present edition, every two years the Report will present authoritative data, knowledge and analyses to advance evidence-informed policy-making regarding teachers and teaching issues, and how they affect education systems’ capacities to ensure that all learners have access to quality learning opportunities. As such it will contribute to fulfilling UNESCO’s mandate to lead and coordinate the 2030 Education Agenda by monitoring progress towards education targets and envisioning policy solutions to do so. The Report will be thematic giving it greater impact as an action-oriented advocacy tool highlighting key issues on teachers and advocating for teacher support.

The Report is primarily intended for decision-makers and practitioners, including teachers and educators themselves and their representative bodies, as well as researchers working at national level and in regional and international cooperation bodies and institutions dealing with issues relating to education, teachers and teaching. It aims to influence policy and practice by identifying and promoting promising initiatives, documenting emerging challenges and advocating for international dialogue, exchange of knowledge, collaboration and aid for teachers and quality teaching.

The Report is grounded in the existing international normative instruments for teachers and the teaching profession. This includes the 1960 Convention against Discrimination in Education, the 1966 ILO/UNESCO Recommendation concerning the Status of Teachers, the 1997 UNESCO Recommendation concerning the Status of Higher Education Teaching Personnel and the now called 2023 Recommendation on Education for Peace and Human Rights, International Understanding, Cooperation, Fundamental Freedoms, Global Citizenship and Sustainable Development¹ (UNESCO 1960; UNESCO and International Labour Organization 1966; UNESCO 1997; UNESCO 2024). The analysis and recommendations are made using a human rights-based approach to education and teaching and guided by the four key issues emphasized by the International Commission on the Futures of Education (International Commission on the Futures of Education 2021): recasting teaching as a collaborative profession; recognizing professional

¹ The 2023 Recommendation is the revised version of the 1974 Recommendation concerning Education for International Understanding, Co-operation and Peace and Education relating to Human Rights and Fundamental Freedom adopted by UNESCO’s 42nd session of the General Conference.

development as a lifelong learning journey; mobilizing public solidarity to improve teachers' working conditions and their status; and promoting teachers' engagement in decision-making and public debate on education, providing them with the necessary support and autonomy.

The Report adopts a human-rights-based approach grounded in international normative instruments for teachers and emphasizing the transformative role of teachers. It highlights ways to reimagine the teaching profession, including collaboration, lifelong learning, public support for improved working conditions, and promoting teachers' engagement in decision-making and public debate on education.

In line with this, the United Nations' TES recognized that the education workforce must be professionalized, trained, motivated, and supported, so teachers can transform themselves and become agents of change (United Nations 2022a). As a follow up to the TES and with a view to produce a set of evidence-informed recommendations on how to deliver on the commitment that every learner has a professionally trained, qualified, and well-supported teacher who can flourish in a transformed education system, the UN Secretary-General appointed, in early 2023, a High-Level Panel on the Teaching Profession (HLP) comprising former head of states, serving ministers of education and labour, teachers, students, unions representatives, civil society, employers, as well as international and regional organizations including UNESCO, and academia. The group reviewed existing research and recommendations and conducted consultations with experts. The final recommendations of the HLP have greatly inspired some of the strategies discussed in the present Report (see Box 1.1).

Box 1.1. The recommendations of the High-Level Panel on the Teaching Profession

Supported by a joint ILO-UNESCO Secretariat, the HLP worked through the second half of 2023 and drew on the expertise of its 16 members. It was co-chaired by Her Excellency Ms Kersti Kaljulaid, former President of the Republic of Estonia, and Her Excellency Ms Paula Mae Weekes, former President of the Republic of Trinidad and Tobago. The Directors-General of UNESCO and the ILO, as well as the UNSG Special Adviser on Education were ex-officio members.

Six imperatives for the future of the teaching profession set out in the mandate of the HLP were discussed: Humanity, Sustainability, Dignity, Teacher Quality, Innovation and leadership, and Equity.

A final text was adopted by all panel members on 15 September 2023 containing fifty-nine recommendations covering eleven main topics. Along with it, an urgent call was addressed to governments, teacher organizations, employers, schools, universities, civil society, students, international finance institutions and others, to adopt the recommendations in order to transform the teaching workforce into a high status, highly qualified, well-supported, properly remunerated, and highly respected profession capable of guiding and promoting inclusive, effective, and relevant learning.

The recommendations underscore the pressing need for improved policies regarding the teaching profession, including investments in teachers, ensuring decent working conditions, enhancing training programmes, and promoting equity, diversity, inclusion, and sustainability in teaching. Additionally, the recommendations advocate for enhanced global collaboration on two crucial fronts: the establishment of a Global Fund for Teachers' Salaries to ensure timely and sufficient support for teachers in crises, and the revision of the United Nations international instruments for the teaching profession. UNESCO and the ILO would be key agencies in such an endeavour, given their long-standing collaboration on the teaching profession.

On November 8, 2023, the HLP recommendations were presented at the Annual Leaders' Meeting of the SDG4 High-Level Steering Committee. The Committee welcomed the recommendations and encouraged Member States and partners to back and track their implementation via current coordination and monitoring systems, including the CEART, the UNESCO Global Report on Teachers, and the International Task Force on Teachers for Education 2030.

Source: International Labour Organization 2023; UNESCO 2023; United Nations 2023.

Why is teacher shortage an urgent issue?

The magnitude of teacher shortages worldwide inspired the theme of this new Report. In 2022 UNESCO sounded the alarm on global shortages and the risk they pose to making progress towards SDG-4. Projections commissioned for the present report confirm those fears with 44 million additional primary and secondary teachers needed globally to meet the targets of SDG 4 by 2030. To ensure 'inclusive and equitable quality education and promote lifelong learning opportunities for all' qualified and motivated teachers are necessary in every classroom. And yet, countries worldwide are struggling to meet the SDG 4 target, often regardless of income levels. Some face more acute shortages and difficulties than others. Sub-Saharan Africa, with some of the most overcrowded classrooms in the world, is also home to the most overburdened teachers and understaffed systems, with 90 per cent of secondary schools facing serious teaching shortages (UNESCO 2022e). However, worrying trends are also observed in higher income countries where governments do not manage to attract sufficient numbers of new teachers while increasing numbers of teachers decide to leave the profession. In Europe alone, 35 education systems reported suffering teacher shortage problems in 2021 (European Commission 2021b). In 2022, 9,100 primary teachers were needed in the Netherlands, 4,000 in France, 2,558 in Japan and many more in the USA (UNESCO 2022d). Similarly, a study on Denmark, Finland, Iceland, Norway and Sweden reveals that these countries commonly face an important shortage of teachers (NLS 2023). In England, teaching vacancies tripled between 2011 and 2016, and more teachers are leaving the profession for reasons other than retirement (See and Gorard 2020). Data from the Teaching and Learning International Survey (TALIS) 2018 survey show that an average of 21 per cent of lower secondary principals from participating OECD countries reported a shortage of qualified teachers. In some contexts, more than half of surveyed principals reported shortages. These countries include Viet Nam (86 per cent), Saudi Arabia (62 per cent) and Colombia (53 per cent) (OECD 2019c).

The impacts of shortages are manifold. Teacher shortages are costly, impact workloads, and may deter future generations from joining the profession, which can create a cycle of low-quality education, disadvantaging students throughout life and reproducing and perpetuating educational inequalities.

There may be as many as five or six years between governments committing to increasing teacher recruitment and the resulting impact of additional

teachers. Urgent action and fulfillment of the commitments made at the World Education Forum in 2015 are required to get back on course to attract the 44 million remaining teachers required to provide the fundamental human right of universal education by 2030 (UNESCO and Teacher Task Force 2023a). Further to this, the profession must be sufficiently fulfilling to retain teaching staff and to ensure their equitable deployment so that all learners receive a quality education. Quality teaching and learning for all is within sight for teachers and learners. Reaching this future will require concerted efforts from individual governments and the international community, significant investment, and fulfillment of commitments already made. Now is the time to step up those efforts.

The Report makes the case for reclaiming the role of teachers as collaborative, autonomous and competent professionals who can draw on technology to enrich teaching and learning and to promote and assist in effective communication with students and parents as necessary. A recognition of the skills, competencies and transformative potential of teachers needs to be at the heart of valorizing the profession. Teaching as a profession currently faces multiple threats, foremost of which is the threat to professional status. Countries dealing with vast shortages and a decline in teaching's attractiveness have needed to increase supply rapidly. In some cases, this has meant cutting teacher training periods or employing uncertified teachers to meet urgent needs in the classroom. The occupation is in danger of becoming considered as one that anyone can do without training. Moreover, when teachers are under-qualified, it is more likely their work will be prescribed and monitored as it will be assumed they lack the professional capacity to make good pedagogical judgments based on training and experience. Prescription and heavy monitoring that are judgmental rather than supportive are real threats to teachers' autonomy, one of the conditions of their professionalism.

For many people, AI forms another threat to the role of the teacher. As the Commission on the Futures of Education warns, 'Technology has a long history of subverting our rights and limiting or even diminishing our capabilities' (International Commission on the Futures of Education 2021). AI especially may reinforce biases and further the divide between the privileged and underprivileged (Holmes 2023). When teaching is reduced to a protocol and a teacher's efforts can be diminished to quantifiable outputs, it becomes possible to imagine that anyone or

anything can do this job. There is a danger in believing that technologies such as AI can replace or substitute teachers. An alternative vision of the future is one where students log on to a device each day and learn solely through interactions with their virtual assistant.

AI mainly represents a threat if it is seen as a substitute rather than as an aid to the teacher. The integration of AI in education may present potential opportunities and benefits for teachers, such as providing personalized learning experiences and real-time feedback for each student or reducing the time teachers spend on administrative tasks. Because technology offers so many opportunities to improve and support the teaching process, it is crucial that teachers are empowered as professionals to use it as effectively as any other teaching aid. The future of education probably lies in a balanced approach that harnesses the strengths of both humans and AI technologies, ensuring that education remains a deeply human and relational endeavour between teachers and their students.

Future generations have a right to live in a sustainable, equitable, and peaceful world and teachers, as social actors, are central to the realization of that future. Teachers' work is relational and therefore social; its essence is the interaction between teacher and student, and the wider community of colleagues, parents, community elders, and local inhabitants. School closures and the mass experiment in remote teaching during the COVID-19 pandemic has shown how much of our well-

being relies on human interactions (Gloster et al. 2020). Student and teacher mental health suffered across the world; a finding that has been partly attributed to the stress of severance from in-person social networks (Cao et al. 2020; Newlove-Delgado et al. 2021).

In addition to the expected roles associated with providing education, teachers are increasingly charged with numerous others, such as fostering a sense of belonging and psychosocial well-being including among displaced and traumatized pupils (UNHCR 2017; Falk et al. 2019). Yet an overlooked fact is that most teachers in crisis contexts are also survivors of violence, experience displacement, and contend with a similar array of well-being challenges as the pupils they teach (Adelman 2019; Mendenhall et al. 2019).

This report calls for teacher training and accreditation systems that build professionalism, and for teachers to have a central role in the discussions about education policy that lead to decisions. In line with the vision of the future laid out in 'Reimagining Our Futures Together' (International Commission on the Futures of Education 2021), this Report advocates for effective support and development of teachers throughout their careers through collective leadership, and policies that are orchestrated to work as parts of a cohesive system. Reviving the professional role of the teacher will go some way to making the profession more intellectually and socially appealing, and a career to be proud of.

What is the focus of the first edition of the Global Report on Teachers?

The issue of teacher shortages affects nearly every country and level of education in some form. While taking a global scope, this report focuses on primary and secondary education. This decision does not reflect a lack of challenges at the pre-primary or tertiary level, but instead is based on both the availability of internationally comparable data and a continuation of the global projections made by UIS in 2016.

The Report explores teacher shortages from a variety of angles. The first two chapters provide comprehensive framing of the issue and help establish global context. Chapter II examines in-depth analysis of current data and projections to present the current state of global teacher shortages and how these compare to international and national targets. From there, the report discusses

teacher shortages as a multidimensional challenge. Chapter III thus not only speaks about the many issues that stem from shortages, but it also discusses numerous factors that can lower the prestige of the profession and cause systems issues with attracting and retaining quality teachers.

The issue of teacher shortages affects nearly every country and level of education in some form.

The middle two chapters explore how systems can reverse the current trends. Chapter IV presents potential policy solutions that systems can use to address some of the most direct issues leading to shortages: teacher salaries

and incentives, working conditions, teacher management and equitable deployment. Chapter V then examines how systems can continue to raise the prestige and attractiveness of the profession by moving towards a new social contract for teaching, through priorities such as collaboration, lifelong learning and social dialogue.

The final two chapters explore key aspects that will allow countries to realize and implement the strategies and policies presented in Chapters IV and V. Chapter VI

examines the finances of teacher policies, contextualizing how policy reforms aimed at addressing teacher shortages fit within education budgets and spending. Chapter VII describes international cooperation and solidarity measures and how they may strengthen countries' ability to address shortages. The report concludes by making a series of recommendations for moving forward.

A woman wearing a black hijab and a black long-sleeved shirt is standing in a classroom. She is holding a white marker in her right hand and pointing it towards a whiteboard. In her left hand, she holds a red folder containing a worksheet with Arabic text and illustrations. The whiteboard behind her has colorful decorations, including a red and white stuffed character, a white rectangular object, and various colorful shapes. The classroom walls are decorated with colorful paper. In the foreground, a young child in a blue shirt is sitting at a pink desk, looking towards the teacher.

Chapter 2

The state of the art of global teacher shortages

The SDGs represent an ambitious expansion compared to the Education for All agenda and thus an expanded need of teachers. SDG 4 includes seven outcome targets and three means of implementation. One of these, Target 4.c, refers to teachers, recognizing the pivotal role they play in achieving equity and quality in education. It requires urgent attention since equity gaps are exacerbated by shortages, particularly in disadvantaged zones, and teachers constitute a fundamental factor in guaranteeing quality education.

There are diverse ways to define teacher shortages depending on a multiple of policy objectives.

Teacher shortages are an impediment to the delivery of quality education for all learners but defining teacher shortages and unpacking their constituent parts is a

challenge. At the most basic level, teacher shortages can relate to both the quantitative and qualitative dimensions. For example, the lack of teachers results in large class sizes and overcrowded classrooms helping drive numbers of out-of-school children and early drop out. Shortages may also be qualitative in nature resulting in the recruitment of untrained teachers and those lacking various specializations where they are needed (Wallet 2015).

Measuring teacher shortages is neither a straightforward nor a uniform process across contexts. There is a lack of an integrated approach on how teacher shortages are measured, how they have been addressed in the past and to what effect (Behrstock-Sherratt 2016). Arriving at shortage figures requires a number of methodological considerations beginning with how a shortage is defined. In fact, various indicators measuring teacher shortages vary reflecting contextual needs, conceptual and methodological frameworks and data availability (see Table 2.1).

Table 2.1. Teacher shortage indicators, definitions and considerations

Indicators to measure teacher shortage	Definition	Considerations
Number of vacancies	Number of positions to which a single certified employee has not been assigned.	Vacancies provide straightforward indicators but are subject to variations due to budget cuts or surpluses, regional variations of expected PTRs or hiring strains.
Applicant to vacancy ratio	Average number of applicants to vacant teaching positions	Provides information about the pool of candidates from which schools can draw. However, it doesn't provide information about the qualifications of applicants and data for this indicator is not often tracked.
Pupil-teacher ratios	Average number of pupils per teacher at a certain level in a given year.	Unless there is an established target PTR, this indicator may not point to the presence of a teacher shortage; moreover, ratios are also difficult to disaggregate and therefore may mask shortages or surpluses in regions or in subjects.
Number of teacher education programme enrollees (pre-service teachers)	Number of individuals enrolled in teacher pre-service training programmes	Can provide information about future shortages. The number of programme dropouts and completers who do not enter the teaching professions must also be considered.
Number of teachers with minimum required qualifications	Number of teachers with minimum qualifications to teach at a certain level according to national standards	Provides information on the quality of the teacher workforce and the propensity to deliver quality education.
Teacher attrition rate	Percentage of teachers at a given level of education leaving the profession in a given school year (UNESCO Institute for Statistics 2024)	Teacher attrition indicates the flow of teachers leaving the profession. It includes teachers leaving the profession due to resignation, illness, transfer to administrative duties, dismissal, retirement or death (UNESCO Institute for Statistics 2024).
Teacher absence rate	Average percentage of teachers absent within a defined period of time	Indicates low motivation of teachers.

Source: Behrstock-Sherratt, 2016. Table 1 adapted and published with permission.

Given the SDG targets for full primary and secondary enrolment by 2030, one of the key definitions of teacher shortages is related to the gap to achieve this goal. This includes the total number of those to be recruited between now and the end of the SDG era to ensure that all children can benefit from education and complete a full cycle of primary and secondary education (UNESCO Institute for Statistics 2009; UNESCO Institute for Statistics 2016). On the other hand, given the lack of progress in a number of countries, this report also considers recent

national benchmark enrolment targets set by countries to complement this (UNESCO Institute for Statistics and Global Education Monitoring Report Team 2022).

Moreover, teacher shortages are also defined and elaborated upon through the internationally comparable indicators identified to monitor global progress towards Target 4.c. and shed light on both the quantity of teachers and the quality of teaching (see Table 2.2).

Table 2.2. SDG Target 4.c on teachers

Target 4.c	By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States
4.c.1	Proportion of teachers with the minimum required qualifications, by education level
4.c.2	Pupil-trained teacher ratio (PTTR) by education level
4.c.3	Percentage of teachers qualified according to national standards by education level and type of institution
4.c.4	Pupil-qualified teacher ratio by education level
4.c.5	Average teacher salary relative to other professions requiring a comparable level of qualification
4.c.6	Teacher attrition rate by education level
4.c.7	Percentage of teachers who received in-service training in the last 12 months by type of training

Source: UNESCO Institute for Statistics 2023a.

The global, regional and country needs of teachers

Projecting future teacher needs to meet universal enrolment is impacted by two key features: the school-age population and teacher attrition (see Box 2.1). School-age populations can both grow rapidly and contract, and this is key to projecting future demand. It is of particular concern for countries with high numbers of out-of-school children and high fertility rates. In addition to this, teacher attrition greatly impacts future demand requiring countries to consider the replacement rate for teachers based on teacher age, anticipated retirements and those leaving the profession for other reasons. Furthermore, the reliability of projection models rests on the data used, therefore improving data availability and its quality are part of the enormous task of addressing teacher shortages.

Based on the model developed by UIS (UNESCO Institute for Statistics 2009), 44 million teachers will be needed by 2030, which is down from 69 million projected in 2016

based on 2014 data (UNESCO Institute for Statistics 2016). While the existing teacher gap remains roughly about half the size of the current teacher workforce, much progress has been made since then, for example the number of primary and secondary teachers increased in sub-Saharan African from 4.2 and 2.8 to 4.9 and 3.5 million in 2022, while the number of secondary teachers also increased in Southern Asia from 6.3 to 8.6 million.

Globally, teacher recruitment needs are not on track, as the world needs an additional 44 million teachers by 2030 to meet universal primary and secondary enrolment – one out of three of these teachers is needed in sub-Saharan Africa alone.

Box 2.1. Projecting current and future teacher needs for full enrolment by 2030

The projected number of new teachers needed to be added to the current teacher workforce for each country is based on methodology developed by the UIS, 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 per cent, and consequently, gross enrolment ratios should be between 100 and 110 per cent
- Maintain or improve PTRs to ensure minimum quality standards, meaning that additional recruits will be needed to cap primary and secondary PTRs at 40:1 and 25:1, respectively
- Experience population growth as projected by the United Nations Population Division
- Maintain their current attrition rate (calculation of teacher attrition based on an average of the past decade, with missing data imputed at 5 per cent)
- 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 PTR standards. However, given the lack of comprehensive teacher attrition data and the significant impact of attrition on projections over time, a comprehensive overview of current and future needs is difficult to obtain for all countries. Regional and global figures are meant to be considered as estimates. Moreover, since attrition rates can fluctuate substantially depending on local economic and social context, projections may vary.

Source: UNESCO Institute for Statistics 2009; 2016.

With the inclusion of universal secondary education included in the SDG targets, most newly recruited teachers across the world are needed at that level by 2030. Projections show that 31 million secondary teachers are needed globally compared to 13 million primary teachers, meaning that about 7 out of 10 recruits are required in secondary education (UNESCO and Teacher Task Force 2023b). Furthermore, the number of teachers needed for replacements of those leaving the workforce accounts for a substantial 58 per cent, while the remaining 42 per cent is attributed to new teaching positions (see Table 2.3).

At the regional level, the largest need is in sub-Saharan Africa where 15 million additional teachers are needed, a shortage mostly due to a rapidly expanding school-aged population, coupled with financial constraints. Just six years away from the SDG's 2030 deadline, ensuring adequate numbers of teachers in sub-Saharan Africa is not likely given the current number of teachers needed stands at 88 per cent of the previous target calculated in 2016.

With 4.3 million additional teachers needed in Northern Africa and Western Asia and 4.5 million in South-Eastern Asia by 2030, these two regions also face significant challenges in achieving current teacher recruitment

targets. The number of teachers needed by 2030 in both regions stands at about 70 per cent of the number of teachers needed in 2016.

Projections for Southern Asia (7.8 million) and Eastern Asia (3.3 million) are about half the share of the 2016 targets, suggesting that for these two regions, targets are more achievable by 2030. However, further efforts are needed to recruit teachers in both regions, mostly at the secondary level. This is particularly the case for Southern Asia, which despite recent increases in teacher numbers (particularly in India) and declining birth rates (Arora 2021; Bora et al. 2023; UN Department of Economic and Social Affairs 2022; Pearce 2021), remains the region with the second largest number of additional teachers needed. For example, numbers of primary teachers have been decreasing in Bangladesh and Pakistan since 2017, while increasing in secondary education since at least 2015.

Europe and Northern America, where fertility rates are low, show the third largest number of teachers needed: 4.8 million. Notably, most of the additional teachers required in this region, about 4.5 million, are due to staff attrition. Moreover, these shortages have become more acute very rapidly since the COVID-19 pandemic. In the majority of countries reporting within PISA, principals

reported the school's capacity to provide instruction is hindered to some extent or a lot by a lack of teaching staff. This was most extreme in Belgium, Estonia, France, Germany, Ireland, Latvia, the Netherlands and Portugal where more than 60 per cent of students had principals reporting this (OECD 2023c).

Latin America and the Caribbean also face challenges in achieving Target 4.c, as 3.2 million teachers are needed for universal education by 2030, most of them also due to staff attrition (2.8 million). The present teacher recruitment objective in this region, set at approximately

60 per cent of the targets established in 2016, suggests the need for renewed efforts to make the targets for 2030 more achievable.

Lastly, Oceania and Central Asia with 0.3 and 0.7 million, respectively, are the two regions with the relatively lowest need of teachers to meet universal primary and secondary education by 2030. In both regions, most of the additional teachers are required due to attrition. However, in Oceania it can also be attributed to growing school-age populations and high levels of out-of-school children, especially in secondary education.

Table 2.3. Total teacher recruitment needs by region for 2030, by level (in thousands)

Region	Primary education			
	Teachers in 2022 (in thousands)	Teacher recruitment needed for 2030 (in thousands)		
		Replacing staff attrition	New teaching posts	Total
Central Asia	302	42	54	96
Eastern Asia	7,417	163	17	179
Europe and Northern America	4,862	1,689	25	1,714
Latin America and the Caribbean	3,071	979	30	1,009
Northern Africa and Western Asia	2,849	868	365	1,233
Oceania	199	114	10	123
South-Eastern Asia	3,682	2,945	104	3,050
Southern Asia	6,428	664	397	1,061
Sub-Saharan Africa	4,931	2,447	1,944	4,391
Total	33,741	9,911	2,946	12,857

Region	Secondary education			
	Teachers in 2022 (in thousands)	Teacher recruitment needed for 2030 (in thousands)		
		Replacing staff attrition	New teaching posts	Total
Central Asia	904	362	289	651
Eastern Asia	8,082	2,089	1,011	3,101
Europe and Northern America	7,775	2,830	285	3,115
Latin America and the Caribbean	4,126	1,867	331	2,198
Northern Africa and Western Asia	3,348	1,638	1,386	3,024
Oceania	m	82	69	152
South-Eastern Asia	3,075	1,070	420	1,490
Southern Asia	8,554	2,399	4,317	6,716
Sub-Saharan Africa	3,528	3,191	7,467	10,658
Total	39,392	15,531	15,575	31,105

Region	Primary and secondary education combined			
	Teachers in 2022 (in thousands)	Teacher recruitment needed for 2030 (in thousands)		
		Replacing staff attrition	New teaching posts	Total
Central Asia	1,206	404	343	747
Eastern Asia	15,499	2,252	1,028	3,280
Europe and Northern America	12,637	4,519	310	4,829
Latin America and the Caribbean	7,197	2,846	361	3,207
Northern Africa and Western Asia	6,197	2,506	1,751	4,257
Oceania	m	196	79	275
South-Eastern Asia	6,757	4,015	524	4,540
Southern Asia	14,982	3,063	4,714	7,777
Sub-Saharan Africa	8,459	5,638	9,411	15,049
Total	73,133	25,442	18,521	43,961

Source: UNESCO and Teacher Task Force 2023; UNESCO Institute for Statistics 2024. Date of database consultation: 11 October 2023.

Note: m = missing data.

Note: Teacher numbers reflect 2022, except for South-Eastern Asia which reflect 2021, and Oceania, which reflect 2017; in secondary education in 2017, Oceania does not include Australia and New Zealand.

Fewer than half of all countries are on track to achieve the required teacher numbers for primary education by 2030. Based on the historical annual growth rate, it is anticipated that 78 out of 197 countries (about 4 out of 10) will achieve the required quantity of teachers to ensure universal primary education (UPE). Eastern Asia has the highest proportion of countries meeting this criterion (6 in 7), while sub-Saharan Africa has the lowest with only 9 out of 46 countries meeting expected to meet the target by 2030 (see Figure 2.1.a).

Globally, at secondary level, even fewer countries are expected to meet teacher recruitment targets: only 30 out of 187. In Europe and Northern America, merely 11 out of 44 countries will meet the target. Most significantly, only 2 out of 15 countries in Oceania, 2 out of 16 in Northern Africa and Western Asia, and just 4 out of 44 countries

in sub-Saharan Africa are expected to achieve the target by 2030 (see Figure 2.1.b). Nonetheless, these are distinct regions, each grappling with unique challenges. For instance, in sub-Saharan Africa, this projection primarily stems from resource constraints hindering expansion of the educational system, while in Europe and Northern America it is predominantly linked to higher attrition rates and the lack of competitiveness of the teaching profession.

Unless urgent action is taken, just 4 in 10 countries will have enough teachers to ensure universal primary education by 2030, decreasing to fewer than 1 in 5 countries for secondary education.

Figure 2.1.a Number of countries which are expected to fill the teacher gap for primary education by 2030, based on current trends

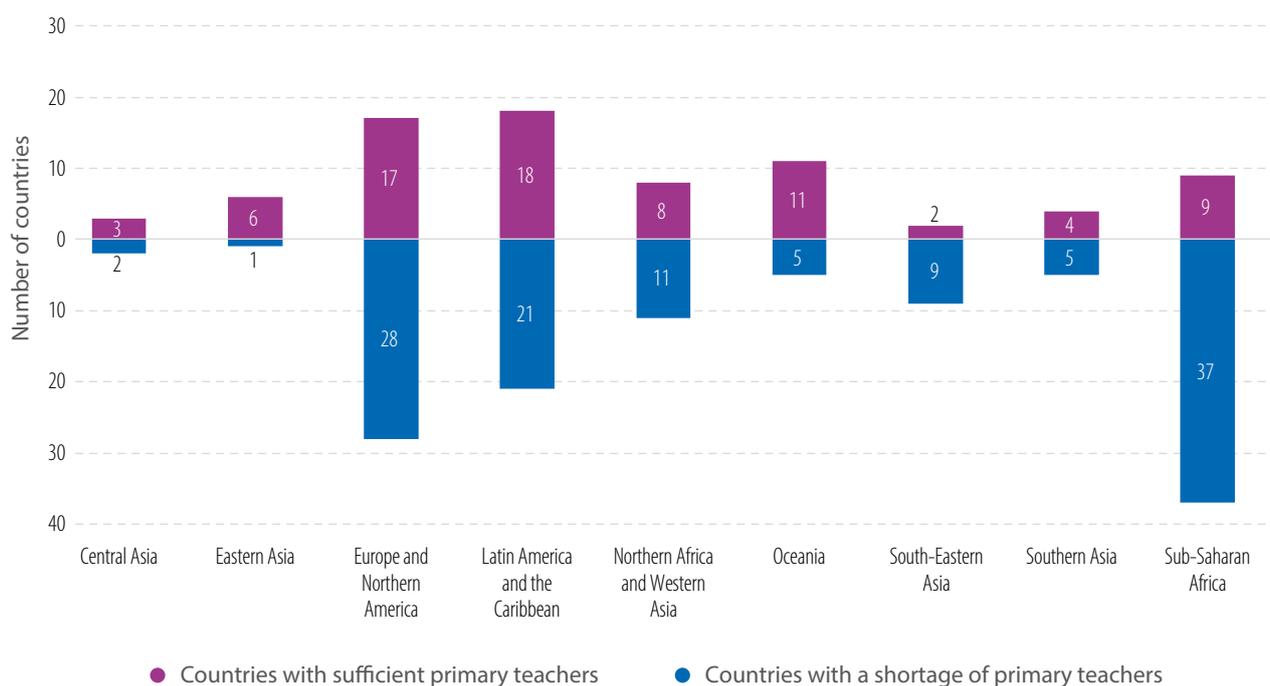
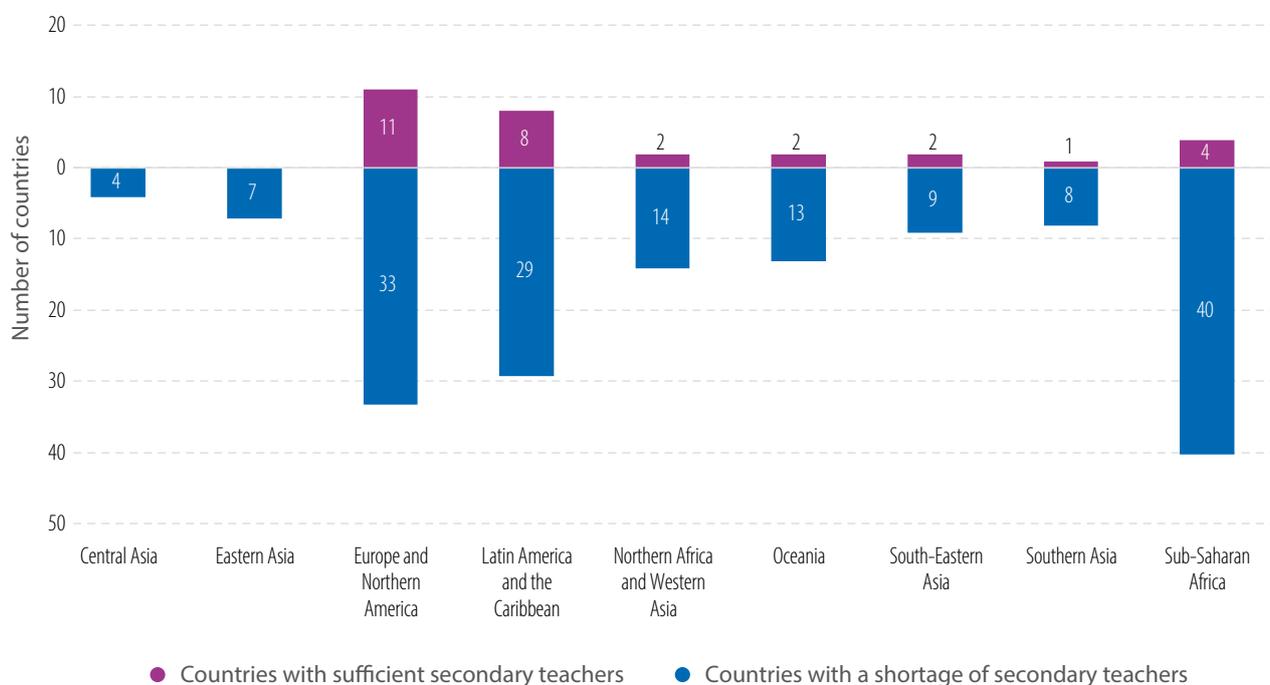


Figure 2.1.b Number of countries which are expected to fill the teacher gap for secondary education by 2030, based on current trends



Source: UNESCO and Teacher Task Force 2023; UNESCO Institute for Statistics 2024. Date of database consultation: 11 October 2023.

While teacher shortages are a widespread challenge, there are reasons for optimism in certain contexts. Countries from a diverse set of regions, including Anguilla,

China, Congo, Fiji, Ireland, Kenya, Micronesia, Nauru and Tokelau are projected to best meet the demand for primary teachers by 2030 if the historical growth rate

remains at the same level, therefore steadily augmenting the size of the teacher workforce. Of the 78 in 197 countries expected to meet the primary teacher targets by 2030, relatively fewer low- and lower-middle income economies are expected to do so. In primary education, the Democratic Republic of the Congo, Gambia, Malawi, Nigeria and Namibia also show annual historical teacher growth rates surpassing the projected annual growth rate required, which suggests that primary targets could also be achieved.

In Angola, Benin, Burundi, Chad, Guinea, Mali and Niger, primary teacher numbers need to increase by more than 10 per cent annually to meet teacher targets.

As for secondary education, countries projected to best meet the demand for teachers by 2030 are, once again, Kenya, with an annual rate of 29 per cent growth, as well as Central African Republic, Congo, Dominican Republic, Gambia, Montserrat, Myanmar, Philippines and United Arab Emirates (ibid). In addition to those mentioned above, India and Tokelau may also meet the 2030 targets for secondary education given recent historical observed growth rates in the number of teachers.

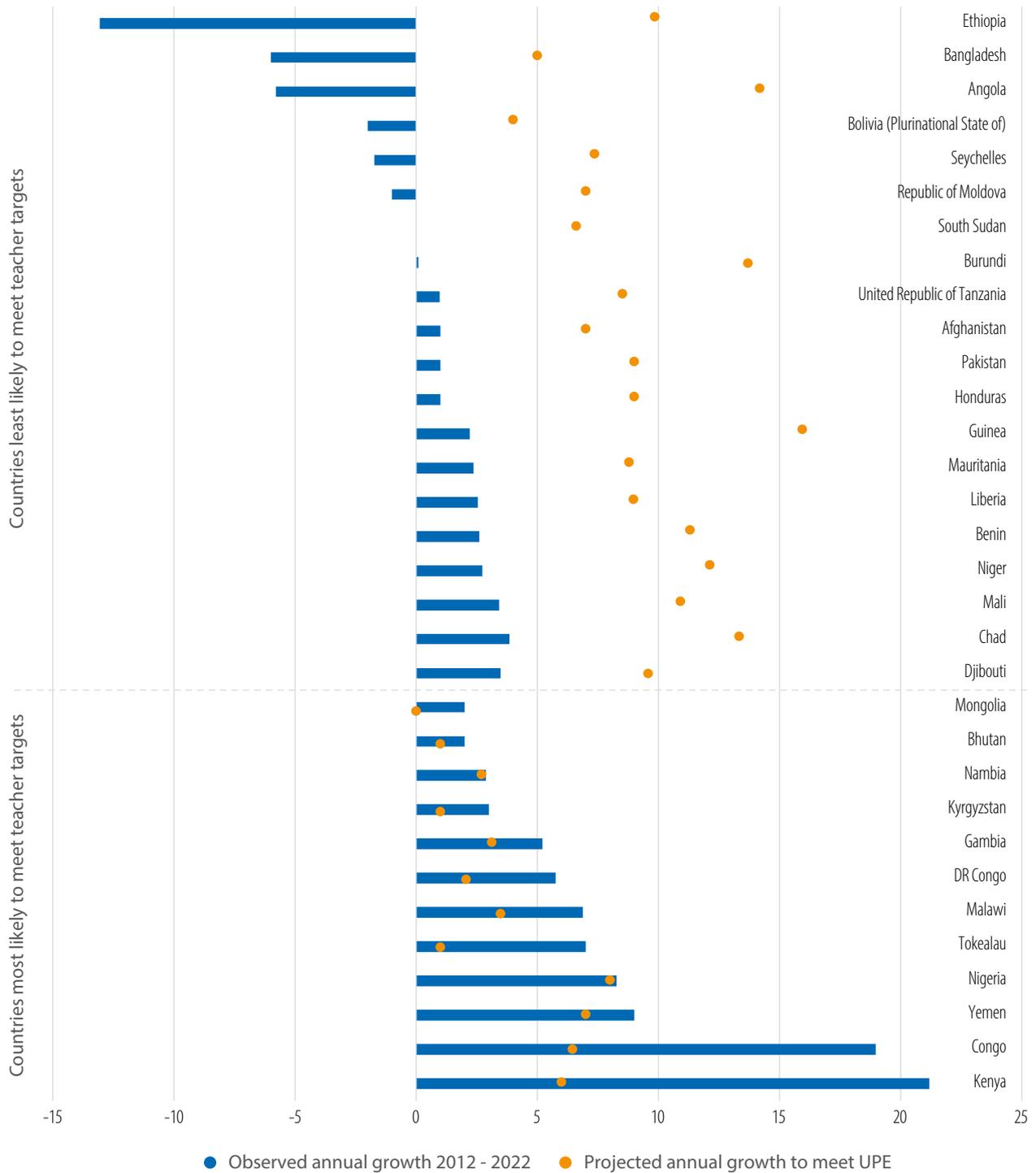
As teacher vacancies differ by region and country, so must approaches to attract and retain them be tailored to fit. In contexts with rapidly growing populations, where the demand for new teaching positions is high, a balance is needed between expanding available spots in training institutions to ensure new recruits are adequately

qualified and making the profession more attractive to ensure retention. While this is the situation in many low- and lower-middle income countries, in particular in sub-Saharan Africa, the average observed growth rates have historically been insufficient to meet demand. In Figure 2.2, for instance, countries with the greatest challenges to meet primary teacher targets include Benin, Burundi, Chad, Guinea, Mali and Niger where the observed growth rates have been under 5 per cent annually over the past decade, compared to the more than 10 per cent annual growth that is needed. Also challenging is the situation in Angola and Ethiopia, where teacher numbers have been declining over the past decade in comparison to about 10 per cent or more annual growth needed. In secondary education, the needs are even greater with a number of countries needing to increase teacher numbers by more than 20 per cent annually, including Burkina Faso, Chad, Ethiopia, Niger and South Sudan. This is also the case for Bhutan in Southern Asia. Malawi has the greatest challenge with a projected annual need of more than 30 per cent annually to meet.

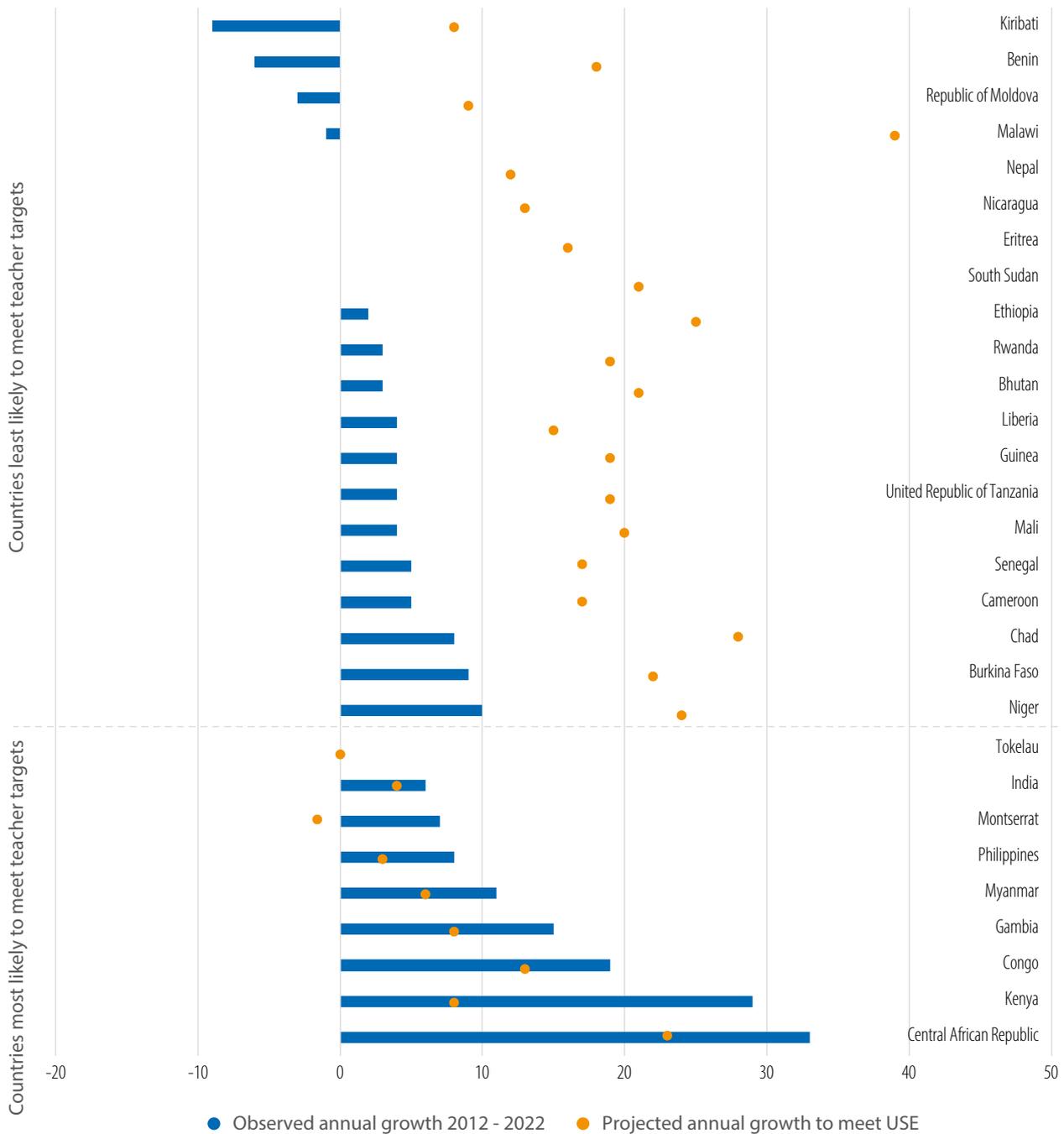
The need for teachers is even greater in some countries at secondary level: in Bhutan, Burkina Faso, Central African Republic, Chad, Ethiopia, Niger and South Sudan the number of teachers must be increased by more than 20 per cent annually and in Malawi by more than 30 per cent yearly to achieve universal secondary education by 2030.

Figure 2.2. Average annual observed and projected growth rates needed to achieve teacher targets for universal enrolment among low- and lower-middle income countries in 2030

Primary education



Secondary education



Source: UNESCO Institute for Statistics 2024. Date of database consultation: 11 October 2023.

Projecting teacher needs according to national benchmarks

Due to ongoing global challenges in achieving the SDG targets, including full enrolment in primary and secondary education, countries more recently took the step of defining their own targets, taking their specific context, starting point and pace of progress into account. This was identified as an important departure from the often unrealistic and unfair assumption that each country could

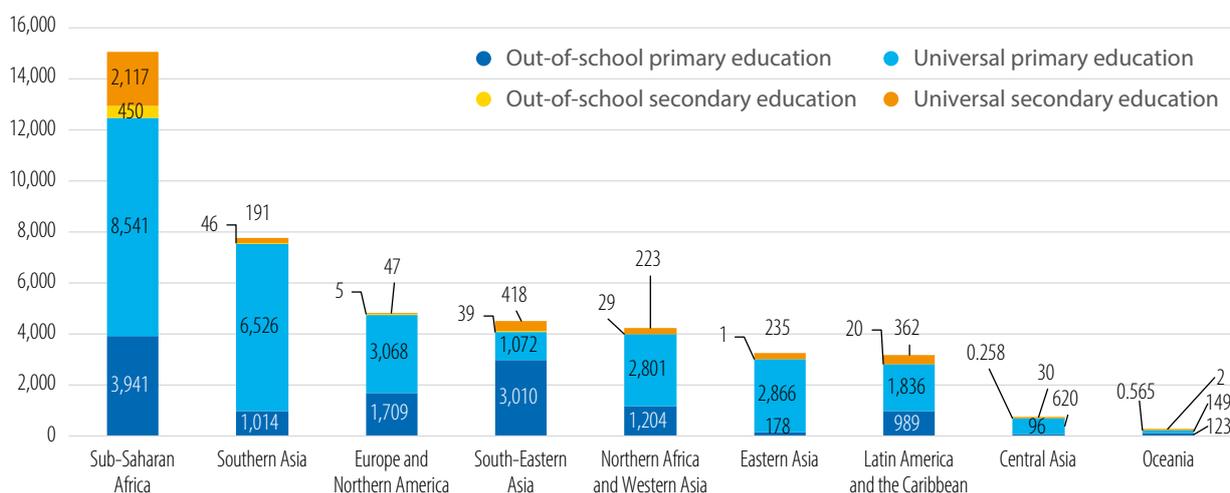
achieve the same target. Countries set these national benchmarks in 2021 along seven education indicators to be achieved in 2025 and 2030, including the out-of-school rate from primary to secondary education. In contrast to the model of full enrolment as part of the SDGs developed by the UIS, these benchmarks allow for alternative teacher projections based on the estimated 84 million

or roughly 5 per cent of primary and secondary aged children (combined) that would remain excluded from formal education in the year 2030 (UNESCO Institute for Statistics and Global Education Monitoring Report Team 2022). Anticipating remaining out-of-school children in 2030, these targets are perhaps more achievable in several countries, particularly where resources are most constrained (UNESCO Institute for Statistics and Global Education Monitoring Report Team 2022).

According to the national benchmarks report, about half of all countries reported their projected out-of-school national benchmarks for primary and secondary education by 2030 (UNESCO Institute for Statistics and Global Education Monitoring Report Team 2022).

By recalculating enrolment estimates for 2030 based on countries anticipated out of school rate, approximately 12.3 million primary teachers will therefore be required globally – a figure approximately 591,000 lower (about 5 per cent) than the 13 million needed to ensure full primary enrolment and achieve the SDGs. Given that national benchmarks in many sub-Saharan African countries anticipate continued high levels of out-of-school children by 2030, this region accounts for most of the decrease in teacher needs compared to the SDG targets of full enrolment. Based on these assumptions, 3.9 million primary teachers will be needed to meet national benchmarks (see Figure 2.3), which is about 10.2 per cent fewer than the 4.4 million primary teachers needed for full enrolment (ibid).

Figure 2.3. Teachers needed to meet National SDG4 Benchmarks for out-of-school children and the gap to meet universal enrolment in 2030, by level (in thousands)



Source: UNESCO and Teacher Task Force 2023; UNESCO Institute for Statistics 2024. Date of database consultation: 11 October 2023.

The decrease in teacher need widens in secondary education based on national benchmarks that often expect relatively higher rates of out-of-school children compared to the goal of achieving universal enrollment. Globally, 27.5 million secondary level teachers would be needed to meet National Benchmarks – a decrease of 3.6 million (or about 12 per cent fewer) from 31.1 million needed for universal secondary enrolment. The gap is greater in sub-Saharan Africa, falling about 2.1 million teachers (or 20 per cent fewer) from 10.66 million to 8.5 million.

National benchmarks result in fewer teachers needed; however, for many countries the challenge to recruit remains significant. In other countries it means many children will remain out of school.

For countries anticipating ongoing out-of-school children in primary and secondary education, this results in lower teacher recruitment targets. However, many countries continue to set ambitious goals regardless, meaning that

significant teacher recruitment efforts are still needed. For example, Congo and Ethiopia have set the rate of out-of-school children in 2030 in primary education to about 1 per cent by 2030 (UNESCO Institute for Statistics and Global Education Monitoring Report Team 2022), down from 21 per cent in 2018 and 24 per cent in 2022, respectively (UNESCO Institute for Statistics 2024).

This will, in turn, only reduce the number of teachers needed in both countries by 2 percentage points. In total Congo and Ethiopia will still require an additional 31,000 and 374,000 teachers. Based on previous growth in Congo, this target may be achievable, while previous decline in the size of the primary teacher workforce in Ethiopia indicates the targets will be more difficult to achieve (see Figure 2.2). On the other hand, Eritrea has indicated it anticipates that 40.5 per cent of primary age children will be out of school in 2030 – a decrease from 45 per cent in 2019 (UNESCO Institute for Statistics 2024). This results in 4,000 more teachers being required by 2030 versus around 11,000 to achieve SDG targets. While this still represents about a 50 per cent increase over the current primary teacher workforce, and it is therefore a more achievable target, it also means many students will remain without formal education.

At the secondary level, teacher gaps were already greater due to the sizeable number of out-of-school adolescents and youth around the world. Similar to primary level targets, countries vary in their national targets for out of school youth in 2030 (UNESCO Institute for Statistics and Global Education Monitoring Report Team 2022). While out-of-school targets of more than 20 per cent in lower secondary and more than 30 per cent in upper secondary education result in fewer teachers needed, even more children of secondary school-age than primary age will remain out of school. In Burkina Faso, Côte d'Ivoire, Niger, Senegal and the United Republic of Tanzania, the numbers of additional teachers needed by 2030 declines by about half or more based on national benchmarks compared to the number needed for full enrolment. In the United Republic of Tanzania, which projects to have 50 and 90 per cent of lower- and upper secondary-age children out of school in 2030, an additional 104,000 additional teachers would be needed rather than 503,000 for achieving full enrolment. Given that the total secondary teacher workforce last counted was 106,000 in total in 2020, even this conservative target will be challenging.

A qualitative gap: The need for more qualified teachers

Teachers play a key role in ensuring the quality of education provided. All teachers should receive adequate, appropriate and relevant pedagogical training to teach at the chosen level of education and be academically well-qualified in the subjects they are expected to teach (UNESCO Institute for Statistics 2018; 2023). However, there is considerable variation in how different education systems define and operationalize the concept of a qualified teacher, making international comparisons and benchmarking challenging. It is worth mentioning that, as part of the collective ongoing efforts to establish national benchmarks reflecting a range of SDG indicators, countries have also included those focusing on the percentage of trained teachers (see Box 2.2).

In 2022, Rwanda reported 76 per cent of primary teachers meeting qualifications compared to 95 per cent in 2019, which can be attributed to recent massive teacher recruitment aimed at reducing double shifting and PTR, which occurred at a faster pace than teachers were trained.

Overall, there is a lack of data on qualified teachers, especially for certain educational levels and for some regions. The worldwide average remains steady across various educational levels, standing at approximately 85 per cent. However, regional trends can hide wide disparities among countries (UNESCO Institute for Statistics 2024).

At the primary level, 86 per cent of teachers worldwide possess the minimum required qualifications. Nevertheless, this percentage significantly decreases to only 69 per cent in the case of sub-Saharan Africa, marking a decline since 2010 when it was at 75 per cent (see Figure 2.4.a). While qualifications vary in the region and many countries only require a diploma equivalent to an upper secondary education (UNESCO Institute for Statistics 2023), proportions of qualified teachers have decreased in a number of countries, including Rwanda from 96 per cent in 2014 to 76 per cent in 2022. This decline might be attributed to the rapid expansion of teacher recruitment aimed at improving school capacity, reducing double shifting and decreasing the PTRs (Top Africa News 2019; Africa Press 2022), which occurred at a pace faster than teachers were trained. It is also decreasing in Seychelles from 85 per cent in 2018

to 61 per cent in 2022. Proportions of qualified primary teachers were also very low in Chad (65 per cent) and in Gabon (52 per cent).

Almost all primary teachers met minimum requirements (98 per cent) in South-Eastern Asia in 2020, declining to 94 per cent in 2021, in part due to decreases in both Lao PDR and Malaysia. In Central Asia and Northern Africa, the vast majority of primary teachers met the requirements, with figures of 95 per cent and 96 per cent, respectively. Notably, small island and developing states (SIDS) have made efforts to raise the levels of qualification among primary teachers, increasing rates from 85 per cent in 2010 to 89 per cent in 2022. This reflects a range including 100 per cent qualified in Cook Islands, Nauru, Palau and Vanuatu and just 28 per cent qualified in Micronesia.

Around 86 per cent of primary teachers worldwide meet the minimum qualifications required. This figure varies greatly at regional and national levels dropping to 69 per cent in sub-Saharan Africa. And those meeting minimum qualifications can shift substantially over time.

The percentage of qualified secondary teachers is typically lower when compared to primary education, a trend that can be partly attributed to the higher investment costs involved, since in many countries, secondary education demands a tertiary level degree (UNESCO Institute for Statistics 2023). That said, globally, 85 per cent of secondary teachers have the minimum required qualifications, ranging between about 80 per cent and 90 per cent in most regions (see Figure 2.4.b). Sub-Saharan Africa lags at just under 60 per cent, ranging from as high as 100 per cent in Côte d'Ivoire to a half or fewer in Benin (36 per cent), Guinea (50 per cent), Madagascar (20 per cent), Mauritius (48 per cent) and Togo (34 per cent).

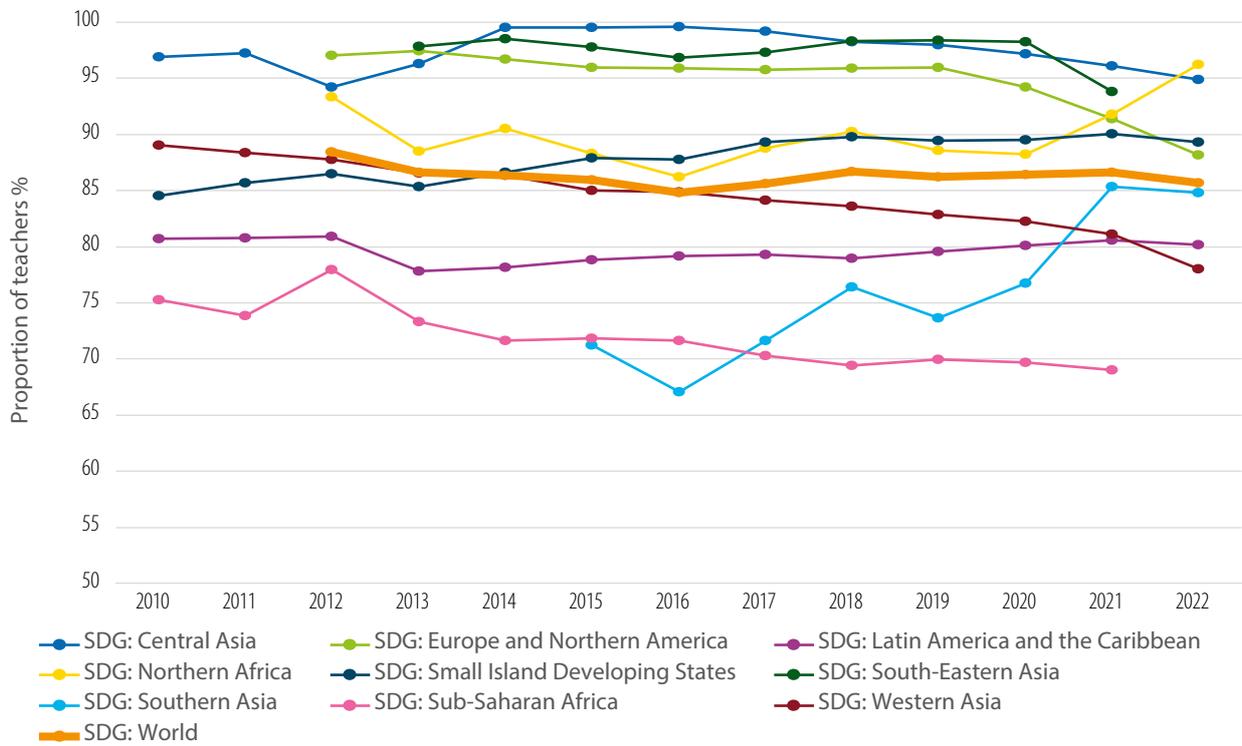
The proportion of secondary teachers with the minimum required qualifications in Latin America and the Caribbean dropped from 80 per cent in 2012 to 76 per cent in 2022. Fewer than half of secondary teachers are trained in six countries, including Antigua and Barbuda (48 per cent), British Virgin Islands (48 per cent), Dominica (47 per cent), Grenada (39 per cent), Monserrat (46 per cent) and Nicaragua (37 per cent), whereas more than 80 per cent meet the minimum required qualifications in 13 other countries, including Cuba, the Dominican Republic and Jamaica where about 100 per cent meet the minimum required qualifications. Similar to Latin America and the Caribbean, Europe and Northern America have also seen a decrease from 89 per cent with minimum qualifications in 2017 to 83 per cent in 2022.

In both South-Eastern Asia and Northern Africa there is notable achievement, with most secondary teachers meeting qualification requirements, reaching 95 per cent. Southern Asia in particular made large gains between 2016 to 2022, increasing the percentage of secondary level teachers with minimum qualifications from 79 per cent to 89 per cent. This progress is exemplified by increases in India from 76 per cent in 2017 to 90 per cent in 2022. Similarly in Northern Africa substantial progress has also been made, from 81 per cent to 95 per cent between 2016 and 2022. This can be partly attributed to increases in Egypt from 67 per cent to 85 per cent with the minimum qualifications.

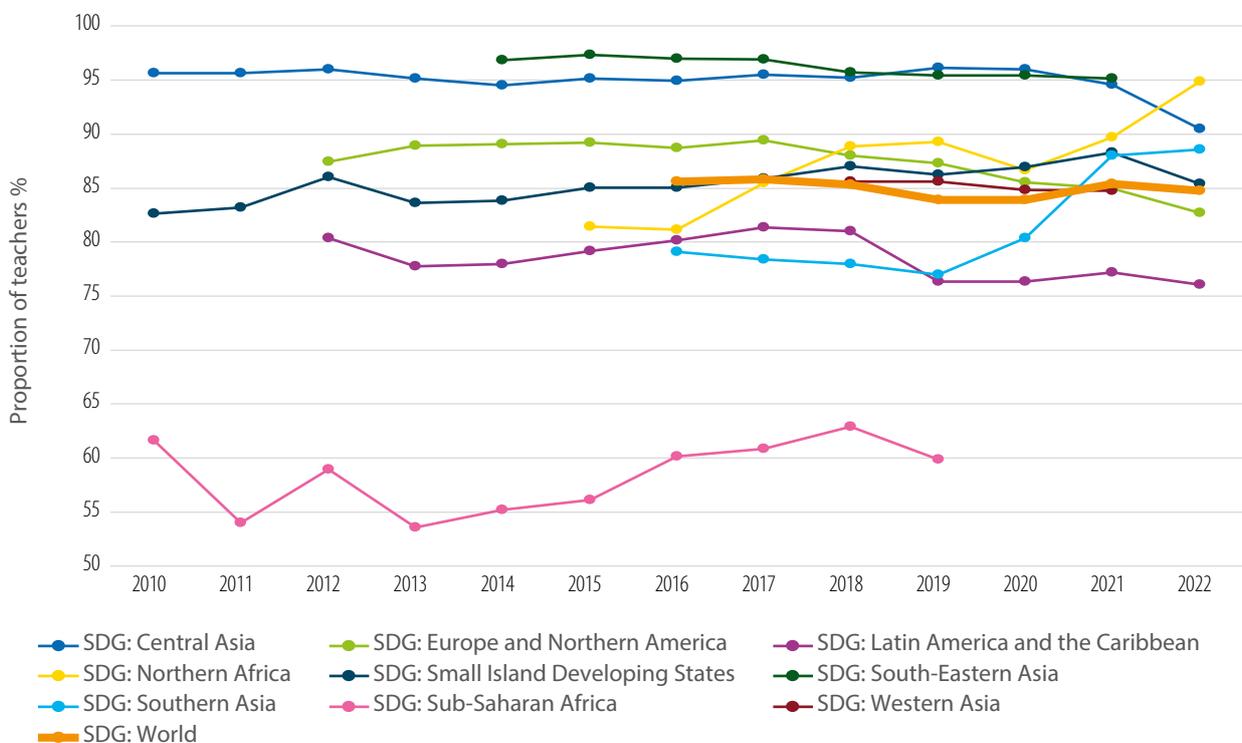
The percentage of qualified secondary teachers is typically lower than at primary level. In most regions about 80-90 per cent have the minimum required qualifications. South-Eastern Asia and Northern Africa have achieved notable progress in the past years: 95 per cent of secondary school teachers meet qualification requirements. Sub-Saharan Africa lags at just over 60 per cent.

Figure 2.4. The proportion of teachers in primary and secondary education with minimum required qualifications, 2010-2022

2.4.a Primary



2.4.b Secondary



Source: UNESCO and Teacher Task Force 2023; UNESCO Institute for Statistics 2024. Indicator 4.c.1. Date of database consultation: 27 September 2023.

Box 2.2. National benchmarks on the SDG indicator on trained teachers

Globally, about 60 per cent of countries have submitted national benchmarks on the percentage of trained teachers in their systems, i.e., national targets for 2025 and 2030. Averaging across all benchmark and feasible benchmark values set for 2025 (the latter were calculated for countries that did not submit benchmarks and were equal to the value a country would be expected to achieve if it advanced at the historic progress rate of the fastest 25 per cent of improving countries), the number of qualified teachers globally could increase significantly if all countries achieved their targets. Projections show that the percentage of trained teachers would increase from a baseline value of 86 per cent in 2015 to 92 per cent by 2025 in primary and secondary education if all countries hit their benchmarks. Looking at regional examples, 83 per cent of primary teachers would be trained in sub-Saharan Africa and 100 per cent in Europe and Northern America (see Table 2.4).

Table 2.4. Average 2025 benchmark values, by indicator and region

Indicator	Disaggregation	Sub-Saharan Africa	Northern Africa and Western Asia	Central and Southern Asia	Eastern and South-Eastern Asia	Oceania	Latin America and the Caribbean	Europe and Northern America	World, 2025	Baseline, 2015
Trained teachers (%)	Primary	83	86	94	98	–	94	100	92	86
	Lower secondary	83	96	95	98	–	85	99	92	86
	Upper secondary	79	80	94	98	–	93	100	92	88

Source: UNESCO Institute for Statistics and Global Education Monitoring Report Team 2024.

Note: Averages are weighted and reported if at least 50 per cent of the population in a region has a national benchmark (actual or feasible).

Countries have been classified into six categories (Table 2.5) based on the speed of their recent progress and the range of progress rates observed historically (2000–15). Four categories capture the speed of progress since 2010 or 2015 – and its implication for the probability of achieving the benchmark – and two categories recognize the non-availability of data. For countries without national benchmarks (either submitted or extracted from national sector plans), progress is evaluated against the feasible benchmarks.

Looking across levels of education, data gaps were highest in secondary education with about two in three countries having no data or not enough data to establish a trend (see Figure 2.5). Among countries with data, approximately one in five were regressing across all levels while the majority of countries were making fast progress: about 60 per cent in primary and lower secondary education and about 50 per cent at upper secondary.

Figure 2.5. Country classification in terms of progress towards the 2025 benchmark values, trained teachers, by level of education**Table 2.5. Country classification of progress relative to national SDG 4 benchmarks**

Category		Description
Fast progress		>75% probability that 2025 national benchmark will be achieved given the latest value (including countries which have already achieved the benchmark or are close to 100%)
Average progress		25–75% probability that 2025 national benchmark will be achieved given the latest value
Slow progress		<25% probability that 2025 national benchmarks will be achieved given the latest value
No progress		Negative progress
No data for trend		
No data		

Source: GEM Report team analysis based on UNESCO Institute for Statistics 2024.

The cost of training and preparing teachers for the classroom might be one of the most expensive investments in building a sustainable teacher workforce. This includes transfers of public expenditures for pre-service ITE to teacher training institutions and that allocated for in-service CPD. The challenge of training

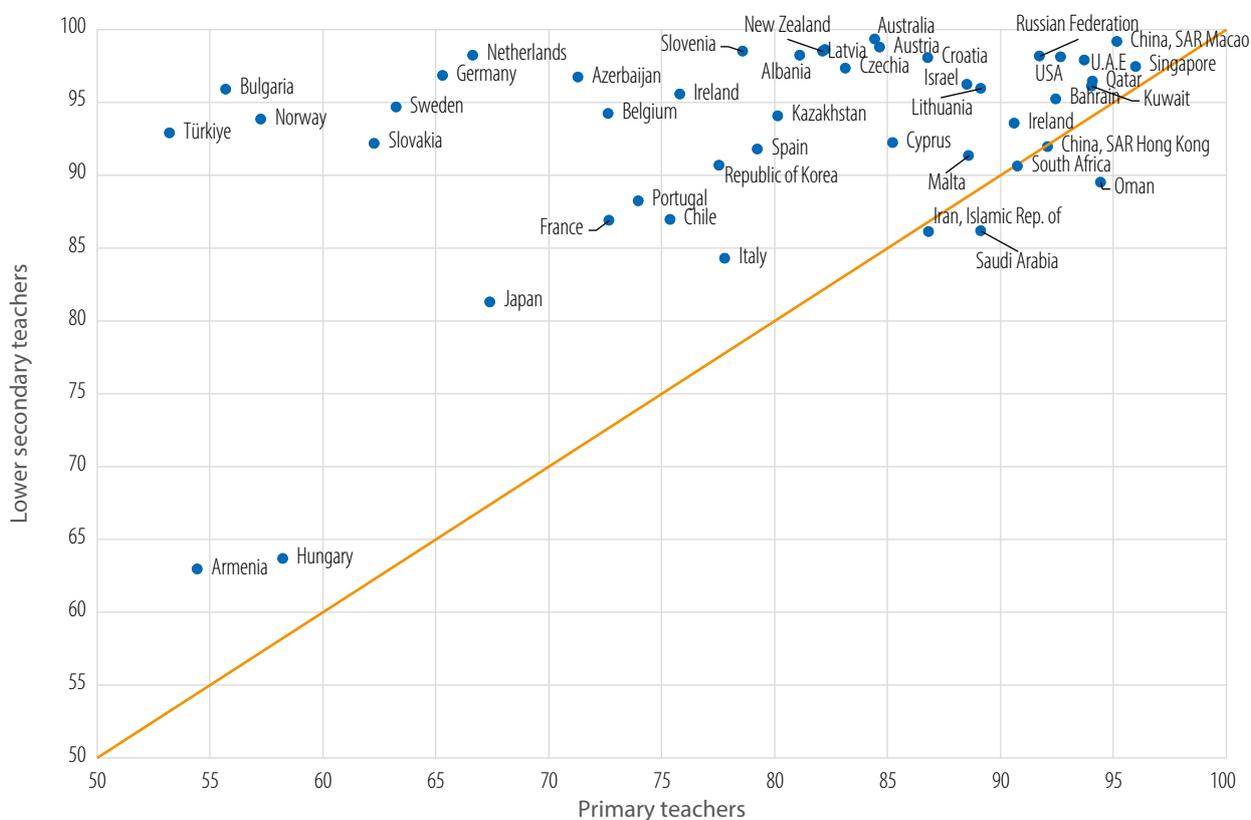
enough teachers to provide quality teaching has been ongoing. In many situations there is a lack of places in institutions to train teachers at a pace to meet growing demand, while the loss of teachers due to a variety of personal and professional reasons results in growing costs putting additional strain on systems. In the UK,

for example, the costs of initial teacher training in 2013-14 varied depending on the training routes. For most secondary level training routes, the average costs ranged from £18,200 to £23,500, while the average costs for primary school trainees were slightly lower, varying between £17,000 and £23,000. However, given the high rate of teacher attrition in the first 5 years after their expected qualification, particularly at secondary level, these costs rose to between £25,000 and £44,000 for most training routes per teacher (Allen et al. 2016).

As discussed in more detail in Chapter V, CPD is critical to ensure teachers remain up to date with evolving curricula, pedagogical content knowledge and administrative norms. Where teachers lack adequate formal ITE and training, it plays an even more critical role to ensure they acquire required knowledge and skills. A model of CPD contextualized within subjects, targeting specific skills and meeting a minimum duration might be most effective (Yoon et al 2007; Popova et al. 2021; Darling-Hammond et al. 2017). SDG Indicator 4.c.7 measures the proportion of teachers who have received in-service training during the previous 12 months. However, there is a lack of data to calculate regional averages and data reporting is sparse over time leading to a lack of time series.

Overall, data show that education systems prioritize the CPD of teachers in secondary education over primary education in most high-income and middle-income countries. Figure 2.6 shows that countries ranged in providing in-service education in the last year from about half to more than 90 per cent of primary teachers, while almost all countries provided training to 85 per cent or more teachers in lower secondary education. Exemplifying this Bulgaria, Norway and Türkiye, provided in-service training to less than 5-6 out of 10 primary teachers compared to more than 9 out of 10 in lower secondary education. Moreover, Armenia and Hungary were least likely to provide training at either level as fewer than 2 out of 3 teachers received in-service training in primary and in lower secondary education. The tendency for disparities in training by level has been previously demonstrated in student assessment surveys, including the Trends in International Mathematics and Science Study (TIMSS) which showed that on average among high- and middle-income countries, Grade 8 students (23 per cent) were more than twice as likely as their Grade 4 peers (10 per cent) to be taught by a teacher who received at least 35 hours of professional development during the two years before the assessment (UNESCO and IEA 2020).

Figure 2.6. Percentage of teachers who received in-service training, by level, 2019 or latest data available



Source: UNESCO Institute for Statistics 2024. Date of database consultation: 15 December 2023.
 Note: While data were available for the number of countries in primary education for 2021, 2019 data were used as a reference point due to the lack of comparison data in lower secondary education. No data were reported in 2020.

In primary education, high-income countries had an average PTTR of 15:1, while low-income countries faced a considerably higher ratio, tripling that number at 52:1 in 2022. With 55.7 trained teachers per pupil, sub-Saharan Africa is the region with the highest ratio.

Teacher training needs to achieve SDG 4 were tested greatly during the COVID-19 pandemic when the sudden transition to distance education further exposed the digital divide and exacerbated inequalities in teaching and learning. Before the pandemic, training teachers to integrate information and communication technology (ICT) into instruction was already being recognized

increasingly as critical for adapting to the transition to digital societies (UNESCO et al. 2021). SDG 4. Indicator c.7 on in-service training was purposed to collect data on training by type; however, this has not yet begun. In comparison, the TIMSS also provides data on continuing professional development according to type of training, including subject matter, pedagogical skills, integration of technology and ICT into teaching and others. Among a number of high- and middle-income countries, data show that countries provide varying levels of training on technology integration into education. For instance, in China, Hong Kong (SAR China), Kuwait, Qatar and United Arab Emirates 60 per cent or more of students have teachers that were trained on technology integration compared to fewer than 20 per cent in Bosnia and Herzegovina, Finland and Hungary (Teacher Task Force 2021b).

The impact of pupil-teacher ratios and classroom size

The number and distribution of teachers are important policy parameters in determining the quality of education. The PTR (number of students per teacher) is a commonly used indicator, reflecting the human resource capacity of education systems. Moreover, it is not a measure of class size nor the number of pupils a teacher faces in classrooms — indicators that are not widely available across countries. While PTRs are used as a proxy of relative class size, caution needs to be exercised given the significant subnational disparities that can exist. Moreover, PTRs often include part-time teachers which would underestimate the overall burden on the overall teacher workforce.

High PTRs signify teacher shortages and an overstretched teaching staff, while low ratios may represent additional capacity. However, the PTR is a national average which can conceal considerable variation between regions and schools. Moreover, the ratio depends on an accurate count of teachers with instructional duties and should ideally be adjusted to account for different modes of teacher deployment, such as part-time and shift-teaching.

There is also an important debate over the effects of class size on teaching practices (see Box 2.3) and educational outcomes including progress, repetition, and completion where high PTRs are typically associated with poorer outcomes (UNESCO Institute for Statistics 2006).

Globally, PTRs have generally declined since 2000 (UNESCO Institute for Statistics 2023; 2024). However, there are large disparities between regions and countries of different income groups (see Table 2.6). High PTRs resulting in overcrowded classrooms pose a particularly acute problem in low-income countries compared to their high-income counterparts.

In contrast to the PTR, the 2015 decision to develop a new indicator, the pupil-trained teacher ratio (PTTR), measures the ratio of students to only those teachers holding the minimum required qualifications. This decision was an important step for policy steering efforts to better advocate for recruiting teachers that meet minimum required qualifications. In countries where all teachers have minimum qualifications, the PTTR will not vary from the PTR; however, in countries where not all teachers are qualified, PTTRs can be substantially higher. As such the PTTR provides less information on class size and more on students' access to qualified teachers and the extent that they can be overstretched as a resource across education systems.

In primary education, high-income countries had an average PTTR of 15:1, while low-income countries faced a considerably higher ratio, more than tripling that number at 52 pupils per trained teacher in 2022 (see Table 2.6 and Table 2.7).

When analyzing this indicator by region, sub-Saharan Africa exhibits the highest PTTR at 56:1. This varies from as low as 25:1 in Kenya and 14:1 in Mauritius to as high as 61:1 in Guinea, 65:1 in Sierra Leone, 88:1 in Chad and 240:1 in Madagascar. This is followed by Central and Southern Asia at 35:1 in 2022, including as low as 12:1 in Maldives and as high as 64:1 in Bangladesh. With this region, India shows strong progress as its primary PTTR has decreased from 44:1 in 2016 to 32:1 in 2022. In contrast, access to a qualified teacher is declining in Pakistan where the PTTR has increased from 56:1 to 67:1 during the same time period.

Globally, pupil–teacher ratios, or the number of students per teacher, have generally declined since 2000; however substantial disparities remain, particularly for remote regions where pupil-trained teacher ratios often remain high.

In contrast, Europe and Northern America have the lowest PTTR, with an average of 16 pupils per trained teacher in 2022.

Global regional averages in secondary education are generally below 25 pupils per trained teacher. However, both sub-Saharan Africa and Central and Southern Asia have exhibited higher PTTRs while also achieving notable improvements in recent years. For example, in sub-Saharan Africa the ratio has decreased from 40 in 2013 to 34 pupils per trained teacher in 2019. This reflects large regional disparity from as low as 24:1 in Côte d'Ivoire, 27:1 in Cameroon and 13:1 in Mauritius to 107:1 in Guinea and 85:1 in South Sudan.

Likewise, a decline is observed from 35 in 2016 to 25 pupils per trained teacher in 2022 in Southern Asia, partly reflecting decreases in India from 44:1 to 32:1 during the same time period.

Unequal strategies for recruiting and deploying teachers for remote and rural areas often results in significant disparities in pupil-teacher and pupil trained teacher ratios while the hiring of contract teachers may elevate attrition and turnover rates. This challenge will be covered in greater length in Chapter III.

Table 2.6. Pupil–teacher ratios in primary education by region and income level, 2022

Region	Pupil–teacher ratio	Pupil–trained teacher ratio
Sub-Saharan Africa	38.4	55.7
Central and Southern Asia	29.8	34.9
Oceania	22.0	m
Latin America and the Caribbean	20.1	25.0
Northern Africa and Western Asia	20.0	24.5
Eastern and South-Eastern Asia	16.9	m
Europe and Northern America	13.7	15.5
Low-income	37.8	52.5
Lower-middle-income	30.2	36.4
Upper-middle-income	17.3	m
High-income	13.5	15.1
World	22.8	26.7

Source: Pupil-teacher ratio adapted from UNESCO and Teacher Task Force 2023; UNESCO Institute for Statistics 2024. Date of database consultation: 17 October 2023.

Note: m = missing data.

Box 2.3. The effects of class size on teaching practice: How teacher shortages result in poorer outcomes and how these can be mitigated

Large class sizes are a particular challenge for teachers and students alike. They have been found to negatively affect teacher well-being and job satisfaction (OECD 2020g). Moreover, while several factors can impact teaching performance in the classroom and, subsequently, student learning outcomes, an important factor is class size and student-to-teacher ratios. Some research suggests that larger class sizes tend to be linked to both teachers' performances and students' educational outcomes and learning achievement (Leuven and Oosterbeek 2018; Education Endowment Foundation 2023). These results have motivated policies and interventions focused on putting caps on class sizes or finding alternatives to support teachers when smaller classes are not feasible. Moreover, larger class sizes and PTRs will become more prominent in the coming years, especially considering trends in population growth in low-income countries, teacher shortages globally, and education finance allocation to hire and support teachers.

Using the World Bank's Teach tool that monitors teaching practices, data were collected to show the types of teaching practices across low- (N=36), lower middle-income (N=44), upper middle- (N=28) and high-income (N=1) countries. Larger class sizes were observed in low-income and lower-middle-income countries compared to upper-middle-income countries and one high-income country. Globally, on average, there were 40 students in the classroom per teacher, but with considerable variation in the total number of students within and between countries. Analysis shows a statistically significant, low, negative correlation between class size and scores on the three primary areas of quality of teaching practices considered in the Teach Framework: Classroom Culture, Instruction, and Socioemotional Skills. These results suggest that effective teaching practices are more common in classrooms with smaller class sizes. Additional advanced statistical analyses explored whether these negative associations between class size and Teach primary scores were maintained when additional factors, including country income level and whether the teacher was teaching in a multigrade classroom, were considered. In summary, these results suggest that the impact of class size becomes nonsignificant when other factors linked to resources and classroom modality (for instance, multigrade versus single-grade classroom) are taken into account.

While evidence shows that teacher shortages resulting in large class sizes matter by potentially influencing teaching performance, other factors and policies can play an important mitigating role to ensure the use of effective teaching practices that foster student learning. One important caveat in this analysis is that the data collection design limits the possibility of establishing any type of causal relationship between class size and the use of effective teaching practices in the classroom, so the interpretation of the results needs to be understood only as trends that can inform policies on class size and additional supports for teachers and students. Where shortages exist, countries can mitigate the challenges of teaching in large classrooms by providing more training and related resources on strategies to ensure a positive learning environment, including on multigrade classrooms, student-centred learning, classroom management techniques and inclusive education.

Source: Luna-Bazaldua et al. 2021; Molina et al. 2018; Molina et al. 2020.

Table 2.7. Pupil-trained teacher ratio in primary education, by region, 2022 or latest data available

	<20	20 - 29	30 - 39	40 - 49	50 - 59	>60
Central and Southern Asia	Kazakhstan, Maldives,	Bhutan, Iran (Islamic Republic of), Kyrgyzstan, Nepal, Sri Lanka, Tajikistan, Turkmenistan, Uzbekistan	India			Bangladesh, Pakistan
Eastern and South-eastern Asia	Brunei Darussalam, Hong Kong (SAR China), China (SAR Macao), Malaysia, Republic of Korea, Singapore, Thailand,	Lao PDR, Myanmar, Philippines	Mongolia, Vietnam	Cambodia		
Europe and Northern America	Andorra, Bermuda, Gibraltar, Latvia, Lithuania, Malta, Monaco, Poland, Portugal, Republic of Moldova, San Marino, Slovakia, Spain, Ukraine, United States of America	Albania, Belarus, Russian Federation,				
Latin America and Caribbean	Bahamas, Barbados, British Virgin Islands, Cayman Islands, Costa Rica, Cuba, Dominica, Dominican Republic, Guyana, Jamaica, Montserrat, Panama, Saint Lucia, Suriname, Trinidad and Tobago	Antigua and Barbuda, Belize, Bolivia (Plurinational State of), Brazil, Colombia, Ecuador, El Salvador, Honduras, Mexico, Turks and Caicos Islands	Grenada		Saint Vincent and the Grenadines	Nicaragua
Northern Africa and Western Asia	Azerbaijan, Bahrain, Cyprus, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Tunisia, United Arab Emirates	Algeria, Armenia, Morocco, Palestine (State of)	Egypt	Lebanon, Syrian Arab Republic		

	<20	20 - 29	30 - 39	40 - 49	50 - 59	>60
Oceania	Cook Islands, Fiji, Niue, Palau, Tokelau	Kiribati, Marshall Islands, Tonga, Vanuatu	Solomon Islands, Tuvalu	Nauru		Micronesia (Federated States of)
Sub-Saharan Africa	Mauritius	Botswana, Cabo Verde, Djibouti, Kenya, Namibia, Seychelles	Comoros, Democratic Republic of the Congo, Eswatini, Gambia, Lesotho, Liberia, Zimbabwe	Burkina Faso, Burundi, Côte d'Ivoire, Eritrea, Ghana, Mauritania, Niger, Nigeria, Senegal, UR Tanzania, Zambia	Benin, Cameroon, Gabon, Mozambique, Rwanda, Togo, Uganda	Chad, Equatorial Guinea, Madagascar, Malawi, Sao Tome and Principe, Sierra Leone

Source: UNESCO Institute for Statistics 2024.

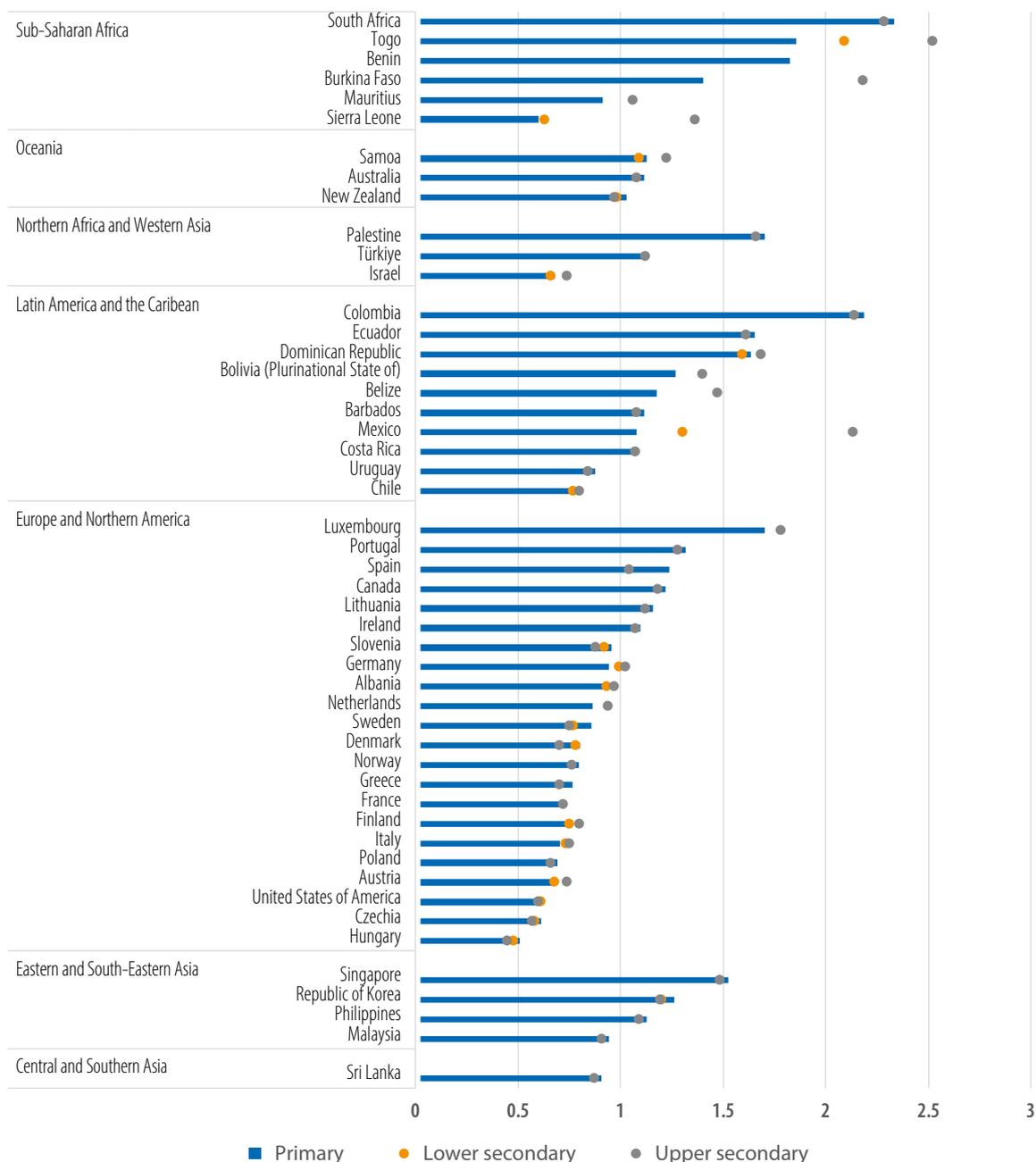
Teacher salaries remain unattractive

One of the main goals of analysing teacher salaries is to assess the competitiveness of the profession to attract and retain teachers over time. Faced with better salaries in other professions, the relatively low salaries in teaching can dissuade high-quality candidates. Moreover, throughout a teaching career, the combination of low salaries with limited prospect for improved compensation can result in higher attrition, as other more attractive opportunities become apparent. To measure this, the average teacher salary, relative to other professions requiring a comparable level of qualifications at different levels of education, is systematically collected at the global level.

Data show that teacher salaries vary greatly with respect to other professions requiring similar levels of qualifications across all educational levels. In some countries, teachers earn double the average of other professionals while, in others, they earn much less (see Figure 2.7). Notably, there is a lack of data on teacher salaries globally; therefore, a global average and regional averages are not available.

In primary education, analysis shows that half of all countries pay teachers less than other professions requiring similar qualifications, while this decreases to just 3 in 10 countries in Europe and Northern America. In Hungary, primary teachers earn half of what comparable qualified professionals do, while in the USA they earn about 0.58 times other professionals. Moreover, at least in the USA, teacher pay has been shown to be declining compared with other tertiary level graduates – 26.4 per cent less, which has widened since at least 1979 (Allegretto 2023). On the other hand, primary teachers in Singapore, Luxembourg, Colombia, Dominican Republic and Ecuador earn at least 50 per cent more than similarly qualified professionals (UNESCO and Teacher Task Force 2023). Data show that teachers can also earn relatively higher salaries in sub-Saharan Africa. For instance, primary teachers in Togo, Benin and South Africa earn, on average, salaries that are 50 per cent higher than those of other professions requiring similar level qualifications.

Figure 2.7. Average teacher salary in primary, lower and upper secondary education relative to other professions requiring a comparable level of qualification, both sexes, 2021 or latest data available



Source: UNESCO and Teacher Task Force 2023; UNESCO Institute for Statistics 2024. Indicator 4.c.5. Date of database consultation: 27 September 2023.

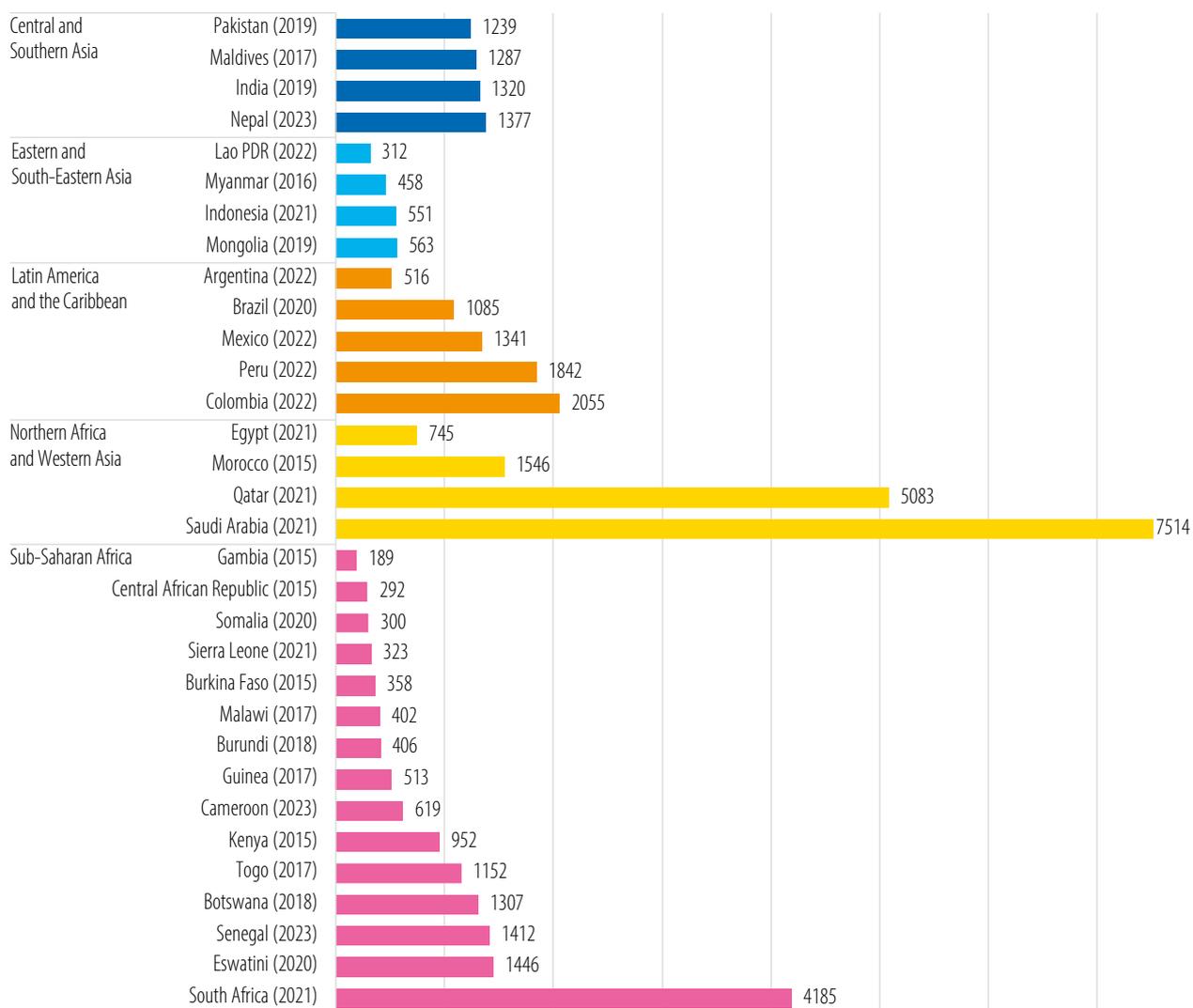
Lower and upper secondary teachers enjoy relatively more competitive salaries in a few countries such as Burkina Faso, Mexico and Togo, where especially at the upper secondary level, they earn more than double the salaries of similarly qualified professions. However, the lack of competitiveness of teachers' salaries in secondary education in a large percentage of countries remains a significant factor.

While teacher salary data show that compensation can be competitive in several other countries, particularly in lower income economies, this does not necessarily translate into salaries that ensure a livable wage for individuals and families. To shed light on this, salaries can be converted into purchasing power parity per annum (PPP) values 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 (OECD 2023d). Based on previous analysis of household data in sub-Saharan Africa (Evans et al. 2020), a complex picture emerges where teacher

salaries are often not competitive compared with other professions requiring similar levels of qualifications. These results are consistent with research in 20 countries in sub-Saharan Africa, which showed that teachers are paid salaries that are largely inadequate to meet basic family needs (Bennell 2023b).

Elsewhere in other regions, teacher salaries also reveal a wide variation between countries. Figure 2.8 shows average teacher salaries in Eastern and South-eastern Asia that range from US\$312 per month in Lao PDR to US\$563 in Mongolia. Other regions show wide variation, notably in Northern Africa and Western Asia. While teachers are compensated very well in Saudi Arabia and Qatar, receiving about US\$7,514 and US\$5,083 per month, teachers in Egypt earn just US\$745 per month. Differences also exist in Latin America, varying from US\$516 per month in Argentina to US\$2,055 in Colombia. In Southern Asia, the range is narrower among countries such as India, Maldives, Nepal and Pakistan where the monthly average teacher salary was about US\$1,239 in Pakistan to US\$1,377 per month in Nepal.

Figure 2.8. Average monthly teacher salaries in US\$ PPP (2015 constant dollars), primary and secondary level, by region, 2021 or most recent data



Source: Adapted from Ramírez et al. forthcoming a.
 Note: Teacher Salaries for Argentina and Brazil are average minimum salaries.

The analysis of public sector teacher salaries based on administrative sources has a few shortcomings in terms of providing a comprehensive picture of the competitiveness of the profession and the capacity to retain teachers. Teachers' total remuneration and rewards vary for numerous reasons beyond basic salaries. For example, teachers are incentivized through bonuses related to other factors, including achieving higher qualifications and high scores in qualification examinations, accumulating years of experience teaching, specializing in certain fields, especially in science,

technology, engineering and mathematics (STEM), teaching more hours or classes than required in standard contract, working in remote and isolated locations, high performance in teaching and achieving exceptional student performance outcomes (UNESCO Institute for Statistics 2006). In many countries and in some situations total teacher bonuses can represent a substantial portion of overall remuneration. Research using household survey data of teacher pay will inevitably vary with administrative salary information (Evans and Mendez Acosta 2023).

Second-class teachers? The effects of temporary contracts

There is no single definition of contract or community teachers, however they are typically recruited through alternative pathways and agree to work outside traditional employment arrangements, including statutory salary scales that are supported by a civil service collective agreement. Moreover, while they receive a salary for the work they perform, they do not receive the benefits that apply under public sector norms and standards, such as annual leave, pension or health insurance. As a result of their status, contract teachers typically receive lower remuneration and have less job security as their employment is subject to public budget fluctuations, market pressures and the education providers' ability to pay. This is particularly challenging for teachers where the civil servant salary is already below what is considered a livable wage.

Since salaries are often not attractive enough to retain civil servant teachers in the profession, inequities based on teachers' contract status are a significant factor further undermining the profession and its overall attractiveness. The practice of recruiting large numbers of contract and community teachers in low-income countries to expand education access has resulted in large inequalities between teachers working together across school systems. Poor work conditions and lack of training opportunities and support inevitably impact educational quality and student outcomes as will be discussed in greater detail in Chapter III.

In Cameroon and in Senegal, where the basic monthly average primary teacher salary in 2023 was US\$619 (PPP) and US\$1,412 (PPP) respectively (Ramírez et al. forthcoming b), contract teachers are earning around 81 and 40 per cent of their civil servant counterparts (Senegal Ministry of Economy, Planning, and Cooperation 2020; Cameroon Ministry of Basic Education 2022). This is especially significant given that contract teachers accounted for about 45 per cent of all teachers in Cameroon in 2022 (Cameroon Ministry of Basic Education 2022) and 29 per cent in Senegal in 2020 (Senegal Ministry of Economy, Planning, and Cooperation 2020). On the other hand, the overall proportion of contract teachers in primary education has been declining as the proportion of civil servant teachers has grown in both countries as governments strive to integrate more teachers into regularized and better paying terms of employment (Abdourhaman forthcoming; Diatta forthcoming).

The opposite trend has been identified in Burkina Faso, where, compared to the average civil servant earnings of about US\$358 (PPP) per month (Ramírez et al. forthcoming b), contract teachers earned a median of about 16 per cent more than their civil servant counterparts, ranging from 29 per cent more at the lowest end of the salary scale to about eight per cent more at the highest (Burkina Faso Ministry of National Education, Literacy and Promotion of National Languages 2016). Moreover, contract teachers in Burkina Faso only accounted for about 8 per cent of the total number due to the country's law to absorb most teachers into the civil service in primary education as of 2015. Nevertheless, 28 per cent of lower and upper secondary teachers remained with some kind of non-civil servant status as contract teachers in 2021 (Burkina Faso Ministry of National Education, Literacy and Promotion of National Languages 2021).

In India, teachers on temporary contracts comprise 11 per cent of the workforce and can earn just one third of the salary of their civil servant counterparts. In Nepal the number is even higher—there are 39 per cent of primary and secondary teachers working under contracts who earn less than 60 per cent of the salary of civil servant teachers.

Contract teachers have also been substantially recruited in large numbers in Southern Asia to meet gaps, including in India where they continue to represent 11 per cent of public sector teachers (Sarangapani forthcoming) earning about a third of the average civil servant teacher salary of US\$1,320 (PPP) monthly (Ramírez et al. forthcoming b; Sarangapani forthcoming). This practice of employing contract teachers, which can influence attractiveness of and retention in the teaching profession, shows great variation across India. For example, in 2022 contract teachers comprised more than 1 in 5 in primary and secondary education in Assam (24 per cent), Uttar Pradesh (25 per cent) and in Chandigarh (35 per cent). In comparison, they represented fewer than 1 in 100 teachers in 7 other states/Union Territories, including Bihar, Gujarat, Jammu & Kashmir, Karnataka, Lakshadweep, Madhya Pradesh and Tamil Nadu

(Sarangapani forthcoming). Similarly, contract teachers comprise about 39 per cent of primary and secondary teachers in Nepal in 2022 under various types of contracts (Paudel forthcoming) and earned on average about 75 per cent of the average salary of US\$1,377 (PPP) by their civil servant counterparts (Ramírez et al. forthcoming b). Besides, contract teachers in Nepal are also not receiving other financial benefits, including post-retirement income. These policy provisions are the major demotivating factors for contract teachers. (Paudel forthcoming).

While recruiting contract or community teachers is a relatively common practice in low- and middle-income countries, the practice also occurs in high-income countries. Analysis from the 2018 TALIS showed that 16 per cent of teachers across the European Union worked on contracts of one year or less. In Austria, Romania, Italy and Spain, 20 per cent or more of teachers worked on fixed-term contracts of one year or less. This phenomenon may especially affect younger or less experienced teachers, as the share of teachers under 30 on short-term contracts is at least 50 percentage points higher than for teachers over 50 in countries such as Austria, Belgium, Finland, Italy, Romania, the Slovak Republic, Slovenia and Spain (OECD 2020e).

Teachers are leaving the profession

Teacher attrition refers to the number of personnel leaving the profession in a given year. Departures may be due to any number of personal, professional and organizational factors, such as retirement, health, family commitments, taking a job in another field, or death, among others. It is important to note that attrition should not be confused with teacher turnover, which could also include teachers moving between schools or levels of education in addition to leaving the profession (OECD 2021; UNESCO Institute for Statistics 2023b). No matter the cause, the significant loss of trained professionals is disruptive for schools, students, and education systems.

A system with a steady attrition rate of above 10 per cent would result in an average teaching career of merely 10 years. For systems aiming to have teachers working for extended careers of 30 years or more, it would be necessary to sustain attrition rates considerably below 5 per cent (UNESCO Institute for Statistics 2023b). Global attrition rates among primary teachers almost doubled

from 4.6 in 2015 to 9 per cent in 2022 (see Table 2.8). In lower secondary education, the rate also increased substantially in 2019 but has begun to decrease since 2021. While there has been significant discussion of the ‘great resignation’ since the onset of the COVID-19 pandemic reflecting broader changes to the job market, these data are relatively new and trends should be monitored closely to better inform policy-makers on the state of teacher attrition at national, regional and the global levels. Moreover, close scrutiny of these data are needed to validate trends and to also eliminate methodological issues in data collection as a source of these fluctuations. In the case of upper secondary attrition, there is a lack of recent data, although older data generally show that attrition generally decreases at higher levels of education at the global level (UNESCO and Teacher Task Force 2023b). Elsewhere data show that in some high-income countries, attrition is higher in secondary education relative to lower levels (OECD 2021).

Table 2.8. Global teacher attrition rates (%), both sexes, 2015-2022

Educational level	2015	2016	2017	2018	2019	2020	2021	2022
Primary	4.62	m	m	m	5.36	5.17	5.83	9.06
Lower secondary	m	5.00	4.89	4.14	6.61	7.85	5.75	5.71
Upper secondary	m	4.14	4.03	4.19	m	m	m	m

Source: UNESCO and Teacher Task Force 2023; UNESCO Institute for Statistics 2024. Indicator 4.c.6. Date of database consultation: 05 October 2023. Note: m = missing data.

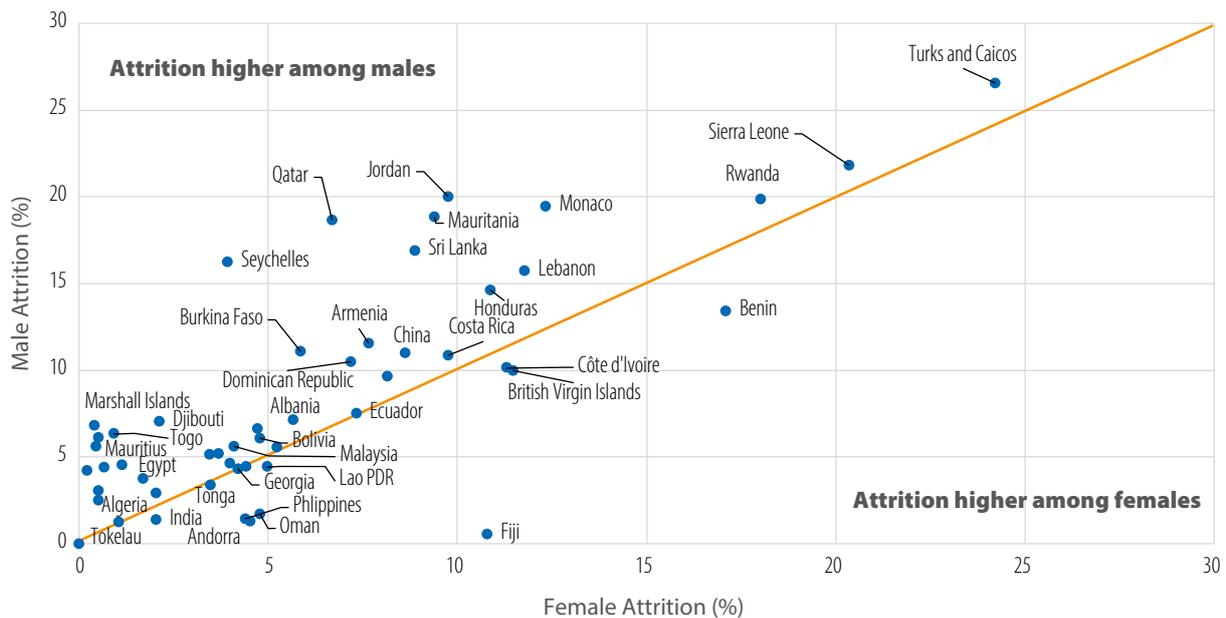
Male teachers generally leave the profession at higher rates than their female colleagues (see Figure 2.9). Global attrition rates in 2021 were 9.2 per cent and 5.9 per

cent for male primary and lower secondary teachers, compared to 4.2 per cent and 5.6 per cent for female teachers (UNESCO Institute for Statistics 2024). Attrition

among male teachers in primary education is higher than females in 80 per cent of countries. It is more than twice as high in Algeria, Belarus, Bhutan, Djibouti, Egypt, Marshall Islands, Mauritius, Morocco, Mongolia, Niger, Seychelles and Togo. In some circumstances, women have higher attrition rates than men: for instance, in India, female primary teachers had an attrition rate of 2 per cent in 2022 compared to a 1.4 per cent rate for male primary teachers (UNESCO and Teacher Task Force 2023b; UNESCO Institute for Statistics 2024).

Attrition among male teachers is higher than female in primary education in 80 per cent of countries and increased to 9.2 per cent in 2021, compared to only 4.2 per cent for female teachers.

Figure 2.9. Teacher attrition in primary education, by sex, 2021 or latest data



Source: UNESCO and Teacher Task Force 2023; UNESCO Institute for Statistics 2024.

Overall, there are insufficient data to calculate all regional averages and to determine long-term trends in terms of teacher attrition. Furthermore, country level attrition rates can vary widely by education level and from year to year. In fact, UIS only includes attrition inputs from 79 countries at the primary level, 44 at the lower secondary level and 48 at the upper secondary level between 2012–2022 (UNESCO Institute for Statistics 2024).

In primary education, available data for Eastern Asia allows for a medium-term analysis, showing a significant teacher attrition rise from 1.3 per cent in 2018, to nearly 9 per cent in 2022. Between 2020 and 2022, primary level teacher attrition was very high (10 per cent or more) in a number of countries across different regions: 10 per cent in Sri Lanka; 11 per cent in the British Virgin Islands and Côte d'Ivoire; 12 per cent in Honduras, Jordan and Lebanon; 16 per cent in Mauritania and 19 per cent in Rwanda. It was alarmingly high (20 per cent or more)

in Benin, (28 per cent), Sierra Leone (21 per cent) and Turks and Caicos (25 per cent) (UNESCO and Teacher Task Force 2023b). Again, closer scrutiny of these data are needed to ascertain potential trends and to also eliminate methodological issues in data collection as a source of change.

Similarly, the lack of sufficient data on secondary teachers hinders a long-term trends analysis on attrition rates for many regions. Data for Eastern and South-Eastern Asia reveal stable primary teacher attrition rates of less than 4 per cent since 2013, with increasing variability from 2019 onwards. This evolving pattern includes a subsequent rise to more than 5 per cent in lower secondary education and more than 3 per cent in upper secondary in 2022. Compared to other regions, the teacher attrition rates in SIDS at lower secondary schools are notably high and have remained stable, with rates around 16 per cent between 2018 and 2020.

Very few countries provide data about when teachers leave the profession over the course of their careers, and some studies show that, unless they are appropriately supported, novice teachers are more likely to leave the profession than their more experienced colleagues (Ingersoll and Smith 2003; Papay et al. 2017; United Kingdom Department for Education 2023; Allen and Sims 2018b).

Attrition is particularly high among novice teachers and those about to retire. This can exacerbate teacher shortages in countries where teachers are older on average, which is the case in some European countries, Northern America and other high-income countries.

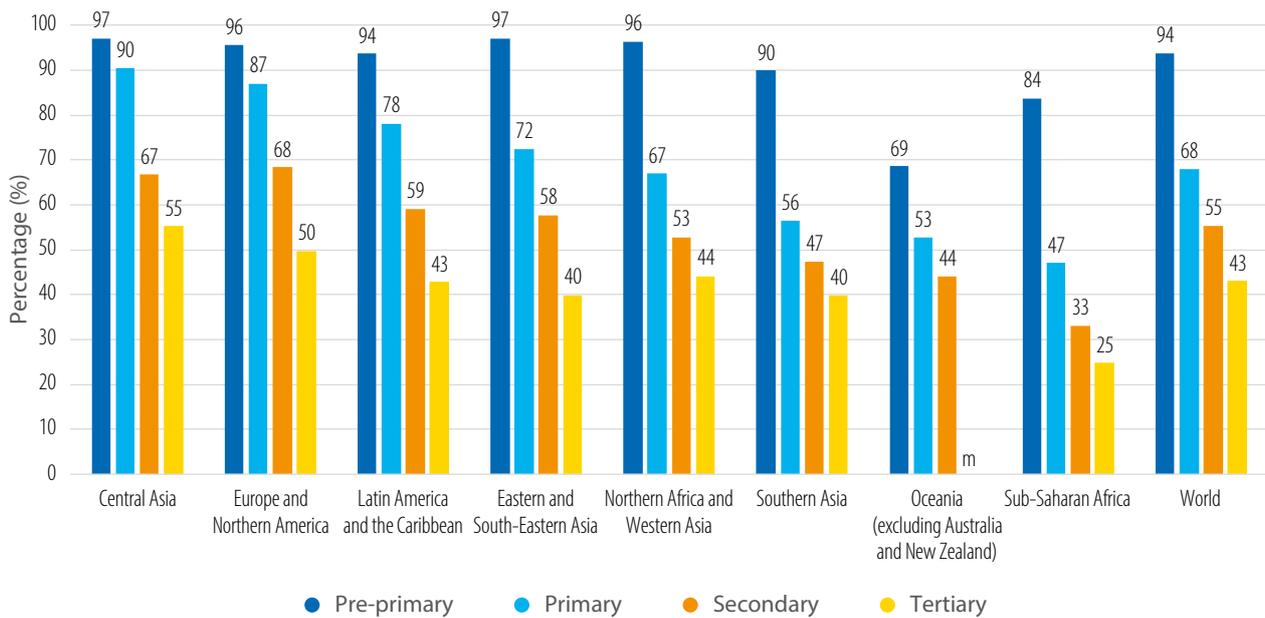
While the loss of novice teachers strains education systems and results in high recruitment and training costs, teachers retiring, which is one of the main reasons for attrition, also adds pressure. This is an important factor particularly in Europe, Northern America and other high-income countries where teachers are older on average. High average teacher age, as in Italy and Lithuania (over 50 per cent of primary teachers are aged 50+), poses significant adaptation challenges (Eurostat 2023). This situation however also creates a unique opportunity to recruit new talent into the profession with skill sets that are different and, in some cases, better aligned to changing priorities. Chapters III, IV and V cover these challenges and potential solutions in greater detail.

A gendered profession

Gender equality for teachers and representation that reflects the diversity of classrooms and communities are key to ensure inclusive and equitable quality education for all. The expansion of primary education during the last 20 years was largely supported by the recruitment of female teachers (UNESCO Institute for Statistics 2024) and the share of female teachers in education only seems to be growing. Female primary teachers represented 60 per cent of the global teaching force in 2000 and 68 per cent in 2022, while female secondary teachers increased from 51 per cent to 55 per cent over the same period (Global Education Monitoring Report Team 2022).

Teaching at lower levels of education is frequently perceived as a women's profession, influenced by cultural norms and gender bias that assign women the primary role in educating and caring for children (UNESCO and Commonwealth Secretariat 2011; Global Education

Monitoring Report Team 2019). For example, women represent the vast majority of pre-primary teachers (94 per cent) and a strong majority in primary education. They are less likely to participate in secondary and higher levels of education and positions of school leadership (see Figure 2.10). For example, whereas women form the majority of teachers in high-income countries, 49 per cent of school leadership positions on average were held by women and were as low as fewer than 40 per cent in Colombia, Denmark, Mexico, Netherlands and Viet Nam and fewer than 20 per cent in Japan, Republic of Korea and Türkiye (OECD 2019c). At the tertiary level they only represent 43 per cent of educators globally and are a minority in all regions except in Central Asia where they comprise 55 per cent of the tertiary sector.

Figure 2.10. Percentage of female teachers, by level, 2022

Source: UNESCO Institute for Statistics 2024. Date of database consultation: 15 December 2023.
Note: m = missing data.

Gender gaps remain unfavourable for women in developing and low-income contexts. For example, while women comprise the highest proportion of teaching workforces in Central Asia and Europe and Northern America, where they make up 90 per cent and 87 per cent of all primary teachers and about 2 out of 3 of all secondary level teachers, they make up just 47 per cent and 33 per cent of primary and secondary teachers in sub-Saharan Africa. Women are least represented (fewer than 30 per cent in primary education) in a number of Central and Western African countries, including Benin, Central African Republic, Chad, Comoros, Liberia and Togo (UNESCO Institute for Statistics 2024).

Teaching remains predominantly a female profession, globally, where women make up 94 per cent of pre-primary, 68 per cent of primary, and 55 per cent of secondary teachers.

Based on an analysis of teacher needs, the finding is that the number of additional teachers needed to meet universal enrolment is the greatest in those same countries where women are least represented in teaching workforces. Whereas this is reflective of the social and economic realities of those countries cited, in the context of attracting and retaining more qualified individuals into the profession, women therefore represent a significant untapped group to be capitalized upon for the needed

educational expansion and teacher recruitment needed to achieve the SDGs, the Education 2030 Agenda and beyond.

Moreover, in some contexts it has been found that women represent a larger component of contract teachers resulting in further inequities between the sexes. In India for example, while women make up 44 per cent of teachers in government and government-aided schools, they make up 55 per cent of those on contract in government schools and 59 per cent in government-aided schools, and earning lower salaries (Sarangapani forthcoming). This feminization pattern of the contractual workforce, compare to the overall workforce, is repeated across different school types in India. For example, it is also present among tribal welfare schools, where woman are under-represented in the overall teacher workforce but increase their participation in the contractual workforce by 6 to 7 percentage points. (Sarangapani forthcoming). The under-representation of women among Scheduled Caste and Scheduled Tribe teachers, in rural areas and across certain states and territories such as Bihar, Jharkhand, Rajasthan, and Tripura (below 40 per cent) (Centre of Excellence in Teacher Education 2023), underscores the complex dynamics of gender in the teaching profession when intersecting with other dimensions.

Another interesting finding in Burkina Faso shows how recent educational reforms to raise the academic qualifications to become a pre-primary or primary

level teacher from lower- to upper secondary level qualifications, could have short to medium term consequences on the gender composition of those entering initial teacher education and the profession. Enrolment data across teacher training colleges since 2021 show that the cohorts of prospective public primary school teachers since the reform are largely male-dominated. One hypothesis is that more males may be attracted to the profession because the entry level was raised, which comes with a higher salary. In any case, without effective policies focusing on emphasizing the entry of females to initial teacher education and the

recruitment of female teachers, the gender composition of the public primary teacher workforce in Burkina Faso, which was nearing parity in 2021 (49 per cent of primary teachers were females), could be threatened resulting in new gender imbalances favouring males (Dembélé et al. forthcoming).

The number of additional teachers needed to meet universal enrolment is the greatest in those same countries where women are least represented in teaching workforces.

The quest for more and better data

As highlighted in the different sections of this chapter, the availability and quality of data to ascertain the nature, extent and persistence of teacher shortages, with adequate details on the relevant dimensions of equity, remain a challenge. Several additional data sources are key to better understand the challenges to achieving SDG 4 and Target 4.c. Regular reporting of teacher shortages are needed for better planning around recruitment needs. Related to this, better and more consistent data on teacher attrition are needed. Current attrition indicators make use of recruitment data relative to shifts in the size of the teacher workforce; therefore, it is unclear whether reported high shifts in attrition are truly reflective of attrition or recruitment drives. Direct data on attrition would be informative and could validate other methodologies to calculate indicators on attrition. Moreover, data are required on the reasons for attrition which are critical in order for stakeholders to develop policies to better attract and retain teachers. To this end, better measurement of attrition would require accurate estimates using personnel data with assigned identification numbers so teachers can be tracked as they qualify, enter, leave and re-enter the teaching workforce.

More data on teachers, and who they are, are also important for longer term projections. Data on teachers' ages are predictive of impending gaps due to retirement, while more sex-disaggregated data on school leaders can help to develop policies designed to combat systemic discrimination against females and ensure they are in positions of leadership to help build more equitable outcomes for other female teachers and students.

Another of the main weaknesses is the lack of international agreement over the definitions of qualified versus trained teachers. To address these gaps, UIS has

established the International Standard Classification of Education for Teachers (ISCED-T) framework along with a comprehensive database on teacher recruitment policies around the world. Unpacking teacher preparation along the dimensions of teaching level, minimum requirements, programme duration and the overall relative duration in practicum, will help provide important insights on the quality of teacher training and important benchmarks for comparison and the generating of new indicators. This information will also be useful for informing any future work to establish guidelines for regional and or international minimum standards for teacher training and qualifications. Additionally, in light of the growing recognition of lifelong learning, more data by level on in-service training by subject type is critical to shed light on teachers' ongoing development and the acquisition of new innovations in pedagogy and subject matter that are critical to national, regional and international goals.

More data on deployment strategies, especially those shedding light on disparity and inequity along various dimensions are needed. These can help stakeholders better understand sub-regional disparities in terms of gender, qualifications, contract status and other key elements that make up teacher workforces and affect the quality and delivery of education. It also informs decision-makers in terms of policy development to make various adjustments.

Additionally, more data on working conditions, including real salaries and other incentives, working hours teaching time, class sizes, accountability, standards and issues around school and broader governance are also critical for informing holistic and comprehensive teacher policy development (UNESCO and Teacher Task Force 2019).

Lastly, across all data sources, more disaggregated data are needed, especially based on gender, location, contract status, urban versus rural and socio-economic status, to better ensure inequities are identified and policy reforms are adopted to mitigate the challenges through

measures that improve the status of all teachers, enhance quality of education delivery, maximize student outcomes and ensure the achievement of the SDGs.

These, along with other dimensions of data quality and availability, are discussed in Chapter V of this report.



Chapter 3

Teacher shortages as a multidimensional challenge

To effectively reach the aims of SDG 4, education systems need to take action to supply and allocate teachers equitably across their schools and classrooms. Nevertheless, as seen in Chapter II, teacher numbers are insufficient in many systems, with teachers inequitably distributed within and between countries. Moreover, teacher shortages represent a complex and layered policy issue, taking many shapes and stemming from numerous causes. Examining teacher shortages and their causes from multiple perspectives, this chapter

explores issues such as recruitment shortfalls, difficulties in coping with rising school attendance levels, growing teacher attrition rates and inadequate teacher allocation. It then explores the many dimensions which underlie acute teacher shortages and demonstrates how they are interconnected. This chapter contends that addressing teacher shortages involves recognizing them as a multidimensional issue in order to identify effective solutions.

Status of the teaching profession

While a multiplicity of factors contribute to teacher shortages, many of them are closely linked to the status of the teaching profession. As highlighted by the 1966 Recommendation ‘...the expression ‘status’ as used in relation to teachers means both the standing or regard accorded them, as evidenced by the level of appreciation of the importance of their function and of their competence in performing it, and the working conditions, remuneration and other material benefits accorded them relative to other professional groups’ (UNESCO and International Labour Organization 1966). With a few exceptions, the status and appeal of the teaching profession has declined globally, as education systems struggle to attract and retain skillful and motivated teachers (UNESCO IIEP 2019c).

In many low- and middle-income countries, high population growth combined with strides towards achieving universal primary and secondary education have led to the massive expansion of education systems. One side effect of this expansion in many countries is a relaxation of standards for entering the teaching profession, which has had a negative effect on the prestige of the profession and its appeal to many candidates (UNESCO IIEP 2019c). At the same time, in many cases teacher working conditions have worsened as classrooms have become more crowded. In countries across all income levels, unattractive salaries, hard working conditions, and heavy workloads are also discouraging many candidates from joining the profession (UNESCO IIEP 2019c).

As mentioned, the expansion of education systems has also resulted in the widespread hiring of contract or community teachers in many countries. This practice can give rise to two-tier systems where contract staff are employed on less desirable terms compared to those in government employment. Despite contract teachers’

important work in covering critical shortages (especially in hard-to-staff schools), they are typically employed on a short-term basis with limited access to health care, pensions, sick pay, and parental leave (UNESCO and Teacher Task Force 2020). In addition, they are often paid less than their tenured counterparts (UNESCO and Teacher Task Force 2020; Abdourhaman forthcoming). These conditions mean that contract teachers’ employment status is vulnerable. When education systems are sustained by high volumes of staff on unstable contracts, the teaching profession is unlikely to be viewed as an appealing option to those seeking job security.

Low status makes the teaching profession unattractive: only 67 per cent of teachers in the countries participating in TALIS 2018 reported that teaching was their primary career choice.

The diminished status of teaching affects its attractiveness to high-attaining candidates. In Latin America, candidates that choose teaching are academically weaker as compared to a pool of higher education students (Bruns and Luque 2015). In fact, students with low PISA scores in Latin America and the Caribbean were more likely to report that they wanted to be teachers than their higher achieving peers (Bruns and Luque 2015). The view of teaching as an easy entry or back-up career also prevails in Australia where only 58 per cent of teachers said it was their first choice career, compared to an average of 67 per cent for teachers in countries participating in TALIS 2018 (OECD 2019a). In Ethiopia too, careers in teaching have been perceived as a ‘last resort’ due to teachers’ low social status and pay compared to other professions (Yimam 2019). In the Philippines, stronger candidates often gravitate towards prestigious Bachelor of Science programmes in fields such as engineering, medicine,

or business. These disciplines, and the careers they lead to, are generally viewed as more lucrative and rewarding by prospective students compared to teacher training programmes (World Bank 2023a).

In contrast, in countries where entry into teacher training requires a high level of academic achievement, teachers may be highly regarded. However, simply increasing the entry requirements into the profession without considering a comprehensive set of factors will not necessarily lead to a higher teacher status.

As per the Global Teacher Status Index,² the 2018 results showed that teachers are much more highly respected in Asian countries (i.e. China, Indonesia, Malaysia) compared to European countries (Dolton et al. 2018). In China and Malaysia, teaching as a profession enjoyed a level of prestige comparable to doctors, whereas, in most countries, teachers tend to share a similar level of prestige with social workers (Dolton et al. 2018).

Moreover, the discourses that frame teaching are powerful in shaping teacher status and the attractiveness of the profession. Media portrayal is one of the factors

that informs public perceptions of teachers, and thus their status (see Box 3.1). Teachers are rarely portrayed positively in the media, as shown by Education International's survey of teacher unions, which reported that the media portrayal of teachers was 'very positive' in only one surveyed country – Fiji – and only the Gambia reported 'very positive' press coverage of teacher unions (Education International 2018). Other studies report similar findings about the USA (Goldstein 2011) and South Asia (Bangladesh, India and Pakistan) (Sayed et al. 2020). In the Middle Eastern contexts of Saudi Arabia and Oman, mass media is reported to idealize teachers as nation builders and transformative intellectuals, while simultaneously accusing them of a lack of professionalism (Alhamdan et al. 2014).

Improving the social status of teaching, and consequently the appeal of the profession, involves reassessing the representations of teachers in public discourse and respecting their right to be recognized as professionals (UNESCO and ILO 1966). Professional status is built through robust ITE and CPD, and the implementation of professionalizing policies as further discussed in Chapter V.

Box 3.1. The effect of the COVID-19 pandemic on teacher status

The COVID-19 pandemic affected public perceptions of teaching. Globally, teachers faced increased workloads and had to quickly adapt to online or remote pedagogies (UNESCO 2022d). In some countries, the demanding nature of teachers' work briefly gained attention: Education International found that 35 per cent of surveyed union leaders perceived that teachers' status improved during the pandemic. However, 28 per cent said that teacher status had declined, and 36 per cent perceived no change (Education International 2021). Other research suggests that those teaching in Australia, the USA and England perceived a temporary uplift to their public status as schools closed and parents, required to home-school, acknowledged the complexity of the task (Heffernan et al. 2021; Nerlino 2023; Oxley and Kim 2023). In addition, Education International's survey found that around 60 per cent of union leaders thought that media reporting on teachers/educators was very positive or positive both during and after school closures (Education International 2021).

Although teachers and their work were celebrated in mass media during the COVID-19 emergency, in high-income English-speaking contexts, this perceived change was temporary. Public opinion soon swayed against the profession when teachers expressed safety concerns about returning to in-person teaching. As a result, teachers were quickly accused of selfishness and laziness (Asbury and Kim 2020; Nerlino 2023). The bounce in public opinion did not lead to significant structural enhancements like increased investment, support and improved conditions for professional educators (Education International 2021). A vital opportunity to build and sustain an improved status for teachers may have been missed, but the power of media portrayal in shaping teacher status became more evident.

2 It was developed by the Varkey Foundation and measures the level of respect for teachers among the general population in 35 countries.

Recruiting matters: Teaching as an attractive career choice?

Shortfalls in recruitment are one of the key causes contributing to teacher shortages. Young people's interest in pursuing a career in teaching can serve as a good indicator of the profession's attractiveness to the upcoming generation, even if this is not necessarily representative of the number of teachers actually entering the profession, as explained later.

There is great variation across countries when it comes to 15-year-olds' aspirations to become a teacher, as illustrated by the PISA results. Data available for 41 countries participating in PISA reveals that between the years 2000 and 2018, on average, teaching continued to be ranked among the top ten career aspirations of 15-year-olds (Mann et al. 2020). However, analysis of results from the 2006 PISA cycle show that in some countries such as Ireland, Indonesia, the Republic of Korea, Luxembourg and Türkiye over 10 per cent of students would opt for a career as a teacher, while in others this proportion is lower than 2 per cent, as in Austria, Chile, the Czech Republic, Denmark, Estonia, Germany, Hungary, Italy, Portugal, the Russian Federation, the Slovak Republic and Switzerland (Han et al. 2018). Likewise, data for the year 2015 show that in high-achieving systems like Finland, Hong Kong (SAR China), Japan and the Republic of Korea, the percentage of students interested in pursuing teaching ranges from 10 per cent to over 25 per cent, which is higher than the percentage of those interested in engineering. In contrast, a set of countries from Latin America and the Caribbean report a very low percentage of students interested in teaching, significantly lower than those interested in engineering. In Peru, for example, less than 5 per cent of students reported an interest in the teaching career, while more than 32 per cent indicated a desire to pursue engineering. In Brazil, 5 per cent of 15-year-olds envision pursuing a teaching career, whereas 21 per cent are interested in engineering (Elacqua et al. 2018).

According to PISA, between 2000 and 2018, teaching continued to be ranked among the top ten career aspirations of 15-year-olds. Today, this varies greatly among countries with fewer than 2 per cent aspiring to become teachers in Austria, Chile, the Czech Republic, Denmark, Estonia, Germany, Hungary, Italy, Portugal, the Russian Federation, the Slovak Republic and Switzerland.

In some countries, longitudinal data point to a decline in interest in teaching among pre-university students over recent years. In the USA, for example, the ranking of education as an intended college major among ACT-tested high school graduates fell from fourth to eighth place between 2007 and 2017 (Croft et al. 2018).

However, high-school students' occupational aspirations must be interpreted with caution since career intentions at the age of 15 remain malleable and are not directly transposable into enrolment rates in teacher education programmes. An analysis compared student career intentions reported in PISA 2015 with university enrolment rates for 2013-2015 from the UIS database and found that the pattern is reversed: in high-achieving countries, the share of students enrolled in teacher education out of all university enrolments is low (e.g. about 5 per cent in Republic of Korea and Finland), whereas in Latin American countries, the share tends to be higher (e.g. over 15 per cent in Brazil) (Elacqua et al. 2018). This may be due to teacher education programmes generally being more selective in high-achieving countries. In Australia, a study that used PISA 2006 data matched with data from the Longitudinal Survey of Australian Youth found that by the age of 23, two-thirds of those surveyed who wanted to teach had changed their minds and no longer wanted to enter the profession. The study also found a similar number who had not been inclined towards teaching at age 15 but were so inclined at age 23 (Sikora 2021). This yields interesting policy insights, such as the fact that students interested in teaching at age 15 may need ongoing encouragement to sustain this interest. Additionally, students may opt for teaching at later ages, and recruitment campaigns should not ignore these 'late conversions'.

In countries where the number of high schoolers interested in pursuing teaching or the percentage of enrolments in teacher education programmes fall short, it is important to further explore reasons that lead to these observations. A systematic review addressing this issue found that where young people have rejected teaching, common reasons included factors such as a lack of personal fit, perceptions of teaching (e.g. workload and their own experience of schooling) and better options elsewhere (See et al. 2022). For those who have never considered teaching, career choices tend to be motivated by salary, promotional prospects, job status and working conditions. This is consistent with other studies (Barber and Mourshed 2007), which found that, while an attractive salary may not be the main reason for choosing

a teaching career, a salary comparable to the starting salary of other graduates is crucial for many individuals to consider entering teaching. It is also important to be aware of wider socioeconomic trends which may influence career choices. For example, a study interprets the decrease in enrolments in teacher preparation programmes observed from 2008 to 2013 in the USA as a reflection of the economic recession: in a context of economic hardship, students might be driven to careers that are more lucrative (Aragon 2016).

Between 2000 and 2010, only about 15 per cent of graduates from teacher training programmes in Lithuania actually took a job in a school, which represents the challenge of education systems to attract qualified graduates to teaching jobs.

In some contexts, failures in teacher recruitment are exacerbated by the inability to attract graduates of teacher education programmes to take teaching jobs. In England, for example, almost half of trained teachers in 2019 were not actually working as teachers (United Kingdom Department for Education 2023). Lithuania is facing a similar issue. Between 2000 and 2010, only about 15 per cent of graduates in education studies with a teacher qualification actually started working in schools (Gruodyte and Pasvenskiene 2013). This situation may imply a significant inefficiency in the allocation of financial resources dedicated to teacher training.

Retaining teachers: Challenges caused by attrition

As explored in the data presented in Chapter II, teacher attrition emerges as a significant factor contributing to teacher shortages. Projections show that approximately 58 per cent of the demand for teachers globally by 2030 will be driven by attrition. While it has represented a growing issue since before the pandemic (see examples from the USA: García and Weiss 2019; or in Latin America and the Caribbean: Elacqua et al. 2022), teacher retention is now receiving strong international attention as various countries continue to struggle with this challenge (Ozoglu 2015; Ávalos and Valenzuela 2016; Edge et al. 2017; Burge et al. 2021; Palma-Vasquez et al. 2022).

As explained in Chapter II, teacher attrition specifically refers to the number of personnel leaving the profession in a given year, with departures stemming from various reasons, including retirement, health concerns, pursuing employment in another field or dissatisfaction with working conditions. Attrition occurs in diverse country contexts around the world, affecting low-, middle- and high-income countries alike. For example, only two thirds of newly qualified teachers in England remain in post by their sixth year in the profession, and only 40.6 per cent remain in teaching after 25 years (United Kingdom Department for Education 2023). High levels of teacher attrition can cause issues throughout education systems, affecting students, other teachers, and schools (Allen and Sims 2018a).

Of primary concern, teacher attrition can directly impact students, particularly those from lower performing or high needs schools (Hanushek et al. 2016). Furthermore, recent developments in neuroscience have highlighted that learning is inherently emotional (Immordino-Yang 2016), and as a result, students' development and learning are likely to be impacted by the effects of high numbers of teacher departures and the discontinuity of classroom interactions. Building effective learning environments with conducive cultures supportive of pupil learning, development and well-being require time and stability (Day et al. 2007; Hargreaves and Fullan 2012; Robinson 2017), which can be undermined by high levels of teacher attrition (Kelchtermans 2017). These situations can cause teachers to experience more difficult working conditions and damage school cultures, which can in turn lower motivation and increase attrition rates.

Teacher attrition, especially early in a career, can also prevent educators from reaching their full potential and effectiveness. Research has found that teachers improve as they gain experience (Ladd and Sorensen 2017), with a literature review of 18 studies that analysed longitudinal data sets in the USA showing that experience is positively correlated with effectiveness (Podolsky et al. 2019a). Teachers make the biggest gains in effectiveness early in their careers but continue to improve even past their first decade in the classroom (Podolsky et al. 2019a). Research has also found that more experienced teachers can have impacts on students beyond test scores, such as

improving student absences and classroom behaviour. One study showed that teachers with more than 20 years' experience can reduce the number of students with high rates of absenteeism (more than 17 days) by 12 to 18 per cent (Kini and Podolsky 2016).

Nearly 6 in 10 of the teachers needed to reach SDG 4 targets by 2030 will be lost by attrition which is also problematic as recent studies show teachers improve as they gain experience: a teacher with more than 20 years' experience can reduce students' absenteeism by 12 to 18 per cent.

Teacher attrition can also have direct negative impacts on other teachers through issues such as staff shortages and increased class sizes (Teacher Task Force 2021a). For example, a study in Rwanda found that high rates of turnover led to at least 21 per cent of teachers teaching in subjects for which they had no training (Zeitlin 2021). Constant turnover may also prevent ongoing

opportunities for fruitful collaboration that develop between teachers over time (Carver-Thomas and Darling-Hammond 2017).

Staff attrition also poses continuous challenges for schools, principals, and even entire systems. Initially, training and recruiting new teachers is expensive (see Chapter VI) and time-consuming, straining already taxed systems (OECD 2020a; Carver-Thomas and Darling-Hammond 2017). Schools experiencing high turnover also face ongoing disruption throughout the year as they seek to recruit and onboard new colleagues. Large intakes of newly qualified, inexperienced, or beginner teachers place extra demands on schools, which play an important role in the ongoing development and training of such staff. At the system level, large numbers of departures can eventually lead to vicious cycles where systems struggle to keep up with the constant turnover of training and deploying new teachers. It can also lead to demoralised and under supported staff who are at a higher risk of quitting (Loeb et al. 2012; Newberry and Allsop 2017).

Teacher attrition is multi-causal

Much like the multitude of issues that lower the status of the profession and affect recruitment, no singular cause drives teachers to leave the profession. Teacher attrition and the subsequent shortages in the workforce depend heavily on the conditions of teaching, ranging from employment status and remuneration, to the trust, appreciation, and sense of fulfilment they receive as well as the autonomy they are granted. Broadly, the factors

that lead to teacher attrition can be grouped into three major categories that include push factors (working conditions and teacher well-being), pull factors (teacher remuneration and opportunities for career growth) and personal reasons (retirement, health concerns or family obligations) (Teacher Task Force 2010; Global Education Monitoring Report Team 2023a).

Factors that may push teachers away from a career in teaching

Push factors can include any issues that make a teacher's everyday life more difficult, such as long working hours, large class sizes or a lack of support and recognition (Teacher Task Force 2010; Podolsky et al. 2016). Research from African and other low-income countries highlights how inadequate resources including textbooks, overcrowded classrooms, excessive workload and classroom management issues can all contribute to teacher attrition (Mulkeen et al. 2007; Pitsoe 2013; Marais 2016; Palm 2020). These types of challenging work conditions can have impacts on a teacher's well-being with physical, psychological, emotional, and social dimensions (OECD 2020g; Green and Wright 2021).

When it falls below a certain threshold, a teacher's lack of well-being can lead to retention problems (Skaalvik and Skaalvik 2017).

High rates of stress for any reason can push teachers out of the profession. The 2018 TALIS report showed that teachers who experience 'a lot' of stress at work are more than twice as likely to want to leave in the next five years (OECD 2020f). A common source of stress for teachers is the lack of a healthy work-life balance, which can stem from overburdensome administrative tasks. For instance, in a survey of 128 teacher unions from 94 countries, 60 per cent of respondents disagreed with the statement that teachers could maintain a healthy work-life balance

(Education International 2021). Administrative tasks are the leading source of stress for teachers in OECD countries (OECD 2020f). These stressors are also prevalent in parts of Southern Asia and Latin America and the Caribbean, where overwhelming administrative duties can prevent school leaders from engaging with school improvement efforts (UNESCO 2018b).

In a global survey of teacher unions from 94 countries, 60 per cent of respondents disagreed with the statement that teachers could maintain a healthy work-life balance.

In a related issue, workloads are a pressing concern for teachers in many systems. Workload can have qualitative, perceptual elements (appearing too intense and/or pressured), but it can also include quantitative aspects including increased contact hours, or higher work intensity (Green 2021; Creagh et al. 2023). In Japan, where teachers work the longest hours of all OECD countries, stressful workloads are attributed to administrative tasks, responsibility for students' achievement, and addressing parent or guardian concerns (OECD 2020f). Pressure from parents is also a concern in the Republic of Korea, where teachers protested about this particular aspect of their work and asked for better legal protection from accusations made by parents (Choi et al. 2023). Increased workloads have been associated with attrition also when teachers must adapt to complex or generally poor timetable assignments or are teaching out of field (Donaldson and Johnson 2010; Connolly 2023).

The COVID-19 pandemic proved a catalyst for a new dynamic and set of stressors for teachers in many systems, increasing their workloads or work intensity. While digital technologies and distance learning capabilities allowed schooling to continue, many teachers lacked access and proper training (Global Education Monitoring Report Team and Education International 2023), which caused added stress or increased workloads to try and develop competency. Other issues stemmed from having to work extra hours due to constant connection with students and parents. For example, a survey of nearly 900 teachers from eight Latin American countries during the pandemic revealed that teachers experienced technological difficulties (including a lack of connectivity), spent lots of additional time answering questions from students and parents and faced interruptions to their personal time and space (Medina-Guillen et al. 2021). While much more ongoing research is needed, this may have established

more intensive expectations of teachers to work and engage with students or parents in the evenings or over weekends.

Inspections and evaluations can also add to teacher workloads and stress levels, with research showing that teachers who experience accountability-related stress might go on to leave their roles (Ryan et al. 2017; Jerrim and Sims 2022). A study of eight schools in Sweden revealed that inspection and evaluation pressures added to teacher stress, reduced opportunities to experiment, and impaired job satisfaction (Hanberger et al. 2016). However, while overly strenuous accountability systems may have negative consequences for the appeal of the teaching profession, weak systems can also be demotivating (Bennell and Akyeampong 2007). Accountability can be welcomed by teachers when it has a developmental dimension, but if little to no attention is paid to school or teacher performance, school leaders and teachers may feel undervalued and ignored by policy-makers.

Teachers' well-being can also be shaped by the quality of their social relationships, whether in school or with the community. When teachers are isolated from peers or feel that they do not belong in a community, their well-being may be impaired. This trend has been found for teachers across the world (Hascher and Waber 2021). Competitive education systems, where teachers compete for promotions and desirable postings might impede collaboration and collegiality (UNESCO IIEP 2019c). International studies have linked the quality of teachers' relationships with others – including colleagues, parents, and ministries – with job satisfaction, efficacy and retention (Toropova et al. 2021; Klassen et al. 2013; Opoku et al. 2020). For example, data from Australia indicate that a teacher who is very satisfied with their working relationships is about 70 per cent less likely to leave their position than a teacher who is very dissatisfied (Cui and Richardson 2016).

In an even more direct threat to their well-being, many teachers around the world face an increased threat of physical or psychological violence. This could refer to a range of troubling behaviour, including insults or mockery, shouting, verbal threats, online harassment, property theft/damage or even physical attacks and violence. Any such behaviours can have negative impacts on the physical, mental and emotional well-being of teachers and reduce recruitment and retention (Berlanda et al. 2019; Henderson 2023). Physical violence against teachers may especially occur in contexts that are facing

conflict or have active paramilitary groups nearby. One example is the Boko Haram extremist group in northern Nigeria that has actively threatened, kidnapped and killed teachers for years (Henderson 2023). In other instances, resistance forces have forcibly conscripted some teachers in Syria, while teachers aligned with the resistance government in Myanmar have been abducted and killed (ibid).

Violence can also heavily impact teachers working in countries or locations that are not in conflict settings. A large study, surveying more than 9,000 teachers in the USA in 2020 and 2021, found that 33 per cent of teachers had been the victim of verbal abuse or threatening behaviour from students, and 29 per cent had faced this behaviour from parents. Even worse, 14 per cent

of teachers reported they had experienced physical violence from students (McMahon et al. 2022). Nearly half the teachers participating in the survey reported a desire to quit or change jobs due to worries about safety and school climate. Another multi-country survey of more than 20,000 teachers in 2022 found that verbal and online violence rates against teachers had increased in France (up 5 per cent from 2021 to affecting 35 per cent of those surveyed), Belgium (up 9 points to 36 per cent), Quebec (up 12 points to 39 per cent) and Morocco (up 10 points to 22 per cent) (Education and Solidarity Network 2023). France has also dealt with multiple high-profile teacher murders in the last several years, leaving teachers worried they could be targeted due to their work (Pommiers 2023).

Factors that can pull teachers towards careers in other professions

Many teachers can be pulled away from teaching by careers in other fields that offer higher pay or more room for professional growth. The data in Chapter II highlighted that teacher salaries remain unattractive across many countries globally when compared to professions requiring similar qualifications. As low salaries or irregular payments can lessen the prestige and attractiveness of the profession, or prevent teachers in low-income countries from being able to afford basic necessities, higher wages and benefits in other careers can draw teachers away (Mulkeen et al. 2017; UNESCO 2022d; Katete and Nyangarika 2020). For example, a survey of teachers in 6 systems (Belgium, France, the Gambia, Mexico, Morocco, and Quebec) found that half of those surveyed in the Gambia had forgone medical care due to financial reasons in the last year, as had 60 per cent of those in Morocco (Katete and Nyangarika 2020). In the North-West Province of South Africa, research determined that high rates of attrition stemmed from teachers' dissatisfaction with the government's handling of a pension fund, with 78.3 per cent of recently resigned teachers citing low salary and benefits as their reason for departure (Mpundu et al. 2023).

Higher wages and benefits such as health care in other careers can draw teachers away from teaching – approximately half of teachers surveyed in the Gambia and 60 per cent of those surveyed in Morocco reported foregoing medical care due to financial reasons.

A further consequence of low salaries or late or missed payments is that teachers might take on additional jobs. Although not always financially motivated, teachers working multiple jobs are found across countries regardless of their income level, with teachers assuming secondary work in various occupations (Mizala and Ćopić 2016; Koomson et al. 2017; Timothy and Nkwama 2017; Šťastný et al. 2021). Research in Tanzania found that teachers on low salaries either assumed additional jobs or took out loans leading to debt and financial precarity (Stromquist et al. 2017). Teachers in countries from all income levels especially take on work as private tutors, both to earn more money or gain more experience. This can lead to issues where teachers put less effort into regular lessons in the classroom and more towards fee-paying work, as in Myanmar (Global Education Monitoring Report Team 2021). These conditions take teachers away from teaching, contribute to absenteeism, and are damaging to their well-being as they may increase their workload.

In addition, external labour markets can also be a complex factor influencing teacher retention rates. On the one hand, increasing levels of teacher training and qualification help retain teachers in many parts of sub-Saharan Africa. In Zimbabwe, less qualified teachers are more likely to quit teaching because they tend to be on short-term contracts and receive poor levels of support (Teacher Task Force 2021a). On the other hand, high levels of training and qualification can paradoxically lead to greater attrition if highly qualified teachers take advantage of their qualification level to move outside

the education sector. This especially holds true for STEM teachers (Global Education Monitoring Report Team 2018; Bennell 2023a). For example, research from Rwanda indicated that maths teachers leave the profession at a higher rate than teachers in other subjects (Zeitlin 2021). In other cases, teachers may stay in the education sector while being promoted to administrative roles (such as school principals) but move away from the classrooms, which negatively affects education quality as the best teachers stop teaching (UNESCO IIEP 2019c). However, the influence of external factors can also work in the opposite direction. For example, in 21 countries in sub-

Saharan Africa, low attrition rates (below 5 per cent) may be linked to weak local labour markets (Bennell 2023a); such conditions make it difficult for teachers to leave teaching even if they want to.

Salaries and labour markets are not the only factors that drive teachers to other jobs. Evidence from the USA and Norway suggests that teachers may quit in search of increased intellectual satisfaction, professional autonomy and as an act of agency to seek out ongoing career development outside of the classroom (Goldring et al. 2014; Rinke and Mawhinney 2017; Smith and Ulvik 2017).

Personal factors leading to teacher attrition

Personal factors leading to teacher attrition can often originate from variables which lie beyond the scope of policy measures. These can include retirement, family obligations, marriage, raising children, illness, death or other reasons (Teacher Task Force 2010; Podolsky et al. 2019b). Across teachers' careers, work challenges may interact with elements of their personal lives; some factors may be protective, helping to build resilience and sustain them in their roles, or may sap both energy and self-efficacy (Day et al. 2006). In the USA, survey data from 2013 identified 'personal life reasons' such as pregnancy

or childcare as the most common cause for teachers to leave the profession, with 37 per cent of voluntary leavers citing it as an 'extremely' or 'very important' factor in their decision (Podolsky et al. 2016). Data from the USA Teacher Follow-up Study reported a 'better work-life balance' as the top benefit when teachers leaving the profession took a new job, even though it may have resulted in lower pay (Goldring et al. 2014). This echoes concerns about growing workload intensity and time poverty as factors which drive teachers out of teaching (Creagh et al. 2023).

International teacher mobility

While national teacher retention policies are a crucial component of any country's strategy to build a sustainable teaching workforce, there are global mobility and migration trends that defy a system's individual capacity to retain its teachers. Skilled migration has grown globally, with a 130 per cent increase in high-skilled migrants in OECD countries between 1990 and 2010 (compared to a 40 per cent increase in low-skilled migrants), and talent distribution across countries remains skewed. Four countries, Australia, Canada, the UK and the USA together host 70 per cent of high-skilled migrants to OECD countries (Kerr et al. 2016). Teachers are not an exception to this trend, with just a few countries, Canada, Germany, the UK and the USA, hosting among the largest numbers of immigrant teachers (Global Education Monitoring Report Team 2019).

Comprehensive data on teacher migration is not available and it is challenging to obtain global figures on teacher migratory flows, but there is evidence that points to

an exacerbation of teacher shortages in countries affected by crisis-related forced migration or labour migration outflows.

Global migration of high-skilled workforce has increased by 130 per cent in OECD countries, which also includes teachers. The ongoing crisis in Syria has displaced more than 5 million people abroad since 2011, about one third of whom are teachers and health care personnel.

On the one hand, forced migration due to conflict, natural disaster, or extreme economic collapse can have rapid and long-lasting effects on the teacher workforce, compromising the future of a country's education system. The protracted crisis in Syria has displaced over 5 million people abroad since 2011, out of which more than one third are teachers and health care personnel (United Nations 2022b). A recent survey singled out

qualified teacher shortages as one of the most important challenges currently being faced by this country (Abu-Amsha 2023). In Zimbabwe, socio-economic and political turmoil in the 2000s led to 35,000 teachers leaving the country, mainly to Botswana, South Africa and the UK (De Villiers and Weda 2017).

On the other hand, teacher labour migration tends to mirror general migration patterns driven by the pull of better wages in the destination country. Whereas the positive impact of remittances and returning migrants is acknowledged, critical voices also emphasize the risk of brain drain that could hamper the development of sending countries if too many teachers are lost (Caravatti et al. 2014). Commonwealth countries, particularly small states in the Caribbean, such as Barbados, Guyana, Jamaica, and Trinidad and Tobago, have long reported major teacher losses as a result of large-scale teacher recruitment, mainly by the USA and the UK (ibid). In some Arab countries, like Jordan, which experienced an important outflow of teachers to the oil-exporting Gulf States particularly since the 1970s, concerns have also

been raised about the shortage of qualified teachers (Brand 1994; Ghawi and AlQbeilat 2020). In Lebanon, the Center for Lebanese Studies in 2022 estimated that three-quarters of teachers are planning to leave Lebanon, which can be at least partly explained by deteriorating teacher financial and working conditions.

Despite the prevalence of 'south-north' teacher migration flows (Ochs 2003), high-income countries are also affected by teacher loss due to international mobility. In the UK, for example, concerns are raised about the intentions of newly qualified teachers planning to teach abroad for better pay and conditions (Henry 2023).

Teacher losses in sending countries can often be less visible, particularly when it comes to the qualitative, rather than the quantitative aspects of shortages. In Jamaica, for example, school principals report concerns about the loss of experience, since most teachers quitting to teach abroad are those with a wealth of experience (Morgan et al. 2006).

Teaching amidst crisis

The multi-faceted nature of teacher shortages and the associated challenges are even more complex when addressing teaching in crisis and emergency situations. During the COVID-19 pandemic, the world witnessed teachers and education personnel at the forefront of crisis response, with 63 million teachers affected by school closures and impacts on their health and well-being (Teacher Task Force 2020). Teachers had to innovate and adapt pedagogical processes, adjust methods and curricula, design materials, and use a variety of media and platforms to sustain learning. They also faced demands that went beyond sustaining learning, such as providing psychological support to learners and families – an area of work that becomes increasingly important in crisis contexts but for which teachers were not necessarily prepared beforehand.

Teachers in crisis contexts are often exposed to safety and security risks, and this has important implications for shortages. Empirical evidence suggests a negative relationship between the level of risk that teachers are exposed to and their motivation to stay in the profession (Henderson forthcoming). Furthermore, there is a correlation between the risk that teachers are exposed to and the likelihood of experiencing burnout (Henderson forthcoming). For example, in the context of the Syrian refugee crisis, qualified refugee teachers left the teaching

profession due to restrictions on their right to work, non-recognition of their qualifications, or language barriers in host countries (UNESCO and Teacher Task Force 2023a).

In crisis and emergency contexts, the conditions in which teachers work and live vary largely as per specific contexts. For example, teachers of displaced children are likely to have experienced displacement and trauma themselves. Alongside their own psychosocial and emotional needs and those of their students, educators in crisis contexts contend with large class sizes, severely limited resources, and restricted opportunities for collaboration and professional development, in addition to safety and security risks. These factors can affect teachers' motivation and well-being and may discourage them from entering or staying in the teaching profession (Henderson forthcoming). Crisis contexts therefore tend to exacerbate pre-existing challenges in the areas of teacher support and training as well as teachers' rights and protection. Depending on various factors, the employment and recruitment of teachers in crisis and emergency situations can therefore vary widely. Teachers may be employed through a state teacher service, hired on short-term contracts, hired and registered as volunteers, or as 'incentive teachers' and paid a nominal fee for teaching (Mendenhall et al. 2018). Further they may include formally trained teachers hired on permanent or temporary contracts, or teachers working

on a voluntary or community basis, often with limited access to training. The teachers' own 'displacement status' may influence which legal, policy and administrative rules apply to them and, in turn, determine the challenges relevant to work conditions and access to professional development opportunities (ibid).

The specific challenges relevant to teacher management systems in contexts of crises have been identified as those of availability, financing, and planning (Mendenhall et al. 2018). In these situations there is often a significant shortage of teachers, with a pronounced scarcity of female teachers (ibid). Furthermore, this may add additional stressors to those previously discussed in this chapter, especially considering that women predominantly occupy teaching roles globally. This may be explained due to the fact that women are more likely to be exposed to gender-specific violence in crisis situations along with a lack of necessary sanitary and health facilities and menstrual support (Henderson, forthcoming). Furthermore, the recruitment of female teachers in contexts of crises is compounded by the difficulty to retain female teachers in crisis areas, particularly where violence is prevalent, as women are more susceptible to harassment and exploitation during conflicts (Mendenhall et al. 2018).

Another crucial aspect relevant to teacher supply in contexts of crises is teacher compensation. As highlighted in this report, equitable and predictable salary systems are crucial to ensure adequate teacher supply. However, several challenges exist for meeting this requirement in fragile and crises-affected contexts. These include, but are not limited to, the following: lack of sufficient financial resources to meet these salary requirements, over-stretched national education budgets and the lack of international aid over a long-term period, practical

challenges of weak audit mechanisms to track teacher pays, weak teacher management systems, and the destruction of payroll records, among other challenges (Mendenhall et al. 2018). Thus, recruiting sufficient, gender-balanced numbers of qualified teachers, who are employed under decent conditions of work with regular, predictable salary structures is essential, as well as identifying the contextually relevant bottlenecks and designing innovative funding mechanisms to address these challenges.

Exclusionary government policies can also affect access to training, certification, and pathways to professionalization and career advancement. In Thailand, for example, legislation makes it impossible for refugee teachers to work and earn an income outside of refugee camps. This places teachers in the camps in a vulnerable position, perpetuates the structural marginalization of certain groups, and limits the opportunities to improve the education system in the long term (Penson 2013). To integrate refugee or displaced teachers into national education systems, it is imperative to support them through relevant, high-quality and context-specific CPD programmes. These programmes, identified as effective by both teachers and community members, should be continuously refined and improved through ongoing cycles of policy enhancement and professional learning (Henderson forthcoming).

Additionally, this professional development support needs to consider the range of support that learners and teachers in this context need, including for their socio-emotional well-being as well as strategies to deal with trauma (Mendenhall et al. 2018). Targeted training that helps teachers to manage their stress levels is seen as being beneficial (ibid).

The role of gender in teacher attrition

Chapter II showed that although teaching is a female-dominated profession globally, in general, male teachers leave the profession at higher rates than their female colleagues. This reality can leave systems bereft of male teachers, especially at lower levels of education. That being said, there are some contexts where women have higher attrition rates. No matter the direction of the gender disparity, a lack of equity can create considerable challenges for education systems.

Women make up 57 per cent of the teaching workforce in Uganda, but only 17 per cent of teaching staff in remote areas. Other reasons for female attrition include the lack of suitable accommodation, unsafe or unsanitary environments and working conditions or discrimination.

The causes of higher male attrition rates vary by region or country. However, some general trends have emerged such as men having more employment mobility than women, especially in fields such as construction, business, manufacturing and agriculture (OECD 2023e). Globally, women are over-represented in lower paying service sectors such as education and social care, and the gender gap in labour force participation stands at 25 per cent (OECD 2023e).

A dearth of male teachers may have negative impacts on boys' engagement and achievement at lower levels of education. For example, in Côte d'Ivoire, the percentage of male teachers in school is positively correlated with the promotion rate for boys, but not for girls at primary and elementary level (UNICEF Innocenti et al. 2023b). In Latin America and the Caribbean, boys underachieve academically compared to girls and are at higher risk of dropping out of secondary and tertiary education (UNESCO 2022c; World Bank 2023b). Some factors that might contribute to this include a lack of role models in education and classroom responses that do not respond to boys' needs (World Bank 2023b). A UNESCO report further substantiates these findings, underlining that exposure to male role models and mentors may dismantle stereotypes and improve boys' motivation to learn (UNESCO 2022c). This was especially demonstrated in Kuwait where the study highlighted that male role model examples introduced at school through different activities may help improve individual-level factors responsible for boys' underperformance in education (UNESCO 2022b).

The factors causing more women than men to leave the profession will vary by context, but in certain locations these include a lack of suitable housing, unsafe or unsanitary working conditions, or discrimination due to views on women's role in the workforce (Global Education Monitoring Report Team 2022). Data indicate that female teachers in some countries work in schools that lack even the basic facilities for physical well-being. For example, across Africa nearly 2 in 5 schools do not have drinking water or single sex toilets (UNICEF and African Union Commission 2021).

Alongside inadequate WASH facilities, across the world many female teachers' well-being is threatened by the unsafe environments in which they must work.

In particular, gender-based violence is a concern for women working in education in low- and middle-income countries including Afghanistan, Argentina, Democratic Republic of Congo, India, Kenya, Niger, Malaysia, Panama, Peru, and Zambia (Education International 2018). With these concerns, it is unsurprising that there are difficulties in recruiting women into teaching in some locations, especially in remote areas where physical isolation may make the threat of violence feel more acute. In Uganda, for example, women account for 57 per cent of the teacher workforce but only 17 per cent of those in remote areas (UNESCO International Institute for Capacity-Building in Africa 2017).

When there is a lack of female teachers or school leaders, this can potentially impact girls' enrolment, engagement, retention, and future aspirations (Education Commission 2019). The 2019 Conference of Ministers of Education of Francophone States and Governments (CONFEMEN) Programme for the Analysis of Education Systems (PASEC)³ reported that schools with female principals had significantly higher reading and mathematics scores for all students than schools with male principals (PASEC 2020). While encouraging for the potential of female leaders, deeper regression analysis indicated that women may work in more advantageous academic settings in some of these countries from the report, indicating more research and observation may be needed to reach deeper conclusions on this matter. Even when accounting for all factors, though, female-led schools still outperformed male-led schools by a statistically significant margin in Benin, Madagascar, Senegal and Togo (UNESCO IIEP Pôle de Dakar 2023). The same analysis also found that schools with female leadership adopted different management practices in some of these countries, such as holding more meetings with parents and reporting fewer occurrences of teacher absenteeism (ibid).

Studies from different countries show a positive correlation between female school leadership and student learning outcomes: in Lao People's Democratic Republic, highly effective schools, as compared to their peers in similar contexts, are twice as likely to have a female principal than less effective schools.

3 The report covers the quality of education systems in primary schools in French-speaking sub-Saharan Africa. The most recent PASEC assessment took place in 2019 across 14 sub-Saharan African CONFEMEN member nations. These countries include Benin, Burkina Faso, Burundi, Cameroon, Chad, Congo, Côte d'Ivoire, the Democratic Republic of Congo, Gabon, Guinea, Madagascar, Niger, Senegal, and Togo.

Analysis of ERCE 2019⁴ indicates a correlation between sixth grade students' academic performance and the gender of school principals. This suggests the hypothesis that improved outcomes in ERCE, particularly in mathematics, language and science, are associated with female school principals (UNESCO OREALC forthcoming b). This is also supported by the UNICEF 'Data Must Speak' study conducted in Lao People's Democratic Republic where highly effective schools, as compared to their peers in similar contexts, are twice as likely to have a female principal than less effective schools (UNICEF Innocenti et al. 2023a). A similar study conducted in Togo highlights that, at the primary school level, gender of the school leader is associated with better outcomes of girls and lower dropout rates for girls. Furthermore, a female principal is also associated with reduction in the gap between girls and boys in terms of average scores and admission to the Primary School Completion Certificate.

However, this positive association between the gender of the school leader and academic outcomes/performance was not observed at the lower secondary school level (UNICEF Innocenti et al. 2023c). In Côte d'Ivoire, girls outperform boys when it comes to promotion rates and exam results and the presence of more female teachers in the school is positively correlated with these results. In addition, school dropouts are less frequent in female-led schools (UNICEF Innocenti et al. 2023b). Some analysis highlights specific characteristics of female leadership that may contribute to enhanced performance, such as greater reliance on instructional expertise (Hallinger et al. 2016; Carrasco and Barraza Rubio 2021; Jiménez and Parraguez-Núñez 2023) and less hierarchical authority than that of male peers (Shaked et al. 2018), increased promotion of participation and collaboration between actors (Eagly and Carli 2007) and higher management quality (Martínez et al. 2021).

The role of experience in teacher attrition

The early years in a teaching career are particularly sensitive for attrition, as Chapter II highlighted that some studies show that novice teachers can leave the profession at higher rates than those with more experience. Younger and more inexperienced teachers may need extra support to flourish in their new roles. Similarly, the organization and progression of a teacher's career path can affect the motivation and satisfaction of early career teachers.

Attrition rates present a U-shaped pattern through the career path of teachers as the highest rates are witnessed in the early years of teaching and when teachers are near retirement (Guarino et al. 2004). In South Africa, for instance, new entrants to the profession face unfavourable working environments, specifically in terms of student violence towards teachers and limited infrastructure, that negatively affect teacher attraction and retention in the early years of their careers (UNESCO IIEP 2019). Some studies have calculated that teachers leaving the profession in the first five years of the profession reach up to 40 per cent in Canada, Hong Kong (SAR China), the UK and the USA (Gallant and Riley 2014). Attrition in the early years could be explained by the fact that novice teachers have less experience and lower levels of confidence to deal with the complexity of their jobs, particularly when working in challenging environments

(OECD 2020g). If these teachers are not adequately monitored, accompanied, and supported, they may leave the profession altogether.

As many as 40 per cent of new teachers leave the profession within their first five years on the job in Canada, Hong Kong (SAR China), the UK and the USA.

The way teachers' careers are organized and the level of support that novice teachers receive might also further contribute to teacher attrition. In Europe, teachers' careers are often viewed as 'flat', with limited progression or development opportunities (European Commission 2020). Likewise, in Uganda, a survey of 387 teachers found that limited opportunities for professional growth was the second most cited reason for teachers' job dissatisfaction after salary (Nkengne et al. 2021). Furthermore, teachers in the Asia-Pacific region were also demotivated by linear career structures that offered little chance of progression over the long-term (UNESCO 2016b). Likewise, in Latin America, career structures largely followed a vertical progression based on seniority leaving little room for meritocratic recognition (Cuenca 2015). In many cases, if teachers wish to assume more responsibilities and improve their working conditions, it often entails leaving the classroom or the school to take on administrative roles

4 ERCE 2019 is the fourth version of the Regional Comparative and Explanatory Study coordinated by UNESCO's Latin American Laboratory for Assessment of the Quality of A (LLECE), which covered 16 countries: Argentina, Brazil, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, and Uruguay. ERCE assesses the learning achievements of students within the educational systems of Latin America and the Caribbean in language and mathematics in third and sixth grade, and sciences in sixth grade.

(Cuenca 2015). However, it is also important to mention that many countries in the region started reforms to introduce more meritocratic elements in their teacher career structures (UNESCO IIEP 2019c).

Mid- and late-career teachers also deserve consideration regarding support and motivation around career growth and promotion opportunities (Stevenson and Milner

2023). This group is often neglected in retention studies, which tend to focus on early career teachers who are at the highest risk of attrition (Stevenson and Milner 2023). However, if experienced teachers become demotivated and decide to leave teaching early, their skills and experience are lost from the system.

Structural and contextual challenges affecting teacher shortages

Numerous structural and broader contextual challenges contribute to the issue of teacher shortages. These should be seen as interconnected and interacting with factors described earlier in this chapter, illustrating the multidimensionality of teacher shortages. For example, teacher absenteeism may contribute to teacher shortages if the problem is chronic, or it could provide an additional indicator of low motivation or poor working conditions in a system (see Box 3.2).

Systemic, political and social changes, crises and upheavals often impact teachers in particularly stressful ways, as education systems are in turn affected. Growing social and economic disparities and rapid demographic shifts are often felt by this profession, which is at the forefront of societal change. Institutional factors related to education system planning and management at national, regional and district/school levels can also have significant effects. It is therefore important to take a closer look at these factors.

Box 3.2. Teacher absenteeism

Teacher absenteeism can be viewed as related to teacher attrition as high rates of absenteeism are often seen as an indication of low motivation (UNESCO Institute for Statistics et al. 2022). Absenteeism can potentially increase the impact of teacher shortages by negatively affecting instructional time and putting additional stress on schools and systems. Much like the vicious cycles caused by ongoing teacher shortages, absenteeism is cited as a cause of stress for teachers who face an increased workload to compensate for their absent colleagues (Schleicher 2021). However, research has also found that many causes of teacher absences are beyond the teacher's control, which points to poor or stressful working conditions (Bennell 2022; Játiva et al. 2022). For example, research from Senegal found rural primary teachers miss, on average, approximately 10 more days each school year than their urban colleagues due to issues such as difficulty withdrawing monthly salaries or extreme isolation and rustic housing (Niang 2017).

High rates of absenteeism have historically been reported from various regions, including sub-Saharan Africa, South and West Asia, and South America (UNESCO Institute for Statistics et al. 2022). Surveys from before the pandemic in both West and Central Africa as well as East and Southern Africa showed that about 15 per cent of teachers were absent on any given day (Karamperidou et al. 2020; Játiva et al. 2022). Data from during and after the pandemic is sparse, but about half of countries responding to a global survey on national responses to COVID-19 indicated an increase in teacher absences from 2020 to 2022 (UNESCO Institute for Statistics et al. 2022).

Socio-demographic changes

Socio-demographic changes are a crucial factor to consider in understanding teacher shortages. They may result from an increase in student enrolment, as, for example, in the case of successful initiatives to reduce out-of-school student populations. For instance, sub-Saharan Africa has experienced an exacerbation of teacher shortages following successful student enrolment campaigns (DeJaeghere et al. 2006; Moon and Villet 2017; Aden and Kharbiryumbai 2019). Educational systems have struggled to keep up with the demand and provide adequate training and good working conditions to an expanding teaching workforce (Pitsoe and Machaisa 2012).

In addition, some regions of the world are faced with an ageing teaching workforce. Among the OECD education systems participating in TALIS, 34 per cent of teachers in lower secondary are above 50 (OECD 2019c). The TALIS report concludes that, given that the average retirement age in the OECD is 64.3 for men and 63.7 for women, education systems will need to replace at least one-third of their teachers over the next 15 years, presuming the number of students remains constant (OECD 2019c). The situation appears to be most critical in Bulgaria,

Estonia, Latvia, Lithuania and Georgia, with over half of teachers in lower secondary being over 50 (OECD 2019c). In other regions of the world, such as Brazil, the proportion of teachers under 24 dropped by 42 per cent between 2009 and 2021, while the percentage of primary school teachers aged 50 increased by 109 per cent during the same period (Instituto SEMESP 2022). Retirement is only a problem if systems are not able to attract new candidates into the profession. This issue is therefore intrinsically linked to the attractiveness of the profession (Santiago 2002).

Ageing teaching populations may present difficulties in some countries such as Bulgaria, Estonia, Latvia, Lithuania and Georgia, where over half of teachers at the lower secondary level are over 50 years old. Among the OECD countries, education systems will have to renew at least one third of their teaching workforce in the next 15 years due to an ageing teaching workforce.

Allocation and deployment of teachers

The allocation and deployment of quality teachers, which involves their distribution and assignment throughout a system (UNESCO IIEP 2015), is a major factor in any analysis of teacher shortages. Shortages persist when there is a misalignment between teachers' qualifications and the subjects or areas where they are needed. The labour market might be able to augment the supply of teachers, but it is unlikely that increase alone can ensure an equitable distribution across fields and subjects (Sutcher et al. 2016). Unequal distribution across an education system can increase the PTR, making teaching and learning in some schools more difficult, which may ultimately jeopardize the quality of education. For example, a UNICEF study in Zambia showed that a higher PTR resulting from unequal allocation of teachers is negatively associated with Grade 7 students' performance (Kabir 2023a).

It is essential to highlight that teachers may be allocated unequally at different administrative levels. In other words, inequities may exist at national, provincial, district or even school levels. The same UNICEF study in Zambia demonstrated that inequities within schools – i.e. across grades – remain an important challenge. Average PTRs

appear higher in Grades 1 to 4 compared Grades 5 to 7 creating major challenges in acquiring foundational skills (Kabir 2023b). The same patterns are also observed in Madagascar (Gouédard 2023) and Côte d'Ivoire (UNICEF Innocenti et al. 2023b). In fact, in Madagascar, the PTR is almost three times higher in the first year than in the last year of primary school.

Shortages in certain subjects are another issue across many different regions and often lead teachers to teach out-of-field. Due to external labour opportunities, some subjects are more prone to shortages than others. For example, lack of STEM teachers has been reported as one of the most widespread causes of shortages across all members of the European Union (European Commission 2021b). In the USA, shortages are particularly visible with STEM graduates as there are numerous non-teaching opportunities with more favourable pay and conditions (Pitsoe and Machaisa 2012; Sutcher et al. 2016). In England, in 2022, only 17 per cent of physics teaching positions had been filled (Long and Danechi 2022). Linguistic diversity is another important issue to consider as estimations have indicated that around 40 per cent of

the global population does not have access to education in a language they speak or understand (Global Education Monitoring Report Team 2016).

Shortages in specific subjects can also disproportionately affect certain types of schools. According to a database ranging from 2016 to 2017, in Brazil 41 per cent of mathematics teachers in rural schools lack certification in that subject, while 57 per cent of science teachers in low-income secondary schools in Chile, and 72 per cent of language teachers in indigenous schools in Ecuador are also not certified in their respective subjects (Bertoni et al. 2020). In Zimbabwe, nearly half of those teaching science in rural schools lacked proper training, compared to roughly one-quarter in urban areas (Bashir et al. 2018). Similarly, the unequal distribution of qualified teachers between rural and urban areas and a shortage of educators in key subjects like science and mathematics are also challenges in Thailand. These imbalances entail remote schools struggling with staffing shortages at the primary level, while urban schools exhibit a surplus of teaching personnel (World Bank 2015).

The shortage of teachers also affects the distribution of qualified teachers between rural and urban areas: In Zimbabwe, almost half of science teachers in rural schools did not have adequate training, compared to only about a quarter in urban areas.

Rural areas have often struggled more to attract qualified teachers in some regions of the world. Reduced access to educational facilities and personal amenities, a greater sense of social isolation and, sometimes, less satisfactory living arrangements, contribute to the challenge of attracting teachers in rural areas. As in other contexts, many sub-Saharan African countries face challenges in hiring teachers for rural schools, resulting in significant disparities in PTRs (Mulkeen 2010). The unattractiveness of these schools in the region has even led some teachers to use bribery to avoid their destination, which further increases the shortages in rural settings (Bennell 2004). The same situation can be observed in Latin America, where rural schools have one of the greatest teacher shortages (Bertoni et al., 2020).

Data from OECD also suggests that teacher shortages are more prevalent in rural areas (OECD 2020c), although this is not true of all countries. While teaching quality disparities between rural and urban areas are generally common, certain countries show large disparities, such as Türkiye, with 34 per cent more experienced teachers in urban areas compared to rural areas (OECD 2022b). Peru struggles to staff rural public schools in impoverished areas with qualified and competent teachers, as many prefer to work in wealthier urban regions. Less qualified teachers often fill these positions through short-term contracts or non-certified routes (Bobba et al. 2022). In China, the rural teacher workforce often encounters significant disadvantages as compared to their urban counterparts. The former often suffer from imbalanced age structure, lower professional competencies, a higher attrition rate, inadequate salary and work benefits, and work burnout. Over the past decade, attracting and retaining high quality teachers in rural areas has therefore been a great priority area for the government (Han 2018a).

Too often, schools in poor areas and high-minority settings are the ones which struggle the most with teacher shortages. In a cross-national study of India, Mexico and the United Republic of Tanzania, teachers responsible for marginalized children more consistently expressed dissatisfaction with their working conditions and a desire for reassignment (Luschei and Chudgar 2017). In the USA, those working in high-poverty schools were more than twice as likely to leave as those in low-poverty schools (Darling-Hammond et al. 2017; Ingersoll et al. 2019). In OECD countries, teachers with less experience are found in greater proportion in schools that host larger proportions of students from socio-economically disadvantaged backgrounds, with special needs, or whose first language is different from the language of instruction. Furthermore, there is a sort of trade-off across OECD countries, where low performing schools receive a greater quantity of teachers than high-performing schools, while the latter receive a smaller dose of teachers but of higher quality (i.e. more years of experience and higher levels of education (OECD 2018a).

Teacher management and information systems

As noted in the prior section, in many cases the issue of teacher shortages does not stem from a lack of qualified teachers in a country or system but rather from inefficient teacher allocation. Effective education and teacher management information systems (EMIS and TMIS, respectively⁵) are key to collecting and processing data on teachers. However, very often, weak planning and management procedures as well as nonexistent or inappropriate monitoring tools result in a lack of adequate information required for decision-making. The issue of utilizing information systems to better manage and allocate teachers can get derailed by a host of challenges.

Initially, many systems simply do not have integrated human resource management systems, neither for personnel management nor data collection. This problem especially emerges in low-income countries that lack either the infrastructure or human resources required to install and maintain such systems. In Tanzania, the internet remains unreliable in many parts of the country, making integrated networks difficult to connect and maintain (Manyengo 2021). In Ethiopia, many teachers, principals

and education officials have low levels of digital literacy, and generally have a poor perception of ICTs (Yigezu 2021).

In combination with a lack of established systems and personnel to run them, many countries struggle to collect and utilize high quality data for planning at the local, district, regional and national levels, as noted in Chapter II. For example, 81 per cent of countries in sub-Saharan Africa still collect and input data into EMIS by means of paper records instead of sharing and inputting these files electronically (UNESCO Institute for Statistics 2020). This can cause significant delays in data collection, transmission and processing, making proper and timely allocation and recruitment efforts extremely difficult. A lack of timely data may also lead to the issue of 'ghost teachers', those listed on payrolls and receiving salaries but who do not actively teach due to moving, retiring or simply defrauding the system (Mulkeen et al. 2017).

5 An EMIS typically tracks data across entire systems and includes broad categories of schools, students, and human resources. A TMIS focuses more specifically on the human resources of an education system, specifically managing and processing data on teachers (UNESCO Institute for Statistics, 2020; UNESCO and Teacher Task Force, 2019b).



Chapter 4

Levers to address teacher shortages

Countries have acted to address the pull, push and personal factors related to teacher shortages in varied ways. Efforts to address these factors aim at making teaching a more attractive career which is understood as the ability to recruit and retain qualified and motivated individuals relative to other professions (Stevenson and Milner 2023). Systems and education leaders may utilize a variety of levers at their disposal to improve the attractiveness of teaching, ranging from comprehensive management strategies and policy initiatives to decisions made by principals at the school level.

This chapter then explores potential ways to tackle some of the core issues that lower the attractiveness of a career in teaching and cause difficulties in attracting

and retaining quality teachers. It opens by addressing fundamental causes of the push and pull factors explored in Chapter III: improving teacher salaries and working conditions. From there, it examines how school leaders as well as mentorship and induction programmes can improve the motivation and working conditions of teachers, and especially impact young teachers – which Chapter III highlighted as a group potentially vulnerable to attrition. The chapter concludes with discussions about improving teacher management, especially with the aid of advanced information systems, and providing more equitable deployment so that systems can better prevent localized and regional shortages.

Salaries and incentives

As noted in Chapters II and III, low salaries in comparison to professions requiring similar qualifications can reduce the prestige and attractiveness of a teaching career and cause teachers to gravitate towards other jobs. At the same time, it may be critical for systems to ensure teachers' basic salary conditions before prioritizing investments in other manners of professionalization. Thus, providing competitive salaries throughout a teacher's career can serve as a cornerstone to attracting the best candidates to the profession and sustain their motivation and retention once in post.

Systems have many options as to how they can improve the salaries of teachers. Some strategies include blanket raises for all teachers or more targeted raises, both for early career teachers (where there is a struggle to attract candidates) or more experienced teachers (if struggling with retention). For example, Kazakhstan began increasing teacher salaries by 25 per cent annually in 2020 for four years, effectively doubling teacher salaries by 2023. Initial responses from teachers have been positive, saying they feel more supported by the state (Press Service of Kazakhstan 2020). These changes came in response to a national survey that found teachers in Kazakhstan felt underpaid and overburdened, mainly choosing a career in teaching due to a sense of altruism (Kopeyeva 2019). In 2011, Kyrgyzstan developed legislation that increased teacher salaries to attract more highly qualified young people into the profession as well as get higher quality teachers into rural schools. Overall, the reforms succeeded in reducing teacher shortages and improving payments, especially to teachers in rural schools. However, the process faced numerous difficulties

and had to be revised several times due to financial constraints as well as tensions between more experienced teachers in subject areas with shortages and younger and less experienced teachers (UNICEF 2014).

Kazakhstan effectively doubled teacher salaries between 2020 and 2023 after a national survey revealed that teachers felt overburdened and underpaid. Teachers responded by saying they now feel more supported by the state: competitive salaries can increase job satisfaction and the attractiveness of the profession.

Other systems provide more targeted raises or other financial incentives for specific groups, such as STEM teachers or those working in remote locations. The Shanghai Municipality has developed a comprehensive pension plan for teachers, enabling a large group of retired teachers to earn a high percentage of pensionable remuneration. Teachers serving for 15+ years or 20+ years in China may earn 70 per cent and 75 per cent pensions based on their prevailing salaries, respectively (State Council of People's Republic of China 1978). The Shanghai Municipality provides an additional incentive for teachers with extensive service, namely 30 years of teaching experience, or 25 years in the case of female teachers. Eligible individuals can earn an additional 5 per cent to 15 per cent of their pre-retirement salaries (Shanghai Municipal Human Resources and Social

Security Bureau 1998). These retirement benefits may not only motivate teachers to stay in the profession but can also raise its prestige and status.

While raising salaries and providing incentives are important levers to enhance teaching attractiveness, neither is a quick fix or immediate solution for teacher

shortages. Furthermore, the effects of policies might not become evident for several decades. Salaries should be one aspect of comprehensive teacher policies which also encompass professionalizing teachers and improving overall working conditions from a systemic approach, as discussed in the following sections.

Ensuring proper working conditions

Numerous factors play into teacher motivation and the decision to enter and remain in the profession. As described in Chapter III, systems that have poor working conditions (i.e. long hours, large class sizes or a lack of support and recognition) can lower the attractiveness of a teaching career and push away those already in the profession (Teacher Task Force 2010; Podolsky et al. 2016). Likewise, research has indicated that the satisfaction of working teachers correlates with their well-being, and their motivation and dedication to teaching, especially in low-resource, crisis and conflict-affected contexts. Even though any single strategy targeting working conditions is unlikely to dramatically increase the attractiveness of a career in teaching, multiple strategies utilized collectively can have a large impact. Therefore, the strategies highlighted in this section can work in a comprehensive fashion to improve teacher motivation and job satisfaction and the prestige and appeal of the profession.

Many strategies that address factors pushing teachers away from the profession can occur at the school level, such as improving its culture and organizational climate. Building a positive school culture could include such priorities as providing a healthy and safe school, good PTRs, standard working hours or support for professional growth and development (UNESCO and Teacher Task Force 2019). In Sweden, a study at the lower secondary level found that working conditions played an important role in teacher job satisfaction, especially regarding teacher cooperation and workload, and student discipline (Toropova et al. 2021). Further illustrating the importance a positive culture can have, a study from Malaysia among government secondary school teachers found that the organizational climate has a significant positive relationship with teachers' job satisfaction (Ghavifekr and Pillai 2016). Similarly, a study among vocational education teachers in China found that a positive perception of the school climate not only enhances job satisfaction but also positively affects teachers' self-efficacy, which in turn further boosts

job satisfaction. The findings also highlight the role of teachers' self-efficacy as a mediator between school climate and job satisfaction (Fang and Qi 2023).

Long working hours and overwhelming administrative responsibilities can raise teacher stress levels and lower motivation (Toropova et al. 2021). To mitigate for this, teacher policies can develop schedules that offer flexible working and time arrangements to complete all necessary tasks and allow the development of a healthy work-life balance. The enhanced use of technology can also help ease burdens on teachers' schedules. Recent advances have seen AI and other technologies assist teachers with basic administrative tasks such as grading assignments or organizing student performance records (Makala et al. 2021; UNESCO 2021a). Some countries such as France and the Republic of Korea provide online platforms with extensive resources that can aid teachers in planning and designing lessons more efficiently to better utilize their time (Global Education Monitoring Report Team 2023a).

Chile reduced teaching time from 75 to 65 per cent between 2017 and 2019 so teachers had more time to engage in non-teaching activities. Teachers appreciated it but stressed the importance of safeguarding this time from other activities such as substituting for absent colleagues and urged the establishment of a school culture that prioritized the non-teaching time for professional development.

To enhance teacher well-being and promote professional development, both Chile and the Republic of Korea have implemented strategies to strike a balance between teaching and non-teaching tasks, thereby reducing the overall workload for teachers. In 2016, the Ministry of Education of the Republic of Korea introduced the Leave of Absence for Self-training System. This programme

allows teachers a one-time leave opportunity for training or rejuvenation (provided they have a minimum of ten years of teaching experience and the leave does not exceed one year) which aims at fostering professional growth and self-improvement, as well as improving teacher retention (OECD 2020f). Also in 2016, a new law in Chile marked a progressive reduction in instructional time: from 75 per cent before the law, to 70 per cent by 2017 and 65 per cent by 2019. Despite appreciating the extra time, teachers noticed that these hours were irregularly distributed and frequently allocated to address unforeseen activities, such as substituting for absent colleagues. Consequently, there is a need to safeguard non-teaching hours from other activities and establish a school culture that prioritizes the time for professional development (UNDP 2023a). This experience underscores the critical need for meticulous attention on this matter in policy planning and implementation to ensure that intended objectives are effectively met.

The well-being, mental health and professional status of teachers in emergency and crisis situations deserve special priority in teacher-related policies. A holistic and coordinated approach from all relevant stakeholders is essential in ensuring that work conditions are improved for teachers working in contexts of crises. Additionally, being acutely aware of the specific contextual needs and conditions is essential while designing policy responses. Initiatives in Kenya, Uganda and South Sudan provide some illustrations of ways in which these much needed teachers can be supported. The 'Teachers for Teachers' programme in the Kakuma Refugee Camp in Kenya provides teacher training, peer coaching, and mobile mentoring. Teacher education professional development – which focused on both strengthening teachers' competence and supporting their well-being in displacement contexts – was trialled from 2018 to June 2021 in locations in South Sudan and Uganda (Ladegaard 2022). Alongside trainings, some of the teachers engaged with peer observations. While the mid-line evaluation showed that teachers needed further support to fully implement their learning, there were improvements to teaching approaches and participants reported a greater sense of belonging to their communities. UNRWA's Teacher Policy (2013) provides another strong example of addressing the multiple inter-related dimensions of ensuring teacher supply and professionalization in contexts of crises so that teacher motivation and well-being are prioritized through the development of diversified and robust professional pathways into the profession.

Protecting teachers from violence can prove another key factor to prevent attrition and promote retention. While no plan can fully guarantee the safety of every

teacher and student, especially in settings with a history of violence or conflict, several organizations put out planning guides to help school leaders and education officials mitigate the risk of violence against teachers. The Global Coalition to Protect Education from Attack has developed a technical guide for teachers and school leaders to implement protective measures, such as early warning alert systems, psychosocial support and comprehensive school-based safety and security plans (GCPEA 2017). For instance, schools can partner with parents and communities to form protection committees, as in Liberia, Nepal, Sri Lanka and Zimbabwe (GCPEA 2016). The TTF has also supplemented its Teacher Policy Development Guide with a module on crisis-sensitive planning that provides guidance and resources for topics such as safe schools, teacher well-being and needs assessments (Teacher Task Force 2022b).

To a lesser extent, teachers around the world have faced increasing levels of stress since the beginning of the COVID-19 pandemic. To help deal with such stressful situations or working conditions, education systems can develop a tiered system of support to include mental health resources or counselling services (UNESCO Institute for Statistics et al. 2022). A synthesis of 40 policy initiatives from GPE partner countries in sub-Saharan Africa indicates that most of the countries offered layers of assistance to educators, predominantly in the form of psychosocial support such as counselling, to help manage the repercussions of the pandemic (Association for the Development of Education in Africa et al. 2022). Specifically, Cameroon, the Central African Republic, Chad, Comoros, Côte d'Ivoire, Djibouti, Guinea, Guinea Bissau, Mali, Mauritania, Rwanda, São Tomé and Príncipe, Zambia and Zimbabwe offered psychosocial support to teachers specifically to cope with the effects of the pandemic. Many countries also prioritized well-being during the pandemic by treating teachers as frontline workers, providing them with priority access to COVID-19 prevention support. Some countries, such as Côte d'Ivoire, Kenya, Malawi, Rwanda, and Uganda, prioritized teachers in the first round of vaccination drives at the national level (ibid).

Most sub-Saharan countries offered special assistance to support teachers during the COVID-19 pandemic: Cameroon, Central African Republic, Chad, Comoros, Côte d'Ivoire, Djibouti, Guinea, Guinea Bissau, Mali, Mauritania, Rwanda, São Tomé and Príncipe, Zambia and Zimbabwe offered psychosocial support.

In Latin America and the Caribbean, out of 18 countries, at least 11 reported implementing national-level policy measures related to mental health and psychosocial support for primary and secondary education teachers in the 2021/2022 school year (UNICEF 2023). For instance, Peru launched ‘I hear you, teacher,’ a platform providing socio-emotional and physical support, including resources for COVID-19 prevention. By July 2021, it had 955,000 visits with 200 resources in inclusive and indigenous languages (García Jaramillo and Insua 2022). An evaluation from its first year (2020) indicated successful goal attainment, high acceptance, and broad participation. Notably, the most common socio-emotional challenges highlighted by beneficiaries were occupational stress and anxiety (Peru Ministry of Education 2021).

Also gaining more attention during the COVID-19 pandemic, another strategy for improving teacher motivation and working conditions is the simple recognition of accomplishments. Respecting and

recognizing the work of teachers can play an important role in building dignity, professional identity and motivation, particularly in contexts affected by conflict and crisis (Falk et al. 2019). Recognition could come at the school, locality, country, continental or even global level. For example, the African Union Continental Teachers Award has sought to enhance visibility of the profession and celebrate outstanding achievement (African Union 2022). In 2022, 10 teachers were awarded a cash reward and a certificate of appreciation.

Along similar lines, addressing the social standing of teachers is also important to improving recruitment and retention, and media campaigns can contribute to this aim. The Dominican Republic provides an example of a country that has made progress in elevating the attractiveness of the teaching profession through various initiatives and reforms, including through a media campaign (see Box 4.1).

Box 4.1. Revitalizing the role of teachers in the Dominican Republic through initiatives and policy reforms

The Dominican Republic, despite its status as an upper to middle-income country, continues to underperform in both national and international exams. Recognizing the critical role of teachers in improving learning outcomes, the government has undertaken reforms to attract highly qualified individuals to the profession, improve working conditions, and provide ongoing support and professional development.

The Ministry of Education increased secondary school teachers’ salaries by 73.4 per cent from 2012 to 2019 (Dominican Republic Ministry of Education 2019) and financial resources in the form of supplementary retirement plans were linked to teachers’ years of service (Dominican Republic INABIMA 2022). Mass recruitment campaigns and scholarship programmes aim to emphasize the value of teachers in Dominican society and encourage high-achieving secondary students to pursue teaching careers (ISFODOSU 2021). A national teaching standards framework was established (Dominican Republic Ministry of Education 2014) and two new standardized tests were included in the pre-service teacher education entry requirements (Dominican Institute for the Evaluation and Research of Educational Quality 2019). Parallel efforts to enhance the quality of teacher education include training teacher educators and providing more practical teaching experiences for pre-service teachers (Dominican Republic Ministry of Higher Education, Science, and Technology and Dominican Republic Ministry of Education 2021).

Once trained, teachers enter a competitive application process (‘concurso de oposición’) in which they are carefully assigned a role, based on the needs and vacancies of public schools (Dominican Institute for the Evaluation and Research of Educational Quality 2019). Teachers take part in the National Induction Program, during a one-year trial period where they receive supervision and coaching; upon successful completion, teachers may be granted tenured positions (Dominican Republic Ministry of Education 2022a; Dominican Republic Ministry of Education 2022b; Dominican Republic Ministry of Education 2023). The System of Accompaniment and Supervision uses various instruments to collect data on teaching practices and other school-level factors that shape learning outcomes, and district technicians use this data to devise a school plan of support involving teachers and school leaders (Morales Romero 2017). Lastly, new accreditation and regulation standards offer additional opportunities for aspiring teachers to upgrade their skills through short- and long-term trainings (Dominican Republic ISFODOSU 2021).

While the Dominican government has implemented different initiatives and reforms aiming to make the teaching profession more attractive, challenges remain. Teacher vacancies continue to be a critical issue and the government continues to expand recruitment processes (El Caribe 2019; Amparo 2021). The Educational Accompaniment and Supervision System is not implemented evenly across schools, especially in rural or hard-to-reach urban areas (Morales Romero 2017), and results of teacher evaluations are rarely utilized, 'to give teachers feedback in an effective way' (Sucre and Fiszbein 2015).

The role of school leaders in curbing teacher shortages

Effective school leadership can enable motivating school environments, enhance working conditions and empower teachers with greater autonomy. School leaders can develop a system of distributed decision-making that can improve teachers' sense of professionalism, as they are involved in shaping the environments where they work, increasing job satisfaction, motivation, and retention (OECD 2014; UNESCO IIEP 2019d; Shuls and Flores 2020). Additionally, effective school leaders can foster professional growth in teachers by offering mentorship, support, and opportunities for ongoing professional development. Effective school leaders do not just emerge out of thin air, however; principals need to be effectively selected and trained.

A recent study conducted in China revealed that distributed leadership could have a significant positive impact on teacher career satisfaction. Furthermore, distributed leadership positively exerted significant effects on career satisfaction indirectly via both teacher empowerment and organizational commitment. Notably, teacher empowerment exhibits a stronger mediation effect compared to organizational commitment (Yao and Ma 2024). School leadership in Finland encourages distributed decision-making, collaboration, and a focus on improving pedagogy – and these foci help to secure the professional status of the country's teachers (Lavonen forthcoming).

School leaders can also play a vital role in fostering teachers' lifelong learning pursuits. By setting schedules and establishing school culture, principals have unique influence on promoting professional growth in teachers. For example, analysis of ERCE 2019 shows that principals in Latin America frequently engage in administrative management actions and less often participate in pedagogical leadership practices, such as classroom observation or fostering collaboration among teachers.

Analysis suggests that schools whose principals more frequently engage in these pedagogical leadership actions with teachers may achieve better results in sixth grade students' academic performance in maths, language and science (UNESCO OREALC forthcoming b).

Results from the 2019 ERCE suggest that Latin American schools, whose principals more frequently engage in classroom observation or foster collaboration among teachers, may achieve better results in maths, language and science.

To help actualize the potential of school leaders, the Varkey Foundation and Global School Leaders has established the School Leadership Network which aims to strengthen leadership roles in schools while advocating for school leadership as the key to equitable and quality education. The network helps to identify current and future challenges of school leaders. Additionally, it promotes innovation and reinforces educators' voices within the academic and policy-making community. Since its launch in May 2021, over 500 School Principals and 165 Educational Leadership Experts from over 57 countries have joined the network. Through virtual gatherings, participants explore a diverse set of topics unpacking the integral part a school leader plays in transforming school systems (SLN 2023). The School Leadership Network participants have identified the need for more autonomy and improved access to training to help them better fulfil their roles (ibid).

Effective school leadership requires clear role definitions, specific working conditions, effective selection processes, and tailored professional development systems to retain competent leaders. In many Latin American countries,

qualifications for public school principals usually require prior classroom experience, and academic degree prerequisites vary depending on the school level and the country. For example, some countries demand principals hold a university degree, while others only require post-secondary education. Some countries mandate training or preparation in administration or leadership, while others consider it optional or do not require it at all (OEI 2017; Flessa et al. 2018). Only a few Latin American countries have regulations for induction programmes. Thus, while Bolivia, Colombia and Paraguay consider induction voluntary for novice principals, Cuba, Mexico, Panama, Peru, Uruguay, and certain regions in Brazil mandate it (OEI 2017). In Mexico, for instance, novice

principals are required to complete a course in leadership and management within the first years of appointment (Mexico Secretary of Public Education 2012; OEI 2017). In Colombia, the Ministry of National Education conducts voluntary workshops and meetings with principals to introduce their new roles, motivate them and stress their importance in educational improvement. Training for principals covers various topics including personal development, teacher valorization, teachers' roles and challenges in the current environment, and national policies, among others. In addition, since 2009 'Encounters with principals' sessions are organized to enhance leadership, communication, and teamwork competencies (OEI 2017; Colombia Ministry of Education 2021).

Supporting novice teachers

Novice teachers need ongoing support to build their motivation and professionalism which in turn prevents early career attrition. As shown in Chapter III, while few countries provide data about when teachers leave the profession over the course of their careers, some studies show that novice teachers are more likely to leave than their more experienced colleagues (Ingersoll and Smith 2003; Papay et al. 2017; United Kingdom Department for Education 2023). Initial teacher training that incorporates an adequate in-school experience, followed by induction and mentoring in the novice years are key elements to retaining these early career teachers (Naylor et al. 2019). However, in OECD countries, only approximately 40 per cent of novice teachers reported taking part in some form of induction, while only 22 per cent indicated having a mentor (OECD 2019c).

Induction programmes may vary, but generally they offer some combination of mentoring from a more experienced colleague (usually in the same subject area), informal support and more structured formal training. In conjunction with this, many systems start new teachers on a probation period, where ongoing training or formal programmes may be required before final certification (UNESCO and Teacher Task Force 2019). For example,

Scotland requires new teachers to complete a full year of induction procedures and complete an assessment before reaching full qualification status (UNESCO and Teacher Task Force 2019).

In developing induction programmes, systems need to work to ensure they blend and complement both ITE and ongoing professional development. For example, Chile enacted reforms in 2016 that aimed to strengthen the teaching profession by improving initial training, induction, recognition and continuing professional development. The new regulations allot more time for mentorship and professional development in the early phases of a teacher's career to support their progression (Naylor et al. 2019). In the Republic of Korea, study groups pair new teachers with more experienced colleagues to align professional learning and exchange ideas in both directions. For the early career teachers, they can learn from senior teachers and it 'provides a venue for a gradual and sustained integration into structured, lifelong professional and organizational learning' (OECD 2018b). At the other end, the more experienced teachers report excitement about keeping in touch with new ideas and knowledge that new teachers receive during their initial training.

Enhancing teacher management with advanced information systems

Systems need to comprehensively track and analyse their teaching forces to better understand the potential for high rates of attrition or inequitable deployment. To do so, utilizing a TMIS can help planners and policy-makers better project personnel needs. These systems allow planners to track various aspects of their teaching staff in great detail, to include teachers recruited for the first time, those who left the profession and came back, or those who moved between schools or districts. They can also allow systems to track teachers' ages to better anticipate upcoming retirements. Keeping track of all these factors can allow planners to better understand and monitor the rates of attrition in their systems. Nevertheless, information systems differ widely across the globe, posing challenges for some countries in digitizing and effectively utilizing educational data. Thus, recognizing EMIS limitations and investment needs is vital. For this purpose, UNESCO has created an EMIS Maturity Assessment Tool to aid countries in this process and to gauge the quality of data and its utilization.

The MIRADOR system in Senegal provides a good example of how an advanced information system can help plan for teacher attrition. It has integrated modules tracking such elements as career management, recruitment, training, and staff numbers and jobs (UNESCO IIEP Pôle de Dakar 2017). The advanced system can also forecast retirements and project replacement needs so that planners can work to better maintain personnel levels and account for upcoming attrition (UNESCO IIEP Pôle de Dakar 2017). It may also help prevent ghost teachers, those teachers discussed in Chapter III that are on payrolls and earning a salary but who do not actually teach (Mulkeen et al. 2017).

UNESCO provides technical support to the Ministry of Education of Jordan to strengthen evidence-based, strategic, and crisis-sensitive planning through the enhancements of the Education Management Information System (OpenEMIS). The system has helped improve teacher management by its integration into the ministry's teacher demand and supply model. This support aims to improve the ministry's capacity for data collection, utilization, and analysis, to include teacher-specific data such as workload per teacher, academic qualifications, health profile and professional

development. OpenEMIS is integrated with the ministry's WebGIS platform (Geographic Information Management system), which supports the ministry with their infrastructure planning and school rationalization. The GIS system also enables Ministry of Education's planners to identify the needs for teaching staff (surplus, deficits or adequacy) in the system by subject, education level and gender. This level of data integration and analysis allows for the ability to recommend transfers of teaching staff within and between sub-districts. Even so, the data on teachers is not always collected, analysed and shared with the appropriate stakeholders in a timely manner, especially regarding teachers in refugee settings. Thus, ongoing training and support may be needed for leaders at all levels of the education system to better utilize data in decision-making processes (UNESCO IIEP and Education Development Trust 2022).

The teacher management information system "MIRADOR" in Senegal has integrated data modules that can track elements including teacher career management, recruiting, training, and staff numbers. The system can use this data to support planners in forecasting retirements and projecting future teacher replacement needs.

In collaboration with UNESCO, Uganda implemented their own digitized TMIS system in 2019 that aims to streamline teacher management and help officials better track teachers as they reach retirement age (UNESCO 2018a; UNESCO 2021d; UNESCO 2023d). As part of the initiative 'Strengthening Multi-Partner Cooperation to Support Teacher Policy and Improve Learning', also known as the Norwegian Teacher Initiative,⁶ the country was supported in making improvements to the TMIS platform based on feedback from teachers which included new features and making registration and use of the platform easier. The initiative also supported the national and regional dissemination of the TMIS and capacity-building of district education officers and tutors at teacher training institutions to further support teachers to register in the system. Since it is a web-based

⁶ The Norwegian Teacher Initiative is sponsored by Norad and implemented from 2017 to 2021. UNESCO, the coordination agency, joined forces with seven key education partners, Education International (EI), the Global Partnership for Education (GPE), the ILO, UNHCR, UNICEF, the World Bank and the TTF to synergize action on teacher issues for improving the quality of teaching and learning in Burkina Faso, Ghana, Malawi and Uganda.

platform, teacher data is centralized in the TMIS and the Ministry of Education uses it for teacher management and workforce planning in the teaching profession. It has also informed the development of the National Teacher Policy, which was supported by UNESCO and launched in 2019. To ensure that the new features of the system, the registration process and the use of the data are known and understood nationwide, further training was conducted for ministry officials and remote district officials during its second phase of implementation in 2023. Previous efforts in Uganda to improve the efficiency

of their system saw the identification and removal of more than 5,000 ghost teachers in 2012 (Mulkeen et al. 2017). Likewise, the Teacher Demographic Dividend research project in South Africa seeks to gather extensive data on the workforce to model future dynamics including the identification of windows of opportunity to improve education. So far, the project has identified the upcoming challenge of replacing half of all government employed teachers, who will retire by 2035, along with its potential impact on public expenditure (Stellenbosch University 2023).

Promoting equitable teacher deployment

While utilising data from a TMIS may help provide broad overviews and planning options, other tools may help target more specific goals of improving equitable deployment. As part of their SABER-teachers initiative, the World Bank developed a policy framework that asked guiding questions for planners to consider when attempting to deploy teachers more equitably (World Bank 2013). In Sierra Leone and Malawi, spatial analysis tools have helped planners take a deeper dive into location data to assist in more equitable deployment (Mackintosh et al. 2020; Asim et al. 2017). With a better understanding of what they need, countries can try several long and short-term options to improve equitable deployment.

The most common option for systems to improve equitable deployment involves offering incentives for teachers to work in remote or disadvantaged schools. These could range from direct financial help such as increased pay or housing allowances to offering additional professional development opportunities or fast tracks to promotion (UNESCO and Teacher Task Force 2019; Mulkeen et al. 2017; OECD 2019c). For instance, Chile paid high-performing teachers a larger bonus (about 16 per cent of their salary) if they worked in disadvantaged schools. This improved retention by about 20 per cent but had little effect on attracting more high-performing teachers to these schools (Elacqua et al. 2022). China has offered a wider range of initiatives to increase the attraction and retention of high-quality teachers in rural areas, beginning in 2013 with a policy that provided living subsidies to over 1 million rural teachers in the western areas of the country (Xinhua News Agency 2013). In 2015, the country launched the Rural Teacher Support Plan to extend support to a wider range of rural educators in the form of monthly allowances, health care benefits beyond basic medical insurance, student loan assistance and housing subsidies (free housing in dormitories or support to purchase property in instalments)

(The People's Republic of China General Office of the State Council 2015). As of 2022, more than 600,000 dormitories have been constructed at rural schools to house more than 830,000 teachers (China Daily 2022).

To improve equitable teacher deployment among schools, China launched the Rural Teacher Support Plan to increase the attraction and retention of teachers in rural areas through measures including housing subsidies. By 2022, housing for more than 830,000 teachers have been constructed.

Some systems have found innovative and low-cost measures to try and improve deployment to remote or disadvantaged schools simply through how they list job openings. Ecuador has piloted an initiative that lists disadvantaged schools first on a job application platform. When compared to a control group that simply listed postings alphabetically, teachers applied more often to disadvantaged schools in the experimental group (Ajzenman et al. 2021). A programme in Peru tested two successful methods of posting vacancies in disadvantaged schools. One sought to prime teachers' altruistic nature while the other clarified pre-existing monetary incentives. Both initiatives led to positive results, with the altruistic initiative especially affecting high-performing teachers (Ajzenman et al. 2020; Ajzenman et al. 2021). This research indicates that systems may be able to tap into teachers' altruism and improve recruitment in hard-to-staff locations with relatively simple, low-cost measures. This knowledge could prove important for systems such as Chile. Analysis of the National Diagnostic of Initial Teacher Training from 2017 to 2019 shows that aspiring teachers, who are mostly educated in urban areas, have a notable preference for working in rural schools in the future, with over 57 per

cent showing this inclination. Moreover, more than 66 per cent express interest in teaching in socio-economically diverse settings, with 30 to 23 per cent preferring to work in poverty-stricken areas as their second choice, and only about 5 to 6 per cent interested to work in schools with middle or upper-income students (Madero forthcoming). This is a notable finding, since although Chile anticipates a more acute teacher shortage in urban than rural areas, rural schools also experience staffing difficulties (Elige Educar 2020; Elige Educar 2021). The potential of motivation is significant, yet it cannot be considered as a silver bullet to reverse teacher shortages. For instance, in Latin America, over 90 per cent of students are taught by teachers who reaffirm their vocational choice. Furthermore, despite a few exceptions, these teachers generally consider the benefits of their profession to surpass its drawbacks, even though in most countries they feel that their profession is undervalued (UNESCO OREALC forthcoming a).

To develop more sustainable equitable deployment practices in the long term, systems have additional possibilities. One option is to increase local recruitment in hard-to-staff locations. Past studies have shown that some teachers tend to stay either close to home or near urban environments when accepting job offers (Raju 2016; Bertoni et al. 2019). Therefore, recruiting from hard-to-staff locations may prove more beneficial to retaining teachers in these areas.

Some countries have developed a system of rotation where teachers spend a specified number of years at a location before moving to another school. This allows a more equitable distribution throughout the country, especially among more experienced and highly qualified teachers (OECD 2018a). In the Republic of Korea, they combine a rotational schedule with an incentive-based programme. Teachers rotate schools every five years within a town or province, and those working in disadvantaged schools can earn extra pay, have fewer

teaching hours or gain more opportunities for promotion (OECD 2018a; Jeong and Luschei 2019). Statistical analysis showed that the Republic of Korea largely had equitable distribution of experienced teachers between rural and urban schools and with students of different socio-economic backgrounds (Jeong and Luschei 2019).

Given the global dimension of teacher recruitment, whereby countries potentially compete against each other for the best candidates, international concerted action is needed to avoid growing inequitable distribution across countries. Country-level retention measures in sending countries need to be accompanied by international coordination, with improved workforce planning and investment in both source and destination countries (Caravatti et al. 2014). The Commonwealth Teacher Recruitment Protocol (Commonwealth Secretariat 2004) is an example in this direction. Adopted by Ministers of Education in 2004, the Protocol aims to balance the rights of teachers to migrate internationally against the need to protect the integrity of national education systems, and to prevent the exploitation of scarce human resources in low-income countries. In Barbados, following the establishment of the Commonwealth Teacher Recruitment Protocol, the country opted for a managed migration approach that generated protective factors against the loss of teacher talent. On the one hand, the Ministry of Education instituted practices such as unpaid leave for teachers, this way enabling leaving teachers to easily return to the country after a period abroad. On the other hand, efforts were made to retain teachers by providing incentives and benefits and strengthening the relationship with teacher unions to reach agreements on terms and conditions of service. The Ministry of Education also negotiated with recruiting governments and agencies to discourage direct contact with teachers, which made it easier to determine how many teachers were planning to migrate and therefore what the teacher replacement needs were (Bristol et al. forthcoming).



Chapter 5

Transforming the profession: A new social contract for teachers

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Looking to the future, developing a new social contract for education may serve as the lynchpin for raising the prestige and attractiveness of the profession and helping to reduce global shortfalls and shortages. As a basis for this contract, the International Commission for the Futures of Education reimagines education as a shared societal goal striving towards a common good which and calls for teaching to become a highly collaborative profession, with an emphasis on reflection, research, knowledge-creation and innovation (International Commission on the Futures of Education 2021). This idea backs past research showing that collaboration can increase the motivation and satisfaction of teachers (OECD 2020b; UNESCO IIEP 2019d).

Repositioning the teaching profession to ensure teachers increasingly serve as creative guides and facilitators in the learning process was also called for by the TES, which has implications for teacher policy and practice, research, financing, and international cooperation. In terms of policy, this requires participatory policy-making, engaging teachers and their organizations in educational decision-making from the classroom to the school to the policy level. Mechanisms for consultation and social dialogue need to be put in place to capture teacher voice and benefit from the knowledge teachers produce in the classroom.

The transformation of teacher education and professional development from course-based, credit-grounded, and individual training models, to a life-long, collaborative, teacher-led process is needed. This includes the promotion of communities of practice and exchange and embedding pedagogies of cooperation and solidarity in teacher education, and prioritizing service-learning, action-research and community engagement.

As to research, more and better data is needed to understand teachers and their needs, but also to recognizing and supporting the research capacity of teachers, for example the production and systematization of pedagogical knowledge and its uptake in academic research and research for policy. The links between teachers, academia and policy-makers need to be strengthened and teachers considered as research partners.

Realizing this vision of teaching and ensuring teachers have enabling conditions to thrive has implications for financing and international cooperation, which will be addressed in chapters VI and VII and in the conclusions and recommendations of this Report, which includes revisiting the normative instruments concerning the status of teachers and enhancing the role of the international community in their monitoring.

Advancing teaching as a vocation and a profession

To build the teaching profession towards this new social contract, systems need first to find and recruit the right candidates drawn to teaching as a vocation. Across systems, effective recruitment strategies must cater to diverse pools of prospective teachers, including potential teaching candidates at the secondary level, individuals who have not previously considered teaching, and former/qualified teachers not currently in the profession. Motivations for choosing the teaching profession vary from individual to individual, but they are largely based on altruistic (to serve and support others), intrinsic (a passion for teaching and personal and intellectual growth), and extrinsic factors (work-life balance, job security and income).

As Chapter III discussed, pre-university students in many countries do not view teaching as a favourable profession. Systems must then determine and understand the

motivation of prospective teaching candidates so that they can better tailor recruitment strategies for initial teacher training. For secondary students considering a career in teaching, individual characteristics such as gender, academic background and local contexts have important influence on motivation. For instance, among secondary students in China, altruistic and intrinsic factors are key, such as the opportunity for CPD, personality fit, interest in a subject, and a desire to help others (See et al. 2022; Lai et al. 2005). A study involving pre-service teachers from Tanzania found intrinsic motivation to be an important factor for students as they had a high commitment to student learning (Moses et al. 2019; See et al. 2022). Meanwhile, OECD's TALIS data showed that teachers were highly motivated by job security in countries such as Latvia (93 per cent labelling it as moderately or highly important in becoming a teacher), the Republic of Korea (88 per cent) and Japan (86 per cent) (OECD 2019b).

Motivations for choosing the teaching profession vary from individual to individual: In China; altruistic and intrinsic factors such as personality fit, interest in a subject, opportunity for CPD and a desire to help others motivate secondary students to pursue a career in teaching.

People who have not previously considered teaching may be potential recruits, although they are often an overlooked constituency. They may help ameliorate teacher shortages, since early career decisions are not set in stone and late conversions are always possible. As highlighted in Chapter III, those who never considered teaching tend to prioritize factors such as salary, career advancement, job status, and working conditions in their career decisions (See et al. 2022). Recruitment campaigns emphasizing the external benefits of teaching could potentially work for this group. On the other hand, some programmes targeting professionals in other fields highlight the altruistic nature of teaching. For example, the ‘Teach for Nigeria’ fellowship seeks college graduates and other professionals to make a two-year teaching commitment in underserved or low-income communities (Teach for Nigeria 2023). Results from Teach for Nigeria’s 2022 alumni survey covering 2017–2020 cohorts revealed that 94 per cent of alumni were either working in education or pursuing an education-related degree, with 74 per cent working as classroom teachers (Teach for Nigeria 2022). In a similar fashion, research on ‘Teach for India’ indicates that its participants are more likely to pursue careers in the field of education (with 55 percentage points increase), assuming leaderships roles both within and beyond teaching (Mo 2021).

Qualified teachers who quit are another important talent pool. Understanding their reasons for leaving (and returning) is key to bringing them back to the profession. Timely policy measures and support are needed, since

the longer teachers stay away, the less likely they are to return. Most who leave teaching transition to different roles within education (administrators or support staff), often with lower pay, suggesting that money is not the primary factor influencing decisions to stay or go. For example, England initiated the ‘Return to Teaching’ pilot programme in 2015 that sought to recruit qualified teachers who were out of teaching back into the classroom in schools facing shortages. As returners worried about a lack of recent experience and knowledge, the programme found some success in enticing them back by offering tailored support based on the returner’s needs. However, analysis of the programme found that the cost of each returning teacher was approximately equivalent to training a new teacher (Buchanan et al. 2018). This high cost is concerning as the cost of the initiative must be seen in addition to the original initial training costs of the returners, and newly qualified teachers are likely to have longer careers than returning teachers (ibid). A study analysing experiences of two novice teachers in China, who left the profession after a year to return two years later, highlights some critical factors contributing to attrition. Among these were unrealistic expectations, lack of support, challenges in classroom management and issues such as financial hardship or other personal struggles. Additionally, the study emphasised the importance of school contexts intertwined with personal narratives in shaping teachers’ professional identity, contributing to their resilience and influencing their decision to rejoin the profession. These findings suggest that the provision of opportunities and adequate time for teachers to grow professionally, while fostering a professional community within schools, establishing supportive networks among teachers, recognizing the relevance of teacher-student relationships, and promoting the value of the teaching profession, are key elements to attract those who left the profession. Lastly, the study suggests managing the expectations about the realities of the profession, especially within teacher training institutions, is an essential aspect of retaining novice teachers (Harfitt 2015).

Making teaching an appealing profession for all

Building and developing a profession attractive to all must embrace diversity, while adopting varied strategies to reach out to different constituencies when trying to recruit and retain teachers. Education policies supporting people from under-represented backgrounds into teaching may contribute to improving equity and performance within education systems (Holt and Gershenson 2015; Harbatkin 2021). A diverse workforce

benefits everyone, as it may include an ample range of knowledge and perspectives historically excluded from formal learning (Ware et al. 2022; Pesambili and Novelli 2021). Strategies to make the teaching profession more attractive to all might be legal, structural, or institutional, and they might affect individuals, targeted groups of teachers, or the whole workforce.

Gender inclusivity

Systems need to develop a gender-balanced workforce that reflects the broader community. Women make up the vast majority of teachers worldwide (except for sub-Saharan Africa), but they are under-represented in certain subject areas and in leadership positions (Avolio et al. 2020; Bergmann et al. 2022). While the reasons for these types of discrepancies can vary (as discussed in Chapter III), some common issues stem from gender bias, a lack of flexibility in work patterns or available child care options, and issues of well-being such as gender-based violence or a lack of WASH facilities (Global Education Monitoring Report Team 2019; Haugen et al. 2014; Education International 2018).

To support women's participation in teaching and school leadership positions, systems need to work to develop laws that protect women from violence and ensure their rights – such as maternity leave – as well as developing more gender-inclusive policies (CooperGibson Research 2020; Education Support 2021; Teacher Task Force 2023b; Gromada and Richardson 2021; Stromquist et al. 2017). In high-income countries, including New Zealand, the Republic of Ireland, Slovakia, Switzerland and the UK, where the cost of child care consumes more than 25 per cent of the average wage (Gromada and Richardson 2021), governments might look to further subsidize the provision of child care so that women can afford to return to teaching.

Some countries have implemented gender quotas or schemes to support women into leadership positions within education. One example is an initiative in Austria that aims to promote women to leadership positions in the public sector, which includes schools. Each federal department must develop a Women's Promotion Plan which examines current personnel levels and develops a future training plan designed to eliminate the shortage of women in leadership positions (OECD 2019c). Additional tools can help systems take a more tailored approach when evaluating their workforce or making hiring decisions. The OECD's Social Institutions and Gender Index (SIGI), for instance, documents discrimination against women socially and economically on a scale of 1-100 for each country (Global Education Monitoring Report Team 2019). Other examples include UNESCO International Institute for Capacity Building in Africa's (IICBA) toolkit for building gender-responsive education and the Forum for African Women Educationalists' (FAWE) guide for gender-responsive pedagogy. Both resources include tools to help education managers and leaders include gender-

responsive staff selection and recruitment, as well as retention and promotion (UNESCO International Institute for Capacity-Building in Africa 2020; FAWE 2018).

Furthermore, community-based approaches are a promising method to encourage women into teaching careers while supporting girls' education. Community-based programmes can prove especially important in unique or crisis contexts. For example, the humanitarian crisis in Afghanistan continues to prevent many girls and women from accessing education and employment (UNESCO 2023g). Since 2022, UNESCO estimates more than 1 million girls have been prevented from attending secondary school in the country (UNESCO 2023g). To combat this exclusion, UNESCO has worked with partners to develop a Multi-Country Preparedness and Response Plan to include initiatives that support girls and women (ibid). This includes the community-based Youth and Adult Literacy and Basic Education programme, where teachers provide basic literacy and numeracy education in their homes (UNESCO 2023a; UNESCO 2023e). These teachers undergo training and certification through a training programme organized by UNESCO in collaboration with local NGOs. Thus far, more than 25,000 participants have taken part in the programme, with some 60 per cent of them women and adolescent girls (UNESCO 2023e).

It is estimated that more than 1 million girls have been prevented from attending secondary school in Afghanistan since 2022. Community-based initiatives with specially trained teachers have sought to fill the gap, reaching more than 25,000 participants – about 60 per cent of which are women. Supporting girls' and women education is an important step towards encouraging women into teaching.

On the other hand, men are severely under-represented at lower levels of education, as this is often considered a women's job due to gender bias and cultural norms (Global Education Monitoring Report Team 2019). Systems should then also develop strategies to increase the presence of male teachers in the lower levels of education. Germany, for instance, instituted expensive campaigns to recruit men to early childhood teacher positions (MenTeach 2012; Global Education Monitoring Report Team 2020a). While this effort more than

doubled the number of men working in early childhood education over a dozen years of implementation (3.1 per cent in 2006 to 6.6 per cent in 2019), women still made up more than 93 per cent of this workforce (Global Education Monitoring Report Team 2020a). In 2013, the National Agency for Education in Sweden initiated a nationwide campaign aimed at motivating men to pursue a profession in early childhood care and education. Similarly, between 2008 and 2011, the Flemish Community of Belgium allocated funding to attract under-represented groups to join the teaching profession, targeting men, individuals with an immigrant background and people with disabilities (OECD 2015).

Male teachers have a key role to play in the psychological (McGrath and Van Bergen 2017) and social development of girls and boys as well as in shaping gender equality dynamics within society as a whole (Moosa and Bhana 2017). However, the available evidence is limited in demonstrating that solely the gender of teachers affects boys' learning outcomes. Nevertheless, policies aimed at enhancing the gender balance within the teaching workforce, coupled with efforts to enhance its ethnic diversity, may contribute to countering boys' disengagement and broader objectives of social justice and gender equality (UNESCO 2022c).

Teachers with minority and migrant backgrounds

Teachers with minority and migrant backgrounds can serve as role models for students from similar backgrounds (Global Education Monitoring Report Team 2020b). Students from minority groups benefit when teachers share their ethnic, racial, linguistic, or cultural background. However, teachers with minority and migrant backgrounds are at higher risk of attrition compared to their peers and may face direct and indirect discrimination (European Commission 2016; Ingersoll et al. 2019; Carver-Thomas 2018). To address this issue, some systems have developed programmes that specifically target and recruit minority or migrant teachers to offer them added support. For example, teacher residency initiatives in the USA aim to improve retention among under-represented groups by partnering teacher apprentices with highly experienced mentors in high-needs schools. The apprentice typically receives financial support or tuition assistance in exchange for committing to work for several years in the district after completing the programme. Research has found that these initiatives bring more teachers from under-represented groups into the profession and improve their retention rates (Carver-Thomas 2018).

A scheme launched in Ecuador also focused on attracting under-represented groups into teaching in under-served areas, thus contributing to building a professionally stable and qualified teaching workforce. To achieve this, the government launched the 'I want to be a Bilingual Intercultural Teacher' initiative. Launched

in 2020, the initiative focused on attracting bilingual teachers fluent in indigenous languages to apply to hard-to-staff schools that deliver intercultural bilingual education programmes. Due to the lack of permanent teachers, these schools must rely on temporary staff, causing instability, deterioration of working conditions and inefficiency in teaching (Bocarejo et al. 2022). In order to increase awareness of the initiative among the target teacher population, communication and dissemination efforts were undertaken. For example, radio communications describing the initiative were broadcast in areas with high proportions of indigenous people, and the Ministry of Education, supported by the Interamerican Development Bank, contacted teachers by email and text messaging services to ensure that they were kept abreast of the stages of the process during the pandemic. The communications reminded teachers that they might not be appointed to any of their five selected schools and invited them to consider being assigned to a hard-to-staff school instead. Evaluation indicated that the total number of applicants for the hard-to-staff schools increased (Bocarejo et al. 2022). Nevertheless, certifying and deploying teachers fluent in indigenous languages through the process faced difficulties, as some were assigned to schools with different indigenous languages. Moreover, ensuring cultural and curricular relevance in teacher evaluations posed challenges, and despite efforts, some remote and dispersed vacancies had low applications (ibid).

Teachers with disabilities

Research has shown that hiring people with disabilities can have positive benefits for both employees and employers (Lindsay et al. 2018). However, once in the profession, teachers with disabilities may face isolation at work (Ware et al. 2022). In addition, their motivation to remain in the profession may diminish if they lack support or face discrimination, depriving them of their rightful equal opportunities and denying students essential role models and mentors (UN General Assembly 2023).

To combat these issues, systems can consider developing peer networks and collaborative opportunities so that teachers with disabilities feel more connected with their colleagues. Additionally, trainings and professional development opportunities for teachers with and without disabilities should incorporate inclusion to better inform staff how to achieve inclusive work environments (Ware et al. 2022; Neca et al. 2022). For instance, a study of teachers in England found that those with disabilities sometimes feel isolated at work (Ware et al. 2022). The study suggested that teacher networks and more training for teacher peers without disabilities would improve the experiences of teachers with disabilities in the workplace (Ware et al. 2022).

Systems and governments can also take positive steps to encourage those with disabilities to enter the profession. For example, the Nepalese government encourages people with visual impairment to enter the teaching profession as a part of their affirmative action plan. Nearly 40 per cent of visually impaired people that hold university degrees in Nepal work as teachers in mainstream schools. Despite challenges regarding access to materials in braille, utilizing illustrations and demonstrations in class, or maintaining class discipline, research found that both students and principals had positive perceptions of these teachers (Lamichhane 2015; Global Education Monitoring Report Team 2020b).

In Nepal, almost 40 per cent of visually impaired people with a university degree work as teachers in mainstream schools, which is perceived as positive by both students and principals.

Enhancing teacher motivation through lifelong learning

As a part of the shift towards a more professionalized and collaborative profession, ITE and professional development programmes must be recognized as learning ecosystems that support lifelong learning for educators in various settings. Teachers may engage in inquiry, research, experimentation and reflection, or connect theoretical and practical knowledge to address diverse and emerging educational needs, all of which empowers them to critically assess policies and practices. Reflecting on other education systems and engaging with research can help teachers identify areas for

improvement. Availability of professional development opportunities in a variety of formats (e.g. micro-credentials, formal, non-formal, shorter trainings over a sustained period instead of one-off longer trainings, etc.) and delivery methods (online, in person, group work) is crucial to ensure relevance and flexibility to accommodate teacher workloads. To facilitate this process, teachers also need ongoing support and mentorship from more experienced colleagues and school leadership, especially early in their careers.

Reforming initial teacher education

A lifelong learning mindset needs to be emphasized from the very start of a teacher's pre-service training, as strong preparation is associated with enhanced teacher efficacy, and better prepared teachers are more likely to remain in the profession (Kini and Podolsky 2016). Research found that novice teachers with extensive preparation are two times more likely to stay in the classroom compared to

teachers with little or no preparation (ibid). Effective ITE should ensure teaching candidates have foundational subject matter and pedagogical knowledge, provide sufficient practical or field training to support theory, align with system curricula and context, and promote inclusion of all candidates (as discussed in the previous section) (UNESCO and Teacher Task Force 2019; Education

Commission 2019). To better impart skills for ongoing professional growth in pre-service teaching candidates, ITE should also include the development of skills such as teamwork or using and generating evidence (International Commission on the Futures of Education 2021; Naylor et al. 2019). And yet, current teacher training often fails to prepare teachers adequately. For example, many feel unprepared to teach in diverse classrooms, which may include students with mixed abilities or multiple languages (Global Education Monitoring Report Team 2020b; International Commission on the Futures of Education 2021).

Ghana initiated a programme in 2014 called Transforming Teacher Education and Learning that supports all education colleges in the country to develop stronger partnerships with schools and practical instruction to trainee teachers.

To better prepare prospective teachers, teacher training institutes should partner and collaborate with schools to provide practical and relevant lessons to aspiring teachers in pre-service training (International Commission on the Futures of Education 2021). For example, Ghana initiated a programme in 2014 called Transforming Teacher Education and Learning that supports all education colleges in the country to develop stronger partnerships with schools and practical instruction to trainee teachers. Reviews of the programme found high levels of success in building these partnerships, and it improved the proportion of beginning teachers showing core competence in professional development and management⁷ from 1.6 per cent to 31.8 per cent over three school years (T-TEL 2018; Naylor et al. 2019). In the Netherlands (Kingdom of), an initiative has led schools and ITE institutes to partner with each other in the design, delivery and evaluation of ITE programming. The Ministry of Education has reported this programme has led to a ‘strong culture of collaboration, co-operation, and connecting preparation to practice,’ and has enabled ITE institutes to provide a good balance of theory and practice (OECD 2018d).

It is also important that the skills and knowledge learned in ITE programmes align with future training and professional growth opportunities. In this way, systems can develop a continuum of lifelong learning that has a natural progression over the course of a teacher’s career. Japan has developed a system of professional growth

through a process known as lesson study. The process usually involves a team of teachers that examine a specific lesson topic in terms of goals, lesson planning and implementation, observation and evidence collection, and finally by reflection and discussion (OECD 2018c). Pre-service teachers receive instruction on this process throughout their university courses while schools incorporate it into the induction procedure for early career teachers (ibid). This not only provides consistency over the course of a teacher’s professional life, but it also fosters opportunities for collaboration from the time a teacher starts initial preparation.

Looking to the future, systems will need to continue evolving the teaching career and ITE programmes to better target modern issues, ensuring relevance and attracting high-quality recruits. Modern youth tend to gravitate towards jobs that address matters that are meaningful to them and align with larger goals. Topics such as greening, human rights, citizenship and education for peace can contribute to maintaining prospective teachers’ interest and trigger their altruistic motivation. For example, focus group discussions at universities in Armenia, Austria, Brazil, Colombia and India revealed that students wanted to pursue careers that matched their values, especially relating to equity, inclusiveness and diversity (Teach for All 2022). Another issue that often strikes a chord with young people is the ongoing challenge of climate change. Programmes related to Education for Sustainable Development, such as UNESCO’s Greening Education Partnership, seek to build new methods of transformative education with the greening of schools, curriculum, teacher training and communities (UNESCO 2024). This type of initiative not only focuses on an issue of great importance but allows teachers to expand their forms of delivery to include pedagogies of cooperation, community outreach, service learning and action research. UNESCO’s new Recommendation on Education for Peace and Human Rights, International Understanding, Cooperation, Fundamental Freedoms, Global Citizenship and Sustainable Development, highlights the role of teachers in promoting these educational objectives and the pedagogical transformations needed to ensure that the safety, health and well-being of teachers and education personnel, and the support and capacity-building needed for teaching personnel to improve their professional, pedagogical and didactical development, as well as their ability to lead and participate in research in the field of education (UNESCO 2024).

⁷ Results based on teacher observations to determine if meeting professional standards and becoming reflective and proficient practitioners based on ten core competencies (T-TEL 2018).

Leveraging technology as part of the lifelong learning journey

Perhaps no issue illustrates the importance of a teacher's lifelong learning journey more than the rapid emergence of, and changes in, technological innovations such as digital technologies and AI systems. Technology can prove important for teachers on multiple fronts: by facilitating their own initial and continuous training and opportunities for collaboration (as shown later in this chapter), as well as by enhancing teaching and learning opportunities in the classroom. However, properly utilizing new technology requires integrated support and training for teachers as well as proper contextualization (Global Education Monitoring Report Team 2023a; Global Education Monitoring Report Team and Education International 2023). In short, teachers need to be well trained and prepared to realize any potential gains from technology use.

In the context of Egypt's educational landscape, examples have emerged on both utilizing digital technology for training teachers as well preparing teachers to equip students with technological skills. The Professional Academy for Teachers represents Egypt's first integrated government platform for teachers, designed to enhance and support the professional development of teachers through online courses, workshops, and resources (Professional Academy for Teachers 2021). It includes provisions for training and accrediting main trainers, developing training packages, and qualifying teachers to obtain certificates in alignment with relevant standards. Recently, a significant collaboration has been established with the funded 'Egypt Workforce' project by the USA Agency for International Development (Egypt Minister of Education and Technical Education 2022). The project aims to support and implement activities related to the professional development of technical education teachers to develop training packages and qualify teachers to obtain certificates in alignment with relevant standards (Egypt Minister of Education and Technical Education 2022). It also focuses on preparing technical education teachers to equip students with the skills needed for effective integration into the labour market.

The COVID-19 pandemic brought sharply into focus the question of integrating technology such as AI into teacher education programmes. The pandemic served to accelerate the adoption of digital technologies in education, underlining the potential role of AI in reshaping teaching and learning. As a response, UNESCO is currently preparing an AI competency

framework for teachers, building on the foundation of its ICT Competency Framework for Teachers (UNESCO 2018c), which is based on human rights principles and driven by the imperative to safeguard human dignity, privacy and empower human agency (UNESCO 2018c). This framework, to be presented later in 2024, is expected to provide a globally recognized guide on this topic. It underscores the importance of nurturing AI competencies among teachers while emphasizing ethical principles and responsible AI use. This framework aligns with the UNESCO Recommendation on Ethics of AI (UNESCO 2021c), fostering a holistic approach to AI education that is well-grounded in ethical considerations.

Countries like Finland and the Republic of Korea have made commendable strides in incorporating AI education into teacher training, while also offering valuable insights into navigating the opportunities and risks associated with this transformative endeavour. In Finland, the Experimentation Lab of the Innovation Centre at the Finnish National Agency for Education (OECD and OPSI 2023), equipped educators with AI knowledge and skills, empowering them to harness AI-driven tools and platforms for enhanced teaching and learning experiences. Finland's approach not only addressed the immediate needs of teachers during the pandemic but also positioned them to thrive in a digitally augmented educational landscape. The Republic of Korea recognized both the promise and the risks associated with AI integration in education (Lee and Lee 2023). Through initiatives like the 'AI Smart School', the Republic of Korea prepared teachers to leverage AI for personalized learning, data analytics, and classroom management. However, the Republic of Korea's approach also underscored the importance of a balanced decision framework. The country prioritized not only technical skills but also ethical and responsible AI practices, ensuring that educators were well-equipped to navigate the ethical dilemmas and data privacy concerns that AI adoption may entail.

The Artificial Intelligence Strategy of the Austrian Federal Government includes integrating digital skills and topics related to AI into teacher training education programmes at higher education institutions. Furthermore, the strategy indicates that AI should be used by teachers and students for individualization and didactic innovation across the entire education system (Austria Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology 2021). In China, a teaching research system utilizes AI to collect and analyse teacher behaviour

based on speech, body, face and location recognition. This process develops a visualized classroom teaching analysis that can provide feedback to the teacher and allow for ongoing teaching research (Yang 2022). This aligns with the Ministry of Education's 2018 action plan on AI that plans to support universities in research and innovation, as well as applying future research to developing and building smart schools (People's Republic of China Ministry of Education 2018).

While AI is one of the most advanced technologies to integrate into education systems, many countries are also focusing on incorporating ICTs and digital technologies into teaching and learning practices. At the classroom level, such technologies can potentially allow teachers to better engage with their students and provide more dynamic lessons (UNESCO 2023f). Game play as a part of digital lessons can support learning in science, mathematics and languages while digital smartboards can better support visual, auditory and tactile learning experiences (Global Education Monitoring Report Team 2023a). For instance, the Thai government has implemented the 'One Tablet Per Child' initiative and distributed tablets to schools nationwide. In conjunction with this, they have incorporated technological, pedagogical and content knowledge into initial and developmental teacher trainings to better prepare teachers for developing instructional strategies integrating technology (UNESCO 2023f).

Through the 'AI Smart School' initiative, the Republic of Korea has prepared teachers to leverage AI for personalized learning, data analytics, and classroom management, while also prioritising ethical and responsible AI practices.

At the same time, evidence remains mixed on technology's overall effectiveness for students and teachers in the classroom. For instance, online learning seemed to have a particularly adverse effect on younger learners during the COVID-19 pandemic (Global Education Monitoring Report Team 2023a). Beyond a certain threshold, technology can also increase distraction and even lower student engagement (ibid). While teachers in Thailand generally favoured the initiative mentioned above, connectivity issues often caused students to have to use tablets without an internet connection (UNESCO 2023f). Other issues stem from a lack of adequate training for teachers in ITC skills (Darling-Hammond and Hyler 2020). Providing teachers with technology without the proper training or connectivity may simply raise frustration and stress levels. Thus, education planners and leaders should carefully weigh plans to integrate technology into systems to best fit the needs, skills and accessibility of teachers and students.

Continuous professional development: a lifelong learning perspective

Pre-service and early career teachers are not the only ones that need support and development: teachers at all stages in their career should have access to quality CPD opportunities. This aligns with the vision of shifting professional development into a continuum of lifelong learning that links initial training, induction and mentoring programmes, and ongoing professional development throughout a teacher's career (International Commission on the Futures of Education 2021). Research has also shown that establishing ongoing professional learning opportunities in this manner can improve a teacher's motivation and well-being (Education Commission 2019).

Teachers in different subject areas or at different stages of their career may require very different professional development options to best suit their needs. Additionally, teachers in rural or remote settings may not be able to easily access in-person professional development sessions held in more populous locations. For all these different needs and scenarios, planners and

policy-makers need to consider how best to ensure that CPD opportunities can be made available to teachers, free of charge and within working hours, to keep them engaged and remain relevant to their unique situation.

One key aspect of CPD involves ensuring that teachers are engaged and actively participating in training sessions. Research has shown that adults learn best from active participation and when seeking goals that will improve their performance rather than passively reading or listening to others' work or observations (UNESCO and Teacher Task Force 2019; Naylor et al. 2019). Translated to teacher professional development, this type of active training can be best achieved with workshopping, role modelling, or mentoring sessions, especially in the school itself. For example, a programme in the Brazilian state of Ceará provided benchmarked feedback and expert mentoring to improve teacher performance. Teachers responded well throughout the programme, with significant gains in student learning performance (Bruns et al. 2017). By embedding this type of less formal,

in-school professional development on a regular basis, systems can help establish a culture of lifelong learning by making it a normal part of teachers' routines.

Developing blended learning systems that combine in-person and online professional development opportunities offers additional promising options, especially for teachers in remote settings (Cilliers et al. 2021; McAleavy et al. 2018; Education Commission 2019). For example, an online teacher network in Lithuania called iKlasė has grown from a single blog entry to more than 2,400 members in its first 10 years of existence. Members share pertinent information about professional learning needs and programmes, as well as expanding to offering informal workshops and seminars (Vuorikari 2019). The eTwinning platform in the European Union offers online professional learning opportunities, such as courses and events, but it also facilitates face to face meetings both nationally and internationally (Vuorikari 2019).

Micro-credentialing offers another innovative way that systems can improve the relevancy of professional development for teachers. Essentially, micro-credentialing consists of sets of professional development sessions that allow teachers to learn new skills, gain feedback from evaluation, develop mastery of a new subject, and earn professional recognition (DeMonte 2017). High-quality micro-credentialing can allow teachers to personalize their lifelong learning while providing updated research and evidence about the impacts of the selected topic (Tooley and Hood 2021). While large scale quantitative evaluations remain sparse, participating teachers have provided positive feedback about micro-credentialing in the USA (DeMonte 2017; Acree 2016). An evaluation of participating

teachers found that they directly applied learned skills to classroom practice and 97 per cent of participants wanted to earn additional micro-credentials (Acree 2016).

High-quality micro-credentialing can allow teachers to personalize their lifelong learning journey while providing updated research and evidence about the impacts of a selected topic. In the USA, an evaluation of participating teachers found that they directly applied learned skills to classroom practice and 97 per cent wanted to earn additional micro-credentials.

For any professional learning and training, there needs to be some form of monitoring, evaluation, and ongoing planning based on the results of current outcomes (Boeskens et al. 2020; OECD 2020d; Education Commission 2019; Research Partnership for Professional Learning 2021). In this way, systems can keep student learning outcomes at the forefront when considering how to approach teacher professional learning. For example, teacher coaches in Kenya received tablets that had pre-loaded software which enabled them to easily conduct standardized classroom observations and better provide feedback. This data, combined with randomly selected student fluency rates, allows coaches to update their training focus and tailor professional learning directly to a teacher's needs (McAleavy et al. 2018). By developing this type of ongoing learning cycle that constantly updates based on outcomes, systems can keep professional development fresh and relevant throughout a teacher's career.

Fostering teacher professionalization

Developing the teaching career into the highly collaborative and innovative vision of the new social contract for education takes a certain level of professionalization to achieve. Teachers either working on temporary contracts or in systems and schools that lack accountability or effective career pathways will also

likely struggle to build collaborative relationships, create knowledge and participate in decision-making. Education systems have a host of options to continue to enhance the professionalization of the teaching profession which serves to improve its status, increase retention and reduce attrition.

Qualification and certification of teachers

Qualification frameworks play an important role in defining teacher professionalism and knowledge. By having minimum standards in place, systems can

raise the status of qualified teachers and in turn the professionalism of a career in teaching. The African Teacher Qualification Framework, for instance,

encourages the elevation of minimum entry requirements to a degree-level teacher education, among other significant measures (African Union 2019). Another influential initiative is the ISCED-T developed by UIS which establishes a framework for assembling, compiling and analysing cross-nationally comparable statistics on teacher training programmes and related

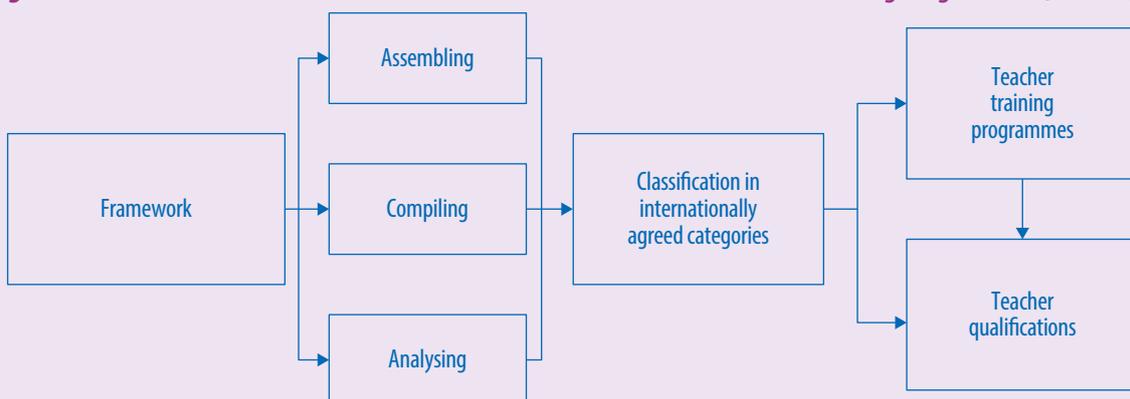
teacher qualifications (see Box 5.1). This fills a key void in internationally comparable data since current monitoring relies on varying national standards. ISCED-T will also contribute to exploring the possibility of creating a global minimum standard for teacher qualifications (UNESCO Institute for Statistics 2022a).

Box 5.1. International Standard Classification of Teacher Training Programmes (ISCED-T)

To increase the proportion of qualified teachers, it is essential to be able to monitor and compare the level of teachers’ qualifications nationally, regionally, and internationally. However, since the current data on teacher training and qualifications, for example the SDG 4 Indicator 4.c.1 on the proportion of teachers who have received at least the minimum organized teacher training, are based on national standards, there is no internationally comparable method to do so.

To remedy this, UIS has developed ISCED-T (UNESCO Institute for Statistics 2022). It is a framework for assembling, compiling, and analysing cross-nationally comparable statistics on teacher training programmes and related teacher qualifications (see Figure 5.1). This new classification is based on, and complements, the International Standard Classification of Education (ISCED) (UNESCO Institute for Statistics 2012), which serves to classify education programmes and the related qualifications by education levels and fields.

Figure 5.1. Framework for the International Standard Classification of Teacher Training Programmes (ISCED-T)



The ISCED-T is applied across five dimensions:

- Educational level of qualification upon completion of the teacher training programme e.g. secondary, post-secondary, non-tertiary, tertiary.
- Target teaching level of the teacher training programme (pre-primary to upper-secondary).
- Minimum educational level required for entry into the teacher training programme.
- Theoretical duration of the teacher training programme.
- Teaching practice ratio, which is the duration of the work-based in-school component of the teacher training programme relative to the total duration of the programme.

The ISCED-T is expected to contribute to global efforts to clarify the definitions of trained and qualified teachers through the improved availability of quality data. Data reported through the ISCED-T will also help explore the feasibility of developing a global minimum standard for teacher qualifications which could then be used alongside the national standards currently used for monitoring.

Source: UNESCO UIS, 2022

Likewise, it is critical for countries to develop quality standards to monitor and control teacher certification or licensing programmes. For instance, accreditation for teacher education institutions, intended to enhance quality in teacher training, began gradually in several Latin American systems from the early 2000s onward. Currently, Argentina, Brazil, Chile, Colombia, Mexico, and Peru widely employ both institutional and pedagogical programme accreditation. Concerning the quality of teacher education, in Argentina, Chile, Colombia, Peru, and Mexico, assessment of teacher education quality occurs indirectly via external examinations of teachers' subject content-knowledge along with pedagogical knowledge. These results aid in identifying areas requiring improvement within various teacher education specializations (Voisin and Ávalos-Bevan 2022).

Moreover, under the initiative 'Teach for Tomorrow,' the Ministry of Education and Technical Education in Egypt actively collaborates with USAID to shape, implement, and oversee the evolution of the teacher professional development system. This strategic partnership involves the co-designing of the country's inaugural teacher standards, which meticulously outline the requisite skills and competencies essential for the success of primary-grade teachers. Furthermore, the programme is actively engaged in formulating a comprehensive teacher certification and licensure model. In addition to these foundational elements, 'Teach for Tomorrow' is spearheading the creation of an innovative incentive structure that recognizes and rewards teachers based on their demonstrated performance. Through these multifaceted efforts, the programme aims to elevate the quality of education by equipping teachers with the necessary skills, certifications, and motivation to excel in their vital roles within the education system (USAID 2020).

Alternative certification programmes or the hiring of contract and community teachers might be a response to reverse the shortage of teachers in the short term (UNESCO and Teacher Task Force 2020; UNESCO and Teacher Task Force 2019; OECD 2019d). However, these practices can also create a shortage of qualified teachers if the quality of these programmes and candidates is not closely monitored or regulated. A more effective long-

term approach can involve offering opportunities to move out of a fixed term contract and into the permanent teaching force. Countries use various strategies for this, including requiring degrees or advanced training, offering a competitive application process, or allowing contract teachers to become civil service employees after serving for a set period (UNESCO and Teacher Task Force 2020).

Numerous examples exist of opportunities developed as a way for contract teachers to earn their way into permanent positions. This practice has been observed in Africa, where some countries actively provide alternative routes into the profession by offering in-service training for contract and volunteer teachers (Bengtsson forthcoming). Mexico regularized 800,000 contract teachers who became eligible for permanent positions after six months on the job (Education International 2023a). Similar steps were taken in Burkina Faso (Nagnon forthcoming) and Indonesia (see Box 5.2) to integrate contract teachers into the civil service. In Cameroon, state-contracted teachers receive a basic monthly salary equivalent to two-thirds of what civil servants receive. They are entitled to various bonuses, allowances, step advancements every two years, and a retirement pension, mirroring the benefits available to civil servants, while performing similar tasks under comparable conditions (Abdourhaman forthcoming).

A longer-term approach to addressing the shortage of teachers can be to help them transition from temporary to permanent positions. Mexico has regularized approximately 800,000 contract teachers who became eligible for permanent positions after six months on the job.

Moreover, Nepal's Ministry of Education, Science, and Technology has a three-pronged plan to integrate contract teachers into the regular civil service system. First, they are implementing a teacher rationalization and redeployment plan initiated in 2016 (Government of Nepal Ministry of Education 2016).

Box 5.2. Indonesian integration of contract teachers

In 2020, the Indonesian government initiated a significant reform in the education sector by introducing a new employment scheme called *Aparatur Sipil Negara Pegawai Pemerintah dengan Perjanjian Kerja (ASN PPPK)*. This scheme aimed to address the issue of contract teachers, providing them with better positions, benefits, and job security. Under the ASN PPPK system, contract teachers are recruited as civil servants. In fact, in 2021, the Government announced its intention to create one million contract-based government employee positions (PPPK) available for teachers of all ages (The Republic of Indonesia Cabinet Secretariat 2021).

This initiative aimed to improve the quality of education in Indonesia by motivating and retaining qualified teachers in the profession. By granting better status, the government sought to attract more individuals to pursue teaching careers, which would ultimately enhance the overall education system. Recruitment is based on the analysis of teacher needs, conducted by the national government as well as each region and school. The need for contract teachers is determined by the shortage of qualified teachers in a particular subject or area. Based on the results of this analysis, the government provides guidelines for the recruitment of contract teachers in each region.

The initial phase of the recruitment process began in 2020, with the announcement of vacancies and eligibility criteria for contract teachers to become ASN PPPK or government teachers. The government conducted a rigorous selection process to ensure the selection of qualified candidates. In 2021, the government continued the recruitment process by organizing written exams and interviews for eligible candidates. These assessments aimed to evaluate the knowledge, skills, and aptitude of the applicants. In 2022 significant progress was made in the recruitment of contract teachers as civil servants, as successful candidates from the previous stages underwent further verification of their documents and medical examinations to ensure their authenticity and eligibility.

Between 2021–2022, there have been as many as 544,000 successful candidates who have become government employees under this scheme and filled vacant positions as qualified teachers across the country (ANTARA News 2023). These figures only filled around 23–33 per cent of the allocation. As of 2023, the recruitment process is ongoing, with the final stage focusing on the appointment and assignment of teachers to their respective permanent positions. The government is actively working on the placement of ASN PPPK teachers in various schools across the country with qualified teachers.

Teaching standards, accountability systems and assessments

Accountability systems may serve as a key aspect for improving the professionalism of the teaching career, but they also may act as a kind of double-edged sword for systems with the potential to affect the attractiveness of the profession in both a positive and negative manner. While some countries have supportive and non-punitive systems that can build professionalism and support teachers, others employ strict accountability measures that have been reported to negatively affect teacher recruitment and retention (Perryman and Calvert 2020). At the same time, and as highlighted in Chapter III, systems need to find the proper balance as too little oversight and accountability can leave teachers feeling undervalued. Practices observed in successful education systems tend to involve professional and participatory accountability mechanisms involving teachers sharing

insights and receiving feedback from peers to stimulate autonomous motivation (UNESCO IIEP 2019). An example is the Global Framework of Professional Teaching Standards, jointly developed by Education International and UNESCO, which consists of ten standards underpinned by twelve principles and organized around three main domains: teaching knowledge and understanding, teaching practice and teaching relations. Its implementation emphasizes the critical role of teachers' professional judgement and the enhancement of their professional standing to advance the reputation of the teaching profession (Education International and UNESCO 2019). While many systems invoke teacher accountability systems based on high-stakes testing and student exam scores, PISA 2015 data from 50 countries showed a negative correlation between test-based

accountability and highly skilled students' willingness to become teachers (Han 2018b). Moreover, a study of over 40 OECD countries found that stress and accountability are linked (Jerrim and Sims 2022). Educational systems may then consider different methods for utilizing student test data instead other than as a means of summative assessment of teacher performance. The only standardized examination in Finland is the secondary matriculation test, but principals do not use its outcomes for assessing teachers. On the contrary, teachers are expected to drive their own development, which contributes to the status of teachers as autonomous and reflective professionals (Akiba et al. 2023). Instead of being dismissed, school leaders in struggling schools in Japan and Shanghai receive support from those working in a more successful school (Crehan 2017).

Other systems have begun to shift their accountability systems from one of oversight or results-based outcomes to more supportive systems, especially at the district or regional level. Research has highlighted the potential of leaders at this 'middle tier' of education systems to act as instructional leaders and provide support to

teachers by providing feedback on instruction, modelling effective methods, and supporting the analysis and use of assessment data (UNESCO IIEP et al. 2020; Education Development Trust and IIEP-UNESCO 2023). At the same time, systems of accountability should not tolerate poor performance or work ethic from teachers; they should simply make attempts to build capacity and provide feedback in a 'respectful and constructive manner' (Education Commission 2019; UNESCO IIEP et al. 2020). For example, reforms in Jordan in 2015 sought to shift the role of middle tier supervisors from an oversight role to providing more formative assessments for teachers. A review of a programme that specially trained supervisors in this transition saw improvements in teacher confidence and motivation (Education Development Trust and IIEP-UNESCO 2023). In Colombia, the Escuela Nueva programme envisioned a new administrative role for supervisors and heads of school clusters that transformed from one of control to one of technical support for teachers. Analysis of the programme showed this served as a motivator for teachers to continue to innovate (UNESCO IIEP et al. 2020; Colbert and Arboleda 2016).

Career pathways

The career structure is a cornerstone of teacher professionalization as it links to motivation, progress, work stability and development. To further the professionalization of teaching and improve motivation and encourage retention, many systems have begun to move beyond models of career progression that raise salaries based solely on seniority (single salary schedules). Instead, systems utilize career ladders, where 'teachers take on a new status or role after meeting the required standards to do so, with their pay reflecting the new position' (UNESCO IIEP 2019).

Career ladders can develop more enhanced pathways with both horizontal and vertical growth opportunities,⁸ such as systems in South Africa, Singapore, and Lithuania (ibid). This type of system can then motivate teachers to improve their performance or seek professional development opportunities to gain promotions. In this fashion, career ladders allow teachers a greater sense of ownership over their career progression while also rewarding excellence. Through horizontal promotion opportunities, it also allows them to apply for higher level positions without having to leave the classroom (ibid). For example, Singapore has developed multiple

tracks that teachers can take for promotion – teaching, leadership, or senior specialist – allowing them a wide range of choices to earn seniority and higher pay. By earning promotions on the teaching track, high-performing teachers can continue their career progression without having to take an administrative role while at the same time gaining extra responsibility to develop others (Jensen et al. 2016).

Singapore allows teachers a wide range of choices to earn seniority and higher pay, including promotion along teaching, leadership and senior specialist paths. Ensuring teachers have careers with long-term prospects is key to keeping them motivated throughout their work life.

Ensuring that teachers have careers with long-term prospects is key to keeping them motivated throughout their work life. Thus, developing a strategic career pathway includes comprehensive policy development that should tie consideration of salary structures and

⁸ Horizontal growth refers to teachers being promoted to more senior teaching positions but staying in the classroom while vertical growth refers to the promotion to leadership or administrative positions, with teaching no longer central to their job (UNESCO IIEP 2019d).

CPD into promotion requirements. The implementation of career reforms should also align with the ability of education systems to effectively maintain them over time (UNESCO IIEP 2019). In short, policy updates to career pathways should not occur in a vacuum but should be part of a holistic vision for improving the professionalism of a teaching career. Lithuania passed legislation throughout the 1990s and 2000s that regulated and updated teacher career structures in the country, leading to a career ladder with streams along teaching and senior management pathways. Teachers seem generally satisfied with the model, but both administrative and financial challenges emerged, highlighting the importance to ensure all aspects of policies contributing to career pathways align (UNESCO IIEP 2019b). Beginning in 2023, France also started introducing reforms in its career systems to enhance the profession's long-term appeal by allowing experienced teachers to further progress in their careers (France Ministry of National Education and Youth

2023). However, ongoing monitoring and evaluation of this new system will be required to determine its full effectiveness.

As teachers advance along career pathways, linking ongoing professional development opportunities to incentives such as promotion or salary increases can help promote the relevancy of CPD (International Commission on the Futures of Education 2021; UNESCO and Teacher Task Force 2019; Education Commission 2019). For example, Ecuador has adopted requirements for professional development that teachers must complete before applying for promotion. These requirements shift depending on the experience of the teachers, progressing from basic trainings to courses on mentorship and management to working on research and publishing findings from their experience in the field. Surveys found that 55 per cent of teachers reported that these types of promotion opportunities improved their willingness to stay in the profession (UNESCO IIEP 2019a; UNESCO IIEP 2019d).

Building a new social contract

Teaching and instructional quality are among the most important in-school determinants of student achievement. Yet, the teaching profession faces serious shortfalls and shortages. A new social contract for education will need to reinforce the complex professional, pedagogical, and relational work of teaching which

includes recasting teaching as a collaborative profession; elevating the professional working conditions of teachers; envisioning teacher education and development as a lifelong endeavour across the professional lifecycle; and involving teachers in educational policy, practice and research for more responsive futures of education.

Teaching as a collaborative profession

Active participation in networks and communities of practice can contribute to enhancing the appeal of the teaching profession, as it provides a place for teachers to develop, share ideas, and innovate (Paniagua and Istance 2018). Networks aimed at finding new solutions to problems are sometimes formalized into Communities of Practice (CoPs). CoPs are networks of colleagues who meet regularly to discuss their work, share good practices and collaborate to find solutions to work-related problems (Rwanda Education Board 2019; Rossignoli et al. 2020). CoPs can operate at transnational or regional levels, within individual schools or across a cluster of schools.

There have been large scale trials of CoPs in some of the sub-Saharan African countries including Kenya and Rwanda (see Box 5.3). There are also examples

from Latin America, where in Argentina CoPs aimed at supporting secondary school initial teachers and education science graduates have been established in the region of Mendoza. Evaluation indicates that the initiative successfully supports new teachers' professional development and identity formation (Barroso and Cruz Garcette 2022). On a national level, the Republic of Korea's 'Teacher Evaluation for Professional Development' policy has encouraged teacher collaboration since 2010, with research finding benefits for teachers joining a Professional Learning Community compared to those who did not (Yoo and Jang 2022). Specifically, membership of a professional learning community was associated with improvements to teacher collaboration, feedback provision, job satisfaction, and self-efficacy.

Box 5.3. Communities of Practice in Rwanda

The Rwandan government prioritizes supporting teachers through CPD opportunities. In alignment with this priority and the country's work towards improving inclusive and equitable education, the 'Leading, Teaching and Learning Together' programme was rolled out between 2018 and 2021. It targeted 680 secondary schools across 14 districts. As part of the programme, school-based mentors and school subject leaders were trained in how to provide CPD opportunities to teachers. To encourage collaboration, collective problem-solving, and knowledge exchange, both mentors and leaders organized teachers into CoPs which met at least three times a year. These CoPs focused on discussing and addressing challenges relevant to the school such as student absenteeism, lack of resources, managing large class sizes, or curriculum implementation (Rwanda Education Board 2019). Even though CPD delivery was severely disrupted by school closures during the COVID-19 emergency (Cortez Ochoa et al. 2022). The programme evaluation shows promising results. Participants in school-based CoPs reported increased levels of collegiality, problem-solving capacity, self-efficacy and motivation (Three Stones International 2021). Head teachers reported improved motivation, stronger community links and more collaboration, and teachers also reported heightened motivation (VVOB and Education Development Trust 2017). Evaluation found that CoP participants sometimes struggled with their workloads, and that the most effective CoPs were those timetabled within school hours and that had head teacher support (Three Stones International 2021).

Networking and collaborative opportunities may also help teachers navigate emergency situations or other unforeseen circumstances. This is important as crises and uncertainties have an impact on teacher well-being and the teaching profession, which in turn may contribute to decreased job satisfaction and higher teacher turnover rates (Pantić et al. forthcoming). During the COVID-19 pandemic, inclusive educational communities helped teachers navigate difficulties by providing a space for collaboration and support to cope with social and psychological challenges (Zaalouk et al. 2021; Ávalos et al. 2022). Moreover, the pandemic emphasized the need for flexible pedagogy, granting teachers agency to adapt their teaching to various factors such as learning environment, technology, and assessment method (Huang et al., 2020). In Kenya during the pandemic, the Teachers' Service Commission supported teachers to adopt remote and virtual learning methodologies by encouraging the development of online teacher communities for collaboration and peer support, among other objectives. This enabled a reflective exchange of teaching experiences and sharing of resources which has fed into national level efforts to enhance teacher professional development (Teacher Task Force 2022a).

To better tap into the beneficial qualities of collaborative opportunities, teachers should be equipped with the ability to identify and seek support from different sources and actors, such as colleagues and communities (Pantić et al. forthcoming). Availability of technology and connectivity to access online resources and distance training opportunities may help teachers to overcome

time and location barriers. Moreover, teachers can use technology to learn from each other, share best practices and work together on projects (Global Education Monitoring Report Team 2023a). For instance, virtual CoPs enabled teachers in Arab States to continue professional development and emotional support during the COVID-19 pandemic (Zaalouk et al. 2021; Ghamrawi 2022).

Virtual communities of practice in the Arab States enabled teachers to continue professional development and offer each other emotional support during the COVID-19 pandemic.

Collaboration does not only take place at the professional level with other teachers or education leaders. Quality teachers also collaborate with and advance their communities, which in turn provide them with support to thrive and achieve professional growth. This is a key factor to increase the motivation of teachers to stay in the profession. In Southern Asia, teacher retention increased when teachers were able to work in their home areas, thanks to social support, networks and familiarity with the community (Bennell and Akyeamong 2007).

Due to the important nature of collaboration for a teacher's professional growth and motivation, time for building relationships and communities needs to form part of contractual hours, alongside time for instruction to allow them to engage with others in problem-solving.

Allocating time for collaboration has been identified as a key factor to address teaching and learning during the pandemic and beyond (Darling-Hammond and Hyler 2020). However, based on findings from a school and

staffing survey conducted in the USA, collaborative time given to teachers is often limited, and many teachers seem to do this collaborative work outside of contracted hours (voluntarily and unpaid) (Kaplan et al. 2015).

Social dialogue and teacher voice

To effectively move towards the new social contract for education, teachers need to be involved in all phases of education decision-making processes. An essential aspect of this involvement includes participating in social dialogue to have a stronger voice in education policy and curricula development. This process of including teachers in the whole education decision-making process can better enable schools to 'become learning organizations, in which teachers shape and share a vision focused on learning for all students' (International Commission on the Futures of Education 2021). In Colombia, for example, a government's strategy launched in 2023 that seeks to valorize and dignify the teaching profession, includes a specific focus on teacher participation in social dialogue to transform the country's education policy. This will be achieved through the organization of regional consultations with teachers and other education stakeholders, who will be sharing their views on topics such as ITE and CPD, with a special consideration for teachers' needs in rural and remote areas (Colombia Ministry of Education 2023).

Without engaging teachers in social dialogue, policies may either struggle with implementation or miss vital realities from the affected schools and classrooms. For example, the government of Punjab, Pakistan passed a reform in 2009 that changed the language of instruction for all government primary schools to English. However, many teachers lacked even basic English knowledge and pushed back on the reform, causing the government to backtrack implementation in 2014 (Aslam et al. 2021). This example not only illustrates the importance of incorporating teachers' voices and experience into the design aspect of policy-making, but it also shows that education leaders need to give teachers the appropriate training and resources to successfully implement any new reforms (ibid).

On the other hand, effective social dialogue has the potential to raise the status of teaching by empowering teachers and giving them a voice (Stevenson et al. 2018). Social dialogue is a continuous process rather than a discrete event and plays a pivotal role in the development of mutually agreed-upon strategies and policies, including those related to teachers' salaries and working conditions. This in turn ensures the ongoing attraction of an adequate

number of teachers to the profession. The importance of social dialogue and collective bargaining is recognized by the 1966 Recommendation concerning the Status of Teachers (UNESCO and International Labour Organization 1966). One of the guiding principles of this international normative instrument establishes that the role of teachers' organizations should be acknowledged as an important contributor to educational progress, and as such, they should be involved in shaping educational policy. As a result, several of its provisions promote teachers' right to actively participate in the negotiation of their salaries and working conditions through teacher unions and together with their employers. This instrument also addresses teachers' decision-making power by means of academic freedom. National and international teachers' organizations are entitled to submit communications concerning the non-application of the provisions of the 1966 Recommendation in a certain state to the Working Group on Allegations of the CEART (International Labour Organization and UNESCO 1999). This body of experts considers and examines such allegations and encourages all parties involved to apply its recommendations, in view of achieving a solution.

In Zambia, for instance, the National Framework for Social Dialogue for Teachers was launched to guide ways to facilitate teachers' input into the policy-making process.

Moreover, a structured democratic voice enables teacher engagement in decision-making. In Zambia, for instance, the National Framework for Social Dialogue for Teachers was launched to guide ways to facilitate teachers' input into the policy-making process (Teacher Task Force 2023a). Similarly, the Nepal Teachers' Association and the Institutional Schools' Teachers' Union have agreed with local Nepali governments to hold biannual social dialogue meetings (Education International 2023b). In Europe, a coalition of more than 100 teacher unions from all parts of the continent influences the European Union through social dialogue venues and working groups for education. This has had impact in various EU member countries, ranging from the primary level through vocational and

higher education programmes (Wiborg forthcoming). When teachers are brought in on the ground floor of planning and designing policy initiatives, they can ease transition to new practices and help build buy-in from their colleagues. For instance, the state of Tamil Nadu in India has seen success implementing the Activity Based Learning reform which reorganized classroom structures and shifted teachers' pedagogical techniques. While this reform marked a major shift in strategy and could have received pushback from teachers, the programme started slowly (in only 13 schools) and engaged teachers through the design and implementation stages (Aslam et al. 2021). This led to a sense of ownership and buy-in from teachers and the reform grew and spread not only throughout Tamil Nadu, but also to other Indian states and even other

countries. While several contextual factors played a part in this growth, incorporating teacher voices into the entire reform process proved a key driver to success (ibid).

In Tamil Nadu in India, the Activity Based Learning reform, reorganizing classroom structures and pedagogical techniques, engaged teachers through the design and implementation stages of the project, leading to a sense of ownership and buy-in and the spread of the reform to other Indian states and other countries.

Enhancing the innovation and autonomy of teachers

Teachers can further contribute to shaping decisions and practices within the world of education by innovating and conducting research. Opportunities for innovation may boost the attractiveness of teaching to graduates because it can professionalize teachers as 'core actors in educational processes' (OECD, 2019b). Innovation can be defined as 'a problem-solving process rooted in teachers' professionalism, a normal response to addressing the daily changes of constantly changing classrooms' (Paniagua and Istance 2018). Teachers can innovate across three categories: knowledge and methods; product and services, and/or technology, tools or instruments (OECD 2014). By drawing on their professional knowledge, skills and experience, teachers might find novel approaches or solutions to challenges – they might experiment with gamifying students' learning experience, test technologies as a learning aid, or use technology to help reduce their own workload. Encouragingly, most (79 per cent) teachers across OECD countries agree that teachers in their school 'strive to develop new ideas for teaching and learning', and openness to new ideas and methods is most prevalent among younger teachers (OECD, 2019b). Compared to other professions, teachers innovate more when it comes to knowledge and methods (ibid), which illustrates that teaching can be an exciting and creative 21st century career.

Innovations that use technology can bring teachers together into a professional community. For example, Botswana and the Caribbean have rolled out the 'Future Teacher Kit' which is a low-tech teacher training and collaboration service (UNESCO, 2022e). The service delivers bitesize training and knowledge exchanges through instant messenger services such as Signal and Telegram. The technology can also be used during emergencies to

enable teachers to keep connected and get support from their peers. A survey of teachers who tried a 'Future Teacher Kit' test module found that the majority (95 per cent) found it 'useful', and that 98 per cent perceived improved student engagement following engagement with the Kit's activities (Von Lautz-Cauzanet and Buchstab 2023). As shown here, innovative technologies can aid teacher collaboration and have indirect benefits for students. These are all outcomes that might improve their sense of community, job satisfaction, and thus their willingness to stay in the profession long term.

Teacher innovation can also dovetail with ongoing professional development opportunities to better enable teachers in lifelong learning pursuits. In Egypt, the Educate Me Foundation runs a community school and professional development programmes for teachers with a focus on empowering teachers, learners and school leaders to become lifelong learners and drive local innovations to education challenges. The Foundation emphasizes the importance of values and works on teachers' and students' mindsets while offering them respect and dignity. During the pandemic, teachers were seen to draw from these programmes to adapt teaching practices despite scant resources (Teacher Task Force 2022a).

The Teacher Training Education Project in Uganda responded with a Sandbox Ed Tech Experiment at the start of the pandemic when teacher colleges were closed. Teacher educators and student teachers of five teacher colleges were provided with online materials and open and free digital tools, along with creating digital learning spaces for teachers to innovate. Evaluations of the project indicated that a large majority of both teacher

educators and student teachers found the material useful and actively engaged with the resources (Teacher Task Force 2022a).

While teachers need a voice in larger decision-making processes and encouragement to innovate, they also require a certain level of autonomy and academic freedom in their own classrooms. The idea of academic freedom is often discussed and well defined at the tertiary level, but it is crucial at all levels of education (Maxwell et al. 2019). The idea of autonomy inside the classroom includes teachers making decisions about teaching methods and materials, adaptation of curricula or student assessment measures (UNESCO and Teacher Task Force 2019). Granting autonomy to teachers is yet

another key for professionalization and has the potential to significantly enhance job satisfaction and self-efficacy, but it requires adequate training and support so that it is not perceived as an extra burden by teachers. In addition, higher levels of autonomy support teachers' capacity to act as highly knowledgeable professionals. Teachers with autonomy can become actors who understand the needs of their students and communities, instead of merely implementers of policies designed by others (Pantić et al. forthcoming). For example, a survey from the UK found that teachers experiencing the highest levels of autonomy⁹ intend to stay in the profession at a rate of 85 per cent compared to only 50 per cent of those teachers experiencing low levels (Worth and Van den Brande 2020).

Implementing policies to reduce teacher shortages

Both this chapter and the previous one laid out an abundance of levers that education leaders at all levels of systems can utilize to potentially improve the attractiveness of the teaching profession. However, these strategies need to be carefully considered, engaging key stakeholders through social dialogue, and especially teachers and their sense of ownership of reforms, and grounded in current data. In addition, these strategies should exhibit flexibility, adapting to diverse contexts and addressing the more pressing issues shaping teacher shortages locally. Furthermore, establishing monitoring systems is crucial to track progress and facilitate necessary adjustments. It is also fundamental that these interventions are designed and implemented addressing existing inequalities, fostering equality and inclusion in and through education, while ensuring their long-term financial sustainability. Last but not least, these initiatives need to be considered and integrated within a holistic strategy that addresses the multidimensional challenge of teacher shortages.

Carefully designed and implemented policies may pay off in raising the prestige of the profession, such as in high performing Finland, noted for its slow and steady approach to policy development (Sahlberg 2015). On the other hand, frequent changes in public policy can lead to greater teacher stress and attrition as much as a lack of reform. For example, Wales implemented large-scale reforms to its education system in 2011 to improve student learning outcomes. However, the high number of new

policies combined with short implementation timelines overwhelmed school leaders and led to a sense of reform fatigue in the first few years of the initiative (OECD 2017).

Issues with reform fatigue highlight the ongoing importance of social dialogue and maintaining teachers' voices in the decision-making processes of new policies and reforms. After initially struggling with their reform movement mentioned above, Wales made a concerted effort in 2014 to co-construct policies with a variety of stakeholders, including teachers, school leaders, and regional officials (OECD 2017). In addition, changes to policies in relation to teacher salaries and career pathways directly affect people's livelihoods and will undoubtedly cause a certain amount of anxiety, even if handled well (UNESCO IIEP 2019d). These types of reforms need input from teachers from the design through to the implementation stages. When designing a new career model in New York City, officials began with a pilot programme that included interviews and group discussions to better incorporate teacher feedback. This allowed for a progressive implementation and enough flexibility for the programme to grow and develop (Crehan et al. 2019).

Policies aimed at reducing teacher shortages and raising the attractiveness of the profession may also take some time to change the culture and perception of the teaching profession, especially if starting from a low level of prestige. Thus, leaders need to have a sense of patience to allow new programming to have the intended effects (UNESCO IIEP

⁹ For this study, the level of autonomy for teachers was determined based on the level of control over working hours, work pace, job tasks, task order and work manner (Worth and Van den Brande 2020).

2019d). The Teacher Development Co-ordinator programme in Delhi created two new positions to provide mentorship, support and instructional leadership to teachers. Teachers and head teachers were sceptical of the programme at first, especially as it had been created amidst a flurry of new reforms in the system, but officials gave it time to grow and develop, however, and both eventually bought in to its benefits, speaking to how it had positively changed the culture in schools to a more academic environment (Education Development Trust and UNESCO IIEP 2023).

Policies must also factor in both individual and system-level barriers that hinder teacher adoption and policy scalability to find success. To address individual barriers in teacher policies, changes should be clear, achievable, and beneficial for teachers. Systems should then clearly communicate any policy or reform intentions along with the plan of implementation to improve cooperation and understanding between teachers and education leaders. In Peru, the Ministry of Education developed an online

platform that allowed teachers to provide inputs and suggest improvements to education policies. Additionally, the ministry held conferences and exhibitions and communicated via radio and television shows to promote and explain reform efforts (Mendoza Choque 2019). Analysis found that this allowed for better dialogue between teachers and officials, improving teacher buy-in (Mendoza Choque 2019; UNESCO IIEP 2019d).

Finally, on a systemic level, policy success and sustainability hinge on numerous variables, including issues such as operational feasibility (funding and management capabilities) and political acceptability (a supportive political environment) (World Bank 2023a). Systems must also take care to closely monitor policy initiatives to ensure they are having the intended effects. The Teacher Professional Development System in Chile presents an interesting case study of the complexities of developing systemic policies aimed at improving the attractiveness of the teaching profession (see Box 5.4).

Box 5.4. The Chilean Teacher Professional Development System and the challenges of implementing comprehensive teacher policies

Enacted in 2016, the Teaching Career Law is a comprehensive strategy aimed at attracting, training, supporting, and retaining teachers while enhancing education quality and performance. The legislation encompasses various dimensions of a lifelong career in education, starting from ITE, progressing through recruitment, mentoring, induction and CPD, and advancing through a comprehensive career ladder aimed at establishing the Teacher Professional Development System. Crucially, the process of enacting this reform led to a compromise law that garnered support from both government proponents and the teacher union (Mizala and Schneider 2020).

Positive outcomes from its implementation include improved recognition and social appreciation of the teaching profession, salary enhancements, reduced salary gaps, increased non-teaching hours, a standard evaluation structure for all teachers, support for teachers and educational institutions' development, and the encouragement of mentorship for collaborative and ongoing professional growth. However, after six years of its implementation, the envisioned comprehensive teacher professional development system has not fully materialized yet. Instead, separate programmes operate independently, lacking cohesion as a unified system. Some critical challenges identified include neglect of pre-primary education particularities, limited human and financial resources (especially in training and support), institutional disconnection from educational communities hindering access to law-related information, increased responsibilities for teachers and principals, and the absence of a monitoring system to track progress and challenges (UNDP 2023b). Furthermore, teachers' assessments place more emphasis on individual advancements rather than fostering teamwork and collaboration among peers.

Although the law sought to standardize the quality of pre-service training by mandating accreditation for pedagogy programmes and training institutions, it has been observed to carry a punitive bias and lacks nuanced consideration for the specific contexts, resources and student backgrounds of each institution. This has particularly impacted smaller, regional universities with limited funding and academic resources, struggling to meet the accreditation demands and higher admission criteria. The latter jeopardizes the sustainability of the pedagogical offers in some universities, despite their central role in regions where they are often the only available option for prospective pedagogy students. Based on this evidence, one of the main short-term risks is the exacerbation of teaching shortages and an increase in inequality of access to pedagogy careers (ibid).

This example from Chile helps illustrate the challenges involved in designing and implementing comprehensive policies aimed at attracting and retaining teachers. It underscores the importance of maintaining a systemic perspective, recognizing that laws do not operate in isolation. Instead, they interact within existing contexts, structures, institutions, and among various stakeholders, each with their unique characteristics and available resources. This highlights the need for policies to be integrated, adaptable and responsive to the complexities inherent to each educational system.

No matter how well designed or written a policy may be, there will be challenges and difficulties once the plan goes into effect. Therefore, systems need to continuously monitor and adapt strategies to align with realities on the ground. This may consist of some combination of social dialogue and receiving feedback from teachers, data collection and analysis, and monitoring and

evaluation studies to determine the effectiveness of policies regarding stated aims. Raising the prestige and status of the teaching profession is a complex task that calls for time, effort and patience on the part of education leaders. However, as discussed in Chapter VI, it is a task that education systems cannot afford to avoid.

Data to support implementation, advocacy and comparability

The SDG Target 4.c. on teachers provides for six thematic indicators and one global indicator as part of a larger framework to monitor teacher preparation, retention and salaries. Despite this, the availability and monitoring of high quality and comparable data remain a major challenge in many countries. Indicators reflecting teachers' qualifications and training have a relatively high coverage, while those reflecting teacher attrition, access to CPD and teachers' salaries have lower coverage (UNESCO Institute for Statistics forthcoming).

The limited availability of data on teacher attrition (as highlighted in Chapter II of this report) makes it difficult to identify long-term trends, particularly with regards to pre-primary and secondary teachers. Also, there is little data on the hidden costs of teacher recruitment and retention, and on the cost of attrition, which would be important to better advise stakeholders on ways of achieving cost-effective supply. This would allow policy-makers to consider the relative cost-benefits of retention payments and other initiatives like CPD, the provision of which can be extremely cost-effective. Allowing this data to be matched with a broader data infrastructure on schools, teachers and pupils would permit an extensive amount of policy-relevant research capable of answering pressing questions.

There are multiple reasons for the existing gap in available data such as the low completion rate of relevant UIS surveys in countries, but also the lack of

additional and adequately trained human and material resources, infrastructure, and capacity to collect relevant data at national levels (UNESCO Institute for Statistics, forthcoming). Another challenge which could lead to limited reporting is directly linked to the SDG Target 4.c. indicators which do not adequately reflect the latest research on a particular dimension of teacher policy and teaching quality. This is, for example, the case for effective teacher training: the existing global and thematic indicators for Target 4.c. lack aspects related to the duration of trainings/teacher education programmes, modalities of training, location of teacher education institutions, relevant curricular design, teacher assessment strategies and other issues identified in the literature as critical dimensions for successful pre- and in-service teacher education (UNESCO Institute for Statistics, forthcoming). Furthermore, while the surveys administered by UIS have provisions for reporting disaggregated data, these may not always holistically capture the multiple and sometimes overlapping dimensions of inequalities that affect the quality of teaching and the availability of high-quality teachers in complex national education systems (Rose and Sayed 2023).

Gaps in data availability are also linked to the challenge of ensuring global comparability of teacher preparation, as teacher qualifications and training are often defined based on national norms and definitions and there is a lack of global governance coordination in relation to the

definition of trained and qualified teachers (UNESCO Institute for Statistics forthcoming). Addressing the multifaceted dimensions of teacher policy in various contexts to address the complex, interlinked causes of teacher shortages – as outlined in Chapters II and III of the report – and to develop appropriate, well-planned and resourced policy responses to the multiple levers to address teacher shortages – as identified in Chapters IV and V of the report – would require robust indicators that combine existing data points with the results of newly-developed indicators. In addition, more robust indicators are also needed to monitor the systemic conditions needed to ensure the quality of teachers and teaching in order to focus on the circumstances that foster equitable and high-quality teaching and learning experiences (Rose and Sayed 2023).

The need for the availability of qualitative data should be considered over the entire ‘supply pipeline’ starting with the recruitment of trainees, through to the superannuation schemes which support retired teachers. This data should be integrated into a broader data architecture. An integrated approach would allow, for example, data on different training routes to be

matched with teacher retention data to permit cost-benefit analyses and allow stakeholders to consider the total cost effectiveness of different options over the career lifetimes of trainee teachers (Allen et al. 2016). It could also inform long-term workforce planning. Acquiring updated and comprehensive quantitative data on pay scales and factors influencing career growth is crucial for creating an appealing salary structure for teachers. Understanding the demographic composition of the teaching workforce is equally imperative to grasp the financial implications of various pay structures.

This report advocates for increased international cooperation to share existing best practice in the design and implementation of national data architectures. To facilitate and build on this, a wide range of experts should collaborate to ensure that such infrastructure gathers sufficient data as to enable analysts to answer the pressing educational policy questions of our time, including how to best ensure the equitable supply of teachers to areas where they are needed most, and how to ensure that those teachers are as effective as possible throughout their careers.

A photograph of a rural school setting. A teacher, a woman in a blue and white patterned sari, stands on the left, looking at a chalkboard. A young student in a blue shirt and patterned skirt stands on the right, pointing at a calendar on the board. The chalkboard is mounted on a large tree trunk. The calendar is a grid with dates and some text. In the foreground, several other children are sitting on the ground, looking towards the teacher and student. The background shows a simple building with a thatched roof.

Chapter 6

Financing the teaching profession

This report has explored the global challenge of teacher shortages from a variety of angles. Chapter II provided in-depth analyses of available data, projecting that the world will need 44 million more teachers by 2030 to reach the goal of universal primary and secondary education. Chapter III explored the multidimensional nature of the teacher shortage challenge, highlighting both the difficulties that attrition can cause for systems, as well as the numerous factors lowering the status and attractiveness of the profession and increasing attrition. Chapters IV and V then discussed a host of potential policy levers and real-world examples that can form part of a holistic plan to reduce shortages. In an ideal context, educational authorities and policy-makers could select and enact preferred policies effortlessly. However, the practical situation is notably intricate: numerous

reforms entail considerable expenses, particularly those pertaining to teacher salaries or incentives, thereby making the implementation process complex.

This chapter will explore issues related to financing the teaching profession in relation to the policy levers discussed in Chapters IV and V. It addresses several aspects of financing teachers and teacher policies, beginning with an analysis of countries' spending progress to better understand the climate around education budgets globally. From there, it covers investment costs in recruitment and retention, and presents examples highlighting the costs of teacher attrition. It also discusses the importance of developing strategies to finance items such as teacher salaries or other incentives, professional development and capital investments. It concludes with new projections on the cost of funding the new teachers required to meet SDG 4 targets and national benchmarks.

Education expenditure: Disparities, challenges, and implications for teachers

Macro-economic factors such as COVID-19, armed conflict, inflation and climate change are causing stress for the global economy and education spending. Evidence suggests a positive correlation between education quality and economic growth (Hanushek and Woessmann 2021). Therefore, investing in education can establish a cyclical relationship fostering better quality education and subsequent prosperity, socially and economically. However, improving the efficiency of education spending and promoting equity of education expenditure is essential for all countries, especially those with relatively low income levels (UNESCO et al. 2023).

Costing education provision should prioritize providing students with equitable and high-quality learning experiences at reasonable expense. However, teacher attrition harms the cost-effectiveness of education spending in multiple ways. The increasing global rates of teacher attrition imply inefficiencies in education expenditure related to the recruitment, training, and development of teachers. This trend not only produces inefficiencies, but also raises costs and undermines the quality of learning. The replacement of departing teachers with inadequately supported and less experienced ones exacerbates these issues (Carver-Thomas and Darling-Hammond 2017).

The financing of education encompasses a political and social decision-making process. It involves the collection of public revenues and other resources, which are then allocated to support education and lifelong learning opportunities. Financing education requires effective governance, well-defined policies, regulations, administrative structures and resource allocation by governments to various educational institutions, authorities and levels of education. The way these resources are distributed among geographical areas and specific groups significantly impacts the equality of educational opportunities.

Worldwide spending on education, originating from public, donor, and household funds, saw a slight increase from US\$5.3 trillion in 2019 and 2020 to US\$5.4 trillion in 2021.

Public investment in education is vital when we view education as a common public good (UNESCO 2015; International Commission on the Futures of Education 2021). It benefits individuals, economies, and societies, with its advantages in lifelong learning extending across generations. Furthermore, education as a human right is also linked to the exercise of other human rights, thus governments must ensure free access to education to

remove barriers and foster opportunities for all. However, fulfilling these benefits requires consistent and sustained financing from governments, which many countries struggle to secure, posing risks for entire generations.

In the Education 2030 Framework for Action, the established financing target was set at 4 to 6 per cent of GDP allocated to education. Regarding the allocation of government expenditure on education, the goal was to dedicate a minimum of 15 to 20 per cent of public expenditure to education. The Incheon Declaration urged adherence to these ‘crucial reference points’ and expressed a commitment to raising public funding for education, taking into account the specific situations of each country.

The three main sources of education financing are governments, donors, and households. Worldwide spending on education, originating from public, donor, and household funds, saw a slight increase from US\$5.3 trillion in 2019 and 2020 to US\$5.4 trillion in 2021. This growth was primarily fuelled by augmented government allocations in low- and middle-income nations (UNESCO et al. 2023).

In 2021, government allocations constituted 78 per cent of the total global spending on education, remaining the primary source of education financing across all country income groups and increasing 2 per cent from 2020 (Global Education Monitoring Report Team and World Bank 2023). In addition, households allocated significant portions of their finances to education. In low-income countries and lower-middle income countries, households contributed substantially to overall expenditure, representing 37 per cent and 36 per cent of the total, respectively, in 2021 (ibid).

Donor funds also remain a crucial component of education budgets in low-income countries, comprising 13 per cent of their total education expenditure in 2021 (UNESCO et al. 2023). Furthermore, despite experiencing a 15 per cent increase from 2019 and 2020, official development assistance (ODA) allocated to education decreased by 7 per cent from 2020 to 2021 (ibid). The decline in education aid has thus particularly affected low-income countries and basic education (Global Education Monitoring Report Team and World Bank 2023). In addition, across regions, sub-Saharan Africa receives slightly more than one-third of the total aid allocated for basic education, despite the fact that the region accounts for over half of the world’s children of primary school age who are out of school (ibid).

Expenditure on education as percentage of GDP

Global averages in public education expenditure exhibit only a very slight increase from 4.1 per cent of gross domestic product (GDP) in 2005 to 4.2 per cent in 2021. However, there remain significant gaps in educational funding between country income groups, ranging from 5 per cent in high-income countries in 2021 (the most recent year with data) to 3.1 per cent in low-income countries in 2022 (World Bank 2023c). This indicates that high-income countries spent 1.9 percentage points of GDP more on education than low-income countries (see Figure 6.1). In low-income countries, government expenditure on education as a share of GDP increased from 2.8 per cent in 2017 to 3.9 per cent in 2021, even amid the challenges posed by the pandemic. However, 2022 saw low-income countries reduce their spending to 3.1 per cent of GDP (World Bank 2023c), perhaps due to austerity measures and the ongoing debt crisis explored later in this section. Although still below the 4 per cent of GDP benchmark, government spending on education in these countries surpassed half of the total expenditure (comprising government, household and development aid) on education (UNESCO et al. 2023).

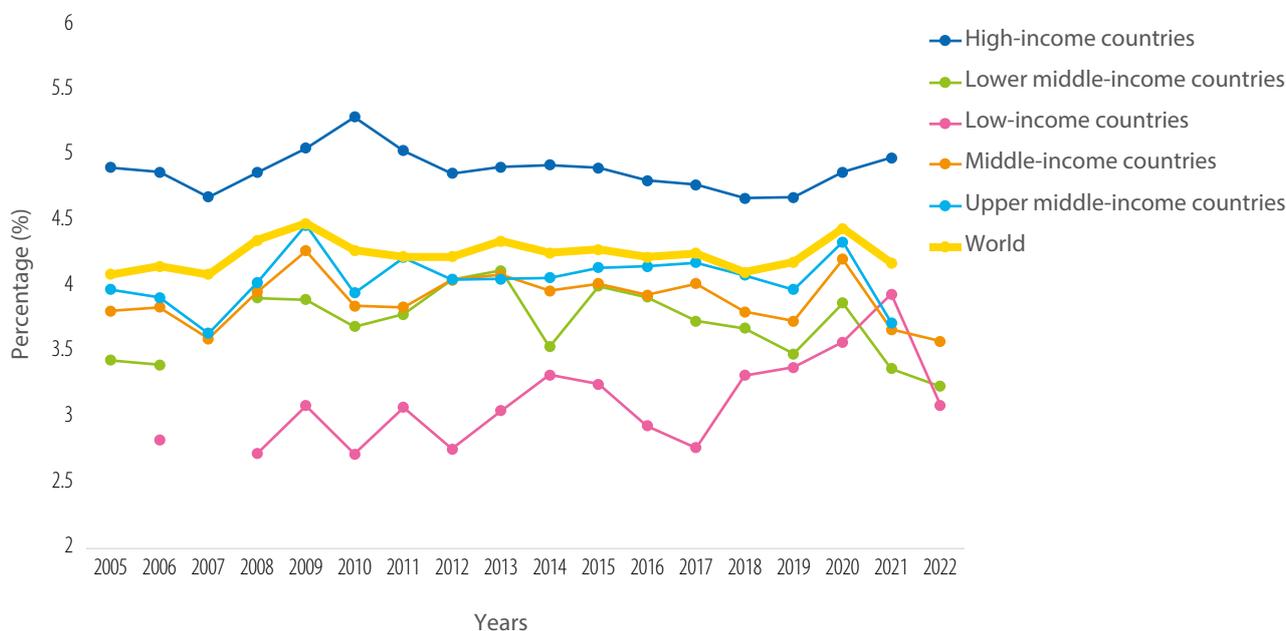
Across regions, expenditure in education as a percentage of GDP varies from 3.3 per cent in Eastern and South-Eastern Asia to 5.4 per cent in Oceania (Global Education Monitoring Report Team 2023a). In Latin America and the Caribbean, out of 34 countries with data for 2020, 10 did not meet the 4 per cent minimum target, and five countries are above the 6 per cent of GDP benchmark: Bolivia (Plurinational State of), Costa Rica, Curaçao, Cuba and Montserrat. Similarly, out of 38 sub-Saharan African countries with data for 2021, more than half did not meet the minimum 4 per cent target, with Cabo Verde, Lesotho, Mozambique, Namibia, Sierra Leone and South Africa expending beyond 6 per cent of GDP (UNESCO Institute for Statistics 2024).

Government expenditure on education as a share of GDP rose from 2.8 per cent in 2017 to 3.9 per cent in 2021 in low-income countries, but fell back to 3.1 per cent in 2022. Government spending on education still surpassed half of the total expenditure on education.

In addition, when it comes to percentage of GDP allocated to education, most countries allocate the lowest percentage to pre-primary education. In contrast,

the bulk of their education budgets, as a percentage of GDP, is directed towards primary and secondary levels (UNESCO Institute for Statistics 2024).

Figure 6.1. Government expenditure on education as a percentage of GDP, by country income group, 2005-2022



Source: World Bank 2023c. Based on UNESCO Institute for Statistics 2024. Date of database consultation: 28 December 2023.

Expenditure on education as a percentage of total government expenditure

Globally, the average proportion of government spending allocated to education has remained below the minimum 15 per cent benchmark since 2005. From 2005 to 2019, the global average remained fairly steady, staying within half a percentage point above or below 14 per cent before dropping below 13 per cent in both 2020 (12.8 per cent) and 2021 (12.7 per cent) (World Bank 2023c). Much like the first benchmark of education expenditure as a percentage of GDP, there are variations between countries of different income levels when it comes to education spending as a percentage of government expenditure.

While most high-income countries typically allocate more than 4 per cent of their GDP to education expenditures, they tend to spend considerably less on education expenditure as a percentage of government spending. On average, high-income countries fall short of meeting the benchmark, ranging from 12.0 per cent to 10.9 per cent between 2016 and 2020. Conversely, middle-income countries met and even surpassed the minimum benchmark from 2012-2018, but they fell short between 2019 and 2021 (see Figure 6.2). Low-income countries also

hit the 15 per cent target from 2013-2015 and again in 2018 and 2021. Even amidst the pandemic in 2021, low-income countries allocated about 4.5 percentage points more than high-income countries in total government spending on education (see Figure 6.2).

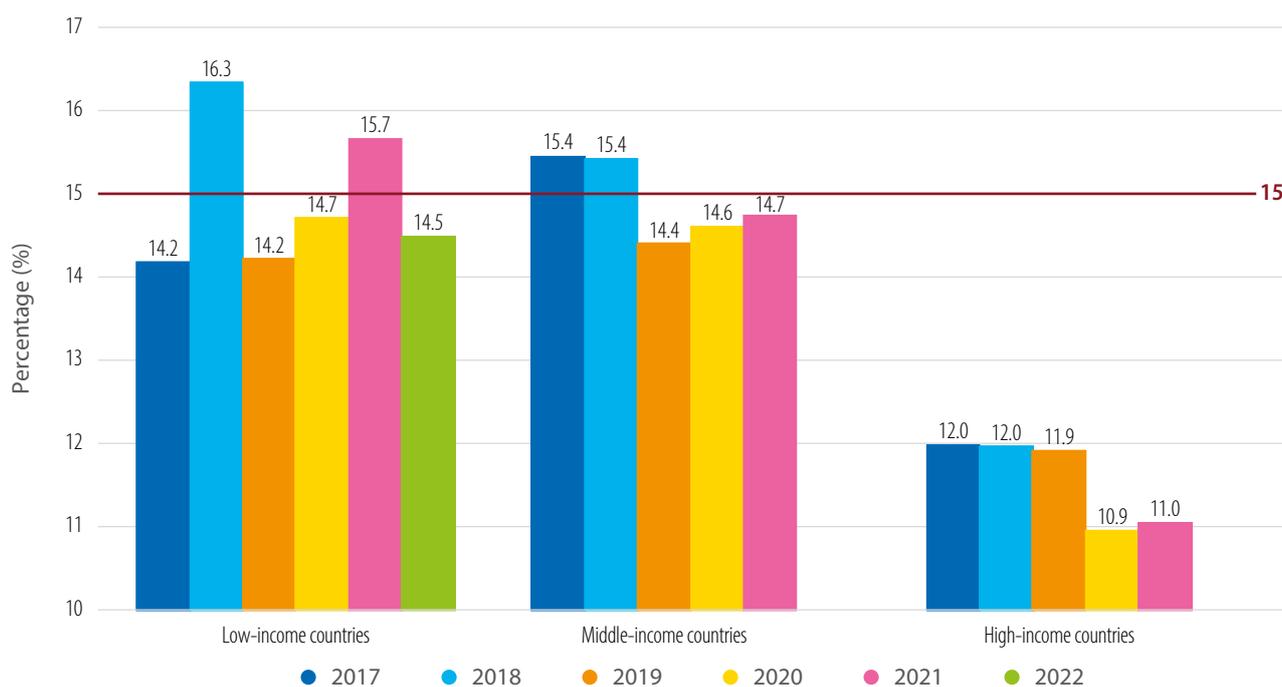
In 2021, low-income countries allocated 4.5 percentage points more, while middle-income countries allocated 3.7 percentage points more of their total government expenditure to education compared to high-income countries.

Analysis by regions shows that the global average experienced fluctuations but generally hovered around 15 per cent between 2017 and 2018 (see Figure 6.3). There was a decrease in 2019 and 2020, followed by a slight increase in 2021. However, this increase was insufficient to reach the minimum benchmark of 15 per cent.

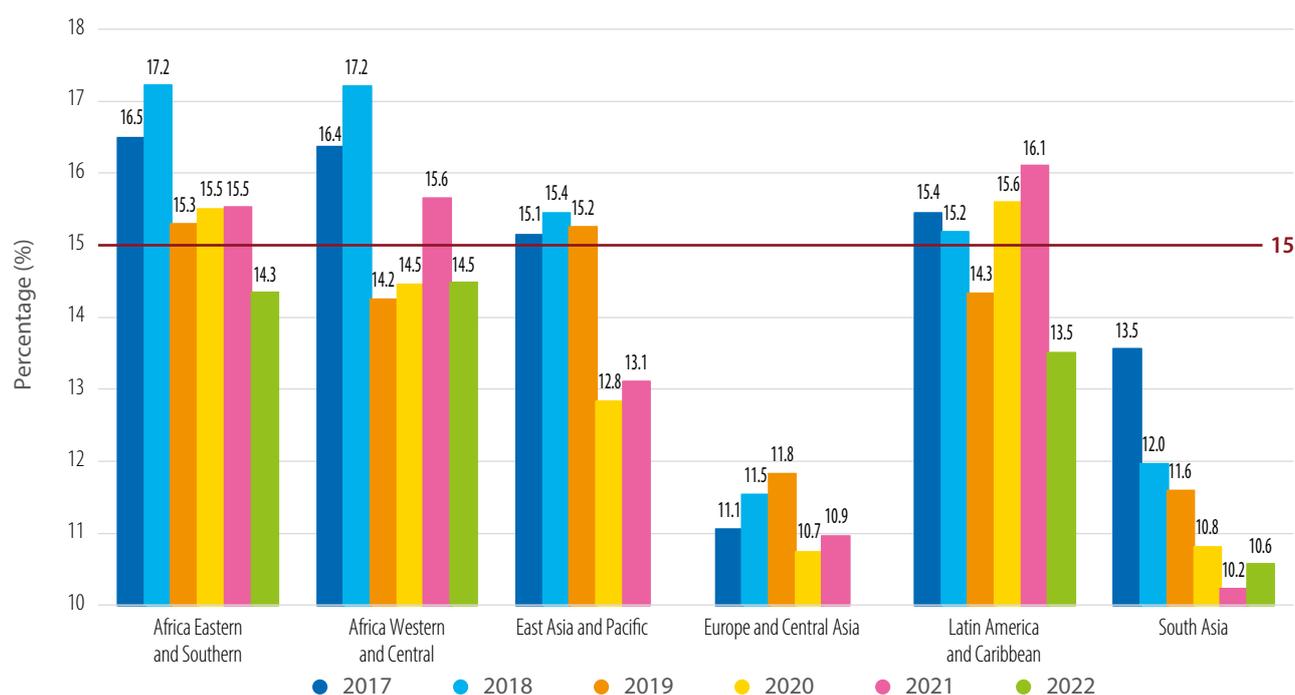
Two regions, South Asia and Europe and Central Asia, consistently exhibit lower averages of government expenditure on education compared to the others, with Europe and Central Asia hovering around 10.5 per cent and 12 per cent between 2017 and 2021, showing relative stability.

Analysis also warns of alarming trends in several regions: Eastern and Southern Africa, Western and Central Africa, and Southern Asia. There is a sharp decline in the percentage of public expenditure in education from 2017 to 2022, as Eastern and Southern Africa fell from 16.5 per cent to 14.3 per cent, Western and Central Africa fell from 16.4 per cent to 14.5 per cent, and Southern Asia fell from 13.5 per cent to 10.6 per cent (see Figure 6.3).

Figure 6.2. Average expenditure on education as a percentage of total government expenditure, by country income group, 2017-2022



Source: World Bank 2023c. Based on UNESCO Institute for Statistics 2024. Date of database consultation: 28 December 2023.

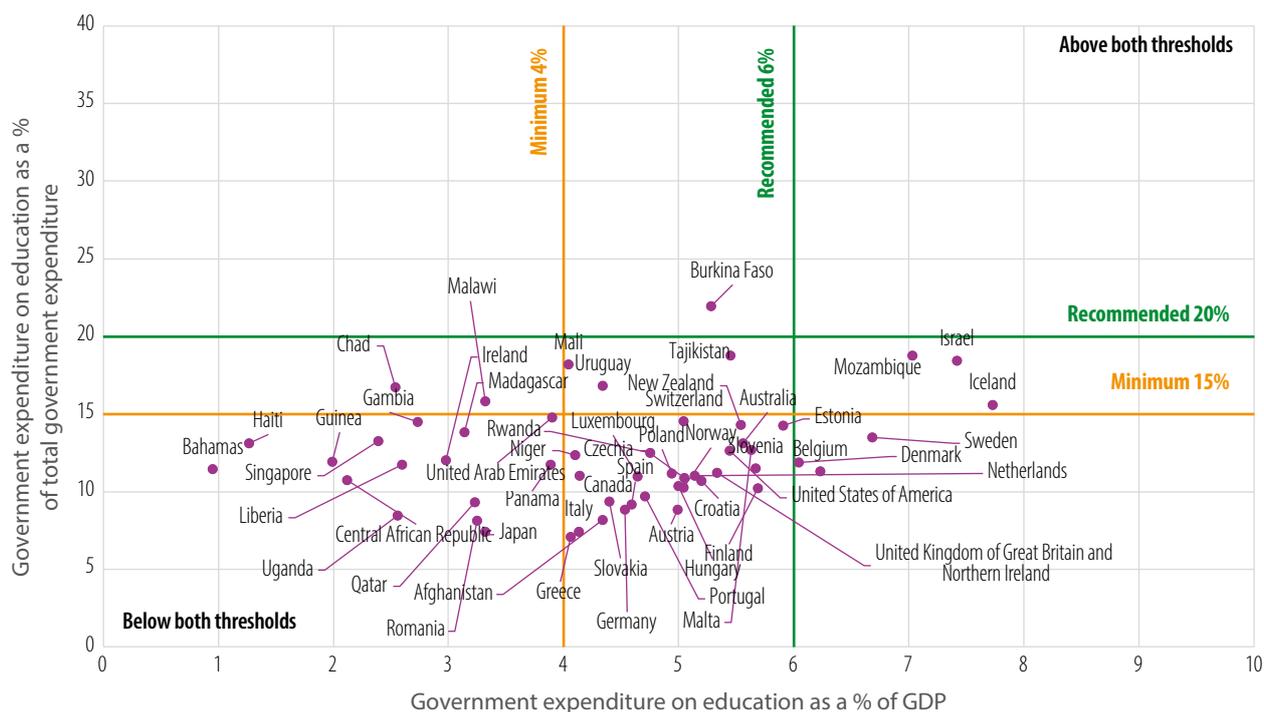
Figure 6.3. Average expenditure on education as a percentage of total government expenditure, by region, 2017-2022

Source: World Bank 2023c. Based on UNESCO Institute for Statistics 2024. Date of database consultation: 28 December 2023.

Considering both benchmarks, there is great variation between and within regions in terms of education expenditure. Some countries have made strong commitments to education with spending that exceeds the agreed targets. However, it is noteworthy that very few countries, regardless of their income level, surpass both minimum benchmarks. For instance, the only examples from high- and low-income countries (shown in Figure 6.4) are Burkina Faso, Iceland, Israel, Mali, Mozambique, Tajikistan and Uruguay. In 2022, sub-Saharan Africa as a whole allocated only 3.22 per cent of its GDP to education, despite the fact that some

countries within the region do allocate a substantial share of their expenditure to education (World Bank 2023c; UIS 2023). For instance, in 2022, Burkina Faso allocated more than 20 per cent of its total government expenditure on education, while Mozambique and Mali allocated 18.8 per cent and 18.2 per cent respectively, of their total government spending on education in 2021. Some countries meet one benchmark but not the other, and a significant number do not meet either target.

Figure 6.4. Spending thresholds (GDP and total public expenditure) in high- and low-income countries, 2022 or latest data available



Source: UNESCO and Teacher Task Force 2023a; World Bank 2023c; UNESCO Institute for Statistics 2024. Date of database consultation: 28 December 2023.

Prioritizing and sharing education expenditures in national budgets to better support teachers

The level of education expenditure outlined in a country's budget is key to stimulating investments that education systems can channel into their teachers – whether it involves funding new positions, increasing pay for current staff, or developing initiatives to improve working conditions. Nevertheless, education expenditures undergo changes or reductions from year to year, even when countries have increases in revenue.

From 2000 to 2020, countries witnessed a growth in their overall government revenues through taxes and social contributions, reaching 26 per cent of GDP, up from 24 per cent (Global Education Monitoring Report Team 2023a). Nevertheless, the increase in tax revenue does not consistently equate to a higher priority assigned to education. Some countries might either increase, decrease, or maintain a constant level of expenditure on education, irrespective of their rise in government revenues (*ibid*). Thus, redirecting tax revenue towards securing consistent and sustainable financing for education is imperative (see Box 6.1).

Box 6.1. Affording new teachers through tax revenues

A study examining tax ratios across 89 Global Partnership on Education (GPE) partner countries revealed that more than 70 per cent have a low tax ratio (under 20 per cent). Half of these countries exhibit an exceedingly low tax-to-GDP ratio, highlighting the challenges they face in generating adequate revenues to support public services. In comparison, the average tax-to-GDP for OECD countries was 33.5 per cent, a benchmark no GPE country achieved (see table 6.1).

Increasing the tax base by five percentage points, these countries could raise an additional US\$455 billion. Furthermore, if 20 per cent of this amount was earmarked for education, that would raise over US\$93 billion for education in these countries every year.

Table 6.1. GPE partner countries tax base

Number of GPE partner countries	Tax to GDP ratio
17	Less than 10%
7	10-15%
19	15-20%
22	20-30%
4	Above 30%

Source: ActionAid International, 2023.

Furthermore, the escalating debt crisis in low-income countries poses a threat to public education expenditure. According to the International Monetary Fund, the proportion of countries facing either debt distress, or a high risk of it, surged from 21 per cent in 2013 to 58 per cent in 2022 (Global Education Monitoring Report Team 2023a). Past experiences from the debt crisis of the 1980s, and its associated structural adjustments, have demonstrated a resulting decrease in public expenditure on education, heightened volatility in spending, and implications for gender equity. While the current crisis has not reached the severity of the past, governments, particularly those in low-income countries, have been adversely impacted by increased expenditure and decreased revenue due to the COVID-19 pandemic.

The escalating global debt crisis poses a threat to public education: the proportion of countries facing either debt distress or a high risk of it rose from 21 per cent in 2013 to 58 per cent in 2022.

Recent spikes in certain prices, sparked by the conflict in Ukraine, have further exacerbated many countries' financial challenges. A recent analysis found that among

71 GPE partner countries, 90 per cent are at a significant risk of debt distress. Additionally, 42 are spending over 12 per cent of their national budgets on debt servicing, reaching a tipping point at which debt servicing typically triggers reductions in public spending (ActionAid International 2023). Moreover, 25 of these countries are spending more on servicing their external debts than they are on education (ibid).

Expected austerity policy measures in some countries may significantly affect public expenditure. Out of 89 GPE countries, 75 per cent are planning to decrease total government spending as a share of GDP between 2023 and 2025, with only 21 countries planning to increase spending. Furthermore, studies suggest that among 36 of these GPE countries, 24 have been advised to cut public sector wage bills as a percentage of GDP, and an additional 10 countries have been advised to freeze these bills (ActionAid International 2023). This measure will mostly affect teachers, since they constitute the largest group in the public sector in many countries, leading to cuts in numbers or in their salaries, even in countries with teacher shortages and where teachers are underpaid (ActionAid International 2023). Thus, it is crucial to protect educational funding from austerity measures, even when operating within the guidelines supported by global financial organizations.

There are no easy options for countries facing these types of economic realities. However, a wide range of government ministries can have a considerable impact on the financing of education, as the multi-dimensional nature of educational spending highlights the potential for synergies when policies are integrated across departments. Collaboration, both in the planning and the financing of policies to support teachers could potentially occur across ministries to help ease financing burdens. Housing, transport, and health are all related areas where cooperation could potentially benefit teacher supply. In Sobral, Brazil, for instance, successful long-term educational reform arose from policy actions coordinated across multiple levels of government (Cruz and Loureiro 2020). These included policies on transport, the provision of school meals, and both pecuniary and non-pecuniary recognition for teachers. Other important aspects included leadership for long-term political

collaboration (Becskehazy 2018), the depoliticization of reform, and long-term continuity of reform (Pontes 2016). This was possible given the establishment of an intergovernmental transfer mechanism to finance education based on student enrolment, and a municipal mechanism to coordinate funds for school infrastructure and autonomy (Cruz and Loureiro 2020).

The realities presented in this section underscore the urgency for mobilizing additional financial resources, in line with TES's call for all countries to increase budgets to meet both of the SDG 4 targets. This is crucial, particularly in protecting education finance from the constrained fiscal environment resulting from the COVID-19 pandemic and the global economic crisis (UNESCO 2022e). In addition, closely monitoring and evaluating the efficacy and efficiency of educational funding, especially expenses related to teachers, is fundamental.

Contextualizing the investment in teachers

While education expenditures can encompass a wide variety of budget items, teachers tend to make up most of the spending between salaries and other related programming or initiatives. This section then illustrates the importance of efficient and effective financing when it comes to the cost of teachers in two separate but important ways. Initially, this section highlights the

sheer volume of expense: teacher salaries and other teacher-related expenditures (such as initial and ongoing training) make up the majority of education budgets. Furthermore, this section illustrates the importance of mitigating teacher attrition due to the ongoing hidden costs of recruiting, training and deploying new teachers in systems stuck in vicious cycles of turnover.

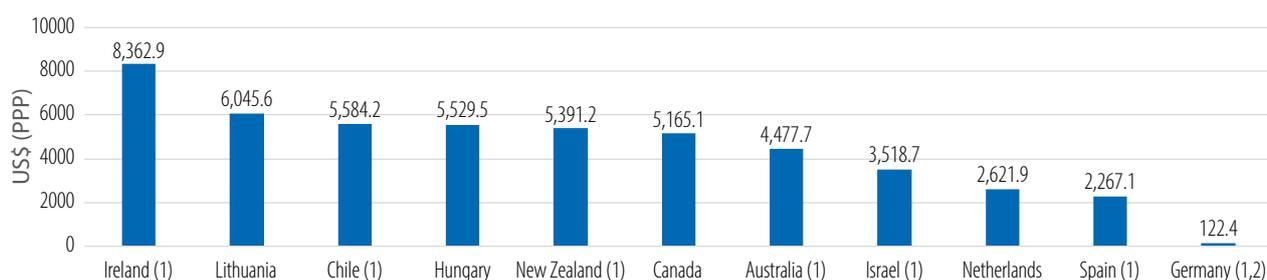
The cost of teacher training

Aspiring teachers invest considerable time and energy training to become teachers, and this is often backed by extensive government funding. If systems face high rates of teacher attrition and are constantly forced to recruit and train new teachers, this government expense can quickly add up. An example from the UK helps illustrate this issue. The UK National Audit Office estimated that more than £920m¹⁰ was spent recruiting and training teachers annually in 2013/2014 (National Audit Office 2016). When looking at teacher retention in the UK, though, only 77.6 per cent of teachers remained in the profession two years after qualifying in 2016 (United Kingdom Department for Education 2023). This means that the cost to the UK government of teachers quitting in their first or second year was approximately £208m per annum. While no system can expect to maintain 100 per cent retention, large amounts of government expenditure to train teachers that do not remain in the classroom can underscore the importance of retaining teachers.

Unfortunately, international data specific to teacher training and the associated costs are scarce. Even so, overall spending per tertiary student can act as a proxy for the cost of training teachers to better estimate costs. Spending can vary considerably by country – for example lower spending countries such as Columbia, Greece, and Mexico, spend US\$ (PPP) 4,192, US\$4,601, and US\$7,341 respectively, while higher spending countries such as Luxemburg, USA and UK spend US\$ (PPP) 51,978, US\$35,347 and US\$29,687, respectively (OECD 2022a). In addition to the large sums spent by governments on tertiary education, student teachers in many countries pay large fees to train. As seen in Figure 6.5, trainees in Ireland pay US\$ (PPP) 8,362, while trainees in Hungary, New Zealand, and Chile pay over US\$ (PPP) 5,000. In light of these costs, teacher attrition becomes very expensive.

10 Amount converted to 2023 value using the Bank of England. Original estimate was £700 in 2014 value (National Audit Office 2016).

Figure 6.5. Tertiary tuition fees for full-time national students in master's or equivalent programmes in education in education - in equivalent US\$ using PPP (2019/20)



Source: OECD, 2022, Figure C5.3.

Note: 1. Reference year: calendar year 2018 for Australia and Germany, 2019 for Chile, Israel and New Zealand; academic year 2018/19 for Spain; 2020/21 for Ireland. 2. Including Bachelor's and Doctoral programmes.

On an individual level, rewards and scholarships for prospective and novice teachers can contribute to strengthening the attractiveness of the teaching profession from a financial point of view. New Zealand introduced a voluntary bonding scheme that rewards newly graduate teachers who agree to work in areas of need by helping to reduce their student loans or as a top-up income (TeachNZ 2024). Similarly, Hungary established the Klebelsberg Training Scholarship Programme (Hungary Ministry of Culture and Innovation 2022), to provide a significant scholarship to students who agree to accept a designated teaching position upon graduation and commit to remaining in the teaching profession for a duration equivalent to the time spent in the scholarship programme (OECD 2019b).

Nevertheless, research on policies attracting academically strong students to teaching via incentives such as scholarships is mixed (Montero and Fernández 2022). For example, the Teaching Fellows programme in the state of North Carolina in the USA attracted high-achieving

graduates and had a positive impact on maths education, but its effectiveness in other subjects may be reduced compared to other teachers. Furthermore, research found that while scholarship recipients generally remained in public schools, they tended to teach in high-performing educational institutions (Henry et al. 2012). In China, a study on a tuition waiver programme showed cost-free education as greater motivation among beneficiaries than a passion for being lifelong teachers (Zhao and Chang 2013). Evaluations in Chile indicate positive initial effects of the Teacher Vocation Scholarship implemented since 1998, which at first increased high-achieving student enrolment in teaching programmes. However, this trend later stagnated due to changes in entry requirements and the introduction of a nationwide policy of free higher education in 2018 (Ávalos 2014; Bonomelli 2017; Montero and Fernández 2022). In 2022, unexpected effects of the scholarship were reported with recipients tending to enrol in less selective universities with lower scores rather than the most prestigious universities (Bastías-Bastías and Iturra-Herrera 2022; Madero forthcoming).

Teachers' salaries as a percentage of education spending

Teacher salaries are typically the largest share of education budgets (Crawford and Pugatch 2020). In fact, approximately 75 per cent of education spending in low- and lower middle-income countries is allocated to teachers' costs (Global Partnership for Education 2022). Similarly, within the European Union member states, the predominant share of public spending on education in 2019 was attributed to the total remuneration paid to teaching staff and other non-teaching staff such as school leaders or special educational support staff, amounting to 64.4 per cent (European Commission 2021a). Moreover, from 2020 up to the most recent data,

a varied set of countries such as Albania, Croatia, Cyprus, Ecuador, Guinea, Marshall Islands, Mexico, Palestine, Portugal, and Romania have, at some point, allocated more than 70 per cent of their educational expenditure in public institutions to teaching staff compensation (UIS 2023). Furthermore, teachers are not only the largest financial investment in the education system, they also bring to life and facilitate the use of other education system investments, such as classrooms, textbooks, and diverse learning materials (Global Partnership for Education 2022).

The high cost of teacher attrition

Teacher attrition affects countries in a variety of contexts and income levels, making the issue ever more pressing. As seen in the updated forecasts in Chapter II, three quarters of the 13.5 million primary teachers needed are to replace staff attrition. At the secondary level, half of the teachers required to meet SDG4 goals are needed because of attrition. The costs associated with these levels of attrition are vast and include not only the immediate financial impacts placed on systems; attrition can harm student learning and in turn have negative impacts on the human capital of a country (as shown in Chapter III).

Teacher salaries are typically the largest part of education budgets: approximately 75 per cent of education spending in low- and lower-middle income countries is allocated to teachers' costs.

The cost of teacher attrition appears large at the systemic level. In the USA, the Alliance for Excellent Education estimates the costs of teacher attrition and turnover, which ran to 16 per cent of the 2011/12 teacher workforce (Goldring et al. 2014), to be between US\$1 and US\$2.2 billion in 2008 (All4Ed 2014). Such estimates do not even account for the cost to governments who train teachers. In an analysis of English administrative data, results suggest that it costs more than £29,000 to train a new newly qualified teacher. Based on this estimate it is argued that between 2010 and 2014 'overuse/loss' of these teachers in the sampled schools amounts to approximately £11 million (Sims and Allen 2018). Despite these large costs, researchers suggest the combined costs of turnover and attrition are rarely considered (Levy et al. 2012) and research in this area is very limited (Sorensen and Ladd 2020).

Schools also incur a heavy cost burden due to attrition, as they take on additional expenses from the moment a teacher resigns. Initially, there may be administrative burdens, such as conducting exit interviews, and financial outlays if there is a need to pay departing staff members accrued benefits such as holiday pay. Advertisements may have to be written and placed, and suitable applicants selected and interviewed. In areas of teacher shortage,

a lack of suitable candidates means positions must be advertised multiple times. Should recruitment agencies be involved, then these can result in 'finders fees' of as much as twenty per cent of the salary (Lock 2018). In addition, there are costs associated with on-boarding and inducting new staff (Watlington et al. 2010), and a risk of increased costs arising from having to pay new recruits more (Levy et al. 2012). Estimates from the USA suggest the overall cost of replacing one teacher is approximately US\$20,000 (Carver-Thomas and Darling-Hammond 2017), and in some states this can be considerably higher.

While some schools may seek to save money by filling vacancies with less experienced staff, this presents numerous risks. As discussed in Chapter III, a lack of teacher experience undermines school culture and learning. Increased financial risks are further compounded by the fact that inexperienced staff are at higher risk of attrition. In other words, they will need to be replaced more frequently which may trap schools in a vicious cycle of endless recruitment, with gaps in the teaching staff becoming a chronic problem for the school. Investing resources in supporting schools to quell high turnover would lead to significant cost reductions for education budgets and should therefore be considered a policy priority.

Due to the lack of international data on the costs to train new teachers and teacher attrition rates, few cost-benefit analyses have been conducted to determine the true financial cost of teacher attrition to systems. One example of a study that has provided such analysis looks at the effects of The New Teacher Project (USA), which provided enhanced support for the first two years of teachers' careers. Researchers conducted a cost-benefit analysis and projected that the programme would produce a positive return on investment after five years (Villar and Strong 2007). As a matter of urgency, governments should determine the total cost of training new teachers, which will help to better model the costs of attrition and enable further cost-benefit studies moving forward. Further research of this nature in wider economic contexts may help better quantify the return on investments made in supporting teachers.

Financing quality teaching

With the high costs associated with attrition and subsequent repeated cycles of training, money spent on teachers can be seen more as an investment than an outright expense to meet these goals. By spending more effectively and efficiently on teacher salaries, capital investments or professionalization initiatives, systems may potentially save money in the long-term by improving the prestige of the profession and in turn reducing costly teacher attrition. Secondly, by investing in teaching and raising the prestige of the profession, systems can raise teaching and learning outcomes by retaining a more experienced and professional teaching corps and develop a virtuous cycle within the education system.

Meeting the SDGs will also require significant increases in teacher numbers, both to meet extra enrolment and to replace teachers leaving the workforce (see Chapter II). Expenses associated with so many new teachers can quickly add up, especially in countries with growing populations. These costs must be considered when developing education financial plans and strategies. This section will then explore some ways that systems can fund initiatives that support teachers, raise the prestige of the profession and better attract and retain quality teaching candidates. It will then conclude by providing estimations for the costs of funding the new teachers required to meet SDG 4 targets and national benchmarks, per the new projections from Chapter II.

Funding teacher salaries and incentives

There are ongoing discussions regarding whether the existing levels of teacher remuneration and incentives are substantial enough to attract and maintain high quality candidates in the teaching profession. Debates persist as teacher strikes, often fuelled by concerns about inadequate pay, are widespread globally (Evans et al. 2020; Conover and Wallet 2022; Deutsche Welle 2023). For example, Chapter II highlighted global data indicating that teacher salaries in many countries remain unattractive compared to professions of comparable levels of qualification. Although salaries are not the only factor attracting good candidates to the teaching profession, they play a crucial role in attracting and retaining high quality professionals (Global Partnership for Education 2022; Education Commission 2019). Moreover, a well-designed salary system is likely to be a key driver in maximizing the impact of education spending (Education Commission 2019).

Despite its importance, establishing the 'right' level of salaries is complex, and little guidance exists for how pay levels should be set (Global Partnership for Education 2022). This process varies significantly among different countries and regions. For instance, salary structures are established at the district level in the USA, while the process features some school-level flexibility in the UK (guided centrally and supported by an Independent Pay

Review Board). In low-income countries, teacher salary levels are usually determined at the national level through entities like Public Service Commissions or Teaching Service Commissions, or negotiated via collective bargaining (ibid). The diversity in methods of determining pay scales, coupled with substantial economic differences, can yield significant discrepancies in salary levels, even among countries within the same regions or income categories. Recent analyses of teacher salaries in sub-Saharan African countries highlight large cross-country variation, for example (Evans et al. 2020; Bennell 2023b).

Teachers in countries such as Botswana, the Gambia and Qatar initially earn only half of the GDP per capita and thus less than the average income in the overall economy of these countries – but offer better prospects for career advancements later on.

To entice qualified teachers, it is crucial to offer them competitive starting salaries and pathways for career advancement. Nevertheless, in countries such as Botswana, Gambia, and Qatar, teachers initially earn only half of the GDP per capita,¹¹ which can hinder the recruitment of qualified candidates, since salaries for teachers in these countries are significantly lower

11 As national incomes rise, absolute salaries generally increase as well (Evans et al. 2020). To better compare salaries across different countries, analysis has often considered salaries relative to GDP per capita. The assumption at the core of this approach is that dividing salaries by per capita GDP serves as a simple yet approximate method to contextualize and gauge the significance of these salaries, thus providing an understanding of how salaries relate to the economic conditions of each country (Bennell 2023b). From the early 2000s to the mid-2010s there had been some donor emphasis on a target of using 3.5 times the per capita GDP as a reference point for teacher pay ratio. However, while still in use to give context, there has since been a move away from targeting 3.5 times GDP per capita as a one size fits all indicator for salary, and towards more nuanced measures that take into account comparable contexts within each country (Bennell 2023b; Ramírez et al. forthcoming b).

compared to the average income an individual might earn in the overall economy of these countries (see Table 6.2). Despite the lower entry-level salaries in these countries, there are better prospects for career advancement later

on compared to countries like Lao PDR or Guinea, where growth opportunities for teachers provide raises that are less than two times their initial salaries.

Table 6.2 Number of scales and initial salary measures among selected countries, latest data available (2015-2021)

Region	Country	Number of scales	Salary (US PPP)	Salary as a multiple of GDP	Times initial salary
Eastern and South-Eastern Asia	Lao PDR	28	244	0.5	1.8
Latin America and the Caribbean	Colombia	16	1,275	1.1	2.3
	Mexico	7	632	0.5	3.3
	Peru	8	1,504	1.5	2.1
Northern Africa and Western Asia	Egypt	5	559	0.5	1.9
	Qatar	10	2,711	0.4	5.6
	Saudi Arabia	103	2,746	0.7	4.5
Sub-Saharan Africa	Botswana	12	296	0.3	8.4
	Gambia, The	4	68	0.4	3.7
	Guinea	3	383	2.0	1.6
	Sierra Leone	11	233	2.0	4.5

Notes: Botswana has additional pay scales for administrators; the figure 12 specifically refers to those scales for teachers. Sierra Leone has a total of 12 scales, but one scale only has a single employee and was excluded from this analysis. Source: Data analysis adapted from Ramírez et al. forthcoming b

Increasing teacher compensation to improve the attractiveness of the profession can then take many forms depending on situation and need. Some countries opt to raise all teacher salaries across an entire system to try to elevate the status of the profession and improve both attraction and retention of higher quality teachers. From 2004 to 2013 Thailand increased teacher salaries to close the wage gap with professions requiring a comparable level of qualification (Punyasavatsut 2019). Likewise, Scotland raised teacher salaries by 23 per cent after a survey found that they felt overworked and underpaid (Crehan et al. 2019). Research found that these changes generally made the career more attractive to teachers and raised the overall prestige of the profession (Punyasavatsut 2019; Crehan et al. 2019).

From 2004 to 2013, Thailand increased teacher salaries to close the wage gap with professions requiring comparable levels of qualification, raising teaching’s prestige and making the career more attractive.

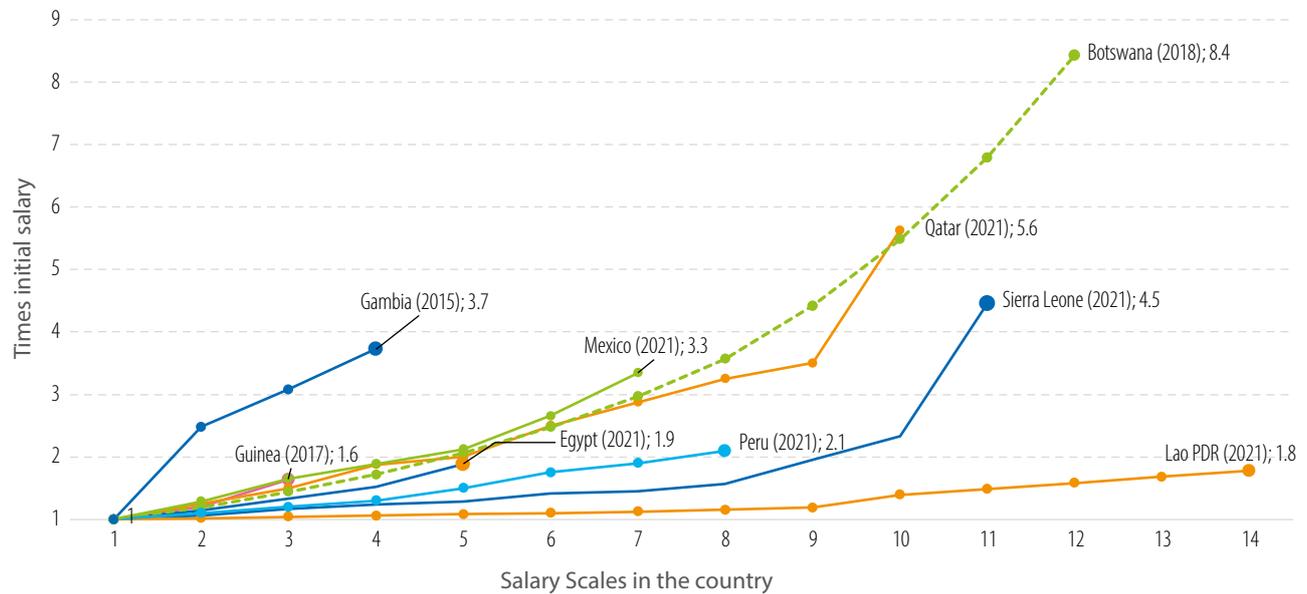
Since raising the salary of every teacher is beyond the budgetary capabilities of many systems, another option comes in the form of more targeted pay increases. For systems struggling to retain young teachers or attract new recruits to the profession, raising new or early career teaching salaries could help mitigate these issues (UNESCO IIEP 2019d). For example, the UK raised starting teaching salaries by up to 8.9 per cent (compared to approximately 5 per cent for more experienced teachers) in 2022 to help combat early career attrition and attract more candidates to teaching (United Kingdom Department for Education 2022; Sibieta 2023).

Other countries may face difficulties retaining teachers if opportunities for earning raises either occur too infrequently or offer little increase to salaries. For example, research indicates that salary structures in sub-Saharan Africa tend to be notably flat. Data from countries such as Gambia, Lesotho, Malawi, and Zambia demonstrated that a certified primary teacher, even with automatic promotions, would experience a modest increase between 11 to 36 per cent in earnings after fifteen years compared to his or her initial salary (Mulkeen 2010). Figure 6.6 illustrates the contrast between the initial

and maximum attainable salaries across nine countries: Botswana, Egypt, Gambia, Guinea, Lao PDR, Mexico, Peru, Qatar and Sierra Leone. The variance ranges from a few

increments in salary scale but a notably steep rise (as seen in the Gambia), to numerous increments in salary scales that are relatively level (as observed in Lao PDR).

Figure 6.6. Salary scale pay progression ratio among selected countries, latest data available (2015-2021)



Source: Data analysis adapted from Ramírez et al. forthcoming b

For systems that struggle to retain more experienced teachers, planners and policy-makers may want to examine how to provide attractive salary growth opportunities throughout a teacher's career. Research has found this can have an influence on whether high-quality candidates are attracted to teaching and remain motivated (UNESCO IIEP 2016). In this manner, systems may consider improving career pathways (as discussed in Chapter V) for teachers instead of simply raising salaries at a fixed interval. These options contrast with more traditional career structures that use a single salary schedule that gives salary increments to teachers based solely on seniority and experience (UNESCO IIEP 2016; UNESCO IIEP 2019d).

Policy-makers then have many options at their disposal instead of only considering a simple salary raise for all teachers. While some pay structures are more equitable, others offer different incentives, or reflect possible policy trade-offs – e.g. whether recruitment is aided by higher starting salaries, whether local pay flexibility will resolve local supply challenges, or whether the promise of significant pensions will encourage teachers to stay teaching over their working lives. Unfortunately, there are no obvious answers to these questions; despite

this variation in pay structures, many countries are experiencing teacher shortages and are now looking to increase pay levels both to attract and retain teachers.

Furthermore, it is crucial to highlight that teacher remuneration encompasses more than just salaries; various elements influence the attractiveness of teaching as a profession. Across the globe, a diverse array of financial incentives exists, as highlighted in Chapter IV. Data regarding the recipients and amounts of these incentives is often opaque, but, whenever feasible, should be included in analyses as they can be substantial. For instance, in the Gambia, the hardship allowance for primary school teachers working in remote areas included a salary premium which amounted to 30 to 40 per cent of their base salary depending on the school's distance from the capital (Pugatch and Schroeder 2014). It is also key to assess the intended outcomes of such incentives and whether they justify the financial investment. In the case of the Gambia, although this measure succeeded in increasing the presence of qualified teachers in remote regions, it did not lead to improvements in average student performance. In general, however, there are still few quality evaluation studies that identify causal links between interventions other than financial incentives and attracting and retaining teachers in hard-to-staff locations (See et al. 2020), and more research is needed in this area.

Performance-based remuneration

While many systems have experimented with the notion in various forms, connecting teacher salaries to student performance brings with it substantial challenges. For example, employing standardized tests to assess students might not adequately capture the comprehensive impact teachers have on students' learning and overall experiences. Analysis on experiences from 15 programmes in low- and middle-income countries shows that only a small number of performance-based pay (PFP) programmes for teachers have enhanced student learning; the majority have not, with about 50 per cent of these programmes reporting a small effect size of only 0.06 standard deviation increase on student learning outcomes (Breeding et al. 2021). Some of these initiatives have even exhibited negative effects, such as instances of cheating, teachers

teaching to the test, or manipulating tests by excluding weaker students or targeting a select promising group. In addition, sustaining PFP impact beyond the evaluation period has proven challenging, with only 33 per cent of evaluated teacher PFP programmes sustained after the evaluation and only one of these showing significant impacts on students' achievements (ibid). While exercising caution against their adoption, research identified three steps to enhance the structure of teachers PFP programmes: 1) ensuring the presence of technical requirements for monitoring capabilities, resources, and political support; 2) assessing various facets of performance and defining reward recipients, criteria, distribution, and amount/format; and 3) acknowledging implementation hurdles and the risk of collusion (ibid).

Capital and infrastructure projects

The financing of long-term capital costs is relevant for their impact on both teacher recruitment and retention. As highlighted in Chapter III, poor working conditions can be a major cause of teacher attrition. Given the direct and indirect costs of attrition, providing appropriate conditions should strongly guide budget decisions.

In particular, systems need to promote teacher retention by making capital investments that cover basic necessities, such as the provision of school toilets and appropriate sanitation facilities. This issue may disproportionately affect low-income countries, and it can have especially detrimental effects on retention of female teachers, as highlighted in Chapter III. The WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene indicated that in 2016, 18 per cent of primary schools and 13 per cent of secondary schools around the world did not have sanitation facilities. This proportion increased for secondary schools, with 24 per cent in

sub-Saharan Africa, 19 per cent in Oceania (excluding Australia and New Zealand) and 18 per cent in Central and Southern Asia (UNESCO 2019). Analysis of pupil trained ratio and teacher preferences in Malawi, for example, strongly suggest that the provision of basic WASH amenities is related to fewer teacher shortages and better teacher supply (Asim et al. 2019). Additionally, too many schools lack electricity or drinking water. These factors are very likely to affect teacher retention, particularly in sub-Saharan Africa where only 32 per cent of primary schools have access to electricity (2022) and only 43 per cent (2016) have access to basic drinking water (see Figure 6.7).

In sub-Saharan Africa, only 32 per cent of primary schools had access to electricity in 2022 while only 43 per cent had access to basic drinking water in 2016, factors that are very likely to affect teacher retention.

Figure 6.7. Proportion of schools with electricity, water, sanitation, and handwashing

Notes: Europe, Northern America, Australia and New Zealand are not shown as they approach 100 per cent. SIDS are omitted for lack of data. Data comes from 2022 or latest year available.

Source: UNESCO Institute for Statistics 2024. Database consultation: 2 January 2024.

Going a step further, systems need to make capital investments that will prepare students and teachers for 21st century learning environments. When examining information technology (IT) for pedagogical needs, fewer than half of primary schools provide access globally (Global Education Monitoring Report Team 2023a). This situation does improve somewhat at lower- and then upper-secondary levels. Access to IT has important financial implications for schools. In a recent review of the highest benefit-to-costs interventions in low- and low-

middle income countries, access to structured pedagogy and teaching at the right level approaches, that may also employ ed-tech, has been proffered as one of the top three most cost-effective interventions (Angrist et al. 2023) and would allow countries to make more efficient use of their education budgets.

As a final priority of capital investments, policy-makers should also create budget headroom so that schools can make adaptations and provisions for pupils and

teachers with disabilities. Data relating specifically to facilities and services for teachers with disabilities is extremely scarce globally, but information does exist for access for students. Data indicated that only about half of primary schools globally had access to adapted infrastructure and materials for students with disabilities. At the secondary level, that rate increases slightly to just over 62 per cent (UNESCO Institute for Statistics 2024). These numbers indicate that many systems have

a long way to go to provide an inclusive environment for students and teachers with disabilities. As noted in Chapter V, providing inclusive environments and proper resources for teachers with disabilities is imperative for their inclusion and retention. Such adaptations support teachers' human rights and communicate a supportive school environment which is known to reduce attrition (Kraft and Papay 2014).

Investing in the professionalization of teaching

While teacher salaries and basic working conditions may be logical starting points for investing in teacher retention, policy-makers should also consider investing in strategies that improve the prestige and professionalization of the career. This could include induction and mentoring programmes that support early career teachers or enhancing CPD initiatives.

As this chapter has laid out the significant costs associated with training and recruiting new teachers, a straightforward cost-reduction strategy for many systems is to better retain early career teachers. As explored in Chapter III, these teachers tend to leave the profession at higher rates than their more experienced colleagues, and thus are a natural target for initiatives that would keep them in the profession. While some school leaders may labour under the misguided notion that beginning teachers are cheaper as they tend to earn lower salaries, the costs of training and recruitment quickly outweigh these false savings. There are numerous factors, including comprehensive induction and mentoring, required to help early career teachers thrive and survive in their early years (Allen and Sims 2018b; OECD 2019c; Rockoff 2008). However, looking across 48 OECD member and partner countries and economies, the 2018 cycle of TALIS found that only about 40 per cent of surveyed lower secondary teachers reported receiving some form of induction. Furthermore, only 22 per cent of novice teachers were assigned a mentor (OECD, 2019b).

Across 48 OECD member and partner countries, only about 40 per cent of surveyed lower secondary teachers reported receiving some form of induction, while only 22 per cent of novice teachers were assigned a mentor.

As discussed in Chapter V, systems may also raise the professionalization of a teaching career by investing in the provision of more high-quality professional development options. For example, a national study in England offers evidence using national school workforce census data to estimate the impact of science teacher training on retention rates. Using the data to construct a matched control group, researchers found that attending training substantially improved the odds of a teacher staying in teaching – e.g. for those who do not receive training, 1 in 12 will leave teaching. In contrast, the ratio improves to only 1 in 30 teachers leaving the profession who do receive training (Allen and Sims 2017). Another initiative from Ethiopia called the Teacher Development Program invested large amounts in teacher development and training which lowered attrition rates in the country (see Box 6.2). A benefits-cost analysis of the English programme found that improved retention equated to a saving over ten years of approximately £2.2 billion in 2019 prices (Van den Brande and Zuccollo 2021). When considering the benefits of CPD to pupil attainment and thus life-time earnings, research estimated that providing an entitlement of 35 hours high quality CPD every year for England's teachers would cost approximately £4 billion over ten years, but create a net social benefit of £61 billion (Van den Brande and Zuccollo 2021).

Box 6.2. Large investments in teacher training in Ethiopia combat attrition

Since 2000, Ethiopia has rapidly increased its student enrolment and teacher numbers. Between 2000 and 2010, primary teacher numbers successfully grew from 86,000 to 308,000. This also benefited PTRs which dropped from 60 to 51 in this time. To provide for this, Ethiopia's budget allocation for education grew from 17.8 per cent in 2005, to 25.4 per cent in 2010 (Nordstrum 2013).

In 2007, a National Learning Assessment identified that more resources were needed for teacher training, and numerous initiatives were launched in two phases from 2009 to 2016. This was financed by a pooled funding mechanism which combined contributions from development partners (Nordstrum 2013).

The Teacher Development Program was a key initiative which sought to increase the supply of effective teachers for all levels of education after the government had raised training and certification expectations (Nordstrum 2013). To support trainees on practicum, the Ministry of Education funded transport to support provision in rural areas and paid for travel and subsistence costs for approximately 25,000 teacher candidates and supervisors on placement. Opportunities were also available for existing teachers to study via self-study modules and residential training during vacation periods. Eligible teachers also received financial support for training and associated costs like transport and lodging (ibid). In addition, Ethiopia recruited a large number of new teachers, and in 2009/10 there were 142,935 teacher candidates enrolled in teacher colleges and training institutions. This number rose to a high of 257,356 in 2016/17 (Federal Democratic Republic of Ethiopia Ministry of Education 2021).

These numbers represent a high financial commitment, and it is encouraging that attrition among Ethiopian primary teachers has declined from 5 per cent in 2014/15 to 1.7 per cent in 2020/21. Secondary school teacher attrition has also been declining and was 2.4 per cent in 2020/21 which is substantially lower than in high-income countries as highlighted in Chapter II. Nevertheless, the Ethiopian Ministry of Education continues to work towards a target of only 1 per cent attrition across all grades (Federal Democratic Republic of Ethiopia, Ministry of Education, 2021).

Although these programmes required sustained effort by the Federal Ministry of Education and donors, this large investment in teachers' development appears to have been successful. In a relatively short period of time Ethiopia has recruited and trained a large number of teachers, whilst seeing a declining rate of attrition.

Financing the teachers needed by 2030

While determining how much to pay current teachers or investing in infrastructure or professionalization initiatives are key financial decisions for any education system, many countries must also factor in projected costs of new teaching positions. As presented in the second chapter of this report, in total, about 13 million teachers are required for primary education by 2030, of which 2.9 million will be for new positions. Globally, 31 million new secondary teachers are needed, with new positions accounting for half of them (15.6 million). In total, both levels combined

indicate a need for 18.5 million new teaching positions. This substantial demand emphasizes the urgent need for governments to be financially prepared to meet these educational requirements. To provide a general estimation of the costs involved in covering the extra teachers needed to achieve 2030 targets of universal primary and secondary education, an estimation considering only new teaching posts needed has been carried out.¹²

¹² The overall method used estimates the new additional teachers needed for each country by 2030 and multiplies this by estimated teacher salaries for each country, to then estimate the financing needed to recruit those teachers. This is aggregated up into regional amounts. To provide a global estimation, where country data was unavailable, salary averages were input based on the country's sub-region and income level, with adjustments made for countries lacking comparable data within their income bracket.

Based on these estimations, the projected 2.9 million additional primary teachers that will be required by 2030 to meet the SDG target of universal primary education will cost US\$12.8 billion. However, there is significant variation across regions. Sub-Saharan Africa requires the most additional new teachers, and so also requires the greatest additional financing, equivalent to half of the total shortfall (US\$6.5 billion). Northern Africa and Western Asia requires the next highest expense (US\$2.7 billion) at the primary level followed by Southern Asia (US\$1.3 billion), which requires more teachers but has typically lower salaries (see Figure 6.8 and Table 6.3).

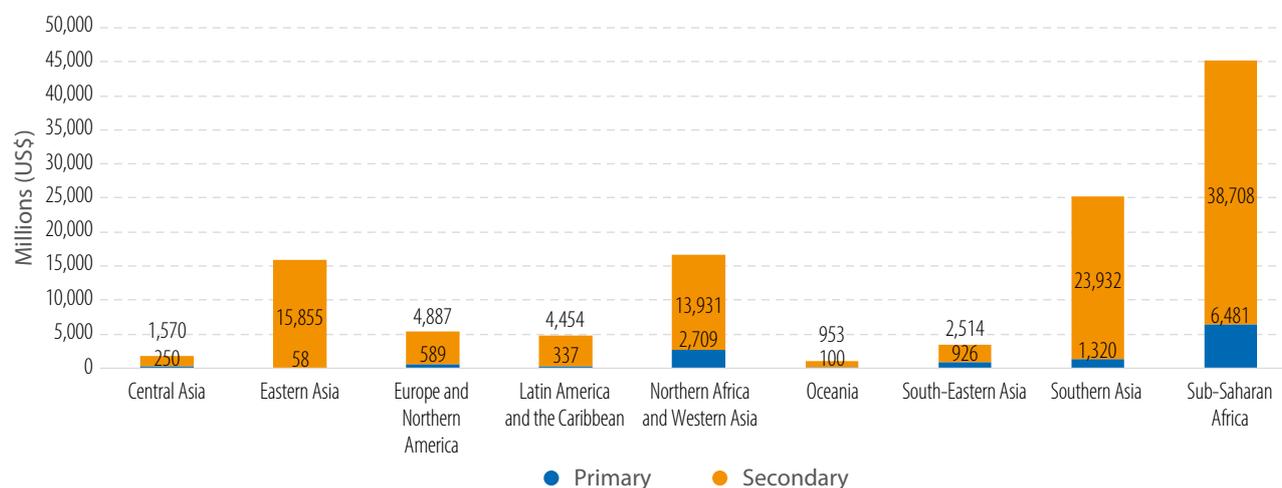
The financing needs at the secondary level are even more challenging. Teacher salaries can often be higher at secondary than in primary, but the greatest factor driving financing needs at secondary is that significantly more teachers are needed. At this level, 15.6 million new teaching positions will be required by 2030 to achieve universal secondary education, costing approximately US\$106.8 billion. Sub-Saharan Africa again requires the greatest share of the financing, but the increased extent of need elsewhere means that this share is about a third (36 per cent) of the total shortfall for secondary education. Southern Asia requires the second most new teachers

and consequently has the second largest additional cost required, equivalent to 22.4 per cent of the total. Eastern Asia requires little financing at primary level but is the third-highest region with need at secondary, due to almost one million additional teachers needed in China (see Table 6.3).

If combined, additional financing needed to cover new primary and secondary teaching posts' salaries by 2030 reaches US\$120 billion annually (see Box 6.3), with Africa and Asia as the regions with the greatest needs, particularly at the secondary level (see Figure 6.8).

According to latest projections, and in order to meet the SDG target 4, the financing of the additional teachers needed will cost US\$12.8 billion for universal primary education, and US\$106.8 billion for universal secondary education. Combined, additional financing needed to cover new primary and secondary teaching posts' salaries by 2030 reaches US\$120 billion annually.

Figure 6.8. Total funding needed to cover new teaching post salaries to meet primary and secondary universal enrolment by 2030 by region (millions US\$, constant 2015)



Source: Ramírez et al. forthcoming a

To contextualize the estimates of the additional financing required to accommodate the required new teachers on the payroll by 2030, the costs are compared to the average current education expenditure. If the additional financing of US\$120 billion was shared across all countries evenly, this would only imply an increased need of 3.1 per cent of the current education budget across all countries.

In terms of international benchmarks, the global mean stands at 4.2 per cent of GDP spent on education. If this number was raised to the target of 6.0 per cent for all countries, that would be sufficient to cover the funding for all new teaching posts. However, needs vary greatly by region and country (Ramírez et al. forthcoming a).

Though teacher salaries are higher in higher-income countries, the far greater disparity in teacher need means that the additional financing needs are greatest in lower-income countries. Higher-income regions like Europe and Northern America require a mere additional 0.2 per cent to finance new teachers, while sub-Saharan Africa faces a substantial challenge, necessitating a significant 79.3 per cent increase in the budget for teacher salaries (see Table 6.3). As a percentage of education expenditure of GDP, sub-Saharan Africa averages 3.01 per cent. This number would need to increase by 2.39 per cent in the region to meet funding needs for new teachers, which will mean an overall spend of 5.4 per cent of GDP, which is a significant increase but within the 6 per cent target. Examining individual countries beyond the regional analysis reveals additional significant challenges. When combining the needs of both primary and secondary levels, 17 countries

must double their current education budgets merely to fulfill the necessary teacher salary requirements. Furthermore, for 11 out of these 17 countries facing the most pressing needs, even if education spending were to reach the upper benchmarks of international targets (allocating 6 per cent of GDP to education), it would still fall short of covering the expenses associated with the additional teachers required to achieve universal access to schooling (Ramírez et al. forthcoming a).

Although the need at secondary remains very high, this estimation does at least highlight the progress that has been made at the primary level. In sub-Saharan Africa, the region most in need, it is estimated that at regional level, the cost of additional primary teachers needed is 11.4 per cent of current education spending.

Table 6.3 Additional budget needed to finance new teachers required by 2030

SDG Region	Total expenditure education (millions USD\$, constant 2015) ¹	Total funding needed for new teaching posts (millions USD\$, constant 2015)		Additional budget needed (As percentage total expenditure of education)		
Central Asia	19,025	250.1	1,570.2	1.31%	8.25%	9.57%
Eastern Asia	785,215	58.0	15,854.9	0.01%	2.02%	2.03%
Europe and Northern America	2,243,967	589.1	4,887.2	0.03%	0.22%	0.24%
Latin America and the Caribbean	287,155	337.4	4,453.6	0.12%	1.55%	1.67%
Northern Africa and Western Asia	138,795	2,708.9	13,930.7	1.95%	10.04%	11.99%
Oceania	101,212	99.6	952.7	0.10%	0.94%	1.04%
South-Eastern Asia	96,282	926.0	2,514.1	0.96%	2.61%	3.57%
Southern Asia	170,258	1,319.7	23,931.8	0.78%	14.06%	14.83%
Sub-Saharan Africa	56,960	6,481.0	38,708.4	11.38%	67.96%	79.34%
Total	3,898,868	12,769.8	106,803.6	0.33%	2.74%	3.07%

Source: Ramírez et al. forthcoming a

Note: ¹ Government expenditure on education, total (% of GDP). Latest year available by country

As discussed in Chapter II, countries have set national benchmarks due to structural and financial challenges in achieving SDG targets by 2030. Cost projections considering the number of new teachers needed to meet

those benchmarks do considerably reduce the projected costs at both the primary and secondary levels. For the primary level, 2.5 million new teaching posts are required by 2030 based on national benchmarks, with a projected

cost of US\$11.3 billion – or nearly 11.5 per cent lower than the projection for meeting universal primary by 2030. At the secondary level, 12.8 million new teaching roles are needed based on national benchmarks, costing US\$85.6 billion – or nearly 20 per cent lower than projections for universal secondary (Ramírez et al. forthcoming a). Combined, additional financing needed to cover new primary and secondary teaching posts’ salaries by 2030 according to national benchmarks reaches US\$96.9 billion annually, which is down from US\$120 billion required to achieve universal primary and secondary education. Even with these reduced amounts, several regions will still need to increase education budgets by 10 per cent or more, including sub-Saharan Africa (increases of 9.4 per cent at primary and 46.9 per cent at secondary), Southern Asia (0.7 per cent at primary and 13.7 per cent

at secondary) and Northern Africa and Western Asia (1.8 per cent at primary and 8.7 per cent at secondary) (ibid). In sub-Saharan Africa, 12 countries would need to double (or more) their expenditure even to meet national benchmarks.

Combined, additional financing needed to cover new primary and secondary teaching posts’ salaries by 2030 according to national benchmarks reaches US\$96.9 billion annually, which is down from US\$120 billion required to achieve universal primary and secondary education.

Box 6.3. Investing in teachers: How much is needed by 2030



Overall need for additional teachers

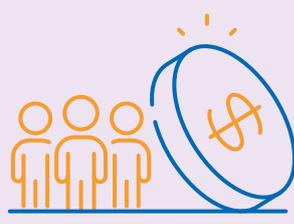
To achieve universal primary and secondary education by 2030, an additional 13 million primary and 31 million secondary teachers are needed globally.

This includes the creation of 2.9 million new teaching positions at the primary level and 15.6 million new teaching positions at the secondary level.



Teacher expenditure dominates education budgets

Approx. 75% of education spending is allocated to teachers’ costs in low- and lower-middle-income countries.



Total financing needs

The combined annual cost needed to cover new primary and secondary teaching positions by 2030 is estimated at USD\$ 120 billion.



Chapter 7

International cooperation and solidarity

As shown throughout this report, teacher shortages are a complex challenge with multifaceted causes and require a host of policy and financial strategies to address them. While some countries may be able to largely tackle teacher shortages through their own initiatives and funding, many others require international cooperation and support to guide strategies and actions or provide human, technical or financial resources.

This chapter then explores several avenues of international cooperation and solidarity to address teacher shortages around the world. It opens with

an examination of international dialogue, specifically focusing on the 2022 TES and subsequent national commitments that stemmed from it. From there, it highlights how teachers and education systems can work across national borders to support and collaborate with each other, specifically focusing on South-South and triangular cooperation. The final section furthers discussions and issues raised in Chapter VI by discussing international financing and aid designated towards supporting teaching.

International dialogue, recommendations and commitments

Collaboration at a global level is key when addressing structural and global challenges such as teacher shortages. The 2022 TES marked a milestone in global cooperation in the field of education and brought critical issues back to the forefront of national and international political agendas. The summit took place in New York during the 77th session of the UN General Assembly and gathered more than 2,000 education stakeholders and 65 heads of state and government (United Nations 2023c). In preparation for this global summit, extensive national and regional consultations were held, both in person and online. Over 350,000 people worldwide took part in the national consultations, including around 39 per cent of teachers and educators (United Nations 2023c). In addition, visions for transforming education were shared and discussed in 8 regional and sub-regional consultations. The importance of regional cooperation through dialogue and joint initiatives was one of the common outcomes of these consultations.

The consultation process was informed and structured by five thematic action areas that addressed key global issues to accelerate efforts towards achieving Agenda 2030 and transform education. In addition to important topics such as inclusion, education for sustainable development, digital learning and education financing, Action Track 3 was dedicated to ‘Teachers, teaching and the teaching profession’ and thus promoted the central role of teachers in education. As part of the Action Track, a discussion paper was developed highlighting the central role of teachers in transforming education and

developing a vision with recommendations for actions, partnerships, and initiatives at national and global level to support teachers worldwide as actors of change in the transformation of education. The outcomes of the Action Tracks and the results of the national and regional consultations contributed significantly to the Pre-Summit, which took place in June 2022. More than 150 ministers and other education stakeholders attended the Pre-Summit in Paris. Teachers’ voices were brought in at different levels of the TES – not only during Pre-Summit and Summit sessions, but also during the various consultations related to Action Track 3 and through a dedicated communications campaign on teachers (#TeachersTransform), organized by the International Task Force on Teachers for Education 2030.

In addition to the discussion papers and the national consultations, some of the main outcomes of the TES are the national commitments submitted by over 140 countries (see Box 7.1). In order to support countries in transforming the visions expressed in these commitments into concrete measures, five global initiatives have been established focusing on the following topics: Education in crisis situations, Foundational Learning, Greening Education, Gender equality through education, and Digital Learning. The High-Level Steering Committee (HLSC), co-chaired by UNESCO and Sierra Leone, is supporting the countries in this process and monitoring progress. As mentioned in Chapter I as one outcome of the TES, the UN Secretary-General established the HLP on the Teaching Profession in early 2023.

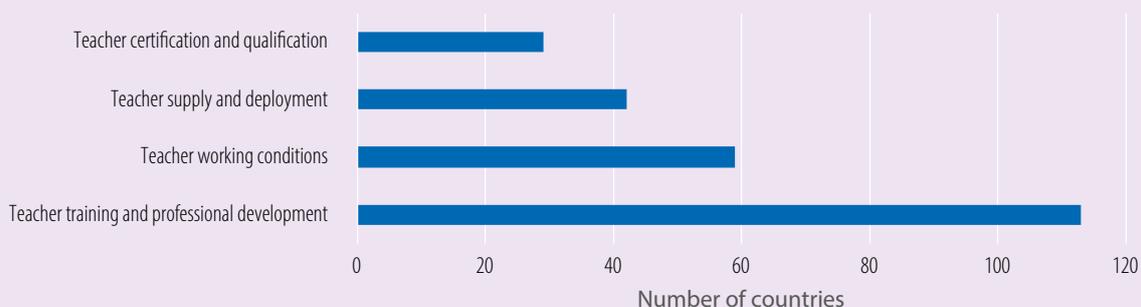
Box 7.1. National Statements of Commitment

The National Statements of Commitment coming out of the TES acknowledged the central role of teachers, educators, and other teaching personnel. As of November 2023, a total of 143 Member States submitted national statements around the five key topics identified in the preparation of the TES, and 120 countries addressed the topic of teachers in their commitments. Most countries (79 per cent) highlighted improving pedagogical training and CPD programmes to make them accessible, affordable and aligned to educational priorities, teachers’ standards, and career development policies as a key determinant to improving the quality of learning. Fewer countries mentioned improving working conditions of teachers (41 per cent) while dimensions included but are not limited to: salaries and financial incentives, workload, work-life balance, professional status, class size, teaching resources, autonomy, employment relationship, school violence and student behaviour governance measures. Forty-two countries addressed teacher supply and deployment (29 per cent), and 29 countries addressed teacher certification and qualification (20 per cent) (see Figure 7.1). Brazil, Croatia, France, and Latvia are among the countries that committed to salary increases, while Egypt committed to appointing 150,000 new teachers in the coming five years to address shortages.

Other relevant topics for the teaching profession often referenced in the national statements include supporting and improving digital learning in the education system (77 per cent); innovations in teaching and learning including future-oriented pedagogical approaches and methods (46 per cent); and contributing to the advancement of education for sustainable development (33 per cent).

However, the importance of financing the implementation of the commitments at national levels needs to be taken into account. As many as 105 countries (73 per cent) have committed to increasing domestic financing for education, including education infrastructure. But only 12 donor countries have declared that they would increase the volume, predictability and effectiveness of international aid to education, and ensure that it is aligned with national education plans and consistent with aid effectiveness principles. Further information on financing education and teachers is provided in Chapter VI of this report.

Figure 7.1. National Statements of Commitment on teachers, Transforming Education Summit, 2022



Source: UNESCO 2023b. Date of consultation: 21 December 2023.

International cooperation and exchange

Developing teaching into a more collaborative profession can extend well beyond the school, local or even national level. Dialogue and knowledge exchange at the international level is also vital to the realization of SDG 4. This is especially true for countries in the Global South, who can benefit from South-South or triangular cooperation.¹³ In these relationships, countries can pool and share resources, develop self-reliance through capacity-building and idea exchange, and expand participation and cooperation for Global South countries to participate in international economic activity (UNOSSC 2023a). To promote these relationships, the United Nations Office for South-South Cooperation (UNOSSC) has developed the South-South Galaxy, which serves as a global knowledge-sharing platform and brokers partnerships for South-South and triangular cooperation (UNOSSC 2023b).

Analysis of 143 Member States' statements from the TES reveals a strong focus on enhancing learning through improved teacher training (79 per cent), while only 41 per cent address teachers' working conditions. Concerns about teacher supply and certification are also noted by 29 per cent and 20 per cent of countries, respectively.

Triangular and South-South cooperation initiatives can benefit teachers in a variety of ways across numerous contexts globally. For example, UNESCO Kingston, in conjunction with Blackboard Academy and the German Agency for International Cooperation (GIZ), has established a programme that supports teachers across 20 SIDS to strengthen pedagogical techniques for online learning and content creation (UNESCO et al. 2023a). This initiative came in response to the difficulties teachers faced during the COVID-19 pandemic. The response has been so favourable from teachers and systems that a new South-South initiative is planned between UNESCO offices in the Caribbean and Southern Africa to exchange lessons learned and strengthen capacities (ibid). Another example comes from the Strengthening Teachers in the Sahel Region project, which targeted teachers in five countries: Burkina Faso, Chad, Mali, Mauritania and Niger. Through this initiative, UNESCO and the European Union have provided technical and financial support so that countries can improve teacher training and management, resulting in each country drafting frameworks to better identify minimum standards and guide future reforms (UNESCO et al. 2023a).

International aid to finance teachers

Government investment in a sustained, well-qualified, and adequately supported teacher workforce for the long run enhances the quality and endurance of educational systems. However, in many low-income countries, the limited size of the education budget leaves minimal room – especially after covering teacher salary costs – for investments in ITE, CPD, and improvements in working conditions and infrastructure. The figures presented in Chapter VI about projected costs for newly created teaching posts further emphasize the financial strain on low-income countries' education budgets. International

aid partners can offer countries assistance to fill in the gaps to invest in their teachers, whether it be through financing, support, training, or advocacy.

International educational aid levels have experienced a slight decline overall since 2019 and are not always equitably reaching those in greatest need.

Coordinated approaches for supporting teachers are being adopted by external funders in collaboration with governments, such as the Mastercard Foundation

13 South-South cooperation involves 'two or more developing countries pursuing their individual and/or shared national capacity development objectives through exchanges of knowledge, skills, resources and technical know-how' (UNOSSC 2023a). Triangular cooperation then 'involves Southern-driven partnerships between two or more developing countries supported by a developed country(ies)/or multilateral organization(s) to implement development cooperation programmes and projects' (UNOSSC 2023a).

via the Leaders in Teaching Program. This was piloted in about half of Rwandan secondary schools over a five-year period bringing together partners to provide coordinated support in STEM secondary education and was complemented by strengthening teacher data and TMS services. With a focus on recruitment, pre- and in-service CPD, and support to teacher motivation and school leadership, the programme is associated with improved learning outcomes. Importantly, girls and boys, and those from disadvantaged backgrounds benefited equally. Also highlighted was the need to support highly under-represented female STEM teachers and leaders (Colenbrander 2021).

To ensure the supply of qualified teachers, supported to reach their maximum potential, donors are encouraged to engage with and strengthen the capacity of social partners – including teachers – as partners in policy development. Such local engagement is exemplified in Madagascar where the GPE provided funding for the ministry to better align the school calendar with climate and agricultural needs, with the aim of minimizing student and teacher absenteeism (Global Partnership for Education 2023b). This action was part of a broader framework entitled Climate Smart Education Systems, where the GPE also envisions teachers as active partners in the fight against climate change (Global Partnership for Education 2023a).

While these types of donor initiatives can help low-income countries in some circumstances, aid levels overall have slightly declined since 2019 and are not always equitably reaching the most in need (Hares et al. 2023). While key donors include high-income countries and multi-lateral institutions,¹⁴ analysis reveals varied donor priorities amid concern that funding may be siloed, and that too little aid financing goes directly to recipient countries¹⁵ (Hares et al. 2023).

The OECD's Development Assistance Committee (DAC) publishes the Official Development Assistance report using its Creditor Reporting System (CRS). In the CRS framework, teacher training is defined as in-service and pre-service training and materials development with the level of education unspecified and categorized as a subset of the education sector within allocable aid. CRS records donor aid activities based on disbursement allocation, organized by project. Despite education aid projects incorporating teacher training, unless it constitutes a significant component, the allocation does not fall under the teacher training sub-category. Consequently, the calculated value may underestimate the actual funds dedicated to developing teachers.

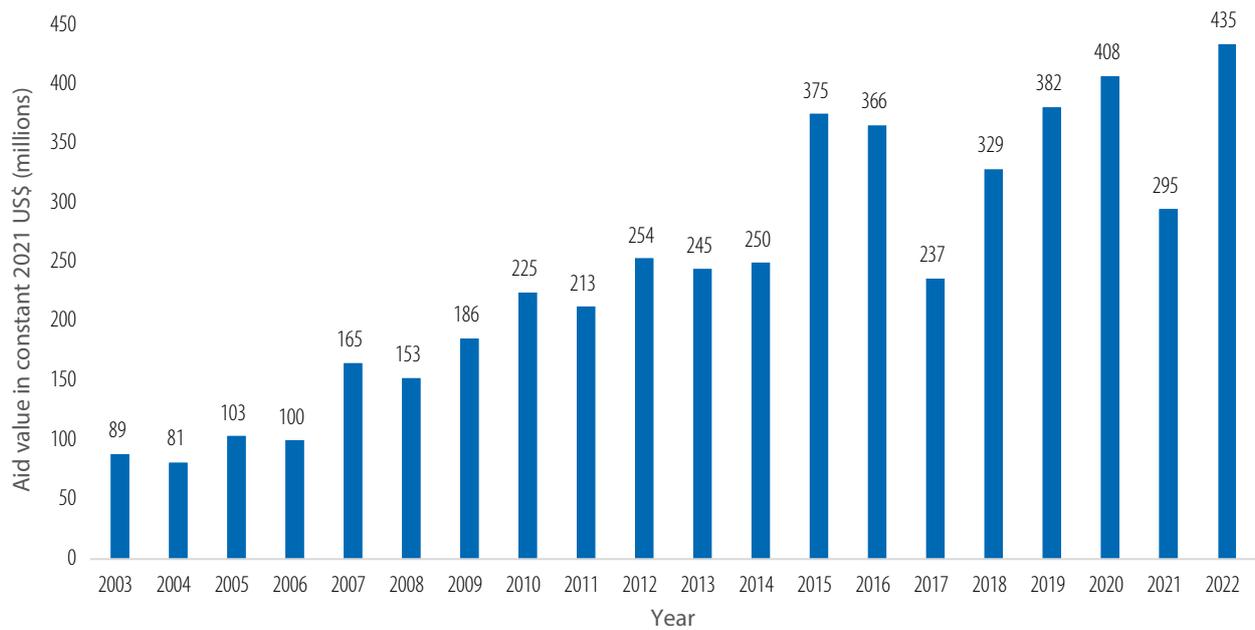
The World Bank emerges as the predominant donor in teacher training initiatives in sub-Saharan Africa, the region with the most acute teacher shortage. From 2013 to 2022, the World Bank's financial support in this area was more than double that of the next largest donor.

Concerning disbursements for teacher training in the education sector, there has been a gradual increase over the years, reaching a peak of US\$435 million in 2022 (see Figure 7.2). Fluctuations in disbursement patterns can be attributed to the limited number of donors contributing to this area, leading to variations over three-year periods. For example, data for 2021 indicates an allocation of approximately US\$300 million for teacher training while 2020 and 2022 both top US\$400 million.

ODA in education, specifically disbursements for teacher training, have steadily risen over the years, hitting a peak of US\$435 million in 2022.

14 Such as the World Bank, regional banks, GPE, Education Cannot Wait (ECW), and the United Nations Relief and Works Agency.

15 Instead, aid funding is predominantly channelled via parties based in donor countries or is spent in donor countries e.g. as scholarships to study in donor countries.

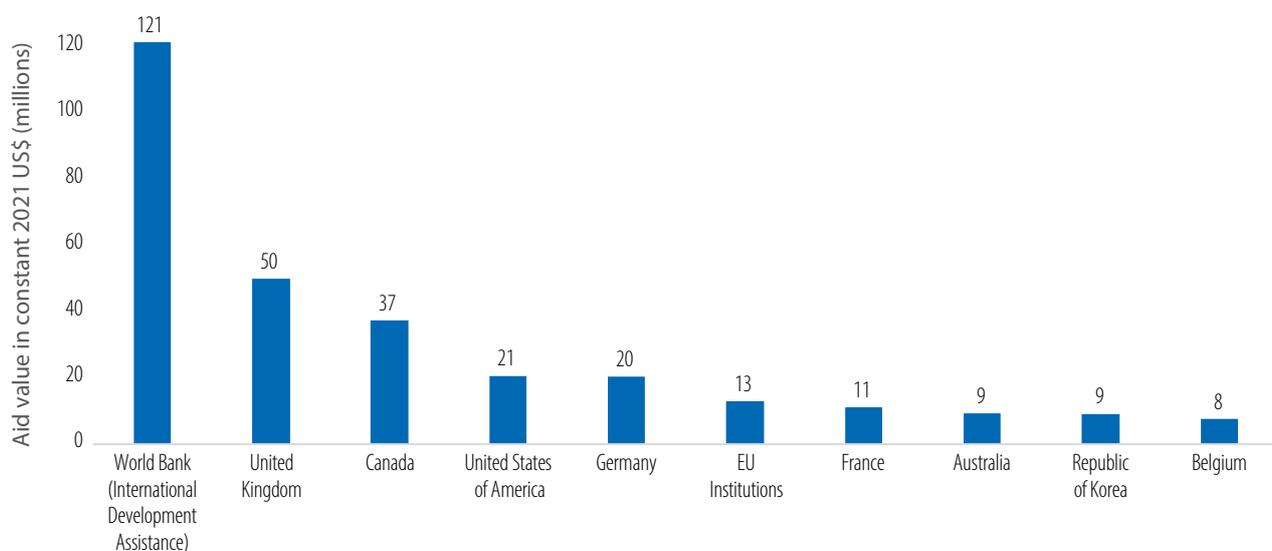
Figure 7.2. Education aid to teacher training, 2003-2022

Note: Amounts shown reflect gross disbursements of ODA from all donors through all channels towards teacher training at constant prices based on the US\$ in 2021.

Source: Adapted from GEM Report team analysis based on OECD 2023a. Date of database consultation: 2 January 2024.

Among the bilateral and multilateral donors contributing data to the OECD CRS, the World Bank has consistently held the position of the largest donor to teacher training over the past ten years, contributing a substantial US\$121 million on annual average. The UK at US\$50 million and Canada at US\$37 million contribute the highest amounts of any individual country (refer to Figure 7.3).

In addressing the increasing student population, sub-Saharan Africa emerges as the region with the greatest need for teachers. Notably, the World Bank stands out as the major donor supporting teacher training in this region, providing an amount more than twice as large as that of the second-largest donor, the UK, during the period from 2013 to 2022.

Figure 7.3. Top 10 largest donors in teacher training, 2013-2022 average

Notes: Amounts shown reflect gross disbursements of ODA from donors through all channels towards teacher training at constant prices based on the US\$ in 2021. Funding from EU Institutions is managed by the European Commission and European Investment Bank (OECD 2023b).

Source: Adapted from GEM Report team analysis based on OECD 2023a. Date of database consultation: 2 January 2024.

While no amount of reasonable ODA expenditure can help all low- and lower-middle-income countries hit the full target of achieving universal primary and secondary education by 2030, ongoing support can be vital to hitting more attainable benchmarks in the short-term. For example, the GPE had 75 grants allocated to activities related to teachers with a total value of more than US\$490 million in 2023. These grants target many activities, including pre-service education, in-service training, teacher mentoring, teacher management and assessment of teaching quality (Global Partnership for Education 2023c). ECW trained more than 72,000 teachers in crisis situations in 2022 on topics such as subject knowledge, mental health, gender, inclusion and WASH (Education Cannot Wait 2023). Even so, funding for projects involving teacher training or mentoring may only be a drop in the ocean for countries that need large amounts of additional

funding just to pay the salaries of teachers in newly created posts (as discussed in Chapter VI). To mitigate this challenge, more donors may consider creating specific funding windows for teachers to more effectively target critical issues that prevent countries – especially low- and lower-middle-income countries – from meaningfully reducing teacher shortages.

In 2023, the GPE allocated 75 grants valued at over US\$490 million and dedicated explicitly to support various teacher-related activities. These initiatives encompass pre-service education, in-service training, teacher mentoring, teacher management, and the assessment of teaching quality.



Chapter 8

Conclusions and recommendations

Conclusions

Teachers are at the core of all education systems and key to achieving SDG 4: to ensure inclusive and equitable quality education and lifelong learning opportunities for all by 2030. However, there exist persistent and increasing teacher shortages around the world which are exacerbated by continued attrition, the use of contract and unqualified personnel to fill teacher gaps, the lack of professional development and support, inadequate working conditions and salaries, lack of adequate funding and crisis contexts, among others.

This first Global Report on Teachers sounds the alarm about the projected global shortfall of 44 million teachers needed to reach the goal of universal primary and secondary education by 2030. The Report examines the dire consequences of these shortages, including increased workloads and diminished well-being, the discouragement of future educators, the perpetuation of educational inequalities caused by the unequal distribution of qualified teachers, the implications for student learning and well-being, and the increased financial burden placed on educational systems.

This inaugural Global Report on Teachers sounds the alarm on existing teacher shortages affecting all countries, though the size of the challenge is unequally distributed. It highlights the global deficit of 44 million teachers needed to achieve the SDG 4 targets for universal primary and secondary education by 2030.

Following an analysis of the reasons for the shortages, the report highlights the levers for action that can be taken to improve the situation. Using examples from several regions of the world and from countries of varying income levels, the Report demonstrates that it is possible to reverse the trend. Its analyses offers conclusions, recommendations and policy measures necessary to address systemic and persistent global shortages and ensure an adequate supply of teachers to achieve universal primary and secondary education, accelerate the achievement of SDG 4 (including target 4.c on teachers) and, more generally, advance the Education 2030 Agenda.

The report details the ways in which the challenge is unequally distributed. For example, by education level, we see that nearly 70 per cent of teachers needed

are for secondary education, while, geographically, needs vary heavily with sub-Saharan Africa requiring the largest share of additional teachers at 15 million. Likewise, the Report shows that teaching workforces do not always reflect the diversity of the communities they serve, linguistically, culturally, and otherwise. There is a dearth of male teachers, especially at early levels, and an under-representation of female teachers, especially at higher education levels, in certain subject matters, and in leadership positions. This has consequences in terms of role models and the reproduction of gender biases. The lack of teachers from under-represented backgrounds has implications on the relevance of education.

In addition to new recruitments needed as a result of demographic change and growing student populations, 58 per cent of teachers needed are to replace those leaving the profession at alarming rates. The Report shows that in the past seven years attrition rates of primary education teachers have jumped from 4.6 per cent in 2015 to 9 per cent in 2022. Male and novice teachers leave at higher rates, especially within the first five years of practice: as many as 40 per cent of new teachers may leave education systems in Canada, Hong Kong (SAR China), the UK, and the USA.

The Report reveals that the challenge of teacher shortages is complex, influenced by an interplay of factors including motivation, recruitment, retention, training, working conditions, and social status. Consequently, holistic and systemic approaches are needed to address the challenge effectively. One such approach is dignifying the profession by means of social recognition and working conditions that match the aspirations society has for teachers and education. Data calculated for this report show that, in primary education, half of all countries pay teachers less than other professions requiring similar qualifications. It is not surprising that younger generations do not contemplate teaching as a career prospect. Analysis shows that in countries such as Austria, Chile, the Czech Republic, Denmark, Estonia, Germany, Hungary, Italy, Portugal, the Russian Federation, the Slovak Republic and Switzerland, less than 2 per cent of secondary students would opt for a career as a teacher.

Following the TES, and the UN Secretary-General's HLP on the Teaching Profession, the Report argues that a new social contract for teaching is needed, one that develops opportunities for collaboration, incorporating social dialogue and promoting teacher innovation. This includes the transformation of teacher education and professional

development from a lifelong learning perspective, relying on the pedagogical knowledge and judgement of teachers to lead their own career growth. For example, evaluations in Latin America and sub-Saharan Africa have shown that the creation of communities of practice at the local, national or even international level, has not only successfully supported professional development but also fostered a professional identity and sense of belonging. Fostering teacher professionalization can raise the prestige of the profession and improve the motivation of teachers.

The Report advocates for a renewed social contract for teaching, focusing on fostering collaborative opportunities, engaging in social dialogue, and nurturing systems that stimulate teacher innovation.

The report shows how policies that provide attractive career pathways with equitable access to professional development are vital to retain teachers and keep them motivated throughout their professional life. Analysis from an upcoming ERCE Report for Latin America suggests that schools whose principals more frequently engage in classroom observation or who foster collaboration among teachers, may achieve better results in mathematics, language and science.

A new social contract for education includes improving working conditions for teachers: numerous studies attest to discontent with workloads. A recent global survey of teacher unions in 94 countries revealed that 60 per cent of respondents disagreed with the statement that teachers can maintain a healthy work-life balance. The Report also shows that, to entice qualified teachers, it is crucial to offer them competitive starting salaries and pathways for career advancement. Kazakhstan, Kyrgyzstan, Thailand and Scotland have raised salaries leading to improvement in the prestige of the career and to teachers feeling more supported. Likewise, effective social dialogue has the potential to raise the status of teaching by empowering teachers and giving them a voice. Initiatives in locations such as the European Union, India, Nepal and Zambia have seen the good effect of teacher engagement in decision-making.

Strategies to reverse teacher shortages need to address the overall attractiveness and status of the profession, which influences both recruitment and retention efforts. Improving teacher salaries and working conditions—such as regulating work hours or involving them in decision-making—is key to enhancing the supply of quality teachers.

Recommendations

In view of the analyses currently undertaken for this Report and following the work of the Committee of Experts on the Application of the Recommendations concerning Teachers (CEART), the Special Rapporteur on the right to education, and the Secretary-General's HLP on the Teaching Profession, the following recommendations are essential to address the systemic and persistent global teacher shortages and ensure an adequate supply of teachers to achieve universal primary and secondary education, accelerate the achievement of SDG4 (including Target 4.c on teachers) and, more generally, advance the Education 2030 Agenda.

1. Develop holistic teacher policies aligned to national priorities and the policy landscape that include all dimensions affecting teachers in an integrated manner, using a collaborative framework and social dialogue. This approach aims to improve the status of the profession, ensuring national objectives are effectively achieved while also reflecting the needs

of teachers. The participation of teachers and their organizations in educational policy-making is not only an important lever to democratizing education policy, but also to making the profession more attractive.

2. Collect more and better data. Tracking progress towards Target 4.c needs greater efforts to systematically report on the indicators agreed in the Education 2030 Framework for Action. More and disaggregated data is needed to know who and where the teachers are and what they need in terms of professional development, career mobility and otherwise. For this, the development of TMISs are paramount to strategically predict and manage demand for teachers, track their professionalization and career development, and ensure equitable deployment of qualified teachers across all regions, levels of education, and sectors of society, including

those most marginalized. The adoption and application of the ISCED-T will be an important step towards more internationally comparable data.

3. Transform teacher education and professional development from course-based, individual endeavours to lifelong, collaborative, and teacher-led processes. The role of teachers as knowledge producers and the systematization, use and exchange of their pedagogical solutions should be at the centre of the transformation of education. Making teaching an intellectually stimulating profession will improve attractiveness and retention for prospective teachers. Minimum qualifications for primary and secondary teachers should be raised to a first-level higher-education degree, as recommended by the HLP on the Teaching Profession.
4. Improve the working conditions of teachers, beginning with salaries and incentives to ensure they receive competitive compensation and benefits, especially when compared to other professions requiring similar levels of qualifications, and ensure gender equality in pay and treatment. Well-structured and defined vertical and horizontal career pathways that provide equitable opportunities for advancement are important to motivate teachers to remain in the profession, as is teacher well-being and work-life balance. Recognition, trust, and appreciation for the work of teachers are among the most effective symbolic conditions that make a difference in teacher retention.
5. Ensure adequate public, domestic funding that is consistent with the existing benchmarks of 6 per cent of GDP and 20 per cent of total government expenditure, and whose distribution targets not only the teacher wage bill, but also what is needed to make the profession more attractive and to elevate the quality of teaching.
6. Enhance international cooperation to engage different constituencies at international level in collaborative efforts to address teacher shortages and amplify the outreach of teacher policies. This includes development aid for education and coordinated, multi-partner programmes to address shortages, but also to enhance collaboration and mutual learning from shared experiences and good practices globally.

Moving forward, international cooperation will become critical to support country efforts in addressing global teacher shortages and important discussions and consultations are currently underway in this respect.

International cooperation will become critical to support country efforts in addressing the global teacher shortages, particularly concerning the revision of the international normative instruments relating to the status of teaching personnel and coordination and monitoring of the implementation of the recommendations of the HLP on the teaching profession.

Firstly, the international normative frameworks recognizing and protecting the status of the teaching profession must be addressed. Both the Joint ILO-UNESCO CEART and the HLP on the Teaching Profession have recommended that the 1966 and 1997 Recommendations concerning the Status of Teaching Personnel be revised to include new areas related to teachers and teaching, and to accommodate changes that have taken place since their adoption. These include issues of inclusion, diversity and equity – including gender equality – in the teaching workforce; the relevance and validity of non-traditional pathways and forms of qualification and professional certification for teachers based on the recognition, validation and accreditation of prior experience or learning; the rise of digital technologies in teaching and learning (including AI and hybrid learning combining face to face and distance learning modalities) and how it impacts on teaching personnel, and the need for specific provisions for teachers in crisis situations (e.g. conflicts, human mobility, natural catastrophes).

Secondly, regarding support to teachers in accompanying education transformations, in 2023, the HLP on the Teaching Profession drafted a set of recommendations to governments, teacher organizations, employers, schools, universities, civil society, students, and international finance institutions, on how to deliver on the commitment that every learner has a professionally trained, qualified, and well-supported teacher who can flourish in a transformed education system. The recommendations emphasize the urgency for better policies for the teaching profession, investing in teachers, ensuring them decent work and better training as well as equity, diversity and inclusion. The HLP also calls for bolder international cooperation on two critical issues, namely the setting up of a Global Fund for Teachers' Salaries and a revision of UN international instruments for the teaching profession

including the 1966 and the 1997 Recommendations as mentioned above. While the date when the UN Secretary-General will officially present the HLP recommendations to the international community is not yet set, and the potential next steps for the HLP have not yet been communicated, the SDG4 HLSC has already encouraged, in its November 2023 meeting, all Member States and partners to support and monitor the implementation of the HLP recommendations through existing coordination and monitoring mechanisms, including the CEART, the International Task Force on Teachers for Education 2030, and this Global Report on Teachers.

If the various measures under discussion at international level are implemented (i.e. the revision of the international normative instruments relating to the status of teaching personnel and coordination and monitoring of the implementation of the recommendations of the high-level panel), the CEART, the primary remit of which is to promote, monitor and report on the application of the ILO, and UNESCO Recommendations concerning the status of teaching personnel, will need to be strengthened in terms of composition, mandate, capacity and resources.

To address the double crisis of equity and relevance in education, the TES called for the empowerment and repositioning of teachers in order to tackle global teacher shortages and to avoid public sector wage constraints that block the recruitment of new teachers along with the improvement of their remuneration and working conditions. For this to happen, countries need to adhere to the commitments made during the Summit and to actively engage in the transformation of teaching and the teaching profession.

Six years from the 2030 deadline, UNESCO as the lead organization in monitoring SDG 4, Target 4.c and the commitments made at the TES, and the Teacher Task Force, as a key partnership that brings all stakeholders together to share experiences and promising practices to address global teacher issues, will continue to produce data and identify policy solutions to ensure that every learner has a professionally trained, qualified, and well-supported teacher who can flourish in a transformed education system.

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Global Report on Teachers

Addressing teacher shortages and transforming the profession

The world faces a critical shortage of teachers, hindering the achievement of SDG 4 and the Education 2030 agenda. This first *Global Report on Teachers* stresses the urgency of this challenge and calls for immediate action. Exposing a projected deficit of 44 million primary and secondary education teachers by 2030, the report examines the complexity of the crisis, from sub-Saharan Africa's need for 15 million more teachers to a decline in the attractiveness of the profession and subsequent retention challenges in higher-income countries. Filling a void in the field and grounded in new data, the report calls for international cooperation and increased education investment, offering a roadmap to empower teachers and to find policy solutions to ensure every learner is taught by a qualified, motivated and well-supported teacher.

