Introduction

The management of any education system involves a complex balancing act of diverse priorities, opportunities and constraints. As noted in Chapter 1, countries improve their chances for success by attaining certain thresholds in educational coverage, quality and efficiency. Above all, social and political stability, combined with sufficient resources and a commitment to equity for all children, serve as the foundations to reach the ultimate goal of good learning outcomes.

Yet many countries lack these most basic elements and must cope with multiple disadvantages. Moreover, they often face the greatest challenges in meeting the goal of universal primary education. They do not have enough teachers to meet growing demand, and those in place, work under considerable stress in overburdened school systems.

This does not suggest an easy road ahead even for countries with a more moderate need for primary teachers. There is greater scope for reducing the number of new teachers through improving the efficiency of the education system and other policy trade-offs. However, these countries do need to focus on improving education quality by raising the skills and knowledge of the teaching force. Considerable progress is still required to improve the quality of instruction, which will spur even greater demand for education.

After identifying the current and future gaps in teacher quantity (Chapter 1) and quality (Chapter 2), this final chapter examines several important areas for potential policy trade-offs to bridge the two, with the goal of achieving universal primary education by 2015. It focuses on three key issues: teacher recruitment, deployment and conditions of service. It examines whether there is the potential, at the country level, for policy options to improve the use of existing teacher supply without expanding the stock of teachers.

Section 1 focuses on the recruitment of new teachers and their qualifications to better understand how countries can increase the supply of classroom teachers without sacrificing minimum levels of education quality. In particular, it examines the trade-offs associated with lowering or raising teacher qualification standards.

Section 2 examines the policy options associated with teacher deployment and labour conditions. It examines a specific set of policy variables – namely instructional hours, class size and salary structure – that may be adjusted to accommodate an influx of new primary pupils, although at the potential expense of educational quality.

Section 3 briefly summarises the main findings for reaching UPE by 2015 and the need to globally monitor policies that help to bridge teacher quantity and quality and their links to student performance.
SECTION 1. Balancing the number and quality of teachers

New approaches are needed to resolve existing and imminent gaps in the quantity and quality of teachers. It is clear that qualifications alone do not make an effective teacher. But it is also evident that a teacher possessing only six years or less of formal schooling may not be prepared to teach in a primary school. As demonstrated by the SACMEQ results presented in Chapter 2, there are countries where 6th grade pupils outperform their teachers on mathematics and reading tests. This kind of situation ultimately creates a vicious cycle: poor instruction and learning reduces the demand for education, which, in turn, reduces the pool of qualified teachers.

Figure 3.1 summarises countries’ needs in terms of both teacher quantity and quality by highlighting the percentage of current primary teachers meeting national qualification standards, the percentage of current teachers that do not, and the remaining percentage of additional teachers needed to achieve UPE by 2015. The total number of primary teachers required by 2015 is presented as 100%.

The first set of countries (presented in the upper panel) will need to expand their primary teaching forces. Many will need to greatly enlarge their stocks, while others can focus on improving qualification levels. For example, Niger and Mozambique have large proportions of teachers that meet the entry standard. It is true that these standards are low (generally nine years of education), but this may not be the time to raise them given the large numbers of new recruits needed by 2015. By contrast, Lao PDR, which also has the same low national standard, requires far fewer new teachers and, therefore, may be able to focus on improving the skills and qualifications of the existing teaching force.

At the opposite end of the spectrum, there are also countries in this group with very high tertiary qualifications for primary teachers, namely Egypt, Kuwait and Oman. Here the challenge is to steadily hire new recruits and redeploy existing teachers to meet the growing demand for education.

Alternatively, some countries may face difficulties in even maintaining existing standards. For example, at least 80% of teachers in Eritrea hold a post-secondary non-tertiary qualification (ISCED 4). This is commendable but it is also important to consider whether teacher-training institutions will be able to expand the national stock of teachers by 9.5% a year to reach UPE by 2015. This is also the case for Guinea (6.0%) and Malawi (5.7%), which have similar entry standards but far lower proportions of primary teachers who meet the minimum requirements.

Yet it is important to ensure that lower standards do not compromise educational quality. The government in Burkina Faso decided to lower standards to attract more teachers and widen access to primary education. The government adopted an aggressive recruitment policy, which established a one-year teacher-training course upon completion of lower secondary education. At the same time, the primary completion rate (the expected gross intake into the last grade of primary education) has risen steadily, from 28% in 2000 to 49% in 2004. At the same time, pupil-teacher ratios have remained constant at 49:1 (2004), yet the goal of UPE remains distant.
Countries presented in the lower panel of the figure can focus almost exclusively on improving the qualifications of the current teaching force and/or raising the standard for new recruits. In Nepal, only a small proportion of existing teachers meet the relatively low standard of upper secondary education. This is also the case for countries with somewhat higher qualifications, such as Guyana and Lebanon. This could be partly the result of recent upgrades in standards which were meant to improve the professional status of teachers.

Notes: +1 Data refer to 2003; -1 Data refer to 2001; -2 Data refer to 2000.
How can the pool of potential teachers be expanded? From a historical perspective, it has been shown that no country has reached UPE without a secondary net enrolment rate of at least 35% (Clemens, 2004), which underlines the importance of secondary education to progressively build a qualified teaching force.

Levels of educational attainment among the adult population reflect shortcomings in the potential labour pool of secondary school graduates. This partly explains why national qualification standards have remained low in some countries. For example, it has been estimated that in order for Mozambique to hire enough primary teachers for UPE, 33% of the adult population should have a secondary education; this figure equals 28% for Mali and Rwanda and 27% for Niger (Wils and O’Connor, 2004). Yet, the current levels of secondary attainment among adults is below 10% in each country.

Figure 3.2 presents secondary net enrolment rates in 2004 beside the required growth in teacher stocks by 2015. Basically, the countries facing the greatest need have the lowest levels of potential human capital. The share of youth enrolled in lower or upper secondary programmes still falls below 35% in 16 countries, 14 of which are found in sub-Saharan Africa (including Lesotho, which has sufficient numbers of teachers but not all have secondary qualifications). The other two countries are Cambodia in East Asia and the Pacific and Guatemala in Latin America and the Caribbean. Six countries have fewer than 20% of the secondary school-age population enrolled, while Burkina Faso, Mozambique and Niger report less than 10%.

**Figure 3.2**

Secondary net enrolment rates (2004) and average annual growth required to meet UPE by 2015

Notes: Data refer to 2005; Data refer to 2003; Data refer to 2002.

To raise the number of teachers with at least a secondary education, countries need a long-term strategy to reinforce institutional capacity and improve the content of teacher training. UNESCO has launched a major new initiative in sub-Saharan Africa to re-assess existing policies and develop new projects in the field (see Box 3.1). The Initiative will build upon the growing interest and experience in a diverse array of community-level projects and distance education programmes using traditional and new technologies to reinforce the skills of teachers in their classrooms (see Boxes 3.2 and 3.3).

**Box 3.1 UNESCO Teacher Training Initiative for sub-Saharan Africa (TTISSA)**

The UNESCO Teacher Training Initiative for sub-Saharan Africa (TTISSA) was officially launched in January 2006. This ten-year initiative will assist UNESCO’s Member States in the region to restructure their national teacher policies and teacher education programmes to better serve national development priorities in the pursuit of EFA and MDGs.

TTISSA is based on country needs and priorities identified by each government and UNESCO. A full-time national coordinator, proposed by the concerned country and selected by UNESCO, guides the initiative at the national level for a four-year cycle*, while evaluating activities and impact of donors, other UN agencies and regional agencies. TTISSA will also work within other core initiatives, such as the Literacy Initiative for Empowerment (LIFE) and the Global Initiative on Education and HIV/AIDS (EDUCAIDS).

Through a collaborative approach, TTISSA will devise relevant action strategies with national representatives, coordinators, heads of teacher training institutions and other decision-makers, as well as bilateral and UN agencies. At the national level, assistance is focused on the relevance and quality of teacher education programmes, steps to professionalise teachers, and the review or adjustment of national policies to improve the status of teachers and reverse teacher attrition, especially due to HIV/AIDS.

* The initial cycle will include 17 countries: Angola, Burkina Faso, Burundi, Cape Verde, Central African Republic, Chad, Congo, DR Congo, Ethiopia, Ghana, Guinea, Madagascar, Niger, Nigeria, Sierra Leone, Tanzania and Zambia.
Box 3.2 Distance training from Malawi’s Domasi College of Education

Free primary education was declared in Malawi in 1994, unleashing a surge of new pupils. Since then, the country has been trying to fill gaps in teacher supply and infrastructure: for each qualified teacher, there are 118 pupils. Furthermore, many primary classes are still taught under trees, bringing the pupil-permanent classroom ratio to 95:1. There is also a chronic teacher shortage at the secondary level.

With funding from the Canadian International Development Agency (CIDA), the Domasi College of Education launched in 2000 a new version of its diploma course, to upgrade the skills of the large number of teachers with only a primary education. This three-year programme is equivalent to the residential diploma in content but is delivered essentially in distance-mode so that the students can continue to teach.

The course is delivered through an annual cycle, with two months of courses at the college during school vacations and ten months of distance study, using mainly print materials. Student-teachers are in regular contact with local ‘field supervisors’, many of whom are retired secondary or head teachers. They provide general counselling and academic support. In addition, students are visited periodically in their schools by college lecturers. With such close support, the quality of this training may actually be better than that offered to conventional students.

The programme’s innovation lies in providing students with daily opportunities to test their learning of academic content and pedagogical skills in their own classrooms. Furthermore, the distance methodology enables a significant number of Malawi’s teachers to upgrade their skills. However, larger-scale programmes must be designed and funded to begin to meet the numerical and quality needs of the system.


Box 3.3 Afghan teachers tune in

Each week, over 3,500 teachers in Afghanistan tune into ‘Knowledge is Light’, a teacher-training radio programme produced by Equal Access, a non-profit organization. For most of the listeners, the radio series provides their first training experience and only information conduit after 23 years of war. As a whole, these teachers are responsible for 150,000 students. As soon as funding is available, the Ministry of Education plans to expand this service to reach 12,500 teachers in 500 schools which need training support. Equal Access also hopes to provide receivers and orientation training to 500 teacher trainers and another 7,000 schools.

Source: http://www.equalaccess.org/stories/
Given the duration and expense of traditional teacher-training programmes, many countries – particularly in sub-Saharan Africa and South and West Asia – must also consider shorter-term options to meet rising demand for education. They face serious fiscal constraints, with limited budgets exacerbating already difficult situations. Thus some governments have decided that the most viable option is to lower or soften entry standards and to recruit untrained teachers. Through diverse arrangements, governments are increasingly relying upon ‘para-teachers’, who are not hired through the civil servant system. They generally have low qualifications (lower secondary education or less), lower salaries than civil servant teachers, and little career stability, with fixed-term contracts often renewed on an annual basis (see Boxes 3.4 and 3.5 for case studies of Bangladesh and India).

Mehta (2000) has identified four categories of para-teachers which reflect different policy orientations. The first consists of those appointed in formal schools to reduce high pupil-teacher ratios and to ensure that overall demand is met as enrolments increase. The second type of para-teacher is hired to replace formal school teachers because of chronic absenteeism. In the third category, para-teachers work full-time in community-based schools in the remote settlement where they are from. Finally, there are para-teachers giving part-time courses in their own communities, even though teaching is not their main profession.

Many of the governments facing the greatest challenges are already relying extensively upon contract teachers. Indeed, untrained instructors are now in the classrooms of Burkina Faso, Chad, Congo, Mali and Niger. Moreover, there is also considerable dependence upon parent-volunteers. Two-thirds of the primary teacher stock in Chad and more than one-half in Congo are parents recruited to teach in local

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**Box 3.4 Bangladesh’s community teachers**

Despite the ongoing debate over para-teachers, they helped to increase Bangladesh’s overall primary net enrolment rate from 76% to 94% between 1990 and 2004. In particular, the non-governmental Bangladesh Rural Advancement Committee (BRAC) illustrates how careful decision-making, combined with reinforced training, can lead to positive outcomes.

BRAC ensures that para-teachers are among the most educated members in the community (with at least nine years of education). Although the initial training takes just 15 days, they regularly upgrade their skills through monthly training courses of three days’ duration. This includes two days of in-service training, provided by official BRAC personnel, which focuses on student-centered learning techniques.

Poor teacher salaries are generally associated with high turnover rates. Yet the attrition rate for community para-teachers in Bangladesh is estimated at 8% per year, which is very low compared to other countries. This can be attributed to the fact that most BRAC teachers are married women from the community, who are likely to remain there. This profile facilitates retention in the schools.

Box 3.5 Para-teachers and education quality in India

Given the size of India's primary school-age population, its para-teacher policy is closely watched. The recruitment of para-professionals has become the norm in many states, such as Madhya Pradesh and Chhattisgarh, where they accounted for 52% and 41% of primary instructors in 2003. Based primarily in rural areas, para-teachers are not subject to any mandatory training, aside from an induction course which is supposed to run for 20 to 40 days but has been found to last for just one week (Jagannathan, 2000; Mehta, 2000).

Surprisingly, a more recent study (Mehta, 2003) suggests that the qualifications of para-teachers are not very different from those of other teachers and, in some cases, might even be slightly higher: 49% of regular primary level teachers have ISCED 5 level qualifications compared to 55% of para-teachers. This may be due to substantial unemployment among tertiary graduates. Nevertheless, most para-teachers have probably not completed the official two-year teacher-training programme, which provides the pedagogical background needed to be effective in the classroom.

These findings must also be tempered by the fact that many states with high proportions of para-teachers did not state their qualifications in the study. For example, data on qualifications were not available for about one-half of all teachers in the state of Madhya Pradesh.

The study does show that para-teachers receive lower salaries and have less job stability than their counterparts. This is problematic from a quality perspective since many para-teachers will be obliged to take second shifts or other jobs outside of the education sector to earn more income, which can lead to absenteeism, poor performance in the classroom and low morale (Kumar, Priyam and Saxena, 2001).

Part of the solution may be to provide para-teachers with in-service training to reinforce their overall professional development. Figure 3.4 shows the proportion of teachers receiving in-service training by state in 2003. Some of the states with the highest proportions of para-teachers, namely Chhatisgarh and Madhya Pradesh, have the lowest rates of in-service training, especially compared to Rajasthan.

FIGURE 3.4

Para-teachers as a proportion of all primary teachers and proportions of all primary teachers receiving in-service training in India, 2002-2003

schools (see Figure 3.3). Not all of them have completed lower secondary education (which is required for primary teaching in these countries). These parents are supposed to be the best qualified in the community but it is highly unlikely that they receive any type of in-service training or other classroom support.

The main impetus for establishing para-teacher schemes is to reduce costs. In many less-developed countries, personnel costs account for more than 75% of all education expenditures. Para-teachers are far less expensive: many receive just 25-50% of the salary paid to their civil servant counterparts. In addition, most work on a contractual basis and, therefore, are not entitled to pensions and other benefits.

Niger is a case in point: 60% of teachers and professors have been laid off since 1998 due to legislative changes forcing teachers to retire after 30 years of service (World Bank, 2004). As a result, more experienced teachers are being steadily replaced by education volunteers, who are often young people with no formal training or experience. As shown in Figure 3.3, less than one-half of all primary teachers are civil servants at a time when the government has proposed restricting rights to unionise, prompting further outcry (L’Ecuyer, 2001). However, the expanded use of para-teachers in Niger has also been accompanied by growth in the primary completion rate (proportion of age group in the last year of primary), rising from 17% to 25% between 2000 and 2004. This situation underscores the

**FIGURE 3.3**

<table>
<thead>
<tr>
<th>Country</th>
<th>Civil servants</th>
<th>Contract teachers</th>
<th>Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea</td>
<td>30</td>
<td>68</td>
<td>0</td>
</tr>
<tr>
<td>Chad</td>
<td>39</td>
<td>68</td>
<td>0</td>
</tr>
<tr>
<td>Cameroon</td>
<td>45</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Togo</td>
<td>35</td>
<td>42</td>
<td>15</td>
</tr>
<tr>
<td>Congo</td>
<td>35</td>
<td>42</td>
<td>15</td>
</tr>
<tr>
<td>Senegal</td>
<td>35</td>
<td>42</td>
<td>15</td>
</tr>
<tr>
<td>Niger</td>
<td>30</td>
<td>68</td>
<td>0</td>
</tr>
<tr>
<td>Madagascar</td>
<td>35</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Benin</td>
<td>35</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>35</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Mali</td>
<td>35</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>35</td>
<td>35</td>
<td>15</td>
</tr>
</tbody>
</table>

Notes: ¹ Data refer to 2002; ² Data refer to 2001; ³ Data refer to 2000.
*Community teachers receive a state-subsidised salary.
Source: Based on Mingat, 2004.
policy challenge facing many governments: how to support and train ‘volunteer’ teachers without undermining the working conditions of existing civil servant teachers and the quality of education?

The first step is to clearly recognise that education quality is inextricably bound to teachers’ working conditions. For example, there are a number of studies comparing the impact of para-teachers on student achievement. Yet it is difficult to draw firm conclusions: a study in Niger shows little difference between pupils taught by regular or para-teachers (Bourdon, Frolich and Michaelowa, 2005), while in Botswana, less qualified teachers are related to poor student performance in mathematics, science and social studies (Botswana, 2000). Clearly more research is needed to disentangle the effects of different institutional arrangements and the individual profiles of para-teachers. Nevertheless, a common strand runs throughout these studies: dissatisfaction with the status of para-teachers (Michaelowa, 2002).

Vegas and De Laat (2003) showed that students taught by regular teachers consistently out-performed those taught by contract teachers in Togo. Both sets of teachers had similar qualifications. The difference lay in their wages, with para-teachers earning 40% of the civil servant salary. This was found even after the researchers controlled for other factors related to pupils and classroom conditions.

Figure 3.5 shows the differences in salaries paid to civil servant teachers, contract teachers and parent-teachers in Central and West Africa. In Burkina Faso, contract teachers receive nearly the same salary as civil servant teachers, but in other countries they can earn less than one-half. Parents receive largely symbolic payments compared to formal teachers.

FIGURE 3.5

Wages as a percentage of GDP per capita by status, 2003

Notes: ¹ Data refer to 2002; ² Data refer to 2001; ³ Data refer to 2000.  
Source: Based on Mingat, 2004.
Wage differentials can seriously impact the quality of education by reducing the prestige of the teaching profession. Low wages will ultimately attract less qualified individuals, and demoralise those teachers seeking a long-term career in education. There is no denying that para-teacher schemes can provide countries with the flexibility to respond to urgent needs. But by institutionalising them as long-term options, governments may seriously damage the general status of the teaching profession (Education International, 2003).

This concern is not new. Thirty years ago, the *ILO/UNESCO Recommendation Concerning the Status of Teachers* clearly warned “that any severe supply problem should be dealt with by measures which are recognised as exceptional, which do not detract from or endanger in any way professional standards already established or to be established and which minimise educational loss to pupils”.

It is possible to reconcile the costs and benefits associated with para-teachers. The solution lies in maintaining the status of the teaching profession by ‘mainstreaming’ para-teachers through adequate training and equitable compensation (Chung, 2005).

**SECTION 2. Balancing teacher deployment and conditions of service**

Another set of policy options to manage teacher supply and demand relates to their deployment and working conditions. Here, the challenge lies in adjusting the responsibilities and remuneration of teachers in order to meet UPE goals.

School organization is a key element of teacher deployment policies. For example, through the use of multiple shifts, schools may adjust the number of pupil instructional hours to educate more children with the same number of teachers in existing schools. Although resulting education quality is determined largely by how multiple shifts are designed and implemented (Amelewonou et al., 2005). In some cases, research has shown that pupils in double-shift schools do no worse than those in single-shift schools (Bray, 2000).

Another element of school organisation is represented by the pupil-teacher ratio, a key indicator of teacher deployment. *Figure 3.6* illustrates the link between the annual increase in teaching stock needed to meet UPE by 2015 and primary pupil-teacher ratios. As explained in Chapter 1, pupil-teacher ratios, while a highly aggregated measure, help to indicate the capacity of an education system and to assess whether teachers are potentially overburdened or under-utilised. In the latter case, it may thus be possible to accommodate more students without necessarily hiring additional teachers.

Yet not all countries have this room to manoeuvre. Chad, Congo, Ethiopia and Mozambique are faced with high demand for teachers and primary pupil-teacher ratios above 65:1. Malawi, Rwanda and Tanzania will not need as many new teachers, but they will not be able to raise pupil-teacher ratios either. With pupil-teacher ratios ranging from 40 to 55:1 in Burkina Faso, Burundi, Eritrea and Niger, there is little room to accommodate more students without recruiting new teachers. But turning to the Arab States, it may be possible to adjust the ratios (often less than 20:1) in countries like Kuwait, Saudi Arabia and the United Arab Emirates.
The following discussion relies, to a great extent, on statutory data (presented in Annex 3), which are relatively easy to collect and compare across countries. However, it is important to recognise their limitations. These indicators are based on legislation, norms or other standards set for the governance and conduct of a national education system. They may, for example, relate to teachers’ conditions of service, such as the required hours of instruction or civil servant salary scales adjusted for years of service. In short, statutory-based indicators reflect policy goals but not necessarily the reality. A teacher may spend considerably less time in the classroom than proscribed because of high rates of absenteeism, for example, or far more time working in overburdened schools.

An important statutory indicator is the number of teaching hours in a school year which is meant to represent the intended time teachers spend actually instructing in the classroom. Teaching hours are distinct from working hours, which include time spent on tasks outside of the classroom. Figure 3.7 shows the wide range of policies on teaching hours across countries and by level of education.

In Bangladesh, primary teachers are supposed to provide about 1,391 hours of instruction per year compared to less than 500 teaching hours in Kenya. In the case of Kenya, it may be possible to stretch existing teacher resources by raising the number of proscribed hours. This might also be a policy option for countries facing imminent teacher shortages, such as Uganda, where there is an obligatory 541 teaching hours per year. However, this is probably not the case for Mali and Niger, for example, which are both already at the high end of the scale with 930 and 1080 hours of instruction.
FIGURE 3.7

Statutory teaching hours by level of education, 2003

Notes:  
1 Data refer to 2002;  
1 Data refer to 2004;  
2 Data refer to 2005.

* No reference year available.

Teaching hours are generally shorter at the lower secondary level. Once again, Kenya and Uganda have the lowest numbers of 486 and 541 teaching hours required per year. At the other end of the spectrum, Kazakhstan, Lesotho and Sri Lanka require even more from secondary teachers (1,160, 1,440, and 1,260 teaching hours, respectively) than at the primary level. This is also the case for Mali (1,050 hours) and Niger (1,260 hours).

Another layer of analysis concerning teacher workload can be added through the measure of class size. This indicator goes beyond simple headcounts of teachers and pupils by also taking into account the mandated classroom time for teachers and pupils in a school year. However, it is important to recognise that average class sizes, like pupil-teacher ratios, will not reflect the inequalities resulting from a skewed distribution of teachers and pupils across the system (see Box 3.6).

Figure 3.8 presents the primary pupil-teacher ratio alongside the adjusted class size (data are provided in Annex 3, Statistical Table A3.14). The figure shows that there may be more policy options than suggested by pupil-teacher ratios alone.

Where the class size is lower than the pupil-teacher ratio, it may be possible to accommodate more students. For example, this appears to be the case in Bangladesh, Lesotho and Zimbabwe: the number of instructional hours required of teachers is actually much higher than the time pupils are expected to spend learning in classrooms each year (hence the low class size). Upon closer examination, it appears that the teachers’ workloads are not exceptionally heavy but rather that the required class time for pupils is below average, especially in Bangladesh and Zimbabwe (compared to the selected countries), at 589 and 516 hours, respectively (see Annex 3, Statistical Table A3.14).

Countries like Bangladesh, Lesotho and Zimbabwe have a policy choice: instead of relying solely upon new recruits to meet growing demand for education, they could also ask existing teachers to work longer hours. However, these governments should be careful not to reduce further the hours that pupils actually spend in classrooms at the risk of seriously compromising learning outcomes.

Figure 3.8 also highlights the opposite situation, where class sizes are extremely high because pupils are expected to attend classes for relatively long hours over the year. In countries like Guinea (with an adjusted primary class size of 53), Kenya (65) and Cambodia (70), there may be even less room to adjust policies for UPE than suggested by pupil-teacher ratios alone. On the positive side, more time spent by pupils in the classroom may boost student learning.

This is not to suggest that demand for additional teachers can be managed simply by asking teachers to provide more or less hours of instruction alone. Changing the number of instructional hours not only has an impact on teacher workload but also can affect student performance. Moreover, the number of instructional hours cannot be considered alone, because it is linked to other aspects of teachers’ working conditions, such as class size.
From the perspective of teacher deployment, Figure 3.10 shows that the relationship between hours of instruction and class size differs across countries. First, there are a cluster of countries where teachers have relatively low hours of instruction and class sizes. These are typically OECD countries, such as Hungary, Japan or Norway, with declining primary school-age populations, which has meant increasing investments in education systems.

However, other countries will probably have to make trade-offs. For example, primary teachers in Cambodia and Kenya face bigger class sizes (over 60 pupils per teacher) but teach fewer hours in a school year (less than 700 hours). In Bangladesh and Indonesia, primary teachers have smaller classes (23 and 18 pupils per teacher, respectively) but longer hours of instruction (1,391 and 1,260 hours per year, respectively). It is often difficult to find the balance in terms of workload. It may be that teachers in the Philippines, India and Guinea face an even more difficult workload because both their hours and class sizes are moderately high.
Average pupil-teacher ratios at the national level conceal serious imbalances in the distribution of teachers: a school with 800 pupils may have 20 teachers, while another school of similar size may only have five. It is therefore essential to consider the situation at the school or district level in order to evaluate deployment policies.

This can be done by comparing local pupil-teacher ratios to the national average through the determination coefficient. If every school in a country has the same ratio as the national average, then the determination coefficient will equal 1. However, it will fall according to the number of schools straying from the average and the degree to which they do so. In short, the lower the determination coefficient, the bigger the problem in terms of teacher deployment.

Figure 3.9 presents the determination coefficient for 22 African countries. It ranges from under 0.5 in Togo to more than 0.9 in Guinea and Sao Tome and Principe. These latter two countries have managed to evenly distribute teachers across their education systems, which is critical to eliminate disparities in terms of education quality. Yet in Togo, teachers seem to be randomly deployed, with little regard to the number of pupils in each school. Consequently, some schools are under-staffed and others have too many teachers. On a positive note, this means that local teacher shortages can be alleviated by adjusting redeployment policies rather than massively hiring new recruits. It is true that local disparities often stem from the inaccessibility of certain areas due to geographic, economic or political factors. But given the trade-offs in the process of training new teachers, governments may consider providing incentives to attract teachers to these areas.

Source: Mingat et al., 2003 and Amelewonou et al., 2005.
In assessing policy options, it is important to assess what teachers are asked to do, as well as what they receive in return. Teacher wages are and will continue to be a contentious area of debate. In fact, personnel costs make up the majority of total public expenditure on education, representing up to 90% or more of recurrent costs in extreme cases. It has been argued that UPE is impossible for some countries given current fiscal constraints. Despite evidence that average primary teacher salaries have actually been falling over the last three decades, particularly in sub-Saharan Africa (Lambert, 2004), they are still considered...
to be high, especially in the central and western countries of the region.

By benchmarking primary teachers’ salaries to national GDP per capita, it is possible to compare country levels by reducing differences due to labour markets and price structures. According to data presented in Figure 3.11, entry-level salaries for primary teachers are highest in the countries needing to expand their teaching forces. In fact, some of the highest salaries, relative to GDP per capita, are found in Mali and Niger.

Based on a study of high-performing countries and universal primary education, the World Bank has suggested that the average primary teacher’s salary should not exceed 3.5% of national GDP per capita (Bruns et al, 2001). But it should be remembered that in the lowest income countries, relative measures, such as the share of GDP per capita, hide the fact that these salaries in absolute terms are still very small, as is the pool of secondary school graduates who may pursue competing employment options.

Figure 3.11 provides a good indication of the statutory costs involved in hiring new teachers (with minimum qualifications) in countries that need to expand their teaching forces to reach UPE. Detailed data on salary scales at the beginning and mid-career of teachers are presented in Annex 3, Statistical Tables A3.9, A3.10 and A3.11.

However, it is also important to consider the policy aims and implications of civil servant salary scales. Do systems reward new teachers with good qualifications? Are there provisions to reward teacher experience? These kinds of incentives can have a considerable impact on the quality of instruction. Figure 3.12 shows the differences in teacher salary scales among two groups of countries: those which need to focus on retaining teachers, especially because of higher attrition rates linked to HIV/AIDS; and those that need to expand the primary teaching force.

Among the first group of countries, South Africa rewards experience more than formal qualifications, which seems to reflect a policy approach aiming to retain teachers. In contrast, Lesotho values relatively high qualifications at the entry level. Although data concerning experience are unavailable, it seems that Lesotho has deliberately raised entry salaries to keep locally-trained teachers in the country rather than migrating to other countries. Kenya seems to apply a strategy that is aimed at reducing overall costs and therefore does not provide incentives to improve qualifications or to accrue experience.

There is less variation among countries needing to expand teacher stocks. The exceptions are found in Mali, which places a higher premium on experience while Niger rewards entry-level qualifications and experience.
FIGURE 3.11

Statutory teacher salaries by level of education, 2003

Primary education

Lower secondary education

Upper secondary education

Notes: 1 Public institutions only; 2 GDP for 2005.
1 Data refer to 2002; 2 Data refer to 2000; na: Not available.
Maximum qualification is shown where data are available.
The statutory salary scales do not fully reflect the benefits that accrue to teachers. In Indonesia, for example, these benefits can account for up to 60% of a teacher’s income (UIS/OECD, 2001). It is very difficult to quantify and therefore compare these benefits, but it is possible to examine their prevalence. Table 3.1 shows the extent to which certain types of salary adjustments are found across countries. The most commonly used benefits are location allowances and housing which are used to attract new teachers to remote or rural schools. However, they can also be a source of dissatisfaction (Box 3.7 highlights some policy contradictions in Latin America).

Common benefits also include additional payments for management responsibilities and for high levels of qualifications when entering the profession. However, other incentives are absent, especially those linked to teacher and more so to student performance. But then again, inspection and administrative structures are needed to apply and monitor the provision of these benefits.
### TABLE 3.1
Prevalence of non-wage benefits for primary teachers

<table>
<thead>
<tr>
<th>Region</th>
<th>Location allowances (e.g., isolation pay, housing allowance, or provision of housing)</th>
<th>Having a higher than minimum level of teacher certification or training obtained during professional life (e.g. Masters degree)</th>
<th>Completion of professional development</th>
<th>Management responsibilities</th>
<th>Achieving high scores in the qualification examination</th>
<th>Outstanding performance in teaching</th>
<th>Outstanding performance of students</th>
</tr>
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<tbody>
<tr>
<td><strong>Arab States</strong></td>
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*Source: Annex 3, Table A3.8.*

**Legend:**
- ▲ Most of the time
- ▲ Occasionally
- ❌ Rarely
- □ Never
- ... Missing data
Box 3.7 Equity in Latin America: The unintended consequences of teacher policies

Equity is a major concern for social development, especially in Latin America where significant income disparities are often related to ethnicity and location.

Teacher policies, especially those concerning deployment and labour conditions, can seriously impact the ways in which education systems promote social justice. In short, clear mechanisms are needed to ensure that teachers reach the students and schools that need them most. But policies are the result of a complex array of circumstances and negotiations that can have unintended and even contradictory consequences.

For example, several Latin American countries have set up incentive packages to make rural or remote schools more attractive to teachers. In Cuba, El Salvador, Panama, Peru and Venezuela, teachers working in isolated or rural communities receive salary bonuses. They also accrue greater benefits in Bolivia, for example, where every three years of service is counted as four, and in Honduras, where an extra half-year is counted for every year of teaching in these areas. Chile also grants teachers a salary bonus for challenging situations, like working with groups living in extreme poverty. In addition to a bonus, Ecuador grants tenure as a priority to teachers living in isolated areas, while Guatemalan laws oblige them to live near these communities in order to gain tenure.¹

But are these measures alone sufficient to ensure that qualified teachers reach students most in need? Do they properly compensate for the hardship involved? There is not enough documentation to properly evaluate the efficiency of these measures.

Moreover, these measures are applied in combination with others, which can lead to contradictory results. For example, new teachers in Ecuador and Peru are required to begin their service in rural or ‘less-developed’ areas. This deployment practice may end up matching the least experienced teachers to the pupils in greatest need. Apparently, negotiations on these rules did not properly weigh the children’s best interests. The same applies to the practice of linking teachers’ salaries to the size of a school (number of students). In this case, schools serving scattered populations (often attending multi-grade classrooms with one teacher) are in a sense punished because they become even less attractive to teachers (UNESCO OREALC, 2005a).

This complexity underscores the need for a comprehensive approach to teachers’ issues to improve services for those most in need (UNESCO OREALC, 2005b).

Based upon an ongoing comparative UNESCO study on “Teachers’ career and appraisal in America and Europe”. Available at http://www.unesco.cl/revistaprelac/ing/.

¹ UNESCO OREALC (2005b).
SECTION 3. Concluding remarks

This report has sought to identify the gaps in teacher supply to establish the parameters for providing minimum adequate standards of education quality in order to achieve universal primary education by 2015. Table 3.2 presents a regional breakdown of the numbers of teachers needed to achieve UPE and to compensate for attrition among existing teachers. This section summarises some of the key factors and contexts shaping future needs in three groups of countries: those that need to substantially expand their primary teaching stocks, those needing more modest stock increases, and countries mainly facing attrition and can therefore focus efforts on other interventions to improve education quality.

Both groups of countries that need to expand teaching forces share a common problem: the availability of sufficient resources. While this report highlights some of the different policy adjustments to alleviate teacher shortages, they are all dependent upon financing. Indeed, there are hidden and sometimes substantial costs for every policy shift: from an incentive package to attract teachers to work in rural areas to the ongoing training and support of para-teachers or an increase in pupil instructional hours.

Countries in the greatest need of new teachers

The principle that the quantity and quality of education should not be compromised is an important one. Yet the challenges and hardships faced by countries with the greatest need to expand teaching forces, found in Central, West and East Africa, cannot be underestimated. This report clearly demonstrates that the quantity and quality of education in these countries has already been compromised: this is not the place to start hurdling towards ambitious

<table>
<thead>
<tr>
<th>Region</th>
<th>Primary teachers 2004</th>
<th>2015 (projected)</th>
<th>Annual % increase in primary teachers, 2004-2015</th>
<th>Primary teacher flows, 2004-2015</th>
<th>Additional teachers needed to reach UPE (among 76 countries)</th>
<th>Teachers to fill vacancies due to attrition (6.5%)</th>
<th>Total number of teachers needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arab States</td>
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<td>2,202</td>
<td>2.10</td>
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<td>2,713</td>
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</tr>
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</table>

goals but rather to lay the foundations for progressive improvements. In fact, since 2000 progress is palpable in countries like Burkina Faso and Niger, but sustaining this movement will constitute a significant achievement.

How can policies be adjusted to make the most of effective teachers? The countries facing the greatest challenges should seek to improve traditional training routes through innovative use of communication technologies – from the time-trusted radio to the Internet connection. To meet growing demand, they may also decide, either by plan or circumstance, to lower teaching qualifications and introduce para-teachers. In any case, they should monitor the efficiency and effectiveness of such schemes.

It is not enough to simply introduce para-teachers into the system – not even the most intensive induction course will rectify the resulting imbalances. It is essential to accompany these individuals and ‘mainstream’ them through regular in-service training, as very successfully done in countries such as Bangladesh. Para-teachers must also have the opportunity to advance their careers. Without this, falling morale will steadily infect the entire school system, sapping motivation to provide quality education which leads to higher attrition rates.

Governments need to keep a careful eye on attrition rates in order to properly evaluate the hidden costs of the loss of teachers (and especially para-teacher programmes, where higher than average attrition rates may not be factored into cost-benefit analyses). By reducing attrition rates by a single percentage point, some countries could secure enough teachers to significantly reinforce the capacity to achieve UPE. In these cases, monetary incentives to keep effective teachers within the profession would cost less than training large waves of new recruits. Additional gains might also be made by an honest and comprehensive assessment of teachers’ roles in decision-making at the school level and other factors related to both teacher motivation, as well as school effectiveness.

**Countries in moderate need of new teachers**

This group is made up primarily of countries in East and South Africa, Arab States, and South Asia. While the projected demand for teachers is not as extreme as that found in the previous group of countries, the challenges for education quality are still considerable. There is slightly more room for policy trade-offs, although the capacity and qualifications among the existing teaching force are a concern.

Improving teacher retention rates are also a priority for countries like Benin, Eritrea, Malawi, Rwanda and Tanzania, where there is a slightly more moderate demand for new teachers by 2015. Here the solutions lie in a combination of measures: a slight reduction of attrition rates along with adjustments in deployment policies and a possible realignment of qualifications required to enter the teaching profession. There is some room for manoeuvre, although the challenges should not be underestimated, especially in light of tight fiscal constraints.

There is still the risk of regression. Some of these countries have recently abolished school fees which have led to large numbers of new pupils entering formal schooling.
As the education systems were not always prepared for the consequences, pupil-teacher ratios soared and education quality suffered. Already, there is evidence of increases in the proportion of children leaving school early in some countries.

For this group of countries, as well as the others, there are questions as to why trained teachers do not necessarily lead to better outcomes. Is the teaching profession attracting less qualified individuals? Is teacher training inadequate? Are teachers poorly supported or monitored at the classroom level? These issues need to be better informed by research, especially at the international level, where the global database of teacher-related indicators is in need of significant improvement. Box 3.8 shows that international efforts to monitor teacher-related issues still focus mainly on macro-level approaches but increasingly look at the mico-level.

**Countries without the need of new teachers**

In countries where no increase in teacher stock is projected, there are a number of commonalities. In most of the countries: primary school-age populations have been in decline; many countries have achieved or are near universal primary education; and levels of internal efficiency are fair, although this is still a significant issue in some areas, such as Latin America. There is often a large but mobile pool of potential teachers within active labour markets. Most countries have high qualification standards (tertiary level degrees) and high proportions of teachers who meet them.

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**Box 3.8 International monitoring of teacher-related indicators**

From a monitoring perspective, the international database is very weak on teachers. The Indicators of National Education Systems (INES) project has made great strides in OECD countries, as well in other countries across the world, in the framework of the UIS/OECD World Education Indicators (WEI) programme. Part of this legacy is represented in the indicators used in this report. The UIS seeks to further expand the use of these indicators to inform education policy issues in less-developed countries. The use of statutory data presents a new perspective, but represents only a modest step towards a better understanding of teachers, teaching and education quality. Cross-national surveys of student achievement, such as those cited in this report (e.g. SACMEQ, PASEC, PIRLS, TIMSS) provide additional information on teachers, especially in terms of their attitudes towards different aspects of the profession. In addition, the PISA assessment is planning to incorporate a teacher survey in the next wave of the study. The UIS and OECD, in partnership with participating members of the WEI programme, have implemented a primary school survey across ten countries which examines teacher-related issues from the perspective of school headmasters and 4th grade teachers, which will help to shed more light into the black box of teaching and learning processes in the classroom.
Several countries in the North America and Western Europe region, e.g. Ireland, Spain and the United States, will need more teachers by 2015; however, it appears that these needs could be met by redeploying teachers or reducing of attrition rates. For example, by reducing the attrition rate by less than one-half percent, the United States could find a sufficient number of teachers to meet increase in the number of pupils at the national level.

A small number of Southern African countries are among this group as the number of primary school-age children is expected to decline. However, these countries may face higher rates of attrition primarily due to HIV/AIDS, so demand for education may be higher than it appears. There is an overarching concern to improve the skills and qualifications of the teaching force and improve the efficiency and quality of education provision.

Ultimately, progress in all three groups of countries will depend upon an ongoing commitment to enhance teacher status. This must be the foundation for a comprehensive policy approach which can balance wider education priorities with the actual conditions facing teachers and pupils in the classroom.